

Flood Risk Management (Scotland) Act 2009

Solway Local Plan District Local Flood Risk Management Plan



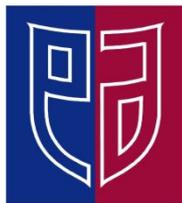
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Dumfries and Galloway Council



Lead Local Authority for the Solway Local Plan District

In partnership with:



Buidheann Dion
Àrainneachd na h-Alba



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 first local flood risk management plan for the Solway 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 – local authorities, 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.

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 Local Flood Risk Management Plan is an important milestone in implementing the Flood Risk Management (Scotland) Act 2009 and improving how we cope with and manage floods in the Solway Local Plan District. This LFRMP translates this legislation into actions to reduce the damage and distress caused by flooding over the first planning cycle from 2016 to 2022.

The Solway Local Plan District is led and is published by Dumfries and Galloway Council on behalf of a partnership comprising three local authorities: Dumfries and Galloway Council, East Ayrshire Council and Scottish Borders Council; Scottish Water; SEPA; and Forestry Commission Scotland.

In summary, 26 areas have been identified as being potentially vulnerable to flood risk across the Solway Local Plan District. These include 3,900 residential and 900 non-residential properties. The estimated annual average damage of these flood risks is £14M.

This LFRMP presents actions to avoid and reduce the risk of flooding, and prepare and protect ourselves, and our communities, within these potentially vulnerable areas and across the Local Plan District. These actions include three new flood protection schemes and completion of works of flood protection; 12 flood protection studies (including one natural flood management study); as well as flood warning schemes, surface water management plans. 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 LFRMP shows that the coordinated and collaborative efforts of public bodies can be brought together to deliver sustainable outcomes. However, the actions in this LFRMP can only be delivered with the support of all the public bodies, The Scottish Government, and most importantly you and your communities.

This LFRMP therefore provides the blueprint upon which SEPA, local authorities and Scottish Water and any other responsible authorities will deliver their flood risk management responsibilities and, in particular, 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 LFRMP, which will help shape the way in which floods and their impacts are managed across the Solway Local Plan District.

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1 Flood Risk Management in Solway Local Plan District

1.1 What is a Local Flood Risk Management Plan

The Local Flood Risk Management Plan (LFRMP) has been developed to detail the actions adopted to reduce the devastating and costly impact of flooding in the Solway Local Plan District. The LFRMP supplements the Flood Risk Management Strategy (FRM Strategy) which coordinates the efforts of all organisations that tackle flooding, be it in our cities or rural areas and be it from rivers, the sea or from surface water. The FRM Strategy identifies where the risk of flooding and benefits of investment are greatest: the LFRMP details the prioritised actions that will be delivered with this investment. There are 13 other FRM Strategies and LFRMPs for the other Local Plan Districts in Scotland.

By publishing the LFRMP, 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 of when they are doing it.

This LFRMP details how and when the actions to deliver the goals set in the FRM Strategy are to be delivered in the first six-year planning cycle, from 2016 to 2022. They therefore describe the short-term direction of flood risk management in the Solway Local Plan District, which is expanded upon in the FRM Strategy. The actions in this LFRMP are based on agreed objectives for tackling floods in high-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 local authorities 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 Solway Local Plan District.

The contents of this LFRMP have been agreed with the lead authority and every other responsible authority, which has flood risk related functions exercisable in or in relation to the Local Plan District and SEPA.

This LFRMP is published by Dumfries and Galloway Council, lead authority for the Solway Local Plan District. The LFRMP has been prepared in collaboration with Scottish Borders Council, East Ayrshire Council and Scottish Water and other organisations with a responsibility or interest in managing flooding. The LFRMP is a requirement under the Flood Risk Management (Scotland) Act 2009 and fulfils requirements within the European Commission's Floods Directive.

1.2 How to read this Local Flood Risk Management Plan

This Local Flood Risk Management Plan has four sections:

Chapter 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 locally to each Local Plan District through the Local Flood Risk Management Plan.

Chapter 2 then provides background on the flooding risk within the Solway Local Plan District, setting the scene for detailed consideration of each Potentially Vulnerable Area within the catchment.

Chapter 3 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. Most importantly, the chapter describes the actions that will deliver progress against these goals over the first six-year planning cycle (2016-2022), including when they will be implemented, which organisation is responsible, and how they are to be funded.

Finally, annexes to LFRMP provide supporting documents and references, and present more detailed information in various formats. A glossary of terms is also available.

This LFRMP should be read alongside the FRM Strategy for the Solway Local Plan District. The FRM Strategy has been developed in parallel and provides additional background information and national context. The publication date of the FRM Strategy was December 2015. Both the LFRMP and the FRM Strategy will be updated every six years – see chapter 1.6 of the LFRMP.

1.3 How have we developed the Local Flood Risk Management Plan

1.3.1 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 disregards local authority boundaries and similarly cuts across the responsibilities of organisations such as SEPA, Scottish Water and emergency responders. Flood management requires the coordination set out in this LFRMP (and parallel FRM Strategy) to be successful. A willingness to collaborate by those responsible for flood management is essential.

This LFRMP 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. Local authorities and Scottish Water have made sure that local knowledge and expertise has informed the decision-making. Where appropriate, the national park authorities have also contributed. The LFRMP has been developed by:

- Dumfries and Galloway Council (lead local authority);
- Scottish Borders Council;
- East Ayrshire Council
- Scottish Water;
- SEPA; and
- Forestry Commission Scotland

1.3.2 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 falls in the main to SEPA, local authorities and Scottish Water.

SEPA is Scotland's national flood forecasting, flood warning and strategic flood risk management authority. SEPA has a statutory duty to produce Scotland's Flood Risk Management Strategies. 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.

Local authorities work together for flood risk management planning purposes through a single lead authority, which has the responsibility to produce a Local Flood Risk Management Plan. Local authorities have been working collaboratively to develop these. It is the responsibility of your local authority to implement its flood protection actions agreed within the LFRMP from new engineering projects to clearance and repair of watercourses. During severe flooding, local authorities will work with the emergency services and coordinate shelter for people evacuated from their homes.

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. Further detailed on some of the key roles are outlined in Annex 1: LPD roles & responsibilities.

1.3.3 Consultation, engagement and advice

Local authorities 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. Two statutory public consultations were held during the development of the FRM Strategies and LFRMPs. The first, by SEPA, was on the general approach to flood risk management planning and the identification of priority areas (2011); the second, held jointly with SEPA and local authorities, was on the understanding of flooding in these priority areas and on the objectives and actions to manage flooding (2015). The views and representations of the respondents to the second consultation were taken account of in developing and finalising the LFRMP. Details of further consultations and other communication and engagement activities for this LFRMP are described below.

Further advice has been sought from relevant organisations at key stages. The LFRMs (and LFRMPs) have benefitted from input from Local Advisory Groups and the Cross Border 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 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, local authorities, Scottish Water, Forestry Commission Scotland, the National Park Authorities and other key interested organisations have assisted each other and developed industry best practice guidance for flood risk management planning.

The Cross Border Advisory Group is also in place in the Solway Local Plan District to advise the Environment Agency, SEPA and local authorities on flooding issues that straddle the border. The group consider how the relevant authorities should coordinate their work in order to ensure that they understand how the impact of flood risk on one side of the border is affected by actions or inactions on the other side of the border. With respect to the Solway LPD, in addition to Dumfries and Galloway Council as Lead Local Authority, the group included representatives from Cumbria County Council, Scottish Borders Council, SEPA, the Environment Agency, Scottish Water and United Utilities. Interaction within the catchment across the Scotland-England Border is limited with the Solway LPD.

1.3.4 Identification of objectives, appraisal and prioritisation of actions

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 FRM Strategy provides the list of prioritised actions for the first six-year flood risk management planning cycle, 2016 to 2022. The LFRMP identifies who will be responsible for the action, a timetable of when it will be undertaken and the funding arrangements – see Chapter 2.

The lists of prioritised actions to meet agreed goals and objectives in the first six-year cycle considered what would be achievable assuming a similar level of funding for flood risk management activities from The Scottish Government. However, given the timing of spending reviews and annualised financial settlements for local government, the actual ability to deliver all the actions set in the Strategies in December 2015 and detailed in this LFRMP will be dependent on the availability of the necessary funding in each year of the six year LFRMP.

1.3.5 Strategic Environmental Assessment and Habitats Regulations Appraisal

Dumfries and Galloway Council submitted an SEA screening report under the Environmental Assessment (Scotland) Act 2005 on the Solway Local Flood Risk Management Plan to the SEA Gateway in late 2015.

The screening report identified that the LFRMP would likely have significant environmental effects. However, it considered that the environmental impacts (positive and negative) for the measures contained within this Local Flood Risk Management Plan had already been assessed by the SEA Environmental Report undertaken for the FRM Strategies. It was therefore concluded that the Local Flood Risk Management Plan itself was unlikely to have any significant environmental effects that had not already been assessed in the SEA process associated with the FRM Strategies.

The responses to the screening report from the Scottish Consultation Authorities (SEPA, SNH, and Historic Environment Scotland) concluded that the Local Flood Risk Management Plan was unlikely to have any significant environmental effects. These can be found in

The English Consultation Authorities (Environment Agency, English Heritage, Natural England) were also consulted via the SEA Gateway, however only Natural England submitted a response. This response highlights that in general their advice for strategies at any level, that have the potential to impact on the environment, is to undertake a specific SEA for that strategy. Dumfries and Galloway Council consider this to be advice on the SEA process, and note that the response from Natural England does not identify that there are likely to be significant environmental effects from the Local Flood Risk Management Plan in England.

On the basis of all considerations, including the responses received by the respective Scottish and English Consultation Authorities, Dumfries & Galloway Council determined that no further SEA assessment is required for the Local Flood Risk Management Plan.

Dumfries and Galloway Council also undertook a Habitats Regulations Appraisal to ensure that the LFRMP will not adversely affect the integrity of Special Areas of Conservation and Special Protection Areas. Scottish Natural Heritage was consulted on our appraisal and their views have been taken into account. Mitigation has been applied where required to ensure that the LFRMP will not adversely affect the integrity of Special Areas of Conservation and Special Protection Areas.

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

The LFRMP does not stand in isolation. As far as is practicable, an integrated approach to land and water management has been pursued. When developing the FRM Strategy and LFRMP, 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 local flood risk management plans and strategies 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.

1.4.1 River basin management planning

Reducing flood risk in Scotland through the development of Flood Risk Management Strategies 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 Flood Risk Management Strategies, and local authorities for Local Flood Risk Management Plans, and they have worked 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 LFRMPs and FRM Strategies.

1.4.2 Scottish Water Business Plan 2015-2021

Scottish Water's investment programme is set out in their business plan 2015-2021, which can be found in their website – [<https://www.scottishwater.co.uk/about-us/publications/strategic-projections>]

Scottish Waters customers have told them that reducing internal property flooding from sewers is a high priority and this is reflected in Scottish Waters Business Plan commitments for the period 2015-21. Addressing sewer flooding is of the highest importance to Scottish Water, as highlighted by our customers who have helped shape the investment plans for 2015-21.

In recognition of this high priority, within the period 2015-2021, Scottish Water will invest approximately £115m to improve the hydraulic capability of the sewer network so that they can remove all customers from the high risk internal sewer flooding register (greater than 10% chance per annum) as quickly as possible, typically within four years of their problem being confirmed. However, Scottish Water has made a commitment to those customers on the register on 31 March 2015 that they will no longer be on the register by 31 March 2021.

Scottish Water Customers have also highlighted external flooding is an important issue. As a result, within the period 2015-2021, Scottish Water are investing approximately £40m to develop and to begin to implement solutions to reduce the flood risk for 400 high priority external sewer flooding areas suffering from frequent repeat flooding events.

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. Scottish Water is also working in partnership with SEPA and Local Authorities, to lead on the production of Integrated Catchment Studies across key catchments. Work carried out under these Flood Risk Management (Scotland) Act 2009 duties will continue to inform future investment requirements for Scottish Water.

1.4.3 Surface Water Management Planning

Surface water flooding is experienced in all Plan areas and therefore there is a need for Surface Water Management Planning. Surface water flooding is a key component of the flood risk assessment that has led to the development of this LFRMP. However, not all Surface Water Management Planning will require a Surface Water Management Plan or specific study or other action, which are described in Chapter 3 of this Plan.

1.5 Next Steps

The LFRMP runs for six years from June 2016. Over this period, the Solway LPD partnership will continue to

meet periodically to monitor progress towards implementing the actions detailed in Chapter 3 and Annex 1 of the LFRMP.

Between years 2 and 3 of the FRM cycle (i.e. before June 2019), Dumfries and Galloway Council, as lead authority will publish a report on the conclusions of a review of the LFRMP, including information on the progress that has been made towards implementing the measures identified in the implementation part of the LFRMP.

Between years 5 and 6 of the FRM cycle (i.e. before June 2022), Dumfries and Galloway Council, as lead authority will publish a report on the LFRMP 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 LFRMP was finalised which the lead authority considers have contributed to the achievement of the objectives summarised in the LFRMP.

The lead authority will make these reports available for public inspection.

[1.6 Licencing acknowledgements](#)

Full licensing acknowledgements can be found in Annex 6: Acknowledgements of this LFRMP.

2 Managing Flood risk in Solway Local Plan District

2.1 Understanding of flooding within the Solway Local Plan District

This chapter presents the summaries of flooding for the Solway Local Plan District and Chapter 3 Potentially Vulnerable Areas details the 24 Potentially Vulnerable Areas (PVAs) and 2 Candidate PVAs. Planned actions to manage flooding that have been prioritised for delivery between 2016 and 2022 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.

This chapter summarises the characteristics and impacts of flooding from river, coastal and surface water sources on the Solway Local Plan District and how flooding from these mechanisms are to be managed, which are described in more detail in the FRM Strategy.

Section 2.2 presents a summary for the LPD with the detail to be found in Chapter 3: sections 3.1 to 3.26 detail actions by PVAs. Section 3.27 describes other flood risk activities undertaken by local authorities in Solway Local Plan District to provide as full a picture as possible of how flood risk is managed in the Solway Local Plan District.

2.1.1 Flood mapping

River, coastal and surface water maps were developed by SEPA using a consistent methodology to produce outputs for the whole of Scotland. This was supplemented with more detailed, local assessments where available and suitable for use.

In developing the flood maps SEPA have:

- Used the most up to date modelling techniques
- Used industry endorsed methods
- Been able to show more information than ever before on the sources and impacts of flooding
- Developed the first national natural flood management maps showing the areas where natural techniques to help reduce flood risk could be most effective.

In developing the maps, SEPA worked in partnership with local authorities. They also worked with the industry to define the overall approach to flood hazard mapping and undertook a series of internal checks and local authority reviews of outputs. Further information on Flood Hazard and Risk including mapping can be found at <http://map.sepa.org.uk/floodmap/map.htm>

2.2 Local Plan District Summary

There are 24 PVAs and 2 Candidate PVAs across the Solway Local Plan District – see Figure 1.

There are approximately 3,900 residential properties and 900 non-residential properties at risk of flooding within the Local Plan District. This is approximately 5% of the residential properties and almost 13% of non-residential properties within the area. It is estimated that 74% of residential and non-residential properties at risk of flooding are located within PVAs and a further 10% of properties at risk are identified within two candidate PVAs. The Annual Average Damages from flooding are approximately £13.7 million.

River flooding is the main source of flooding in the Local Plan District (Figure 1). The Annual Average Damages caused by river flooding are £9.8 million, those caused by coastal flooding are £2.7 million and those caused by surface water flooding are £1.2 million.

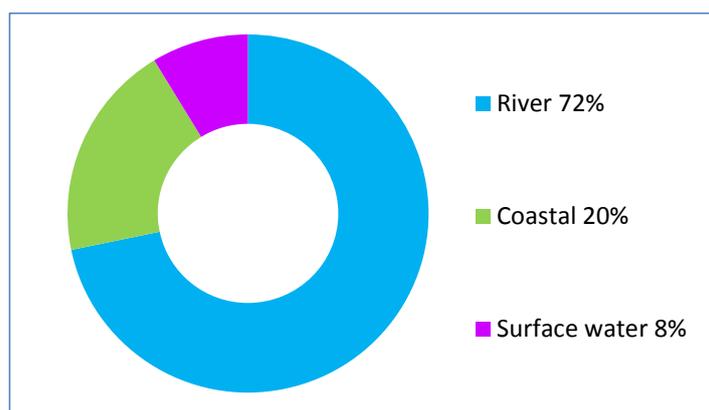


Figure 2 - Annual Average Damages by flood source

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

Settlement name	Residential and non-residential properties at risk of flooding	Annual Average Damages
Dumfries (including Lincluden)	840	£3.7 million
Moffat	350	£630,000
Stranraer	350	£430,000
Dalbeattie	290	£510,000
New Cumnock (including Mansfield)	240	£490,000
Newton Stewart / Minnigaff	210	£490,000
Langholm	190	£270,000
Annan	180	£530,000
Castle Douglas	170	£440,000
Newcastleton	140	£160,000

Table 1 – Main areas as risk of flooding

Action to manage flood risk	Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans	Flood protection study	Natural flood management study	Maintain flood warning*	Awareness raising	Surface water plan/study	Emergency plans/response	Maintain flood protection scheme*	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies
	PVA (14/**)																	
Kirkconnel (01)			✓				✓		NA	✓		✓	✓	✓	✓	✓	✓	✓
Moffat (02)			✓	✓			✓		NA	✓		✓	✓	✓	✓	✓	✓	✓
Newcastleton (03)				✓			✓		✓	✓	✓	✓	NA	✓	✓	✓	✓	✓
Langholm (04)	✓		✓						NA	✓		✓	NA	✓	✓	✓	✓	✓
Dumfries Nith (05)	✓		✓						✓	✓	✓	✓	NA	✓	✓	✓	✓	✓
Dumfries east (06)									NA	✓	✓	✓	NA	✓	✓	✓	✓	✓
Lochmaben - Lockerbie (07)			✓						NA	✓		✓	NA	✓	✓	✓	✓	✓
Ecclefechan - Annan (08)			✓				✓		✓	✓	✓	✓	NA	✓	✓	✓	✓	✓
Kirtle Water catchment (09)									✓	✓		✓	NA	✓	✓	✓	✓	✓
Springholm (10)									NA	✓		✓	✓		✓	✓	✓	✓
Castle Douglas (11)							✓		NA	✓		✓	NA	✓	✓	✓	✓	✓
Newton Stewart (12)	✓		✓	✓					NA	✓		✓	NA	✓	✓	✓	✓	✓
Kirkcolm (13)									NA	✓		✓	✓		✓	✓	✓	✓
Portpatrick (14)									✓	✓		✓	✓	✓	✓	✓	✓	✓
Stranraer (15)	✓						✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Spittal (16)									NA	✓		✓	NA		✓	✓	✓	✓
Creetown (14/17)							✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
G'house of Fleet (18)									✓	✓		✓	NA	✓	✓	✓	✓	✓
Dalbeattie (19)			✓				✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Palnackie (20)									✓	✓		✓	✓	✓	✓	✓	✓	✓
Southernness and Carsethorn (21)							✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Kirkcudbright (22)							✓	✓	✓	✓		✓	NA	✓	✓	✓	✓	✓
Braehead and Whauphill (23)									✓	✓		✓	NA		✓	✓	✓	✓
Isle of Whithorn and Garlieston (24)							✓		✓	✓		✓	✓	✓	✓	✓	✓	✓
Moniavie (25c)							✓		NA	✓		✓	✓		✓	✓	✓	✓
New Cumnock (26c)	✓			✓	✓				✓	✓		✓	NA	✓	✓	✓	✓	✓

Table 2 – Actions to manage flood risk per PVA

Table 3 summarises the headline actions to manage flood risk over the six-year plan period. These details are also provided for the LPD and each PVA in Sections 2.2 and 3.1 to 3.26 respectively.

Area / implementation lead ¹	Actions						
	NFM Studies	NFM Works	Flood Protection Study	Flood Protection Schemes/ Works ²	Integrated Catchment Studies	SWMP priority areas ³	New Flood Warning Schemes
SCOTLAND	22	4	130	56	20	94	18
Solway LPD	1	0	7	6	0	3	3
Dumfries and Galloway Council	1	-	6	4	-	2	-
East Ayrshire Council	0	-	0	1	-	0	-
Scottish Borders Council	0	-	1	0	-	1	-
SEPA	-	-	-	-	-	-	3
Scottish Water	-	-	-	-	-	-	-
Network Rail	-	-	-	1	-	-	-

Table 3 – Summary of Actions by LPD and Council Areas

The following figures present Annual Average Damages across the Solway Local Plan District:

- Figure 3 - Annual Average Damages from river flooding – Esk Catchment
- Figure 4 - Annual Average Damages from river flooding – Annan Catchment
- Figure 5 - Annual Average Damages from river flooding – Nith Catchment
- Figure 6 - Annual Average Damages from river flooding – Dee Catchment
- Figure 7 – Annual Average Damages from River Flooding – Cree Catchment
- Figure 8 - Annual Average Damages from coastal flooding
- Figure 9 - Annual Average Damages from surface water flooding

¹ Councils and responsible authorities may have other actions in other LPDs

² Flood protection schemes / works – Includes proposed flood protection schemes and surface water management works.

³ SWMP priority areas – Includes surface water management priority areas as identified in FRM Strategy. Please note that information on the number of SWMPs that will be produced by each local authority is currently not available.

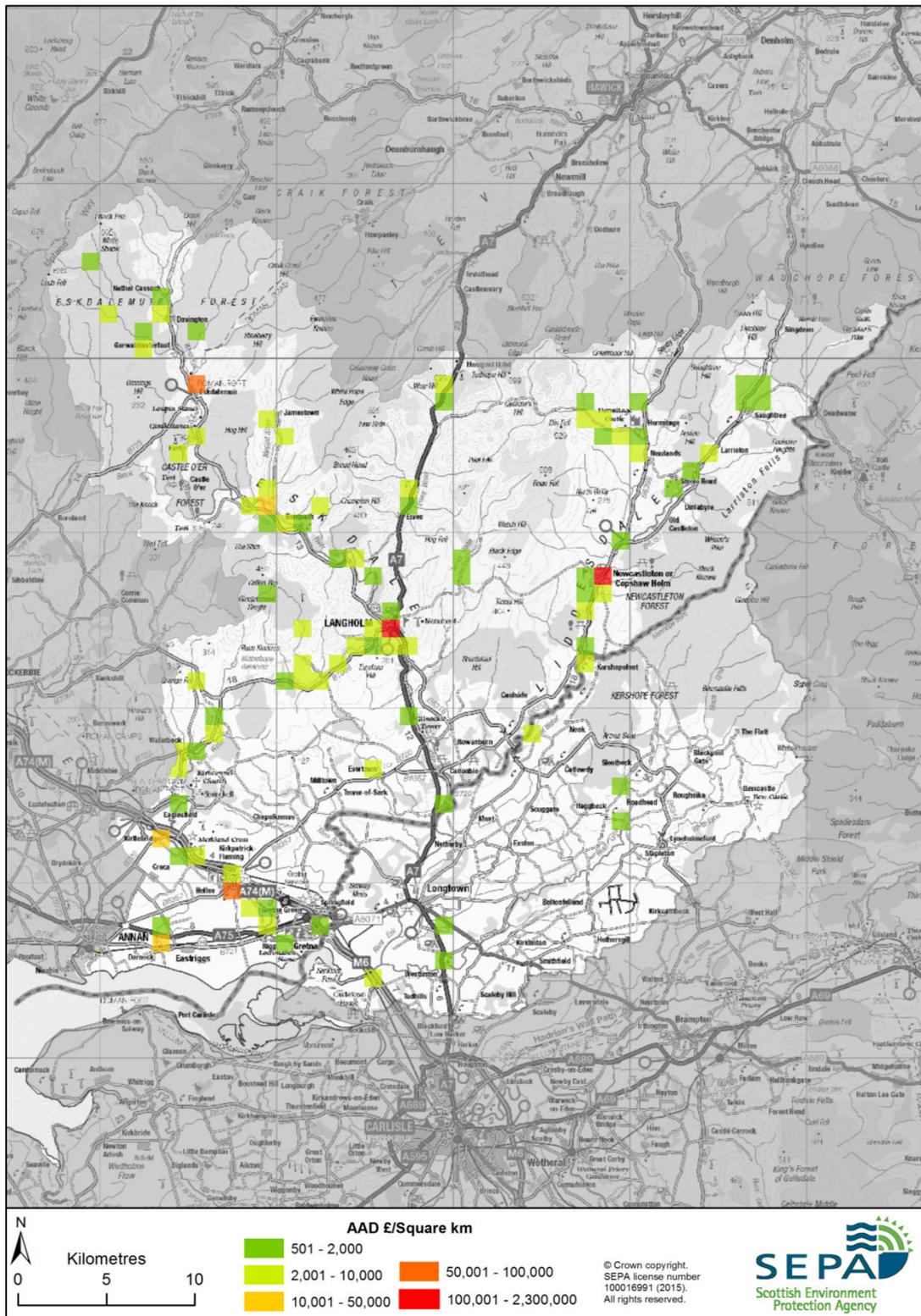


Figure 3 - Annual Average Damages from river flooding – Esk Catchment (from SEPA Flood Risk Management Strategy 2015)

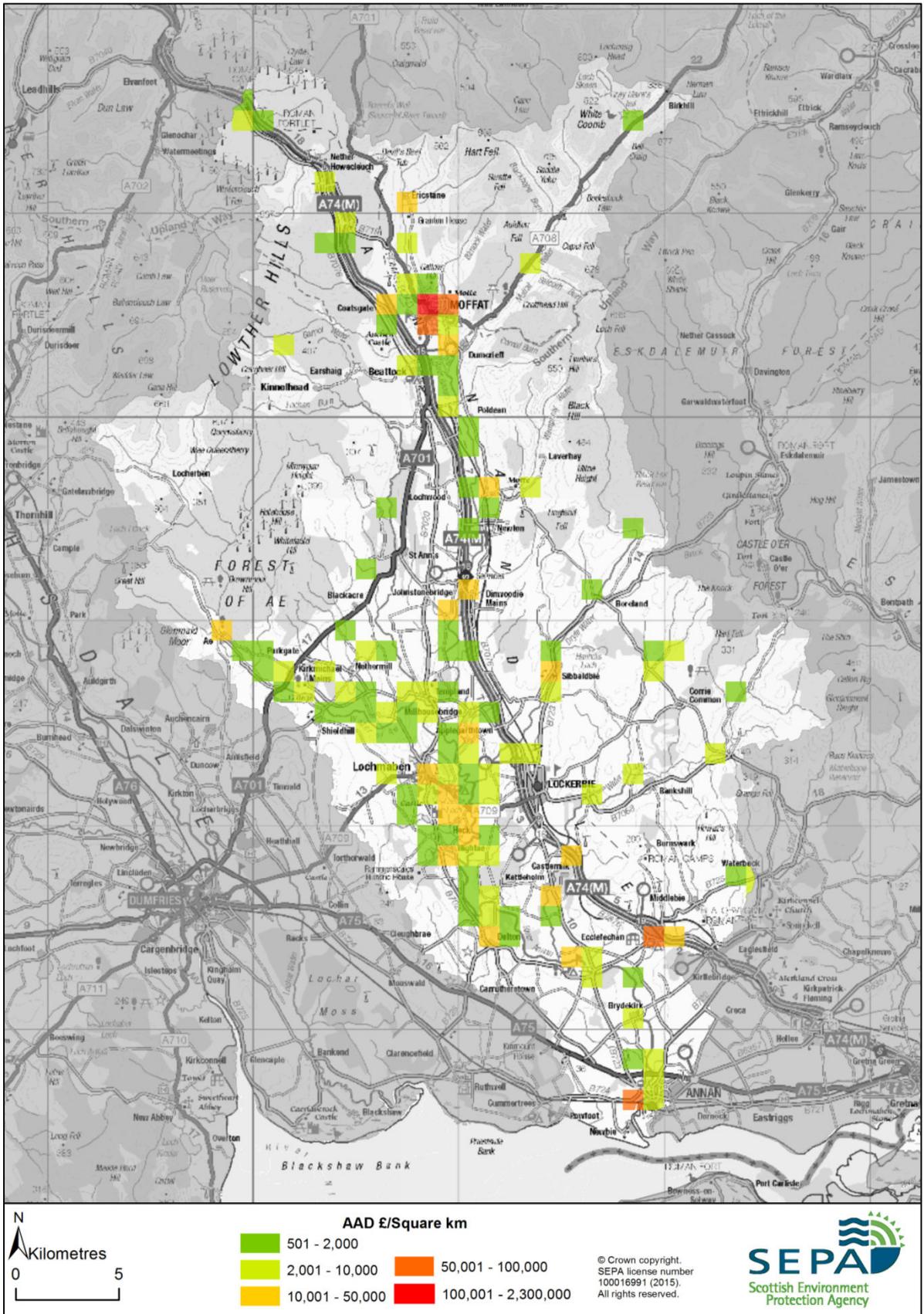


Figure 4 - Annual Average Damages from river flooding – Annan Catchment (from SEPA Flood Risk Management Strategy 2015)

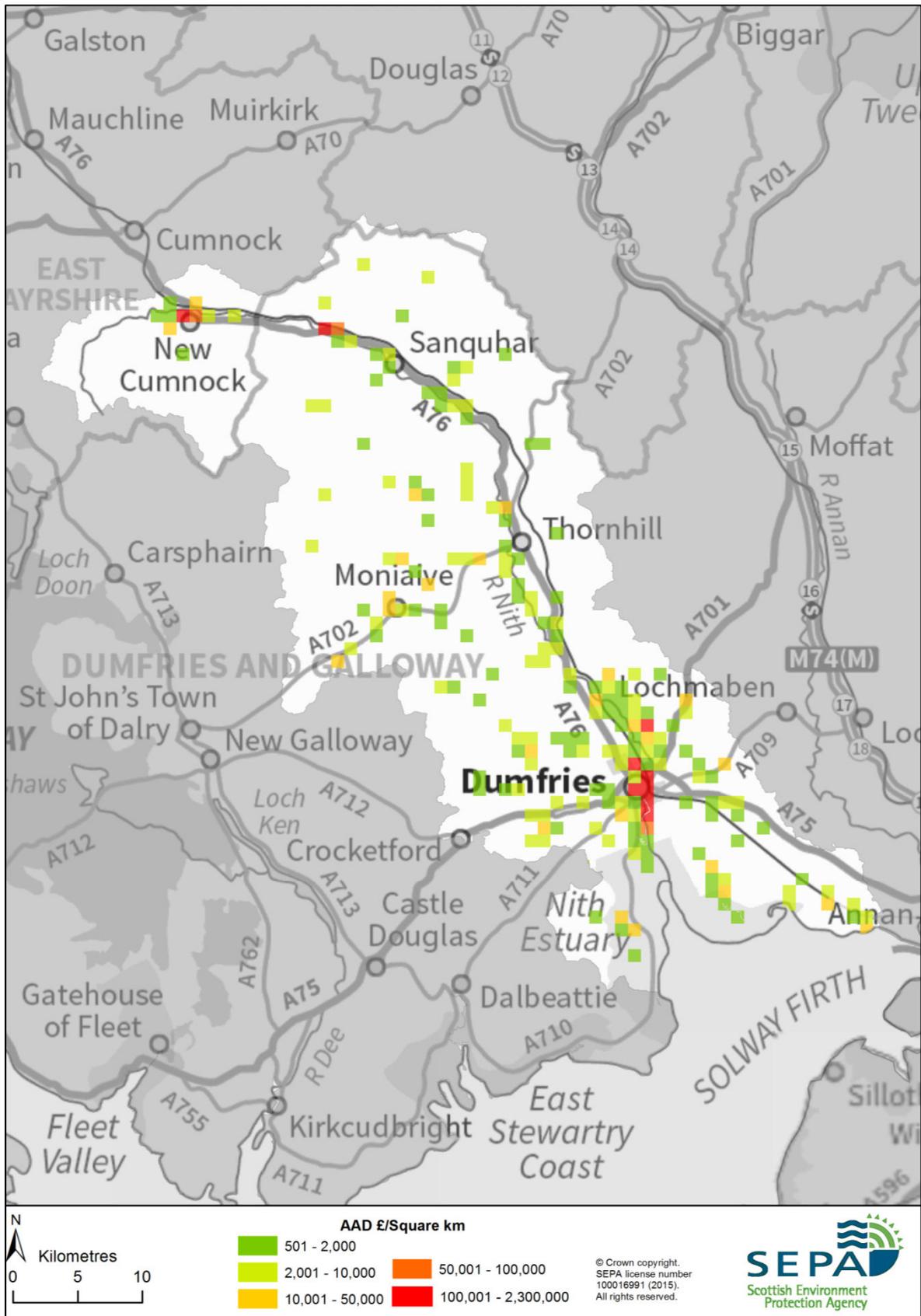


Figure 5 - Annual Average Damages from river flooding – Nith Catchment (from SEPA Flood Risk Management Strategy 2015)

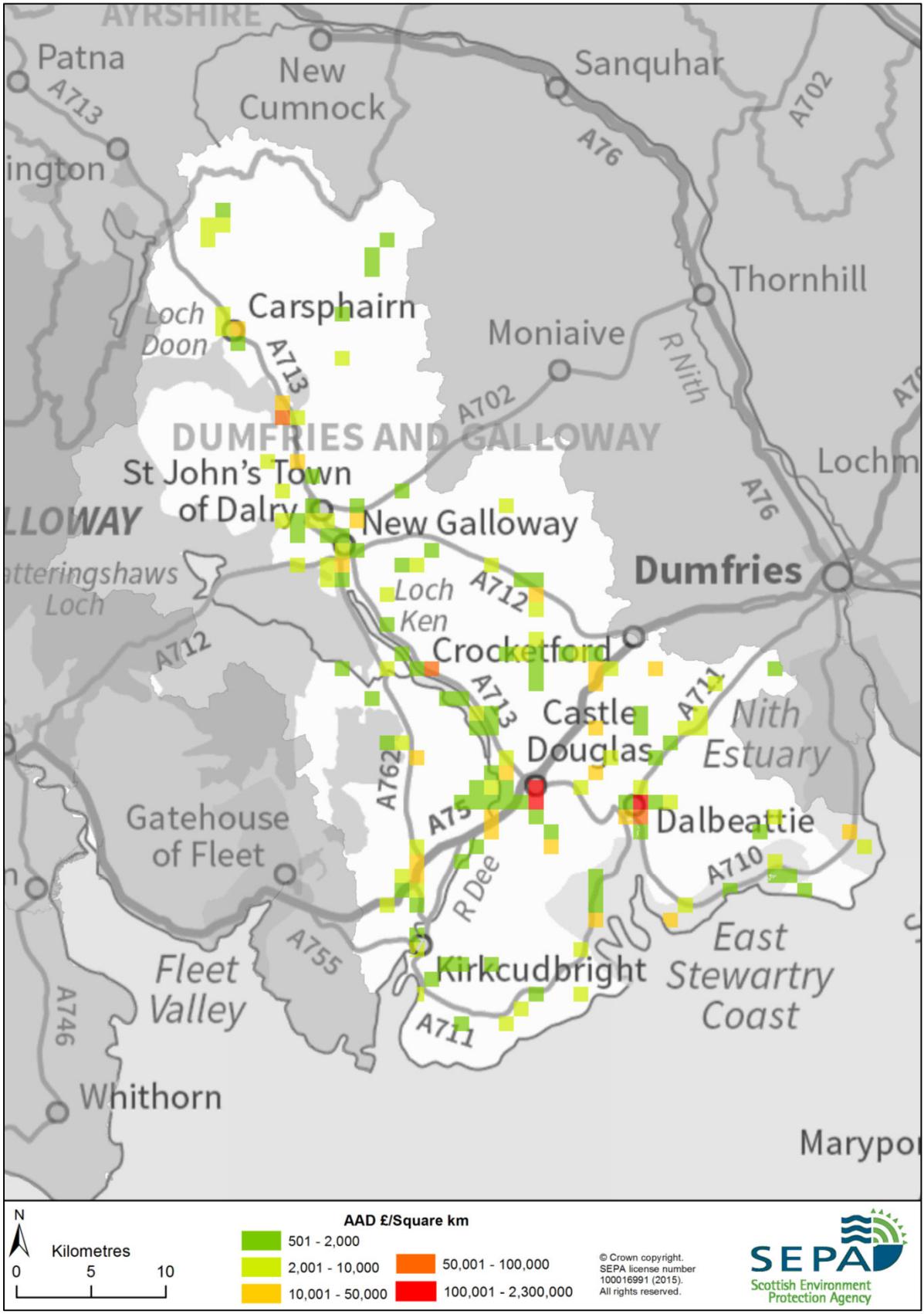


Figure 6 - Annual Average Damages from river flooding – Dee Catchment (from SEPA Flood Risk Management Strategy 2015)

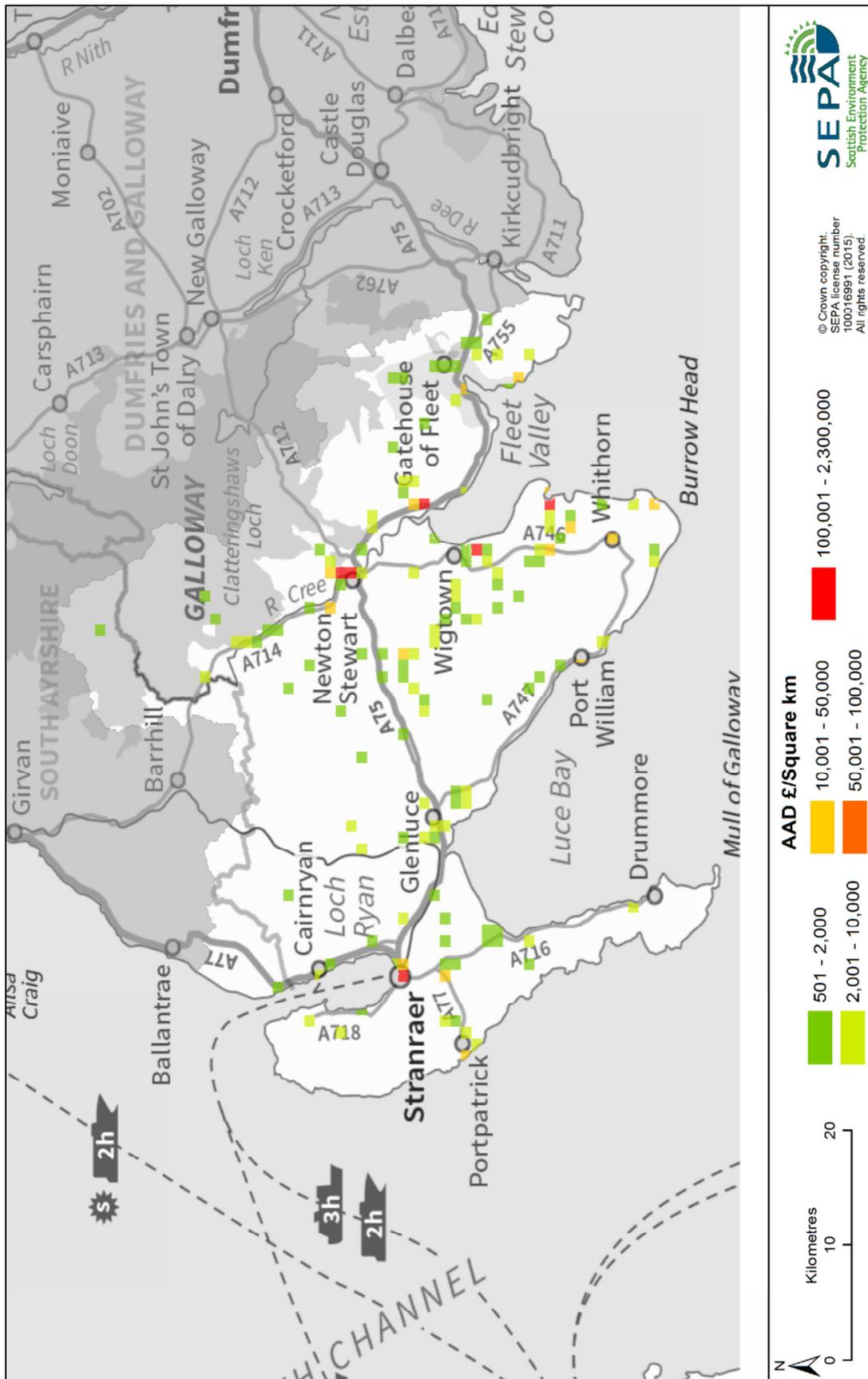


Figure 7 – Annual Average Damages from River Flooding – Cree Catchment (from SEPA Flood Risk Management Strategy 2015)

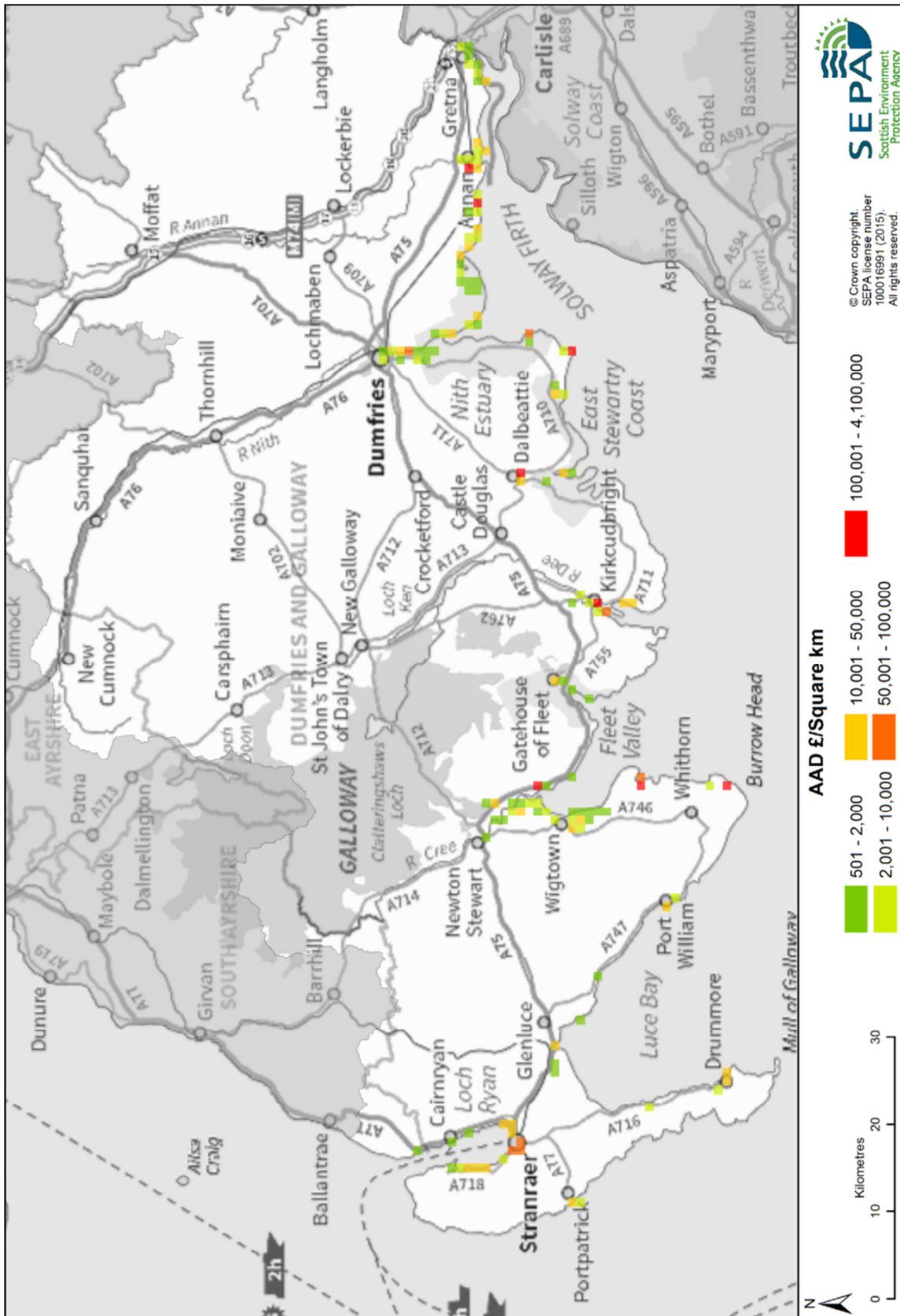


Figure 8 - Annual Average Damages from coastal flooding (from SEPA Flood Risk Management Strategy 2015)

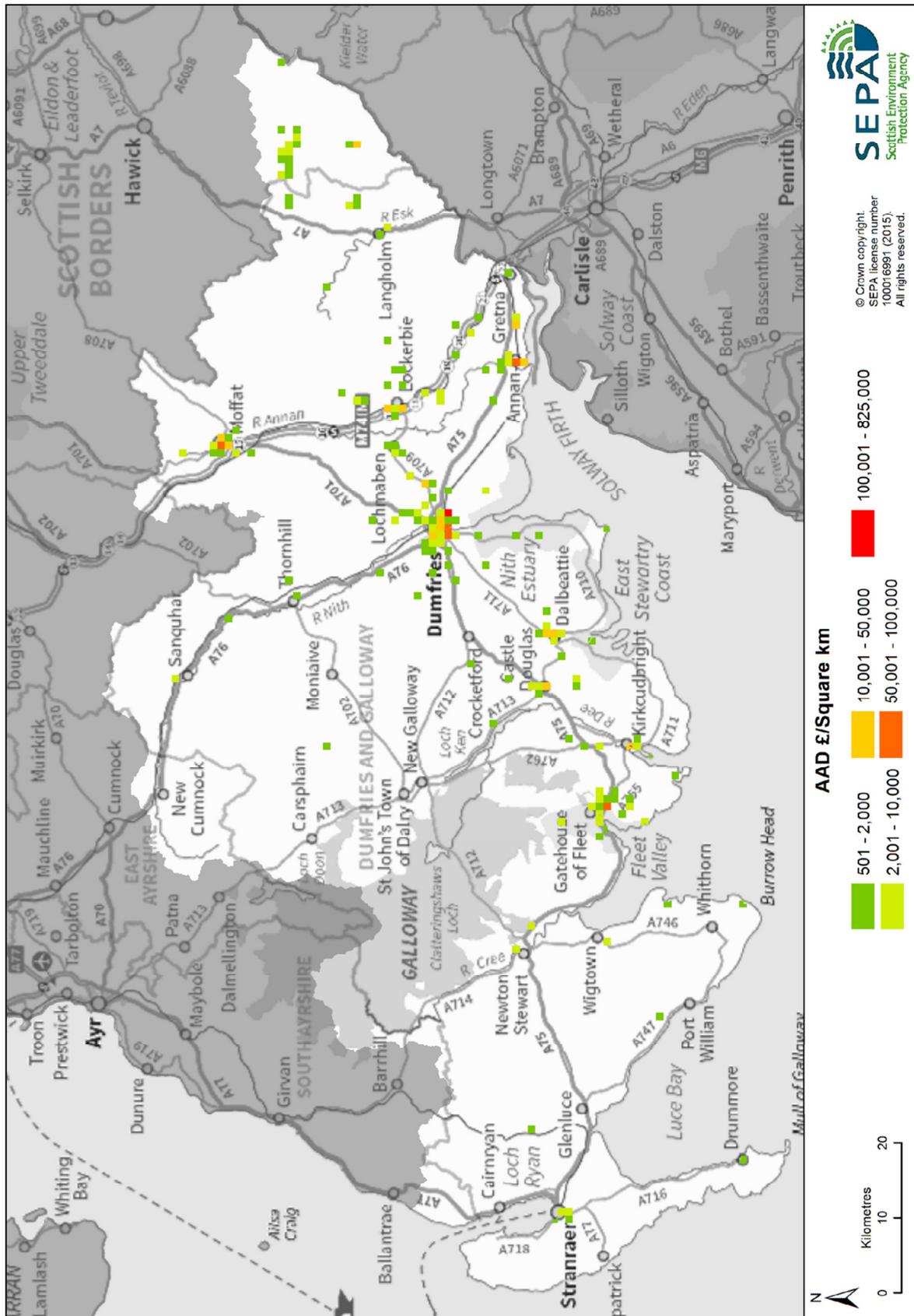


Figure 9 - Annual Average Damages from surface water flooding (from SEPA Flood Risk Management Strategy 2015)

3 Potentially Vulnerable Areas

The following section takes the information detailed in the FRM Strategy and summarises the flood risk, objectives, actions and prioritisation for the whole of Solway Local Plan District. In addition, as required by the LFRMP, 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.

3.1 Flood Risk, Objectives, actions and prioritisation for Kirkconnel Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the north of the Solway Local Plan District and is almost 10km². It includes the town of Kirkconnel (shown opposite).

The area is at risk of river flooding, primarily from the River Nith. Ground water has also been known to affect properties and the road network within the area. There is a small risk of surface water flooding to areas surrounding Kirkconnel.

There are approximately 90 residential properties at risk of flooding. The Annual Average Damages are approximately £150,000 caused by river flooding.



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

Summary of flooding impacts

River flooding is from the River Nith and three tributaries. The Grain Burn and Polbower Burn flow into the Nith from the north and the Kello Water has its confluence with the Nith to the south east of Kirkconnel. The Nith is one of the larger rivers in the Solway Local Plan District and has a shallow gradient as it flows through the area. The catchments of the Polbower Burn, Grain Burn and Kello Water are considerably smaller and have a steeper gradient.

The strategic assessment in this area shows that it is only subject to river flooding; however, historical records identify that groundwater flooding has also been experienced following the cessation of mining activity. The contribution of groundwater flooding has not been assessed in this report.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Residential properties within Kirkconnel are at risk of flooding from the River Nith, notably at St. Conal's Square and Riverside Terrace. The main road link at risk of flooding is the A76 to the north of Kelloholm.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 90 to 110.

For further details, see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response

Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies
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Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
New flood warning						
Flood protection study						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling - ScW						
Strategic mapping and modelling - SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	New flood warning (140010010)
Objective (ID)	Reduce the risk of river flooding to properties in Kirkconnel (14001)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The area under consideration includes properties affected by flooding from the Upper River Nith (from Kirkconnel downstream). Forecasting capability is currently under development in this area.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, the Government provide grant funding to enable SEPA to implement new flood warning schemes.
Coordination	A flood protection study has been carried out for Kirkconnel (ID140010005). SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in developing the new flood warning system.
Timing	Forecasting capability is currently under development. The Flood Forecasting system begins in spring 2016 and the launch will take place in autumn 2016.

Action (ID)	Flood Protection Study (140010005)
Objective (ID)	Reduce the risk of river flooding to properties in Kirkconnel (14001)
Delivery Lead	Dumfries and Galloway Council
Description from	A flood protection study has been completed by Dumfries and Galloway Council, to assess

<p>Strategy</p>	<p>flood risk within Kirkconnel and the feasibility of flood protection actions to mitigate the risk. The study also looked at the potential for natural flood management actions to reduce the impact of flooding, taking into account the proposed work from the New Cumnock pilot catchment study.</p> <p>The study also considered a localised property level protection schemes giving consideration of the achievable flood warning times for the upper River Nith.</p> <p>It is recommended that this study is reviewed to determine the current risk in the town and the potential future risk with climate change. This will determine if / when further work is required to investigate how to reduce the flood risk.</p>
<p>Action Delivery Lead is taking</p>	<p>Jeremy Benn Associates Ltd (JBA) completed the Kirkconnel Flood Study for Dumfries and Galloway Council in 2015. A full copy of the study can be found at the following link: www.dumgal.gov.uk/flooding</p> <p>The findings of the flood study showed that the benefits of undertaking the construction of engineered defences would not achieve a positive benefit cost ratio, thus there is unlikely to be a solution to reducing flood risk in this way.</p> <p>Flood risk is currently being managed in the worst affected part of the town through a community and registered social landlord (RSL) led property level protection scheme. Dumfries and Galloway Council have already worked with Dumfries and Galloway Housing Partnership (DGHP) a Registered Social Landlord and owner of properties in the floodplain to develop a property level protection scheme that sees a community group led by DGHP install floodgates to properties at risk. At present the installation of these measures are based on liaison with the Flood Risk Management Team of Dumfries and Galloway Council at times when risk of flooding on the upper reaches of the Nith is considered likely to cause issues. In future, it is envisaged that the implementation of a flood warning scheme (that may be limited to 1-2hours warning time) could be progressed by SEPA. This would formalise the approach currently taken. There are also a number of properties at risk that are not within this housing scheme and improvements to early warning will require to be implemented, likely along with the implementation of a flood warning scheme.</p> <p>Given that a high percentage of the property at risk of flooding in Kirkconnel is in the ownership of DGHP, during the first cycle Dumfries and Galloway Council will work with the RSL in the most sustainable way to manage its housing stock in the Kirkconnel area. This will be achieved in the main through the engagement of both parties along with other stakeholders in the development of the Local Housing Strategy for the period 2017-2022.</p> <p>Property on the west side of the river is also at some risk and while works of flood protection are not scheduled for the first cycle (2016-2022), given the relatively low capital cost, some consideration will be given to low-cost measures that will offer a reasonable level of protection prior to 2022.</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the North Lowther Uplands SPA.</p>
<p>Delivery</p>	<p>The review of this study will be undertaken during the six-year planning cycle (2016-2022) but will be designed to link with the work being undertaken by SEPA on improved flood warning.</p> <p>Furthermore, there requires being alignment with the development of the next Dumfries and Galloway Local Housing Strategy in the period from 2017-2022. These proposals would also need to be agreed through the Council's Strategic Housing Investment Plan. In order to</p>

	ensure that managed retreat fits in with these overarching strategies (in terms of both funding and planning), delivering this option in the medium term is most likely to be achievable.
Funding	<p>Development works, including the further consideration of options will be funded from Dumfries and Galloway Council's revenue budget. Should Capital works be identified these would be funded from the Council's Capital budget.</p> <p>Local authorities have received a 1-year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>There will be a requirement to coordinate with SEPA on their proposed improvements to the flood warning system for the Nith at Kirkconnel as this will improve resilience through the provision of improved warning of potential flooding events.</p> <p>Consideration will be given to the Natural Flood Management works being proposed for the Nith catchment north of Kirkconnel and how this may improve the flood risk in the town.</p> <p>Coordination of the development of managed retreat options following completion of the flood risk assessment will be with the Council's housing function, DGHP (the registered social landlord) and the local community.</p>

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Upper River Nith area to improve understanding of flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	<p>A flood protection study has been carried out for Kirkconnel (ID140010005). SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p> <p>A new flood warning scheme is under consideration for Kirkconnel. SEPA will ensure that any new information about flood risk resulting from the proposed flood warning developments is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p>
Timing	The Strategic Mapping and Modelling for the upper River Nith will commence in 2016 and will be completed in mid-2017.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Kirkconnel sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood protection scheme (140010017)
Objective (ID)	Reduce the risk of river flooding to properties in Kirkconnel (14001)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Kirkconnel Flood Protection Scheme was constructed in 1984 on the Polbower Burn and consisted of the installation of a concrete channel, culvert and reinforcing gabions. The standard of protection is not known. Maintenance of this scheme should be continued. A flood protection study has been carried out by Dumfries and Galloway Council to look at further action to reduce risk.
Action Delivery Lead is taking	Dumfries and Galloway Council will continue to inspect and maintain the Kirkconnel Flood Protection Scheme to ensure that it operates at peak efficiency. Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency

Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five-day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties, which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016, SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently, the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products

scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.

- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

From 2016, the **Scottish Environment Protection Agency** will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A new flood warning scheme is proposed for Kirkconnel. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with activities of other responsible

	authorities as required.
	Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those, which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example, a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p>

	In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment, which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard, Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC)

	<ul style="list-style-type: none"> • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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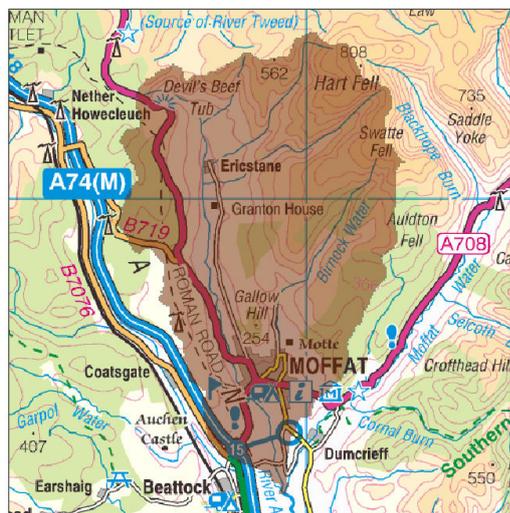
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant</p>

	<p>in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.2 Flood Risk, Objectives, actions and prioritisation for Moffat Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the north east of the Solway Local Plan District. It is approximately 20km² (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

This is a steep, largely rural area covering the Birnock Water and part of the River Annan catchment.

There are approximately 370 residential properties and 50 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £680,000 with the majority caused by river flooding.

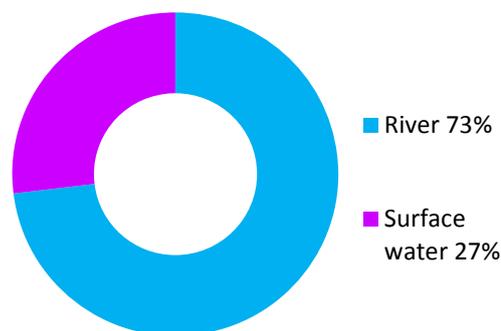


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The primary source of river flooding within the area is the River Annan and the Birnock Water. A study undertaken in 2006 indicated that water overtopping the banks of the Birnock Water, would flow away from the river and pond in low-lying areas. The confluence of these two watercourses is to the south of Moffat with extensive flooding shown as the two rivers converge. This area of the town is where the majority of the flood damage to residential and non-residential properties is predicted to occur.

Almost all of the surface water risk within Moffat originates as runoff from the Gallow Hill area of the town. This steep hill has caused flooding problems in areas of Moffat to both the east and west of Gallow Hill. There are properties on the hillside that have been previously affected by surface water runoff which is made worse by a lack of storage capacity within existing culverts which may also become blocked.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. There are approximately 50 residential properties at risk from surface water flooding and the main transport route, the A74 (M), is also at risk. Nine designated cultural heritage sites are at risk of flooding.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 370 to 450 and the number of non-residential properties from approximately 50 to 60.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Community flood action groups						
Flood protection study						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (140020005)
Objective (ID)	Reduce the risk of river flooding to properties in Moffat (14002)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Moffat Flood Study which was completed in 2006, identified potential works within Moffat including improvements to culverts and construction of flood defences. Since this study further information has been gathered which has increased the confidence in the modelling. The study should also investigate the potential for natural flood management actions to reduce runoff locally and the wider Birnock Water catchment. Other actions may also be considered to select the most sustainable combination of actions.
Action Delivery Lead is taking	<p>There are three watercourses in Moffat that have the potential to cause flooding to resident and /or business property, namely the River Annan, the Birnock Water and the Crosslaw Burn.</p> <p>Furthermore, flooding issues have occurred from run-off from the Gallowhill. This area drains through a number of small ditches and ultimately culverts within the urban area before</p> <p>There is also a small watercourse that passes under the A701 on the south side of Moffat that has the potential to cause flooding issues if the capacity of the culvert is exceeded or the</p>

	<p>screen becomes blocked.</p> <p>Two specific flood studies have been undertaken in the past.</p> <p>In 2003, following a high intensity rainfall event where culverts were overwhelmed by run-off an investigation was undertaken to review all the culverts, generally on the Gallowhill to determine existing capacity and what improvement works could be undertaken. A copy of the report can be found at www.dumgal.gov.uk/flooding.</p> <p>In 2006 a further report was produced, this time by Mouchel, on behalf of Dumfries and Galloway Council. This report looked into the potential for river flooding as well as the issues with run-off from agricultural and forested areas into culverted watercourses that did not have the capacity to take all the flow. Initial options were considered for the Annan Water, specifically the section between the two A701 road bridges. The issues with the Birnock Water were much harder to resolve, with the modelling that was available at the time determining that during high flows the water would exceed channel capacity at a number of locations and pass away from the watercourse through built-up areas before returning to the watercourse and flood plain at the A708. Options for alleviating flooding risk along the Birnock Water were limited, generally due to the lack of capacity between the A708 and the Annan Water where land is very flat and the floodplain of the Annan Water will prevent the Birnock Water from properly discharging.</p> <p>The next steps in the undertaking of a flood study for Moffat are to review all the work that has been undertaken on the two previous studies and to tender for a more up-to-date report that better addresses the risks, particularly those on the Birnock Water.</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Moffat Hills SAC.</p>
Delivery	The study will be commenced in Financial Year 2017/18
Funding	<p>This work will be Revenue funded by Dumfries and Galloway Council. At this stage costs for development of the study are undefined.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	Principally led by Dumfries and Galloway Council who will lead on engagement with SEPA and Moffat Flood Action Group as appropriate.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Moffat sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be

	delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood protection scheme (140020017)
Objective (ID)	Reduce the risk of river flooding to properties in Moffat (14002)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	A Flood Protection Scheme was constructed on Well Road, Moffat in 1989 which consisted of replacing an old mill piped scheme on the banks of the Birnock Water. The standard of protection is 5 years. The flood study should investigate the potential enhancement of these defences. Maintenance of this scheme should be continued.
Action Delivery Lead is taking	Dumfries and Galloway Council will continue to inspect and maintain the Well Road, Moffat Flood Protection Scheme to ensure that it operates at peak efficiency. Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to

predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Community flood action groups (140020012)
Objective (ID)	Reduce the risk of river flooding to properties in Moffat (14002)
Delivery Lead	Community
Description from Strategy	The local community set up the Moffat Flood Action group, to raise awareness of flood risk in the area. An informal flood warning scheme run by the group is currently in place.
Action Delivery Lead is taking	<p>The Moffat Flood Action Group have been instrumental in raising awareness of flooding issues in Moffat and promoting a resilient community with support from the Local Authority.</p> <p>The Moffat Flood Action Group have a charter / memorandum of understanding with Dumfries and Galloway Council (insert a copy) and a further signatory includes Scottish Flood Forum. The group arranges regular meetings to which the Local Authority are invited to discuss matters relevant to the community.</p> <p>The Moffat Flood Action Group have promoted the use of property level protection for those properties at risk of flooding. The Group will continue to support the Council in promoting the subsidised flood products scheme to help residents and businesses at risk of flooding help themselves.</p> <p>The Moffat Flood Action Group have installed a Hydrologic river level monitor in the River Annan with support from SEPA and Dumfries and Galloway Council. The river level is available to view on-line and helps the community monitor whether levels may present a flood risk to properties adjacent to the river. Furthermore, Dumfries and Galloway Council have installed two further Hydrologic monitors in two small watercourses at higher risk locations. The alarm information from these monitors allows maintenance staff to attend and clear blockages at times of high river levels. Moffat Flood Action Group have access to the on-line river level information from these two loggers as well as their own logger so can also identify issues.</p> <p>Moffat Flood Action Group have been instrumental in raising awareness, building resilience and engaging with the community through the Community Council and the Moffat Through School (P1-S6). An event in 2015 brought together first responders, the Council's Safety and Resilience Team and the Community Council in the school to deliver a workshop event on community resilience. While specifically to a cold weather event, the principles will be developed to deliver a similar event on flooding.</p> <p>Moffat Flood Action Group through their involvement with the Local Authority have raised concerns regarding flooding issues in the community and recorded details of issues that may only be apparent during actual high rainfall events. This knowledge and experience of the impacts of flooding occurrences is an important part of developing solutions.</p> <p>Dumfries and Galloway Council, in developing the Moffat Flood Study, will seek input from the Moffat Flood Action Group to better inform the findings and ensure that where feasible the wishes of the Community are met.</p>

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.

- Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme.
- Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding.
- Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.
- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A new flood warning scheme is proposed for Moffat. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.</p> <p>Scheduled works of clearance and repair are carried out on existing culverted watercourses and drains. Two hydro-logic water level gauges are in place on small culverted watercourses at key locations (e.g. screens). DGFirst, who are responsible for areas such as maintenance of roads, facilities management and community safety, receive an SMS warning when the water level reaches a certain height, indicating that screen clearance may be urgently required.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p> <p>At Moffat there are a two water level monitors maintained by the Council. These provide email and SMS advance warning of potential trash screen / culvert blockage allowing maintenance staff to attend to clear prior to flooding.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.3 Flood Risk, Objectives, actions and prioritisation for Newcastleton Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the east of the Solway Local Plan District. It is almost 10km² and incorporates the town of Newcastleton (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 140 residential properties and 10 non-residential properties at risk of flooding.

The Annual Average Damages are £160,000 with the majority caused by river flooding.

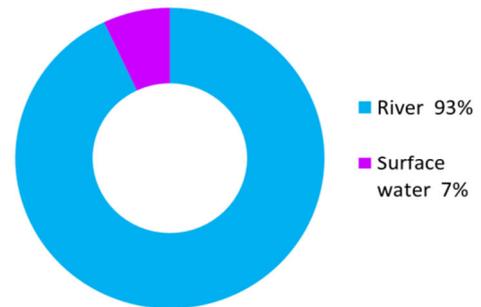


Figure 1: Annual Average Damages by flood source

Summary of flood impacts

River flooding within this Potentially Vulnerable Area is primarily caused by the Liddel Water with the main impacts in the centre of Newcastleton. At this location both residential and non-residential properties are at risk of flooding. River flooding to the north and south of the village could directly impact upon the B6357 and areas of agricultural land.

There are approximately 10 residential properties at risk of surface water flooding. However, previous flooding in the area has shown a greater flood risk because surface water and river flooding could combine. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding lie within Newcastleton and include people, non-residential properties and roads.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 140 to 370 and the number of non-residential properties from approximately 10 to 40.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Community flood action groups	[Active]					
Flood protection study	[Active]				[Planned]	
Maintain flood warning	[Active]					
Awareness raising	[Active]					
Surface water plan/study	[Active]			[Planned]		
Emergency plans/response	[Active]					
Strategic mapping and modelling - ScW	[Active]			[Planned]		
Flood forecasting	[Active]					
Self help	[Active]					
Maintenance	[Active]					
Planning policies	[Active]					

Action (ID)	Flood Protection Study (140030005)
Objective (ID)	Reduce risk to residential properties from river flooding within Newcastleton (14003)
Delivery Lead	Scottish Borders Council
Description from Strategy	A study is recommended to develop upon previous studies, incorporating the most up to date information. The study will further investigate the feasibility of a flood protection scheme in Newcastleton, focussing on the benefit of direct flood defences on the Liddel Water and further property level protection scheme. This study should also consider natural flood management action to reduce runoff into the town. Other actions may also be considered to select the most sustainable combination of actions.
Action Delivery Lead is taking	<p>Scottish Borders Council will take forward a flood protection study for Newcastleton to be delivered 2016 – 2020.</p> <p>The study's main goal is the development of a Flood Protection Scheme. The study will develop upon previous studies and a previously proposed flood protection scheme for Newcastleton.</p> <p>Newcastleton is located in the Liddesdale Valley and is subject to flooding from the Liddel Water and also surface water flooding, of which an area known locally as the 'Lakes' located</p>

	<p>in the south western part of the town is a contributing factor to this issue.</p> <p>Currently it is estimated that approximately 140 residential properties and 10 non-residential properties are at risk from flooding. It is estimated that climate change will increase this to 370 residential properties and 40 non-residential properties. The study/scheme preparation will investigate how to reduce this risk.</p> <p>The study will also be undertaken in tandem with the surface water management plan which will consider the already constructed phase 1 surface water management scheme and any proposed future phases or other measures to manage surface water flooding.</p> <p>The flood protection study will also be directly linked to the other selected actions in this PVA (see selected action table (shaded only) above)</p> <p>Scottish Borders Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Langholm - Newcastleton Hills SPA.</p>
Delivery	The study will be delivered in the period 2016 – 2020
Funding	<p>Funding for flood protection study will be subject to budget allocations over the six years of the Plan, 2016-2022.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	During the development of the study Scottish Borders Council will liaise with a number of stakeholders and relevant groups these will include, but not limited to; other responsible authorities under the FRM (Scotland) Act 2009, local community and groups, affected land owners, other national bodies and relevant departments within Scottish Borders Council.

Action (ID)	Surface Water Plan/Study (140370018)
Objective (ID)	Reduce the economic damages and risk to people from surface water flooding in Newcastleton (14037)
Delivery Lead	Scottish Borders Council
Description from Strategy	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.
Action Delivery Lead is taking	<p>Scottish Borders Council will prepare a Surface Water Management Plan (SWMP) to cover Newcastleton to be delivered 2020 – 2022.</p> <p>This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding in Newcastleton as well as sources of flooding such as the sewer network, and watercourses.</p> <p>An assessment of the existing Phase 1 Newcastleton Surface Water Scheme will be carried out including the viability and effectiveness of future phases of the scheme.</p> <p>The SWMP will establish a long-term action plan to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc.</p>

Delivery	A Surface Water Management Plan (SWMP) to cover Newcastleton will be delivered 2017 – 2019.
Funding	Funding for the Surface Water Management plan will be subject to budget allocations over the six years of the Plan, 2016-2022. Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.
Coordination	Scottish Borders Council will co-ordinate this work with Scottish Water, SEPA and liaison with the local community.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Newcastleton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue to maintain the Newcastleton Village flood warning area which is part of the Newcastleton river flood warning scheme. When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

Potentially Vulnerable Area

14/03 - Newcastleton

Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Newcastleton. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Community flood action groups (140030012)
Objective (ID)	Reduce risk to residential properties from river flooding within Newcastleton (14003)
Delivery Lead	Community
Description from Strategy	Scottish Borders Council is currently in discussion with Newcastleton and District Community Council with a view to forming a Resilient Communities Group which would take action in the event of a flood.
Action Delivery Lead is taking	<p>This action will be on-going through the 6 year duration of the plan.</p> <p>Scottish Borders Council will engage with the community to continue to develop local resilient communities groups as required. This will be done by developing and reviewing emergency plans and facilitating resilient communities plans.</p> <p>Community Flood Action Groups will also supplement and inform other actions in this PVA, (see selected action table (shaded only) above)</p>

Activities relating to Community Flood Action Groups will be funded through the Scottish Borders Council Revenue Budget.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	<p>Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.</p> <p>Scottish Borders Council currently operates a Flood Product Subsidy, it is recommended that this should be continued. Flood protection products are offered at discounted prices to Scottish Borders households and businesses whose property is at risk from flooding.</p>
Action Delivery Lead is taking	<p>This action will be on-going through the 6 year duration of the plan.</p> <p>Scottish Borders Council will work with other responsible authorities to support residents, businesses and local resilient communities groups as required. This will be done by developing and reviewing emergency plans, facilitating resilient communities plans and continuing to provide and develop SBC's subsidised flood products scheme.</p> <p>Self Help will also supplement and inform other actions in this PVA, (see selected action table (shaded only) above).</p> <p>Activities relating to Self Help will be funded through the Scottish Borders Council Revenue Budget.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>SEPA will engage with communities through the Scottish Borders Council Resilient Communities initiative</p> <p>Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Scottish Borders Council will continue to work with other responsible authorities to raise awareness. This will include but not limited to utilising the resilient communities groups setup by SBC and assisting those groups at a local level to raise awareness within their</p>

	<p>communities. Engagement with communities relating to other actions will also help develop awareness within this PVA.</p> <p>Funding will be shared by the responsible authorities with Scottish Borders Council continuing to utilise the Resilient Communities Initiative.</p>
	<p>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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.</p> <p>More general information and flooding guidance will be available on the website at: https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information</p> <p>Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.</p>
	<p>Scottish Environment Protection Agency will engage with communities through the Scottish Borders Council Resilient Communities initiative</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include digital materials, awareness campaigns and promotion of our flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Borders Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Action Delivery Lead is taking	<p>This action will be on-going through the 6 year duration of the plan.</p> <p>Scottish Borders has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Where necessary Scottish Borders Council will coordinate with landowners and other responsible where a risk is identified and carry out works should it be deemed necessary. Scottish Borders Council will prepare a schedule of clearance and repair in accordance with the duties placed on Local Authorities as detailed in the Flood Risk Management (Scotland) Act 2009.</p> <p>Maintenance activities will also supplement and inform other actions in this PVA, (see selected action table (shaded only) above)</p> <p>Funding for maintenance will be subject to budget allocations over the six years of the plan, 2016-2022.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>This action will be on-going through the 6 year duration of the plan.</p> <p>Scottish Borders Council, the Emergency Services and SEPA initiate the relevant Emergency Plan as appropriate in relation to MET office weather warnings and SEPA flood warning information. This includes a coordinated approach with representation from all Category 1 and Category 2 responders including voluntary groups, through the Joint Agency Control Centre (Bunker) at Scottish Borders Council.</p> <p>Scottish Borders Council continue to review and develop their Emergency Plans as new information becomes available. This also includes the continued use of Community Sandbag Stores located at publically accessible areas including fire stations and school grounds. Resilient Communities sandbag stores are now also widely distributed across the Scottish</p>

	<p>Borders in areas that have signed up to the Resilient Communities Initiative.</p> <p>Emergency Plans and Response is closely related to all other actions highlighted for this PVA.</p> <p>This action is funded through multiple funding arrangements from a number of agencies.</p>
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Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Scottish Borders Council
Description from Strategy	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA’s Strategy.</p>
Action Delivery Lead is taking	<p>This action will be on-going through the 6 year duration of the plan.</p> <p>Scottish Borders Council will work with their planners to ensure that appropriate policies and measures are put in place to manage flood risk. This includes adhering to National, Regional and Local Planning Policies, providing advice and information into the formal planning process and ensuring sites going forward in the Local Development Plan have had an initial assessment regarding flood risk.</p> <p>Planning Policies is closely related to all other actions highlighted for this PVA.</p> <p>This action will be funded through the Scottish Borders Council Revenue budget.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA’s grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>

Action Scottish
Water is taking

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 a local authority.

3.4 Flood Risk, Objectives, actions and prioritisation for Langholm Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the east of the Solway Local Plan District. It has is almost 70km² and incorporates the town of Langholm (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 180 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £300,000.

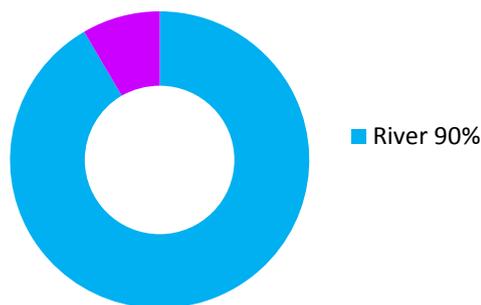


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The main catchment is the River Esk (Solway) which flows from the north west to the south east. The Ewes Water flows into Langholm from the north east and joins the Esk in the town centre. The Wauchope Water flows into Langholm from the south-west, joining the Esk downstream of the Ewes Water confluence.

River flooding is primarily from the River Esk and the Ewes Water which may impact residential and non-residential properties in several areas of Langholm. Small sections of the A7 road are also at risk from river and surface water flooding. Field runoff bypassing culvert entrances can contribute to flooding.

Surface water flooding is largely caused by runoff from the steep hillsides above Langholm. Studies indicate capacity issues in the culvert draining the hillside above Holmwood Drive. Flooding can be exacerbated by field runoff to gardens potentially causing internal property damage.

On the east side of the town, drainage from the golf course and fields flows to the River Esk via three culverts. These have become blocked in the past and caused flooding.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding are within Langholm.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 180 to 320 and the number of non-residential properties from approximately 20 to 30.

The risk of flooding to utilities in Table 1 does not include Scottish Water data. Scottish Water undertook a national assessment of above ground assets at medium likelihood of flooding (including water treatment works, wastewater treatment works, and pumping stations). Within this Potentially Vulnerable Area there is one asset identified as being at risk of flooding.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection scheme/works						
New flood warning						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood protection scheme/works (140040006)
Objective (ID)	Reduce the risk of river flooding to properties in Langholm (14004)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>It is recommended that the Council progress work on the proposed flood protection scheme in Langholm. The Langholm Flood Risk Assessment has been completed which identified potential works within Langholm, including construction of flood defences along the River Esk and Wauchope Water.</p> <p>Further work should be carried out to identify the most sustainable combination of actions and further investigation made into the impact of surface water runoff. Design options should take account of the new flood warning scheme and potential use of property level protection.</p>
Environmental considerations from Strategy	Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. There are no international or national level environmental designations that are likely to be impacted by this action.

	<p>There is likely to be a loss of semi-natural habitat in the footprint and vicinity of the defences. There is the potential for the works to have a negative impact on settings of the Langholm Heritage Conservation Area, Langholm Castle Scheduled Monument and the numerous listed buildings in the area.</p>
<p>Action Delivery Lead is taking</p>	<p>On behalf of Dumfries and Galloway Council, RPS Group completed a flood study for Langholm in 2013.</p> <p>A full copy of this report can be found at http://www.dumgal.gov.uk/index.aspx?articleid=13299</p> <p>RPS has considered possible flood management options for Langholm and concluded that the only feasible type of defence is the provision of hard defences. Hard defence schemes were developed for three different scenarios of flood protection: 1:25, 1:50 and 1:200 year return periods. The financial feasibility of providing the proposed defence schemes was investigated by a cost benefit analysis and the option that produced the highest benefit/cost ratio was for hard defences to protect against a 1:25yr or 4% Annual Exceedance Probability (AEP) flood. During the first cycle (2016-2022) this scheme will be developed with the aim of achieving the highest level of protection feasible, whilst still maintain a positive benefit-cost ratio.</p> <p>The other issue with flood risk in Langholm is associated with run-off from the hills on both sides of the urban development.</p> <p><u>West side of town</u></p> <p>On the west side of the river, the areas affected are the Meikleholm and Holmwood. Limited capacity in the piped network within urban area mean the option of collecting run-off in filter drains and discharging to piped outfall is not a simple solution. Further work will be progressed with survey being undertaken to determine options for collection of run-off and discharge to either the River Esk or the Wauchope Water.</p> <p><u>East side of town</u></p> <p>On the east side of the town, above the A7(T) issues exist with run-off from agricultural land and the golf course. Three culverts exist which carry the run-off / minor watercourses to the Esk. While generally these operate efficiently they do not have the capacity for the highest flows, and given the nature of the ground (wooded in part) and watercourse inverts (loose materials) they are subject to blockage at times. Options are unlikely to include culvert up-sizing but likely to include improvements in trash screen design and access for maintenance. Safe routing of exceedance flows needs also to be considered.</p>
<p>Delivery</p>	<p>The investigation works for the run-off issues on the west side of the river will be progressed in 2016/17. The construction works will be progressed in 2016-2018.</p> <p>The investigation works for the run-off issues on the east side of the river will be progressed in 2017/18. The construction works will be progressed in 2017-2018.</p> <p>The development of the flood protection scheme for the River Esk (and tributaries of Ewes and Wauchope) will commence in 2017/18, with the scheme delivered in the period 2019-2022.</p>
<p>Environmental Action Delivery Lead is taking</p>	<p>Currently detail on scheme design is limited so opportunities to mitigate any environmental impacts will be identified as part of the study through the design and timing of works.</p> <p>Works will be subject to an Environmental Impact Assessment.</p> <p>Consideration will be given to the benefits of Natural Flood Management in the catchment to</p>

	determine whether flood risk management benefits can be realised in Langholm. Work will be undertaken in conjunction with Forestry Commission Scotland and SEPA.
Funding	<p>This project has been identified as National Priority 24 out of 42 Schemes</p> <p>All works will be funded from a Capital budget. This Capital budget will be managed by Dumfries and Galloway Council but will include an 80% direct contribution from Scottish Government.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>Dumfries and Galloway Council will be the lead on the projects which will require the engagement of a number of other responsible authorities, specifically Scottish Water and potentially Forestry Commission Scotland.</p> <p>Dumfries and Galloway Council will coordinate with SEPA on the particular issue of development of the Flood Warning Scheme.</p>
	<p><u>Flood Warning and Community managed Property Level Protection</u></p> <p>The report also considered the development of a flood warning scheme. This is presently being developed by SEPA for delivery in 2016. The potential short-term flood risk management measure from the development of flood warning that will be progressed during 2016/17 is the provision of a store of bespoke property level protection measures, suitable for the property at risk of flooding, and installed by a Council / Community Council led group on issue of a SEPA flood warning.</p> <p>The reason for this approach, which is different from that undertaken at other locations where the onus is put upon the property owner, is associated with the infrequent nature of river flood events in Langholm. Given the likely frequency of a flooding event that will impact upon property is less than a 1:20 year return period, it is likely that those at risk may be unaware of the potential for flooding and for example, property may have owners or tenants not signed up to Floodline. The Community, with direction from the Council, would be better placed to install PLP equipment from a store provided by the Council. This response will be funded by the Council.</p>
Delivery	The work will be commenced in Financial Year 2016/17.
Funding	<p>This work will be Revenue funded by Dumfries and Galloway Council. At this juncture, costs for provision of a store of equipment are undefined.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	Dumfries and Galloway Council will coordinate with SEPA on the particular issue of development of the Flood Warning Scheme (ID140400010).

Action (ID)	New flood warning (140040010)
Objective (ID)	Reduce the risk of river flooding to properties in Langholm (14004)

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue with the development and implementation of flood warnings on the River Esk at Langholm.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, the Government provide grant funding to enable SEPA to implement new flood warning schemes.
Coordination	A flood protection scheme is proposed for Dumfries. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the new flood warning system.
Timing	Forecasting capability is currently under development. The Flood Forecasting system begins in spring 2016 and the launch will take place in December 2016.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Langholm sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2018-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2

	<p>Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p>
Funding	<p>SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.</p>
Coordination	<p>SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.</p>

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	<p>Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection. • Through the continued development of flood studies at higher risk locations, officers

from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.

- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline. This will be achieved through education events. Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include digital materials, awareness campaigns and promotion of our flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships

For the new flood protection scheme, SEPA will support the local authority's communications and engagement activities with media activity, local public awareness events and education engagement with schools. SEPA will also deliver joint communications with local authorities for Floodline customers in any newly protected flood warning area

To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A flood protection scheme is proposed for Langholm. SEPA will support the local authority's communications and engagement activities.

A new flood warning scheme is under consideration for the River Esk. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities.

	SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.
	Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk</p>

	<p>Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC)

	<ul style="list-style-type: none"> • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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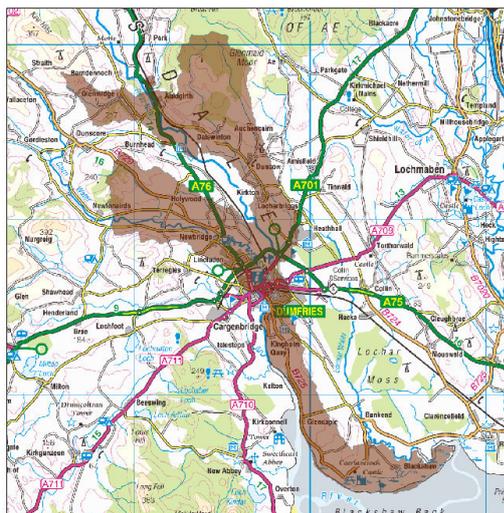
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p>

	<p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.5 Flood Risk, Objectives, actions and prioritisation for Dumfries Nith Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located towards the east of the Solway Local Plan District and extends to the north and south of Dumfries (shown below). It is almost 120km² and incorporates part of the town of Dumfries.



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 600 residential properties and 240 non-residential properties at risk of flooding. The Annual Average Damages are approximately £2.3 million.

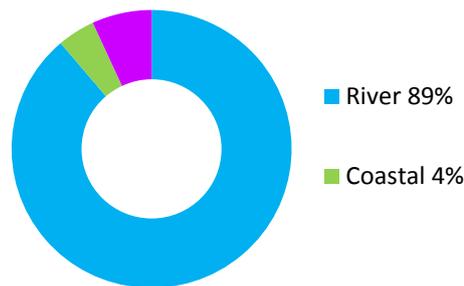


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The primary sources of river flooding within the area are the Cluden water and the River Nith which flows in from the north and discharges into the Solway Firth. These two watercourses converge north of the centre of Dumfries, where residential and non-residential properties are predicted to flood. Downstream, the Whitesands area of town is another notable area of flood risk, and a number of residential properties are also affected by river flooding in Kirkton and Newbridge.

The south of this Potentially Vulnerable Area has a coastline with frontage onto the Solway Firth, where coastal flooding is predicted around Blackshaw. At Kingholm and Glencaple there is potential for coastal flooding to combine with river flooding, which was evident in January 2014.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. There are approximately 210 residential properties at risk of surface water flooding, as well as impacts to non-residential properties and roads, notably the A710, A75 and A76. There are 29 designated cultural heritage sites at risk, including several scheduled monuments and listed buildings. Small areas of designated environmental sites are shown to be at risk within this area.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 600 to 950 and the number of non-residential properties from approximately 240 to 340.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection scheme/works						
New flood warning						
Maintain flood warning						
Awareness raising						
Surface water plan/study						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood protection scheme/works (140060006)
Objective (ID)	Reduce the risk of river flooding to properties in Dumfries (14006)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	It is recommended that the council progress work on the proposed flood protection scheme in Whitesands, Dumfries. Over a number of years Dumfries and Galloway Council have commissioned a number of studies to examine and understand the flooding issues along with potential mitigation options. The Whitesands Project (Flood Protection Scheme and Public Realm) identified potential works within Dumfries. Further work on the design of the scheme is still being carried out. The identified design should look to promote the most sustainable combination of actions, enhance the local amenity value of the river while taking account of the local concerns including construction of flood defences along the River Nith in Dumfries.
Environmental considerations from Strategy	Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. This flood protection scheme is proposed for part of the River Nith (water body IDs 10603 and 200316). The physical condition of this river and estuary is identified by river basin management planning to be at less than good status. Future works could improve the condition of the river and

	<p>estuary or degrade them. Opportunities to improve the condition of the river and estuary should be considered by coordinating with river basin management planning. There are no international or national level environmental designations that are likely to be impacted by this action. There is likely to be a loss of semi-natural habitat in the footprint and vicinity of the defences; however, this can be replanted and re-establish. There is the potential for the direct defences to have negative impacts on settings of the Dumfries Heritage Conservation Area, the Dumfries Old Bridge Scheduled Monument and the numerous listed buildings and structures in the area.</p>
<p>Action Delivery Lead is taking</p>	<p>The Whitesands Project (Flood Protection and Public Realm Improvements) has been developed over a number of years. Hydraulic modelling works completed by Mouchel Ltd in late 2011 identified that upstream storage would not substantially reduce flooding in the Whitesands area and thus the project has developed under the principles of engineered defences in the Whitesands area. Furthermore, the modelling work identified that defences to achieve a substantial standard of protection (SoP) (e.g. 1:200 year return period) would be so high as to separate the town from the river. At Service Committee in December 2011, Members took the decision to progress a scheme that instead offered a lower level of protection (1:25 year return period SoP) combined with improvements in the public realm.</p> <p>Initial design development was undertaken utilising a Charrette process in September 2012 where stakeholders were invited to engage with issues and come to a solution that could be designed in detail. This was undertaken and further consulted in August 2013. Issues raised at that time included impacts upon parking, which was addressed through the full re-provision of parking at other locations.</p> <p>Further work achieving a 1:75 year return period SoP culminated in a public presentation in December 2014 where significant feedback led to further public engagement being undertaken in January 2015, including the construction of a full scale model of a section of the proposed embankment. Feedback (including a petition to save the riverside parking and views) drove the design development to reduce the height of the embankment and utilise glass parapets and demountable systems.</p> <p>Most recently the public engagement in October 2015 and positive feedback on the re-design with a raised walkway not exceeding 1.4m complete with glass parapets and demountable defences led the Service Committee in November 2015 to approve the progression of the design to a stage where approval would be sought to formally publish a scheme in accordance with the Flood Risk Management (Scotland) Act 2009 and associated 2010 Regulations.</p> <p>The following Committee papers detail the scheme development and decisions taken:</p> <ul style="list-style-type: none">• Planning, Housing and Environment Services Committee 13 December 2011, Whitesands Flood Protection Scheme - Report on Hydraulic Modelling, Item 5 - http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=PHE&meet=63&arc=71• Planning, Housing and Environment Services Committee 14 February 2013, Dumfries Town Centre - Whitesands Masterplan, Item 5 - http://egenda.dumgal.gov.uk/aksdumgal/images/att27579.pdf• Planning, Housing and Environment Services Committee 10 September 2013, Whitesands Project (Flood Protection Scheme and Public Realm Improvements), Item 9 - http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=PHE&

[meet=69&arc=71](#)

- Policy and Resources Committee 18 March 2014, Development of Capital Investment Strategy, Item 4 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=PRC&meet=31&arc=71>
- Dumfries Common Good Sub-Committee 27 October 2014, Whitesands Project (Flood Protection Scheme and Public Realm Improvements) - Impacts on Common Good Land, Item 4 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=CGF&meet=14&arc=71>
- Economy, Environment and Infrastructure Committee 11 November 2014, Whitesands Project - Replacement Parking Options, Item 12 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=EEI&meet=6&arc=71>
- Policy and Resources Committee 18 November 2014, Development of the Capital Investment Strategy, Item 6 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=PRC&meet=35&arc=71>
- Nithsdale Area Committee Community Meeting 10 December 2014, Whitesands Project (Flood Protection Scheme and Public Realm Improvements), Item 3
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=NIT&meet=64&arc=71>
- Economy, Environment and Infrastructure Committee 14 July 2015, Flood Risk Management (Scotland) Act 2009 - Local Flood Risk Management Plan - Action Prioritisation – Item 16 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=EEI&meet=11&arc=71>
- Nithsdale Area Committee Business Meeting 2 September 2015, Whitesands Project (Flood Protection Scheme and Public Realm Improvements) – Item 6 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab14.pl?operation=SUBMIT&meet=61&cmte=NAC&grpId=public&arc=71>
- Economy, Environment and Infrastructure Committee, 15 September 2015, Whitesands Project (Flood Protection Scheme and Public Realm Improvements) – Options for Further Public Engagement Item 10 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=EEI&meet=12&arc=71>
- Nithsdale Area Committee Business Meeting 7 October 2015, Whitesands Project (Flood Protection Scheme and Public Realm Improvements) – Engagement - Item 5 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab14.pl?operation=SUBMIT&meet=62&cmte=NAC&grpId=public&arc=71>
- Nithsdale Area Committee Business Meeting 4 November 2015, Whitesands Project (Flood Protection Scheme and Public Realm Improvements) – Engagement – Item 7 -
<http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=NAC&meet=63&arc=71>
- Economy, Environment and Infrastructure Committee, 10 November 2015,

	<p>Whitesands Project (Flood Protection Scheme and Public Realm Improvements) – Approval to promote scheme – Item 12 - http://egenda.dumgal.gov.uk/aksdumgal/users/public/admin/kab12.pl?cmte=EEI&meet=13&arc=71</p>
<p>Environmental Action Delivery Lead is taking</p>	<p>The Whitesands Masterplan was the subject of an Strategic Environmental Assessment. The current design of the Whitesands Project is subject to an Environmental Impact Assessment currently on-going. Given the presence of a Scheduled Monument, engagement with Historic Environment Scotland is being undertaken.</p> <p>While not a specific part of the management of flood risk in Dumfries, Natural Flood Management methods in the Nith catchment are being considered to see benefits on flood levels in Dumfries.</p> <p>Dumfries and Galloway Council is aware of the potential impact on the Solway Firth SAC, given that Sea Lamprey and River Lamprey, species of migratory fish and two of the qualifying features of the SAC, are known to be present in the vicinity of the proposed works. An appropriate assessment will be carried out and the proposed works will only proceed where it can be demonstrated that there will be no adverse effects on the integrity of any European site.</p>
<p>Delivery</p>	<p>The works will be delivered by Dumfries and Galloway Council. The scheme is currently under development with programmed dates as follows:</p> <ul style="list-style-type: none"> • Design completion – August 2016 • Committee Approval to promote – September 2016 • Confirmed Scheme (assuming no public inquiry*) – November 2016 • Detailed design completion – April 2017 • Tender award – July 2017 • Site start – August 2017 • Completion March 2019. <p>*Public Local Inquiry likely to add 6-9 months to above delivery programme.</p>
<p>Funding</p>	<p>This project has been identified as National Priority 18 out of 42 Schemes.</p> <p>All works will be funded from a Capital budget. This Capital budget will be managed by Dumfries and Galloway Council but will include an 80% direct contribution from Scottish Government.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>There will be coordination through scheme development and delivery with all responsible authorities.</p> <p>There will be a need to coordinate with SEPA on the delivery of the improved flood warning scheme for the Nith and how that will assist in advance warning of likely flood events impacting upon Whitesands (ID140400010)</p>

<p>Action (ID)</p>	<p>New flood warning (140400010)</p>
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Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The area under consideration includes properties affected by flooding from the Upper River Nith (from Kirkconnel downstream). Forecasting capability is currently under development in this area.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, the Government provide grant funding to enable SEPA to implement new flood warning schemes.
Coordination	A flood protection scheme is proposed for Dumfries. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the new flood warning system.
Timing	Forecasting capability is currently under development. The Flood Forecasting system begins in spring 2016 and the launch will take place in autumn 2016.

Action (ID)	Surface Water Plan/Study (140350018)
Objective (ID)	Reduce the economic damages and risk to people from surface water flooding in Dumfries (14035)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.
Action Delivery Lead is taking	<p>SEPA's surface water flood mapping provides an indication of the higher-risk areas in the Dumfries urban area and has identified the need for a Surface Water Management Plan (SWMP) to be developed (in accordance with Scottish Government Guidance) to reduce the risk.</p> <p>The initial focus of the planning process will concentrate on identifying "hot-spots" – areas where a combination of ground profile (which can lead to run-off ponding in low-lying areas) and potential lack of capacity in piped drainage systems could lead, in high rainfall events, to surface water flooding.</p> <p>Work will include the review of all available data sources including (but not limited to):</p> <ul style="list-style-type: none"> • SEPA pluvial (surface water) flooding maps • Scottish Water assessments of flood risks from sewerage system • Local Authority records of flooding incidents • LiDAR (digital terrain mapping) data augmented by topographical surveys <p>to determine locations and causes of surface water flooding as well as the impact of flooding where it occurs. It will be important to identify gaps in knowledge and where more information requires to be gathered through ground surveys, and CCTV surveys of piped</p>

	<p>drainage systems, watercourse surveys, etc.</p> <p>Piped systems include</p> <ul style="list-style-type: none"> • culverted watercourses and road drainage systems which are generally the responsibility of Dumfries and Galloway Council, and • sewerage systems – foul, surface water (from private property) and combined systems all of which are generally the responsibility of Scottish Water, (although maybe in private ownership) <p>Options to mitigate any flooding risk will include (but not limited to):</p> <ul style="list-style-type: none"> • The management of surface water at source e.g. retention within open space including parks and gardens, allowing infiltration into the ground or slow release back into drainage networks. • Separation of surface water from combined sewer systems, thus reducing likelihood of surcharging containing wastewater • The retro-fitting of SuDS (Sustainable Drainage Systems) to reduce the peak inflow of surface water to a piped or culverted system • Provision of additional sewer or culvert network capacity at critical locations • Reconfiguration of below ground drainage systems • Review of the operation or maintenance arrangements of the drainage systems • Routing of exceedance flows (those which are greater than a piped or culverted system can carry) to areas that create the least impact e.g. allowing water to pass along a carriageway, routing away from properties, etc. <p>The responsibilities for dealing with surface water in Dumfries are shared between a number of organisations, generally Dumfries and Galloway Council and Scottish Water (but potentially others including Transport Scotland, Network Rail and Forestry Commission Scotland).</p> <p>The SWMP will identify the most sustainable range of actions that will manage and reduce flood risk, and set out how these will be delivered. It is likely that these actions could be delivered by single organisations, or jointly, or a combination of both in a phased manner. If mechanisms are known, and agreed by all parties, then it is likely to be appropriate to produce a long-list and a short-list and agree a preferred action to reduce the flood risk.</p>
<p>Delivery</p>	<p>The study will commence in the financial year 2019/20 and completed by the end of the cycle.</p>
<p>Funding</p>	<p>Funding of the study will be the responsibility of Dumfries and Galloway Council but there is likely to be a contribution from Scottish Water in terms of officer engagement but potentially financial contributions in the future if issues identified are considered their responsibility.</p> <p>During the first cycle (2016-2022) the carrying out of significant works will be limited by available resources and the need to include with future Scottish Water investment periods, and Local Authority Spending Reviews. The potential exists that identified works will be undertaken using other sources of funding, for example, improvements in road drainage when undertaking road surfacing schemes.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>To be undertaken in conjunction with Surface Water Plan / Study for PVA 14/06 – Dumfries</p>

	<p>East.</p> <p>Dumfries and Galloway Council have a further surface water plan/study to undertake for Annan and consideration will be given to delivering this concurrently.</p> <p>It will be critical to work with Scottish Water in developing this Surface Water Plan / Study. This includes the need to ensure that the work to be undertaken by them on Strategic Mapping and Modelling (Action ID: 140400019) dovetails into the Surface Water Management Plan process. This requires Scottish Water to carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.</p> <p>Prior to progression of the study a partnership group will be established with core membership drawn from Dumfries and Galloway Council, Scottish Water and SEPA. Other parties may be included as development works progress.</p>
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Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>SEPA will seek to develop flood mapping in the Middle and Lower River Nith area to improve understanding of flood risk. SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.</p> <p>SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.</p>
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	<p>A flood protection scheme is planned for Dumfries. SEPA will work with the local authority to ensure that strategic mapping and modelling developments reflect the changes in flood risk resulting from new flood protection scheme where appropriate and relevant.</p> <p>A new flood warning scheme is under consideration for the upper River Nith. SEPA will ensure that any new information about flood risk resulting from the proposed flood warning developments is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p> <p>A surface water management plan is proposed for Dumfries. SEPA will work with the responsible authorities to ensure that new information about flood risk resulting from the proposed surface water study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p>

Timing	<p>The Strategic Mapping and Modelling for the lower River Nith will commence in 2017 and will be completed end 2017.</p> <p>The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.</p> <p>The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.</p>
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Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Dalscone, Lincluden and Troqueer sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2017-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	<p>Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.</p> <p>It will be necessary for this work to link with the requirement upon Dumfries and Galloway Council to deliver a Surface Water Plan/Study (140350018).</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Whitesands flood warning area which is part of the Nith river flood warning scheme.</p> <p>Continue to maintain the Upper Solway Firth and Nith Tidal flood warning areas which are part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and</p>

	validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection scheme is proposed for Dumfries. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products

	to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport

property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).

- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the Upper Solway Firth and Nith Tidal coastal flood warning areas. This will be

	<p>achieved through enhanced direct mailings for flood warning areas and education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships. For the new flood protection scheme, SEPA will support the local authority's communications and engagement activities with media activity, local public awareness events and education engagement with schools. SEPA will also deliver joint communications with local authorities for Floodline customers in any newly protected flood warning area.</p> <p>To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>A flood protection scheme is proposed for Dumfries. SEPA will support the local authority's communications and engagement activities.</p> <p>A new flood warning scheme is under consideration for the River Nith. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities.</p> <p>SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead	Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management

<p>is taking</p>	<p>(Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

<p>Action (ID)</p>	<p>Emergency Plans/Response (140400014)</p>
<p>Objective (ID)</p>	<p>Reduce overall flood risk (14040)</p>
<p>Delivery Lead</p>	<p>Category 1 and 2 Responders</p>
<p>Description from Strategy</p>	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency</p>

	and is filled with flood protection equipment which is issued to the public.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

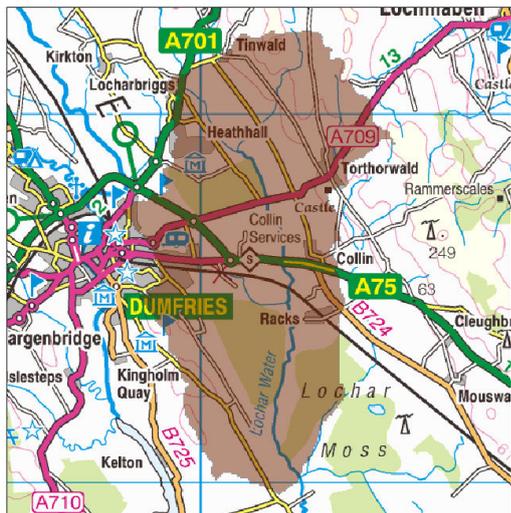
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.

<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.6 Flood Risk, Objectives, actions and prioritisation for Dumfries East Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located to the east of Dumfries, is over 50km² and incorporates part of the town of Dumfries (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 110 residential properties at risk of flooding.

The Annual Average Damages from flooding are approximately £240,000.

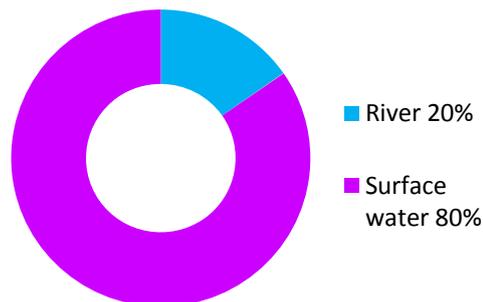


Figure 1: Annual Average Damages by flood source

Summary of flood impacts

Surface water is shown to have the greatest impact in the area with approximately 100 residential properties at risk. Surface water flooding is predominately located along minor watercourses and may result from the interaction of surface water and river flooding. River flooding in the area is primarily attributed to the Lochar Water, which flows from north to south through the area.

The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. There is a risk of river flooding to residential and non-residential properties in the Heathhall area of Dumfries and Torthorwald. Land adjacent to the Lochar Water and the Dow Lochar (Lochar Water tributary) and small sections of the A709 and A75 are also at risk of flooding. One designated cultural heritage site is also at risk of flooding.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 110 to 130.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Awareness raising						
Surface water plan/study						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Surface Water Plan/Study (140351018)
Objective (ID)	Reduce the economic damages and risk to people from surface water flooding in Dumfries (14035)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.
Action Delivery Lead is taking	<p>SEPA’s surface water flood mapping provides an indication of the higher-risk areas in the Dumfries urban area and has identified the need for a Surface Water Management Plan (SWMP) to be developed (in accordance with Scottish Government Guidance) to reduce the risk.</p> <p>The initial focus of the planning process will concentrate on identifying “hot-spots” – areas where a combination of ground profile (which can lead to run-off ponding in low-lying areas) and potential lack of capacity in piped drainage systems could lead, in high rainfall events, to surface water flooding.</p> <p>Work will include the review of all available data sources including (but not limited to):</p> <ul style="list-style-type: none"> • SEPA pluvial (surface water) flooding maps • Scottish Water assessments of flood risks from sewerage system • Local Authority records of flooding incidents

	<ul style="list-style-type: none"> • LiDAR (digital terrain mapping) data augmented by topographical surveys to determine locations and causes of surface water flooding as well as the impact of flooding where it occurs. It will be important to identify gaps in knowledge and where more information requires to be gathered through ground surveys, and CCTV surveys of piped drainage systems, watercourse surveys, etc. <p>Piped systems include</p> <ul style="list-style-type: none"> • culverted watercourses and road drainage systems which are generally the responsibility of Dumfries and Galloway Council, and • sewerage systems – foul, surface water (from private property) and combined systems all of which are generally the responsibility of Scottish Water, (although maybe in private ownership) <p>Options to mitigate any flooding risk will include (but not limited to):</p> <ul style="list-style-type: none"> • The management of surface water at source e.g. retention within open space including parks and gardens, allowing infiltration into the ground or slow release back into drainage networks. • Separation of surface water from combined sewer systems, thus reducing likelihood of surcharging containing wastewater • The retro-fitting of SuDS (Sustainable Drainage Systems) to reduce the peak inflow of surface water to a piped or culverted system • Provision of additional sewer or culvert network capacity at critical locations • Reconfiguration of below ground drainage systems • Review of the operation or maintenance arrangements of the drainage systems • Routing of exceedance flows (those which are greater than a piped or culverted system can carry) to areas that create the least impact e.g. allowing water to pass along a carriageway, routing away from properties, etc. <p>The responsibilities for dealing with surface water in Dumfries are shared between a number of organisations, generally Dumfries and Galloway Council and Scottish Water (but potentially others including Transport Scotland, Network Rail and Forestry Commission Scotland).</p> <p>The SWMP will identify the most sustainable range of actions that will manage and reduce flood risk, and set out how these will be delivered. It is likely that these actions could be delivered by single organisations, or jointly, or a combination of both in a phased manner. If mechanisms are known, and agreed by all parties, then it is likely to be appropriate to produce a long-list and a short-list and agree a preferred action to reduce the flood risk.</p>
<p>Delivery</p>	<p>The study will commence in the financial year 2019/20 and completed by the end of the cycle.</p>
<p>Funding</p>	<p>Funding of the study will be the responsibility of Dumfries and Galloway Council but there is likely to be a contribution from Scottish Water in terms of officer engagement but potentially financial contributions in the future if issues identified are considered their responsibility.</p> <p>During the first cycle (2016-2022) the carrying out of significant works will be limited by available resources and the need to include with future Scottish Water investment periods, and Local Authority Spending Reviews. The potential exists that identified works will be undertaken using other sources of funding, for example, improvements in road drainage when undertaking road surfacing schemes.</p>

	Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.
Coordination	<p>To be undertaken in conjunction with Surface Water Plan / Study for PVA 14/05 – Dumfries Nith.</p> <p>Dumfries and Galloway Council have a further surface water plan/study to undertake for Annan and consideration will be given to delivering this concurrently.</p> <p>It will be critical to work with Scottish Water in developing this Surface Water Plan / Study. This includes the need to ensure that the work to be undertaken by them on Strategic Mapping and Modelling (Action ID: 140400019) dovetails into the Surface Water Management Plan process. This requires Scottish Water to carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.</p> <p>Prior to progression of the study a partnership group will be established with core membership drawn from Dumfries and Galloway Council, Scottish Water and SEPA. Other parties may be included as development works progress.</p>

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Dalscone and Troqueer sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2017-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	<p>Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.</p> <p>It will be necessary for this work to link with the requirement upon Dumfries and Galloway Council to deliver a Surface Water Plan/Study (140350018).</p>

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products

scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.

- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline. This will be achieved through SEPA-led education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.</p> <p>The Lochar Water is heavily modified, and it is reported that the Lochar Water Improvement Committee remove vegetation and improve flows.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km ² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.
Timing	The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water

Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Lochmaben and Lockerbie sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit,

	<p>installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport

property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.

- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities

	through the Local Plan District partnerships.
	<p>Scottish Environment Protection Agency will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

<p>Action (ID)</p>	<p>Emergency Plans/Response (140400014)</p>
<p>Objective (ID)</p>	<p>Reduce overall flood risk (14040)</p>
<p>Delivery Lead</p>	<p>Category 1 and 2 Responders</p>
<p>Description from Strategy</p>	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum</p>

	<p>have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

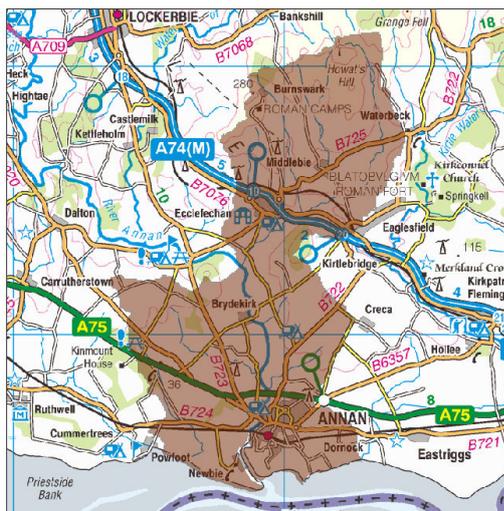
Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.8 Flood Risk, Objectives, actions and prioritisation for Ecclefechan – Annan Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the east of the Solway Local Plan District, on the south coast of Dumfries and Galloway (shown below). It covers over 90km² and incorporates Annan in the south and Grange Fell in the north.



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 240 residential properties and 70 non-residential properties at risk of flooding. The Annual Average Damages are approximately £590,000.

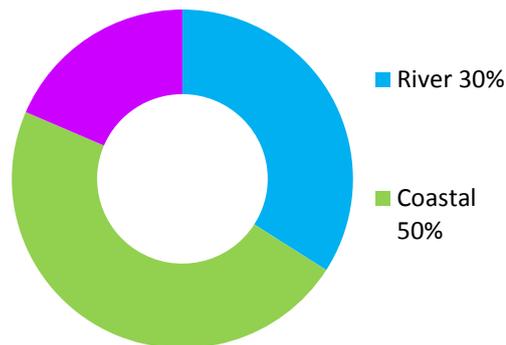


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding is mainly associated with the River Annan and its tributaries, and affects the towns of Ecclefechan, Brydekirk and Annan. In Ecclefechan, the Mein Water, a tributary of the Annan, and the Ecclefechan Burn provide the main flood risk. In Brydekirk, river flooding from the River Annan may affect a number of residential properties. Flooding has also previously occurred from the Jennymill Burn in the southern part of the village.

There is a risk of coastal flooding to the south of Annan. Within Annan town centre, problems of overflowing storm drains and culverts have been recorded. There is also a combined river and tidal risk in the lower reaches of the River Annan, which contributes to flood risk. Therefore, the combination of river, surface water and coastal flooding within this Potentially Vulnerable Area is a key issue.

There are no existing formal flood defence schemes within this area. However, there are a number of privately owned coastal defences at Battlehill and Newbie, including concrete seawalls, sleeper walls, rock armour and a dumped clay embankment. Dumfries and Galloway Council also maintain coastal erosion defences to the west of Barnkirk Point. This is by means of an old concrete wall that is fronted by a revetment of heavy rock armour. This heavyweight rock armour continues westwards, protecting the eastern part of the Newbie. The western end of Newbie is then protected by a mixture of rock armour stone, concrete and sheet steel.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. In Ecclefechan, a number of residential properties, short sections of railway line and the B7075 and A74 roads and agricultural land is at risk. To the south of Annan, residential and non-residential properties are at risk of flooding. There are also areas of agricultural land, sections of road near Newbie and designated environmental areas at risk from elevated tidal levels in the Solway estuary.

The damages associated with floods of different likelihood are shown in Figure 2. Residential properties affected by coastal flooding experience the highest economic impact at approximately 30% of the damages. Non-residential properties also provide a notable contribution at approximately 12% of the damages.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 240 to 350 and the number of non-residential properties from approximately 70 to 100.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study						
Maintain flood warning						
Awareness raising						
Surface water plan/study						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (1401220020)
Objective (ID)	Reduce the risk of coastal flooding to residential and non-residential properties in Annan (14011)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to

	<p>investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2028).</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
<p>Delivery</p>	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
<p>Funding</p>	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>Coordination will be required with a number of bodies:</p>

	<ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal Flood Warning Service.</p>
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Action (ID)	Surface Water Plan/Study (140340018)
Objective (ID)	Reduce the economic damages and risk to people from surface water flooding in Annan (14034)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.
Action Delivery Lead is taking	<p>SEPA’s surface water flood mapping provides an indication of the higher-risk areas in the Annan urban area and has identified the need for a Surface Water Management Plan (SWMP) to be developed (in accordance with Scottish Government Guidance) to reduce the risk.</p> <p>The initial focus of the planning process will concentrate on identifying “hot-spots” – areas where a combination of ground profile (which can lead to run-off ponding in low-lying areas) and potential lack of capacity in piped drainage systems could lead, in high rainfall events, to surface water flooding.</p> <p>Work will include the review of all available data sources including (but not limited to):</p> <ul style="list-style-type: none"> • SEPA pluvial (surface water) flooding maps • Scottish Water assessments of flood risks from sewerage system • Local Authority records of flooding incidents • LiDAR (digital terrain mapping) data augmented by topographical surveys <p>to determine locations and causes of surface water flooding as well as the impact of flooding where it occurs. It will be important to identify gaps in knowledge and where more information requires to be gathered through ground surveys, and CCTV surveys of piped drainage systems, watercourse surveys, etc.</p> <p>Piped systems include</p> <ul style="list-style-type: none"> • culverted watercourses and road drainage systems which are generally the responsibility of Dumfries and Galloway Council, and • sewerage systems – foul, surface water (from private property) and combined systems all of which are generally the responsibility of Scottish Water, (although maybe in private ownership)

	<p>Options to mitigate any flooding risk will include (but not limited to):</p> <ul style="list-style-type: none"> • The management of surface water at source e.g. retention within open space including parks and gardens, allowing infiltration into the ground or slow release back into drainage networks. • Separation of surface water from combined sewer systems, thus reducing likelihood of surcharging containing wastewater • The retro-fitting of SuDS (Sustainable Drainage Systems) to reduce the peak inflow of surface water to a piped or culverted system • Provision of additional sewer or culvert network capacity at critical locations • Reconfiguration of below ground drainage systems • Review of the operation or maintenance arrangements of the drainage systems • Routing of exceedance flows (those which are greater than a piped or culverted system can carry) to areas that create the least impact e.g. allowing water to pass along a carriageway, routing away from properties, etc. <p>The responsibilities for dealing with surface water in Dumfries are shared between a number of organisations, generally Dumfries and Galloway Council and Scottish Water (but potentially others including Transport Scotland, Network Rail and Forestry Commission Scotland).</p> <p>The SWMP will identify the most sustainable range of actions that will manage and reduce flood risk, and set out how these will be delivered. It is likely that these actions could be delivered by single organisations, or jointly, or a combination of both in a phased manner. If mechanisms are known, and agreed by all parties, then it is likely to be appropriate to produce a long-list and a short-list and agree a preferred action to reduce the flood risk.</p>
<p>Delivery</p>	<p>The study will commence in the financial year 2019/20 and completed by the end of the cycle.</p>
<p>Funding</p>	<p>Funding of the study will be the responsibility of Dumfries and Galloway Council but there is likely to be a contribution from Scottish Water in terms of officer engagement but potentially financial contributions in the future if issues identified are considered their responsibility.</p> <p>During the first cycle (2016-2022) the carrying out of significant works will be limited by available resources and the need to include with future Scottish Water investment periods, and Local Authority Spending Reviews. The potential exists that identified works will be undertaken using other sources of funding, for example, improvements in road drainage when undertaking road surfacing schemes.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>Dumfries and Galloway Council have a further surface water plan/study to undertake for Dumfries and consideration will be given to delivering this concurrently.</p> <p>It will be critical to work with Scottish Water in developing this Surface Water Plan / Study. This includes the need to ensure that the work to be undertaken by them on Strategic Mapping and Modelling (Action ID: 140400019) dovetails into the Surface Water Management Plan process. This requires Scottish Water to carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.</p> <p>Prior to progression of the study a partnership group will be established with core</p>

membership drawn from Dumfries and Galloway Council, Scottish Water and SEPA. Other parties may be included as development works progress.

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.</p> <p>SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.</p>
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	<p>A surface water management plan is proposed for Annan. SEPA will work with the responsible authorities to ensure that new information about flood risk resulting from the proposed surface water study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p> <p>A flood protection study is proposed for Annan. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.</p>
Timing	<p>The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.</p> <p>The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.</p>

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead	Scottish Water will undertake further investigation and modelling in the Annan and

is taking	Eaglesfield sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	<p>Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.</p> <p>It will be necessary for this work to link with the requirement upon Dumfries and Galloway Council to deliver a Surface Water Plan/Study (140350018).</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Upper Solway Firth flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Annan. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact

	of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities

<p>Description from Strategy</p>	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection. • Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.

- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the Upper Solway Firth coastal flood warning area. This will be achieved through direct mailing for flood warning areas and education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A new flood warning scheme is proposed for River Annan. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants

available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>

Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>
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Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC)

- Flood Rescue Capability (SFRS & Nith Inshore / MCA)
 - Flood Forecasting Service (SEPA / Met Office)
- Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.

Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought. Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.
Action SEPA is taking	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/ SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement. SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.

Action Scottish
Water is taking

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 a local authority.

3.9 Flood Risk, Objectives, actions and prioritisation for Kirtle Water Catchment Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the south east of the Solway Local Plan District (shown below). It incorporates the area to the north west of Gretna including the village of Kirtlebridge and is almost 60km².

There are approximately 20 residential properties and fewer than 10 non-residential properties at risk of flooding. The total Annual Average Damages are approximately £140,000.



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

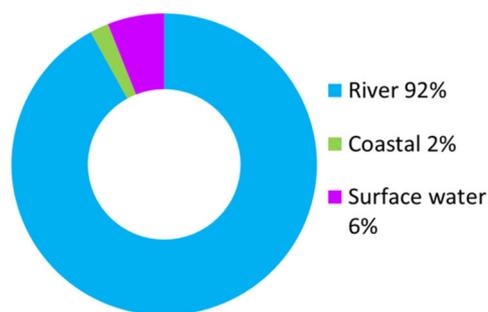


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding in the area is primarily associated with the Kirtle Water which flows from north to south and is predicted to cause flooding to residential and non-residential properties in Waterbeck, Kirtlebridge, Kirkpatrick-Fleming and Gretna Green. Surface water flooding is concentrated around the Kirtle Water and its tributaries, impacting the area of Eaglesfield.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding lie within Kirkpatrick-Fleming and Kirtlebridge and include people, non-residential properties, roads and railways. There are sections of the road and rail network predicted to be affected by flooding, including the A74(M) and A75.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response

Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies
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Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km ² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.
Timing	The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.

Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Eaglesfield and Greta sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2021.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue to maintain the Upper Solway Firth flood warning area which is part of the Solway coastal flood warning scheme. When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	n/a
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.

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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	<p>Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.</p> <p>Property owners in Rigg have carried out works to divert field drainage to a nearby watercourse. This was part funded by Dumfries and Galloway Council using the Flood Product Subsidy Scheme.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities

<p>Description from Strategy</p>	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection. • Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.

- The Council’s Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA’s grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)

Maintenance (140400007)

Objective (ID)

Reduce overall flood risk (14040)

Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>

Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p>
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>

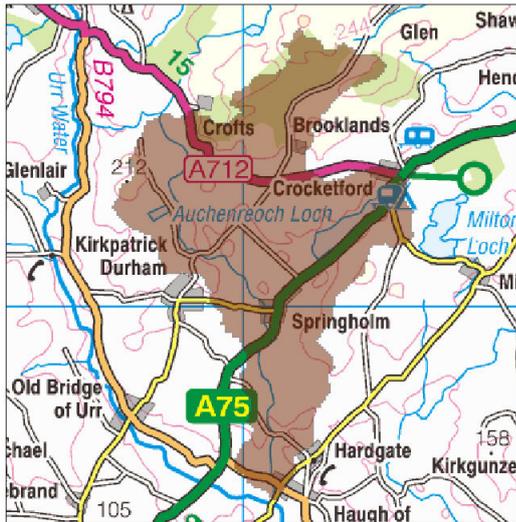
Action Scottish
Water is taking

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 a local authority.

3.10 Flood Risk, Objectives, actions and prioritisation for Springholm Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the centre of the Solway Local Plan District. It is approximately 30km² and incorporates the village of Springholm and Haugh of Urr (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 30 residential properties and fewer than 10 non-residential properties at risk of flooding. The Annual Average Damages are approximately £100,000.

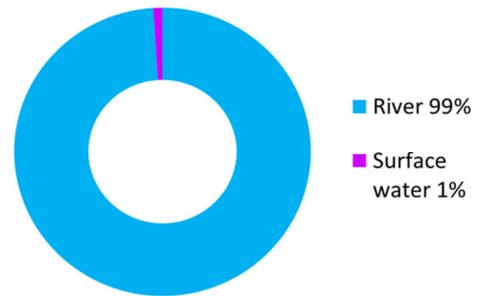


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This Potentially Vulnerable Area is in the Urr Water catchment, which is located in the west of the area and flows from north to south. Within this catchment, there is the potential of flooding from a number of burns including the Brooklands, Burnlands, Minnydow, Culshan, and Spottes. Auchenreoch Loch is also within this Potentially Vulnerable Area and is located adjacent to the A75 to the south west of Crocketford.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. The majority of river flood risk to residential and non-residential properties is in the vicinity of Springholm and Haugh of Urr at the southern tip of the area. There is also a risk to the road network, notably the A75, and agricultural land.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 30 to 50.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
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Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Maintain flood protection scheme (140400017)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Continue to maintain the existing Springholm flood defences. The Springholm Flood Protection Scheme was completed in 1990 and consisted of the installation of a water gate, channel improvements and replacement culverts on the Culsharn Burn.
Action Delivery Lead is taking	Dumfries and Galloway Council will continue to inspect and maintain the Springholm Flood Protection Scheme to ensure that it operates at peak efficiency. Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings,

	giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from	SEPA and the responsible authorities have a duty to raise public awareness of flood risk.

<p>Strategy</p>	<p>Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection. • Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management. • The Council's Flood Risk Management Team have attended meetings organised by

	<p>colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations</p> <p>Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.</p>
	<p>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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.</p> <p>More general information and flooding guidance will be available on the website at: https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information</p> <p>Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.</p>
	<p>Scottish Environment Protection Agency will engage with the community and promote Floodline. This will be achieved through education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers

Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders

Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

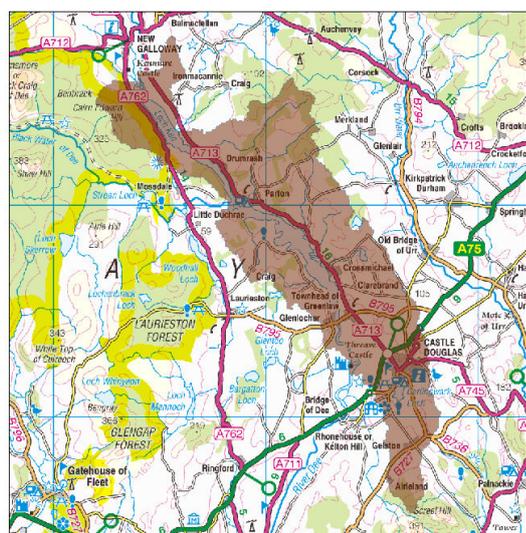
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.11 Flood Risk, Objectives, actions and prioritisation for Castle Douglas Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the middle of the Solway Local Plan District. It incorporates the settlements of Gelston, Castle Douglas and New Galloway, and has an area of 100km² (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 180 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £430,000.

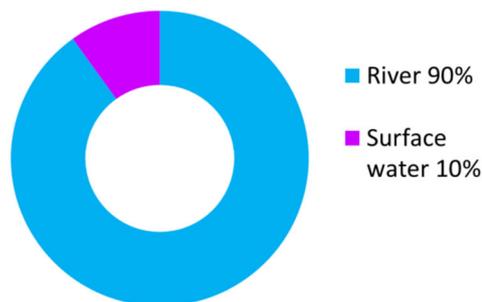


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding in this area is primarily attributed to the River Dee which enters Loch Ken at Little Duchrae in the north east and flows in a southerly direction. The Water of Ken also flows into the Loch from the north. The water levels in Loch Ken are controlled by the Glenlochar Barrage, as part of a hydro-electric scheme. There have been reports of flooding at Loch Ken Caravan Park, situated at the River Dee and Loch Ken confluence.

In the south of the area, flooding to Castle Douglas is influenced by Carlingwark Loch and Blackpark pumping station on Carlingwark Lane. A flood risk assessment carried out by Dumfries and Galloway Council shows that the national flood mapping does not accurately represent flood risk in this area. The flood risk assessment shows there is limited flooding from Carlingwark Loch into Castle Douglas, with only a localised affect in low lying areas. Therefore the flood risk is overestimated in this area.

Isolated pockets of surface water flooding are predicted to occur in areas within Castle Douglas with the highest flood depths in the south of the town.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding lie within Castle Douglas. Sections of the A75 road are at risk from surface water flooding.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Natural flood management study						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Natural Flood Management Study (140400003)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	As part of the wider Galloway Glens Landscape Partnership Scheme, Dumfries and Galloway Council propose to investigate whether Natural Flood Management measures can be utilised on the small tributaries of the Dee to reduce flood risk to settlements in the Dee catchment and provide other ecological and habitat benefits.
Action Delivery Lead is taking	<p>Often expensive engineered flood defence works are difficult to fund if the value of the assets protected is in relation low. These factors increase the interest in lower cost, catchment scale approaches to flood risk management. Natural Flood Management (NFM) is the alteration, restoration or use of landscape features to reduce flood risk. Altering features often includes 'soft engineering' this has been defined as engineering with natural materials such as soil, woody debris and also using living systems such as woodland and functioning peat bogs.</p> <p>This approach can also give wider biodiversity, water quality and carbon storage benefits. NFM aims to reduce downstream maximum water height of a flood (the flood peak) or to delay the arrival of the flood. These aims are achieved by restricting the progress of water through a catchment by either, storing water, increasing soil infiltration, slowing water and</p>

	<p>/or reducing water flow connectivity.</p> <p>A combination of strategies is often the most effective and NFM must be seen as complementing traditional flood management techniques rather than replacing them.</p> <p>Useful links</p> <p>http://www.bbc.co.uk/news/uk-politics-25752320</p> <p>http://www.thejournal.co.uk/north-east-analysis/analysis-news/northumberland-pioneering-flood-defence-scheme-9347131</p> <p>http://www.ceh.ac.uk/news-and-media/blogs/what-difference-could-natural-flood-management-techniques-make</p> <p>http://researchbriefings.files.parliament.uk/documents/POST-PN-396/POST-PN-396.pdf</p> <p>http://www.forestry.gov.uk/fr/infd-7zuclx</p> <p>http://www.forestry.gov.uk/fr/INFD-7ZUCL6</p> <p>http://www.independent.co.uk/news/uk/home-news/uk-flooding-how-a-yorkshire-flood-blackspot-worked-with-nature-to-stay-dry-a6794286.html</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch Ken and River Dee Marshes SPA.</p>
<p>Delivery</p>	<p>Undertake a study (external consultancy) to investigate the possible opportunities and impacts of using natural flood management techniques in the upper catchment of the Ken/Dee.</p> <p>Identify possible locations for pilot projects funded through the Galloway Glens Landscape Partnership Scheme to implement Natural Flood Management (NFM) techniques. Using flood modelling techniques assess the likely impact of using these techniques to ensure positive benefits in terms of flood risk alleviation and habitat benefits. A long list of possible areas for implementing NFM techniques will be created and investigated in detail for their feasibility, benefits and possible disbenefits. From this list a short list of potential projects will be produced which will be considered for implementation through the Galloway Glens LPS subject to landowner approval and funding availability.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Funding</p>	<p>Phase 1 – Consultancy study</p> <p>Heritage Lottery Fund – Development stage funding for the Galloway Glens LPS - £21,000</p> <p>Council funding through the Flood Management team - £21,000</p> <p>Potential community engagement funding through the Climate Action Fund</p> <p>Phase 2 - On the Ground Project Delivery</p> <p>HLF Landscape Partnership scheme if round 2 is successful region of 100,000</p> <p>SRDP Environmental Cooperation Fund (to assist with landowner negotiations and detailed scheme design) £20,000</p> <p>SRDP individual landowner applications – works on the ground £200,000</p> <p>SEPA - WFD funding - £50,000</p>

	Peatland Action (if running) – peatland restoration projects - £50,000 Council capital works budgets - £20,000
Coordination	Delivery would be through the Galloway Glens Landscape Partnership Scheme, team in conjunction with our Council's Flood Prevention team and SEPA's Catchment Management Officer. Implementation would also all include working with private and public sector landowners and local communities.
Timing	The Natural Flood Management Study is due for delivery during 2016/17.

Action (ID)	Strategic mapping and modelling (140150016)
Objective (ID)	Reduce the risk of river and surface water flooding to properties in Castle Douglas (14015)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will review existing modelling and data for this area, to determine if any improvements can be made to the flood maps. SEPA will support the local authority if further detailed study beyond a strategic scale is required.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.
Timing	The Strategic Mapping and Modelling for surface water flooding will commence in 2016 and will be completed end 2017. The Strategic Mapping and Modelling for river flooding will commence in 2018 and will be completed end 2018.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Castle Douglas sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2017-2020.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021)

	which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.

	<p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>
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Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's

Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.

- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

From 2016 the **Scottish Environment Protection Agency** will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services

	<p>(Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

<p>Action (ID)</p>	<p>Emergency Plans/Response (140400014)</p>
<p>Objective (ID)</p>	<p>Reduce overall flood risk (14040)</p>
<p>Delivery Lead</p>	<p>Category 1 and 2 Responders</p>
<p>Description from Strategy</p>	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum</p>

	<p>have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

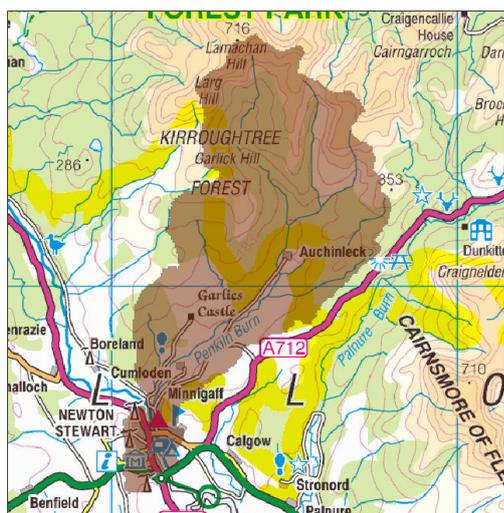
Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.12 Flood Risk, Objectives, actions and prioritisation for Newton Stewart Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located to the west of the Solway Local Plan District. It incorporates the settlements of Newton Stewart, Minnigaff and Auchinleck (shown below). It is approximately 50km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 210 residential properties and 70 non-residential properties at risk of flooding. The Annual Average Damages are approximately £540,000.

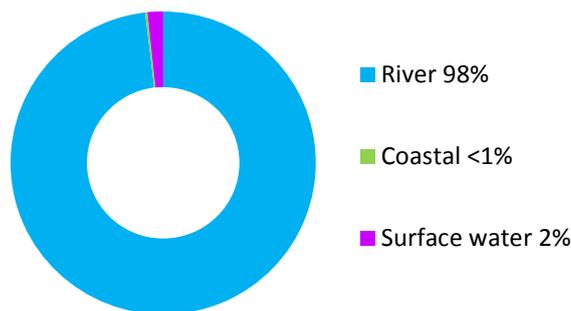


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The River Cree originates in the north of Solway Local Plan District and flows south through the centre of Newton Stewart; this is the main source of risk in the area. The Penkiln Burn originates in the north and flows south west towards Minnigaff where it joins the River Cree. The upper reaches of Penkiln Burn are within Kirroughtree Forest above Auchinleck.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural. Most of the properties at risk of flooding lie within Newton Stewart and Minnigaff.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 210 to 290 and the number of non-residential properties from approximately 70 to 90.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
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Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection scheme/works						
New flood warning						
Community flood action groups						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood protection scheme/works (140160006)
Objective (ID)	Reduce the risk of river flooding to properties in Newton Stewart (14016)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	It is recommended that the Council progress work on the proposed flood protection scheme in Newton Stewart. The Newton Stewart Flood Study identified potential works, including construction of direct defences along the River Cree and Penkiln Burn. The study is being further refined to consider actions that increase the level of protection offered. This includes raising of a footbridge over the River Cree in combination with increased direct defences. Other actions may also be considered to select the most sustainable combination of actions.
Environmental considerations from Strategy	Flood protection works can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. There is potential for impacts on habitats and changes to channel morphology. Opportunities to mitigate any environmental impacts should be identified as part of the study through the design and timing of works.
Action Delivery Lead is taking	<p>The work undertaken previously by Dumfries and Galloway Council in the publication of the 2007 Strategic Flood Risk Appraisal (http://www.dumgal.gov.uk/index.aspx?articleid=8939) ranked Newton Stewart as one of the top five settlements in the region in terms of numbers of properties at flood risk.</p> <p>Newton Stewart was identified in the National Flood Risk Assessment (nFRA) published by SEPA in December 2011 as a Potentially Vulnerable Area (PVA). This confirmed the findings of Dumfries and Galloway Council's Strategic Flood Risk Appraisal.</p>

	<p>In November 2012, Newton Stewart suffered from the worst flooding event experienced “in living memory”. A flood event of magnitude 1:50 year return period on the River Cree led to property flooding on both the west and east sides of the river. The Sparling Bridge, the footbridge at the south end of the town, was surcharged and partial blockage further exacerbated the flood levels immediately upstream. A number of residents were rescued by the Dumfries and Galloway Fire and Rescue Service by boat.</p> <p>Water levels along Riverside Road were above road level and the only thing preventing worse flooding was a free-standing masonry wall. The wall is not designed as a floodwall and failure could have caused a significant inflow of water. While efforts were made to keep public away from the location, the residual risk existed of a catastrophic failure of this wall.</p> <p>Following this event Dumfries and Galloway Council commissioned Kaya Consulting Limited to undertake a flood risk assessment. The initial outcomes of this work showed that there was only one potentially viable option for flood protection, and that was defences within Newton Stewart. However, the benefit cost ratios were below unity for the 1:200 and the 1:75 with the 1:10 year return period standard of protection only just above 1.0.</p> <p>Further work was then undertaken to investigate lower cost options, and avoiding the protection of small number of properties. Given their riverside location they would be so expensive to protect that their inclusion in the scheme would effectively skew the benefit cost ratio so significantly that it would drop below unity. This work has shown that there is potentially a deliverable scheme offering a 1:75 year return period Standard of Protection that has a benefit cost ratio greater than 1.0.</p> <p>This work was in draft form when a flood event occurred in Newton Stewart/Minnigaff on 30 December 2015 that exceeded the event of November 2012 with approximately 70 residential and more than 60 business properties suffering internal flooding. The high river flows caused damage to the wall along Riverside Road with a section approximately 20m long failing, leading to increased flooding impacts in the town centre. The impacts are still being reviewed by Kaya Consulting Limited on behalf of the Council.</p> <p>It is possible that the significance of the event in December 2015 will require the modelling and options for flood protection to be re-visited.</p>
<p>Environmental Action Delivery Lead is taking</p>	<p>Currently detail on scheme design is limited so opportunities to mitigate any environmental impacts will be identified as part of the study through the design and timing of works.</p> <p>Works will be subject to an Environmental Impact Assessment.</p> <p>Consideration will be given to the benefits of Natural Flood Management in the catchment to determine whether flood risk management benefits can be realised in Newton Stewart. Work will be undertaken in conjunction with Forestry Commission Scotland and SEPA.</p>
<p>Delivery</p>	<p>The works will be delivered by Dumfries and Galloway Council.</p> <p>In summer 2016 a tender will be let for the delivery of a flood protection scheme for Newton Stewart / Minnigaff. This will lead to the appointment of a civil engineering consultancy to develop the hydraulic modelling work undertaken by Kaya Consulting into a flood protection scheme.</p> <p>The development of the flood protection scheme will involve the community whose input to the design will be instrumental in ensuring successful delivery.</p> <p>Timetable:</p> <ul style="list-style-type: none"> • Q1 and Q2 2016 – review of the December 2015 event, updating report and

	<p>production of tender documents for appointment of a consultant to undertake flood protection scheme design and delivery.</p> <ul style="list-style-type: none"> • Q3 2016 – award tender for flood protection design and delivery • Q4 2016 – Q4 2017 – development of a flood protection scheme for Newton Stewart • Q1 2018 – promotion of flood protection scheme in accordance with Flood Risk Management (Scotland) Act 2009 and associated 2010 Regulations. • Q2 and Q3 2018 – production of detailed design and tender documentation (assuming no public inquiry*) • Q4 2018 – award construction contract • Q1 2019 – Q2 2020 – scheme construction and completion. <p>*Public Local Inquiry likely to add 6-9 months to above delivery programme.</p> <p>Within this programme there is the opportunity to undertake an element of the works. The Sparling footbridge that crosses the Cree at the southern end of the town restricts flows at the higher flow events, causing a significant localised backing-up of water. Furthermore, the bridge is at risk of damage due to water-borne debris.</p> <p>Using the findings of hydraulic modelling work as design parameter for a raised deck-level, during 2016 Dumfries and Galloway Council will undertake to develop a design to raise the bridge.</p>
Funding	<p>This project has been identified as National Priority 25 out of 42 Schemes.</p> <p>All works will be funded from a Capital budget. This Capital budget will be managed by Dumfries and Galloway Council but will include an 80% direct contribution from Scottish Government.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>There will be coordination through scheme development and delivery with all responsible authorities.</p> <p>There will be a need to coordinate with SEPA on the delivery of the new flood warning scheme for the Cree and how that will assist in advance warning of likely flood events impacting upon Newton Stewart and Minnigaff (ID140400010).</p> <p>In developing the flood protection scheme there will be direct coordination with the Cree Valley Community Council and its sub-groups, specifically the Flood Action Group and the Community Resilience Group.</p>

Action (ID)	New flood warning (140400010)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue with the development and implementation of the Newton Stewart flood warning area on the River Cree.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, the Government provide grant funding to enable

	SEPA to implement new flood warning schemes.
Coordination	A flood protection scheme is proposed for Newton Stewart. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the new flood warning system.
Timing	The Flood Forecasting system begins in spring 2016, and the launch will take place in December 2016.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Newton Stewart sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Community flood action groups (140160012)
Objective (ID)	Reduce the risk of river flooding to properties in Newton Stewart (14016)
Delivery Lead	Community
Description from Strategy	The local community set up the Newton Stewart Flood Action group, to raise awareness of flood risk in the area.
Action Delivery Lead is taking	<p>The Cree Valley Flood Action Group were established in 2013 following flooding to the town of Newton Stewart in November 2012. This Group is a sub-group of the Cree Valley Community Council.</p> <p>Following the flooding events of December 2015 the Community also established a Community Resilience Group.</p> <p>Both groups have a function to play in helping reduce flood risk in the communities of Newton Stewart and Minnigaff and surrounding area.</p> <p>The groups have promoted the property level protection for those properties at risk of flooding. The Group will continue to support the Council in promoting the subsidised flood products scheme to help residents and businesses at risk of flooding help themselves.</p> <p>On development of the SEPA Flood Warning System for Newton Stewart (see Action ID140400010), the Community Groups will be able to assist in sharing warning communication and assisting the installation of property level protection.</p> <p>As detailed in Flood protection scheme/works (ID140160006), in developing the flood protection scheme there will be direct coordination with the Cree Valley Community Council and its sub-groups, specifically the Flood Action Group and the Community Resilience Group.</p>

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are

	identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.

- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and

	<p>participate in property level protection events delivered by the Scottish Flood Forum where possible.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>For the new flood protection scheme, SEPA will support the local authority's communications and engagement activities with media activity, local public awareness events and education engagement with schools. SEPA will also deliver joint communications with local authorities for Floodline customers in any newly protected flood warning area.</p> <p>To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>A flood protection scheme is proposed for Newton Stewart. SEPA will support the local authority's communications and engagement activities.</p> <p>A new flood warning scheme is under consideration for Newton Stewart. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities.</p> <p>SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.</p> <p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>
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Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum</p>

	<p>have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.13 Flood Risk, Objectives, actions and prioritisation for Kirkcolm Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located to the western extent of the Solway Local Plan District. It incorporates the village of Kirkcolm and is approximately 40km² (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are fewer than 10 residential properties estimated to be at risk of flooding. However, the historical records indicate that this number potentially underestimates the risk. The Annual Average Damages are approximately £59,000.

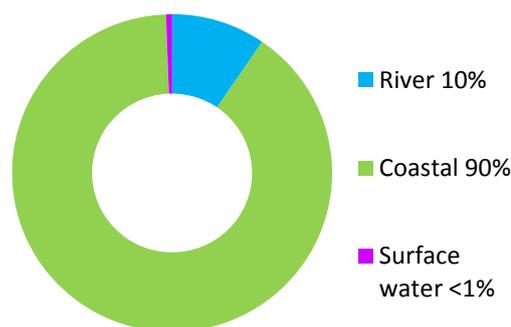


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Coastal flooding provides the greatest risk to the area of Kirkcolm with the main impact affecting transport routes, notably a 2km stretch of the A718 to the south of Kirkcolm. This assessment of coastal flood risk does not include the impacts of wave overtopping, therefore it is possible that impacts in this area have been underestimated.

River flooding is shown to have a small impact on properties and transport links. Historically, river flooding has caused flooding to properties and people in Kirkcolm. One reported flood also destroyed a bridge, which has since been replaced to a higher level of design.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response

Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies
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Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Maintain flood protection scheme (140400017)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Continue to maintain the existing Kirkcolm flood defences. The Kirkcolm Flood Protection Scheme was constructed on behalf of Dumfries and Galloway Council in 1981 and involved channel improvements and culvert up-grades. Installation of a new headwall and trash screen occurred in 2012 along with the installation of a water level gauging station at the site of the 1981 Flood Protection Scheme. Dumfries and Galloway Council also have sections of coastal erosion defences including seawalls at Kirkcolm.
Action Delivery Lead is taking	Dumfries and Galloway Council will continue to inspect and maintain the Kirkcolm Flood Protection Scheme to ensure that it operates at peak efficiency. Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009. The sea defences will be maintained as part of the Council's coastal asset management programme.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact

	of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities

<p>Description from Strategy</p>	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection. • Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.

- The Council’s Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

From 2016 the **Scottish Environment Protection Agency** will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA’s grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)

Maintenance (140400007)

Objective (ID)

Reduce overall flood risk (14040)

Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>

Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	<p>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 a local authority.</p>

3.14 Flood Risk, Objectives, actions and prioritisation for Portpatrick Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located at the western edge of the Solway Local Plan District and incorporates the village of Portpatrick (shown below). It is approximately 30km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 10 residential properties and fewer than 10 non-residential properties at risk of flooding. The Annual Average Damages are approximately £54,000.

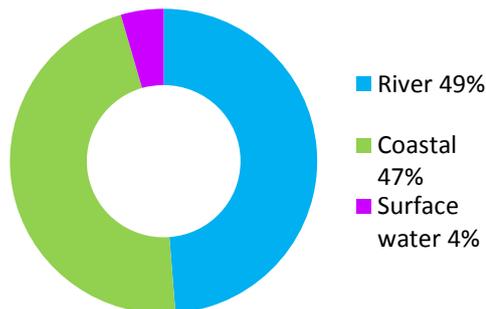


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Coastal flooding from the North Channel is limited to a small number of locations along the western coastline, primarily around Portpatrick. Residential and non-residential properties are predicted to be at risk, along with stretches of the A77 road.

River flooding within this Potentially Vulnerable Area is primarily attributed to the Dinvin Burn which is partially culverted through Portpatrick. The Knock and Maize Burns to the north also present a small risk of river flooding, mainly to the A738 in the area of Portslogan Bridge. Interaction between river and coastal flooding is limited to the downstream extents of the Dinvin, Knock and Maize Burns, particularly in the areas of Portpatrick harbour, Knock Bay, Port Mora and Port Kale.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 10 to 20.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding lie within Portpatrick.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.
Timing	The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.

Action (ID)	Maintain flood protection scheme (140180017)
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Objective (ID)	Accept the current standard of protection offered by the Portpatrick Flood Protection Scheme (14018)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Continue to maintain the existing Portpatrick flood defences. The Portpatrick Flood Protection Scheme was constructed in 2004 on behalf of Dumfries and Galloway Council and consisted of upstream attenuation areas, channel improvements, bridge raising, a storm bypass pipe and walls.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will continue to inspect and maintain the Portpatrick Flood Protection Scheme to ensure that it operates at peak efficiency.</p> <p>The Portpatrick Flood Protection Scheme is generally maintained in accordance with the council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009. This includes maintenance of trash screens as well as general inspection of the watercourse.</p> <p>There are, however, a number of elements that require special inspection specifically the reservoirs at Merrick and Enoch, sections of flood walls through the village and a bypass culvert. The inspection of these will be undertaken by Dumfries and Galloway Council's Engineering Design function that inspect and maintain the Council's bridges and retaining walls.</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the South West Rhins flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	n/a
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products

scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.

- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the South West Rhins coastal flood warning area . This will be achieved through direct mailing for flood warning areas and education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council, asset / land managers
Description from Strategy	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk. Dumfries and Galloway Council also have sections of coastal defences including a concrete seawall at Portpatrick. There are also privately owned retaining wall defences at Portpatrick.</p> <p>Dumfries and Galloway Council has recently undertaken works in Hill Street, Portpatrick, to manage surface water flows into an upgraded culvert network with discharge to the sea.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p> <p>The sea defences will be maintained as part of the Council's coastal asset management programme.</p>

Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>
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Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC)

- Flood Rescue Capability (SFRS & Nith Inshore / MCA)
 - Flood Forecasting Service (SEPA / Met Office)
- Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.

Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought. Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.
Action SEPA is taking	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/ SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement. SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.

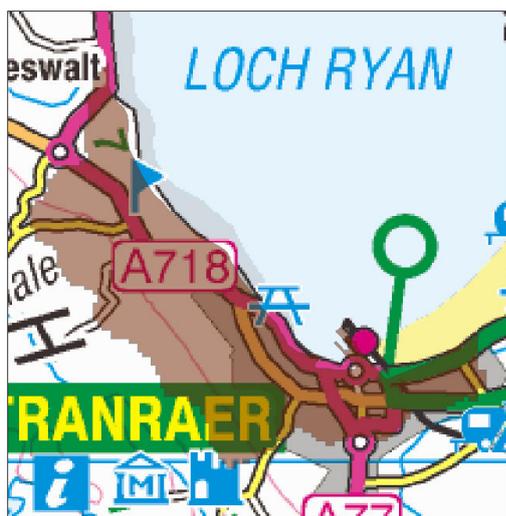
Action Scottish
Water is taking

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 a local authority.

3.15 Flood Risk, Objectives, actions and prioritisation for Stranraer Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located to the western extent of the Solway Local Plan District and incorporates the town of Stranraer (shown below). It is approximately 10km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 290 residential properties and 60 non-residential properties at risk of flooding. The Annual Average Damages are approximately £360,000.

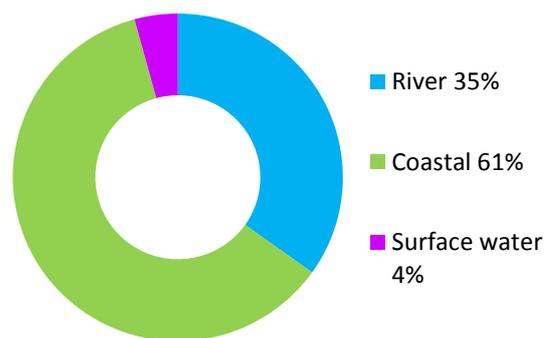


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Whilst this report only covers part of Stranraer, the whole town is being assessed for future actions to mitigate flood risk. There is potential for coastal flooding to occur within the area, particularly in the harbour area and former ferry terminal, which lies on the shores of Loch Ryan. Coastal floods are also likely to impact on local transport links which run along the shoreline, including the A718 and the A77. A number of nearby residential properties, community facilities and utilities are also at risk.

River flooding originates from three main sources, the Black Stank Burn, the Town Burn and the Sheuchan Burn. The Black Stank Burn drains agricultural land to the south east of Stranraer. It flows along the south east boundary of the Potentially Vulnerable Area and then in an easterly direction, where it becomes the Bishop Burn and discharges to Loch Ryan. The Black Stank has a very flat gradient and is known to overflow into the Town Burn just outside the area. The Town Burn flows north west through Stranraer, where it is extensively culverted until its outfall at the harbour.

The interaction between the Black Stank and the Town Burn creates flooding to the town centre. The Town Burn is heavily culverted and has flooding issues from Gallowhill into culvert entrances.

The Sheuchan Burn is known to cause flooding problems at Nursery Avenue, Leafield, Liddesdale Road, Springbank Road, Brookfield and Mayfield Avenue. Risk has been substantially reduced by recent works carried out, at Sheuchan Bridge and the outfall of the Sheuchan Burn.

There are areas within the Potentially Vulnerable Area where interactions between river and coastal flooding may increase the identified risk. These include Stranraer harbour at the Town Burn outfall, the A77 Cairnryan Road at the mouth of the Bishop Burn, and where the Sole Burn discharges to Loch Ryan. There are known surface water interactions around Station Street/Edinburgh Road and with the Black Stank. Surface water flooding may also affect

open land and properties in the Moorefield area and Galloway community hospital.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk of flooding lie within Stranraer along the burns within the town and include people, non-residential properties, community facilities, utilities, roads and railways. Further impacts to roads along the coast can also be seen with the potential for disruption.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 290 to 420 and the number of non-residential properties from approximately 60 to 70.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection scheme/works – DGC						
Flood protection scheme/works – N'wk Rail						
Flood protection study						
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood protection scheme/works (140190006)
Objective (ID)	Reduce the risk of river and surface water flooding to residential and non-residential properties in Stranraer (14019)

Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>It is recommended that the council progress work on the proposed flood protection scheme in Stranraer. Assessment of the flood risk within Stranraer identified a number of works to reduce flooding to people and properties. The Stranraer Flood Protection Works is split into different items with two outstanding items of work. The first will help to alleviate flooding to properties in the Ochtreure area, by increasing hydraulic capacity issues at the head of the system. The favoured option includes diversion of flows. The second item of work is concerned with flooding on the Town Burn mainly downstream of the railway culvert. The preferred option for the Station Road area is to regulate flow passing through the railway culvert and therefore alleviate flood risk in this area.</p>
Environmental considerations from Strategy	<p>Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. This flood protection scheme is proposed for the Black Stank (water body ID 10483). The physical condition of this river is identified by river basin management planning to be at less than good status. Future works could improve the condition of the river or degrade it. Opportunities to improve the condition of the river should be considered by coordinating with river basin management planning. There are no international or national level environmental designations that are likely to be impacted by this action. Creation of a culvert to discharge to the Black Stank may increase erosion and sedimentation downstream of the action. There will be a loss of habitat in the footprint of the works, which should re-establish over time. There is likely to be a loss of natural and semi-natural habitats in the footprint of the storage area.</p>
Action Delivery Lead is taking	<p>Over a number of years, various works of flood protection have been completed in Stranraer which have reduced flood risk on the three watercourses – the Sheuchan Burn, the Town Burn and the Black Stank / Bishop Burn. These works have been completed using other legislation e.g. Roads (Scotland) Act 1984 or undertaken as works of maintenance. There remain, however, two elements of work to be completed.</p> <p>Dumfries and Galloway Council will continue to progress the following two work packages:</p> <ul style="list-style-type: none"> • Work Item 4 – Gallowhill above Ochtreure – diversion of hillside run-off to Black Stank. • Work Item 6 – Flow control on the Town Burn Edinburgh Road culvert including formalisation of upstream flooding of agricultural land. <p><u>Work Item 4</u></p> <p>Historical flooding has occurred at properties bordering the town boundary on Gallowhill above Ochtreure Way at a number of locations where the culvert starts that ultimately lead to the piped section of the upper Town Burn.</p> <p>The options to manage flood risk in this part of Stranraer are to collect excess flows that reach the former reservoir at Highcroft and divert them to the Black Stank catchment near Culreoch Farm, to the west of the A77. The route between Highcroft and the A77 would be a mixture of open swale/channel and culvert and would be designed to intercept overland flow, thus reducing flood risk to properties at Spoutwells and Sheuchan View.</p> <p>Given the time since the original modelling works was undertaken this work is currently being updated to ensure that the impact upon the Black Stank catchment through the diversion of flows does not negatively affect the downstream riparian areas.</p> <p>Because the Black Stank and Town Burn interact further downstream at Blackparks it is</p>

	<p>considered appropriate to promote that in the same process as part of one scheme.</p> <p><u>Work Item 6</u></p> <p>In the fields to the south of the Stranraer-Glasgow railway line and former town station the Black Stank and the Town Burn almost join. During high flows the lack of capacity in the channels of both watercourses causes the fields to flood. This is further exacerbated by the lack of capacity in the culverts under the Stranraer-Glasgow railway line (Black Stank) and under the siding at the former station (Town Burn).</p> <p>The lack of capacity of the railway siding culvert on the Town Burn has the effect of preventing high flows passing into the Station Street / Edinburgh Road area of Stranraer and thus informally protecting that area of the town flooding. Proposals for this work package involve formalising this restriction and using the fields to store floodwater.</p> <p>As part of the updating of hydraulic modelling works for work item 4, this work item is also being updated to ensure the best available information on flood extents is available for negotiations.</p>
<p>Delivery</p>	<p>Currently this project is being progressed by Dumfries and Galloway Council with modelling works being undertaken to better inform future negotiations with landowners.</p> <p>During financial year 2016/17 this modelling works will be completed and negotiations will be recommenced. Negotiations will be undertaken by the Valuation Office Agency.</p> <p>The success of the negotiations will in part determine the timescales for the completion of the work, but the design will be completed in 2016/17 with an intention to promote a scheme in accordance with the Flood Risk Management (Scotland) Act 2009. Commencement of the works will follow scheme confirmation. Assuming no objections this would be during financial year 2016/17. Objections may delay this for 6-9 months. With a year construction period, this could see a completion during 2018.</p>
<p>Environmental Action Delivery Lead is taking</p>	<p>Works will be delivered in a manner so as to comply with the relevant environmental legislation.</p> <p>Opportunities to mitigate any environmental impacts will be identified through the design and timing of works. Works may be subject to an Environmental Impact Assessment.</p> <p>Consideration will be given to the benefits of Natural Flood Management in the catchment to determine whether flood risk management benefits can be realised in Stranraer.</p>
<p>Funding</p>	<p>This project has been identified as National Priority 21 out of 42 Schemes</p> <p>Dumfries and Galloway Council have allocated monies for the completion of these works. However, it should be noted that if scheme costs are liable to increase due to compensation then a bid may be made to Scottish Government. This will be reviewed as negotiations progress.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>There will be coordination through scheme development and delivery with all responsible authorities.</p>

Action (ID)	Flood protection scheme/works (14300021)
Objective (ID)	Reduce the physical or disruption risk related to the transport network for rail. (14300)
Delivery Lead	Network Rail
Description from Strategy	Network Rail will carry out civil engineering work which will reduce flood risk to identified sections of the rail network within this Potentially Vulnerable Area.
Action Delivery Lead is taking	The Network Rail Initial Industry Plan is being developed for submission to The Scottish Government September 2016.
Delivery	2019-2024
Funding	The Network Rail Initial Industry Plan will include a bid to carry out drainage work associated with FRMS actions for the period 2019 to 2024. Delivery of FRMS actions will be prioritised in accordance with allocated funding.
Coordination	Delivery of Actions during CP6 (Control Period 6) 2019 to 2024 will be coordinated with appropriate Responsible Authorities and project partners.

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of coastal flooding to residential and non-residential properties in Stranraer (14020)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the completed Flood Risk Assessment for the Stranraer Harbour area and the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being</p>

	<p>limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2027).</p> <p>A coastal FRA has been undertaken for the Stranraer Waterfront Area. This has been published at http://www.dumgal.gov.uk/index.aspx?articleid=9325</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
Delivery	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
Funding	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal Flood Warning Service.</p>

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Stranraer Port Rodie sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood protection scheme (140190017)
Objective (ID)	Reduce the risk of river and surface water flooding to residential and non-residential properties in Stranraer (14019)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Stranraer Flood Protection Works is split into work items which are currently at different stages of completion. Works to date include upgrading of culverts, installation of trash screens, silt traps and automatic air bricks to properties. The standard of protection of these works is 200 years. The works should all be maintained once completed. Levels of flood risk are likely to increase over time as a consequence of climate change.
Action Delivery Lead is taking	Dumfries and Galloway Council will continue to inspect and maintain the Works of Flood Protection across Stranraer to ensure that they operate at peak efficiency. Given the relatively minor nature of the works across various watercourses in Stranraer, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue to maintain the Loch Ryan flood warning area which is part of the Solway coastal flood warning scheme.

	When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Stranraer. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are

	identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.

- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the Loch Ryan coastal flood warning area. This will be achieved through direct

	<p>mailing for flood warning areas and education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>For the new flood protection scheme, SEPA will support the local authority's communications and engagement activities with media activity, local public awareness events and education engagement with schools. SEPA will also deliver joint communications with local authorities for Floodline customers in any newly protected flood warning area.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>A flood protection scheme is proposed for Stranraer. SEPA will support the local authority's communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.</p> <p>Dumfries and Galloway Council own a number of coastal defences in Stranraer including concrete walls, sheet pile walls, gabions and rock armour. There are also a number of privately owned seawalls.</p>

<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p> <p>The sea defences will be maintained as part of the Council's coastal asset management programme.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

<p>Action (ID)</p>	<p>Emergency Plans/Response (140400014)</p>
<p>Objective (ID)</p>	<p>Reduce overall flood risk (14040)</p>
<p>Delivery Lead</p>	<p>Category 1 and 2 Responders</p>
<p>Description from Strategy</p>	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This</p>

	<p>response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Dumfries and Galloway Council

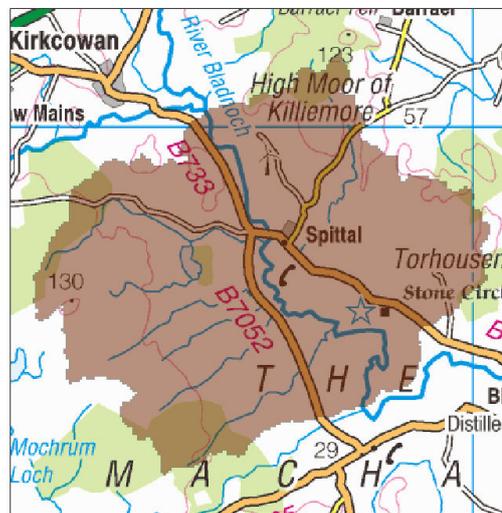
<p>Description from Strategy</p>	<p>Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.16 Flood Risk, Objectives, actions and prioritisation for Spittal Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the west of the Solway Local Plan District and incorporates the village of Spittal (shown right). It is approximately 40km².

There are fewer than 10 residential properties at risk of river flooding in the area. The Annual Average Damages are approximately £26,000. All damages in this Potentially Vulnerable Area are caused by river flooding.



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

Summary of flooding impacts

The main catchment that overlaps the Potentially Vulnerable Area is the River Bladnoch, which is comprised largely of upland grazing, grassland and agricultural land, forestry and a large number of lochs. The River Bladnoch flows through the centre of the area in a south easterly direction. The Bladnoch and its tributaries flood mainly onto agricultural land and limited flooding to properties is predicted, primarily in Spittal.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. There are limited impacts predicted in this area with sections of road at risk of flooding and some impacts to properties.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Awareness raising						
Emergency plans/response						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.

is taking	<p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>
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Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's

Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.

- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with communities and promote Floodline using most the appropriate mix of methods for the area. These could include direct mailings, education activities, participation in local events and relevant flooding messages in the media.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services

	<p>(Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the</p>

	<p>constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
<p>Action Scottish Water is taking</p>	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

<p>Action (ID)</p>	<p>Emergency Plans/Response (140400014)</p>
<p>Objective (ID)</p>	<p>Reduce overall flood risk (14040)</p>
<p>Delivery Lead</p>	<p>Category 1 and 2 Responders</p>
<p>Description from Strategy</p>	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
<p>Action Delivery Lead is taking</p>	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and</p>

	<p>arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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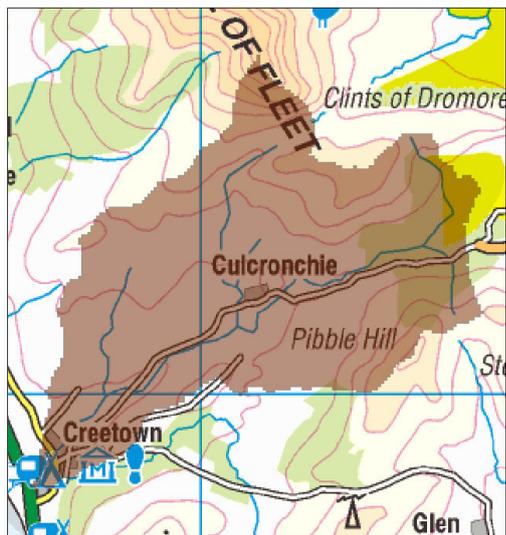
Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	<p>Scottish Planning Policy and accompanying Planning Advice 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA’s Strategy.</p>
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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</p>

	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.17 Flood Risk, Objectives, actions and prioritisation for Creetown Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the west of the Solway Local Plan District and incorporates the town of Creetown (shown below). It is approximately 30km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 90 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £340,000.

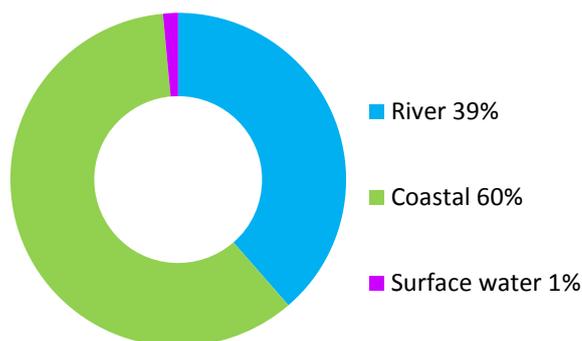


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

There is a risk of coastal flooding in the south west of the area where the Balloch Burn and the Moneypool Burn converge to form the Ferry Burn in Creetown. The Ferry Burn subsequently discharges to the River Cree, which is tidal at this location. Coastal flooding is predicted to affect a number of residential and non-residential in the vicinity of Mill Street, Harbour Street, Norris Street and Silver Street.

River flooding is mostly attributed to the Moneypool Burn and the Balloch Burn. In rural reaches of these watercourses flooding is restricted to a relatively narrow corridor of mainly agricultural land or woodland and a 1km stretch of Chain Road. Within the lower reaches in the urban area of Creetown, a number of residential and non-residential properties are at risk of river flooding.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 90 to 130 and the number of non-residential properties from approximately 20 to 30.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. The figure shows almost all impacts are predicted in Creetown. People, non-residential properties and roads are shown to be at risk.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study – Coastal	[Shaded]					
Flood protection study – Coastal & River	[Shaded]			[Shaded]		
Maintain flood warning	[Shaded]					
Awareness raising	[Shaded]					
Emergency plans/response	[Shaded]					
Maintain flood protection scheme	[Shaded]					
Strategic mapping and modelling – ScW	[Shaded]		[Shaded]			
Flood forecasting	[Shaded]					
Self help	[Shaded]					
Maintenance	[Shaded]					
Planning policies	[Shaded]					

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of river and coastal flooding to residential properties in Creetown (14023)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and</p>

	<p>where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2027).</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
<p>Delivery</p>	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
<p>Funding</p>	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal Flood Warning Service.</p>

<p>Action (ID)</p>	<p>Flood Protection Study (140230005)</p>
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Objective (ID)	Reduce the risk of river and coastal flooding to residential properties in Creetown (14023)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further investigate the feasibility of a flood protection scheme in Creetown. The study will focus on the benefit of flood defences on the Moneypool and Balloch Burns and the role of natural flood management actions for reducing runoff flow into the rivers. This study should take account of the interaction of the Moneypool and Balloch Burns with the tidal River Cree. Other actions may also be considered to select the most sustainable combination of actions.</p> <p>The Solway coastal study may also provide information which will feed into this study.</p>
Action Delivery Lead is taking	<p>In recent years flooding to low-lying ground and a number of properties has occurred on a number of occasions from the Balloch Burn. The Balloch Burn and the Moneypool Burn are both heavily influenced by the tide and flooding in the town can be caused by high river levels, high tidal events or a combination of both.</p> <p>The study will look to build up on the outputs from the update of the Shoreline Management Plan with the development of a combined coastal and river hydraulic model to enable determination of appropriate sustainable flood risk management measures. Furthermore the study will look to the upper catchments to determine whether works there may offer benefit e.g. the reinstatement of former floodplains.</p>
Delivery	This study will commence in 2019/20. The study will be completed by 2022
Funding	<p>Dumfries and Galloway Council will utilise revenue funding to undertake this study.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	The study will benefit from the findings of the update of the existing shoreline management plan (141220020)

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Creetown sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2018.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.
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Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Inner Wigtown Bay flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Creetown. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to

predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>

Action Delivery Lead
is taking

Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.

- Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme.
- Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding.
- Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.
- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood

	<p>risk and how those affected can be better prepared.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.</p>
	<p>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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.</p> <p>More general information and flooding guidance will be available on the website at: https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information</p> <p>Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.</p>
	<p>Scottish Environment Protection Agency will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council

Description from Strategy	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders

Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

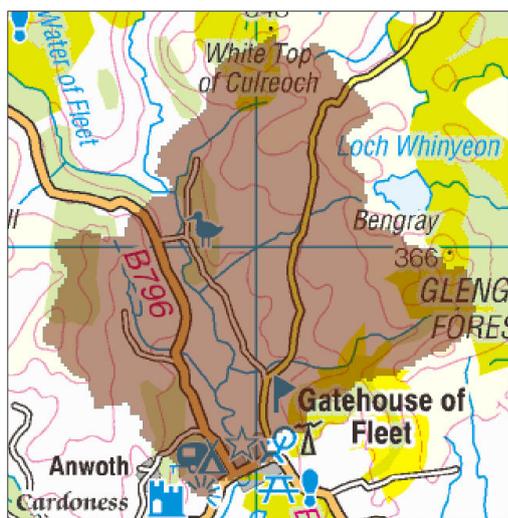
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.18 Flood Risk, Objectives, actions and prioritisation for Gatehouse of Fleet Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the west of the Solway Local Plan District and incorporates the town of Gatehouse of Fleet (shown below). It is approximately 30km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are fewer than 10 residential properties and non-residential properties at risk of flooding. The Annual Average Damages are approximately £19,000.

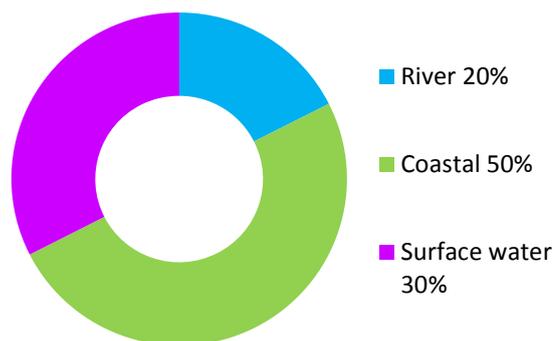


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This area is within the Water of Fleet catchment. The Big Water of Fleet and the Little Water of Fleet converge to become the Water of Fleet, which then flows south and discharges at Wigtown Bay. The majority of the catchment is rural and consists of rough grazing, moorland and forestry.

River flooding is primarily attributed to the Water of Fleet, although the impact of this is mostly on short sections of roads and small areas of agricultural land. The Water of Fleet has a tidal effect in the area which is predicted to cause flooding in Gatehouse of Fleet to residential and non-residential properties. There are known issues of surface water and river flooding interaction at the Mill Pond and Mill Lade to the east of the town.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
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Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Gatehouse of Fleet sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2018.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	Continue to maintain the Fleet Bay flood warning area which is part of the Solway coastal flood warning scheme. When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	n/a
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood

	<p>damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in

addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.

- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

	<p>Scottish Environment Protection Agency will engage with the community and promote Floodline in the Fleet Bay coastal flood warning area This will be achieved through direct mailing for flood warning areas and education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of</p>

	<p>the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents

	<ul style="list-style-type: none"> • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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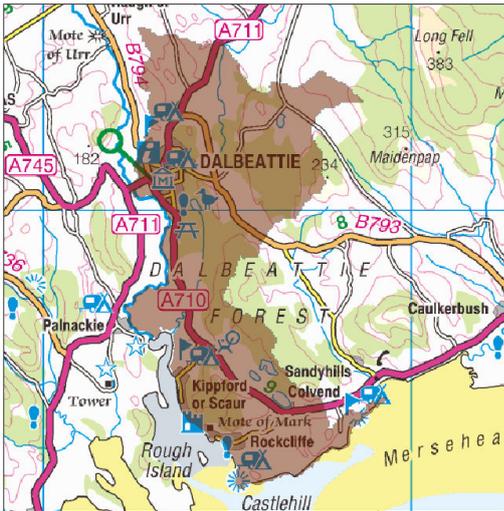
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA’s Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought. Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.
Action SEPA is taking	SEPA has a statutory role in relation to the provision of flood risk advice to planning

	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.19 Flood Risk, Objectives, actions and prioritisation for Dalbeattie Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located on the south coast of the Solway Local Plan District and incorporates the town of Dalbeattie (shown below). It is approximately 40km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 280 residential properties and 80 non-residential properties at risk of flooding. The Annual Average Damages are approximately £570,000.

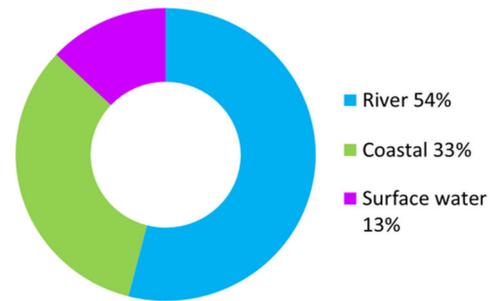


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding in this area is primarily attributed to the Kirkgunzeon Lane, which flows to Maidenholm where it turns west towards Dalbeattie. This river may cause flooding to residential properties, non-residential properties, roads (notably sections of the A710 and A711), utilities and agricultural land around Maidenholm. These predicted impacts are supported by historical flood reports from Dalbeattie. Areas of notable flood risk in Dalbeattie include High Street, the port area, and along the Mill Burn and Little Burn. The national flood mapping for Dalbeattie does not fully represent the flood defences in the area.

The main coastal risk within this Potentially Vulnerable Area is from the Urr Water, which flows along the western boundary of the Potentially Vulnerable Area from Dalbeattie to the Solway Firth, and is tidal over this entire reach. There is also potential for interaction with river flooding in this location. Coastal flooding is predicted to affect a number of properties and a short section of the road network in Dalbeattie and Kippford.

Surface water flooding is more prevalent in the northern half of the area. However, there are small pockets of surface water flooding within Dalbeattie which may impact on properties, utilities and roads.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 290 to 420 and the number of non-residential properties from approximately 80 to 90.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study – Coastal	[Green bar]					
Flood protection study – River	[Green bar]					
Maintain flood warning	[Green bar]					
Awareness raising	[Green bar]					
Emergency plans/response	[Green bar]					
Maintain flood protection scheme	[Green bar]					
Strategic mapping and modelling – ScW	[Green bar]					
Strategic mapping and modelling – SEPA	[Green bar]					
Flood forecasting	[Green bar]					
Self help	[Green bar]					
Maintenance	[Green bar]					
Planning policies	[Green bar]					

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of coastal flooding to residential properties between Dalbeattie and Kippford (14026)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
Action Delivery Lead is taking	Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at

	<p>http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2027).</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
Delivery	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
Funding	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal</p>

Flood Warning Service.

Action (ID)	Flood Protection Study (140250005)
Objective (ID)	Reduce the risk of river flooding to residential and non-residential properties in Dalbeattie (14025)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further investigate the standard of protection of the current defences in Dalbeattie along with the current and future level of risk in the town. If a review of the risk identifies future work is required now or in the future, the study should examine the feasibility of enhancing the flood protection scheme, focusing on improvement to the conveyance of the Kirkgunzeon Lane watercourse, and the improvement of direct flood defences on the Kirkgunzeon Lane.</p> <p>This study should also consider the role natural flood management actions can have to reduce runoff and slow water within the river. Other actions may also be considered to select the most sustainable combination of actions.</p>
Action Delivery Lead is taking	<p>The Dalbeattie Flood Study was published in draft form in January 2016 and is currently being reviewed. The report is published on www.dumgal.gov.uk/flooding</p> <p>The initial findings of the study are as follows:</p> <p>The flood defences have a good standard of protection and in many areas are providing a 200 year standard of protection although uncertainty in the hydrology for this ungauged catchment should be noted in reference to this standard of protection. This standard of protection is arguably borne out by the analysis of flood incidents in Dalbeattie, annual maximum flows and rainfall data suggests that whilst Dalbeattie has witnessed a number of flood issues in the recent past, none of these have been as a result of direct overtopping of the defences.</p> <p>The majority of flood risk relates to the Edingham Burn. This area was not included as part of the FPS and is at risk from floods in excess of the 5 year flood (i.e. at risk at the 10 year flood). Many properties in this Edingham Burn area are have floor levels that are raised above ground levels reducing the impact of the flooding to properties.</p> <p>Further detail on condition and requirements for future maintenance can be found in maintain flood protection scheme (ID140010017) below.</p> <p>The study also recommends that certain works could be progressed and are summarised as follows:</p> <ul style="list-style-type: none"> • Do Minimum • Option 1 – Property Level Protection • Option 2 – 200 year SOP for Edingham Burn • Option 3 – 200 year SOP with an allowance for climate change for Edingham Burn and the rest of Dalbeattie.
Delivery	There is no Action upon the Authority to deliver capital works in the first cycle. Works of maintenance and repair will be undertaken in accordance with statutory obligations to maintain existing Flood Prevention (protection) Schemes – see maintain flood protection

	<p>scheme (ID140010017).</p> <p>Property Level Protection will continue to be offered through the Council's subsidised scheme – see Self Help (ID140400011). Given specific knowledge on properties at risk, a targeted approach will be taken with highest risk properties.</p> <p>This study will be completed in 2016/17.</p>
Funding	<p>The delivery of Property Level Protection will be through the Subsidised Flood Products Scheme and will be funded from Council Revenue Budgets.</p> <p>Delivery of repair works to existing defences will be from the Revenue Budget.</p>
Coordination	<p>The Council will co-ordinate with the community through the Community Council</p>

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.</p> <p>SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.</p>
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Kippford. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.
Timing	<p>The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.</p> <p>The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.</p>

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Dalbeattie sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2017.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID)	Maintain flood protection scheme (140250017)
Objective (ID)	Reduce the risk of river flooding to residential and non-residential properties in Dalbeattie (14025)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Dalbeattie Flood Protection Scheme was completed in 1981 and consisted of flood banks, flood walls, and channel improvements to Kirkgunzeon Lane, Dalbeattie Burn and Drumjohn Burn. Maintenance should be continued. The level of protection provided by these defences may decrease due to the impact of climate change.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will continue to inspect and maintain the Dalbeattie Flood Protection Scheme to ensure that it operates efficiently.</p> <p>As detailed above (ID140250005) a study into protection levels provided by the Scheme has recently been completed. This study included a survey of the condition of the various flood protection elements.</p> <p>The survey of the flood defence assets shows that these are generally in a good condition although the report recommends that the scheme would benefit from additional inspections and maintenance of the watercourse and defences. In particular, many outfalls are present which need to be inspected and flap valves fitted. Some of the smaller watercourses could benefit from intermittent vegetation and sediment management. One element of the flood protection scheme at Colliston Park requires repairs and this will be undertaken during 2016.</p> <p>The report also recommended that culverted sections of watercourses be cleared and this will be undertaken. Again, the survey recommended an increased frequency of inspections of culverts and pipes and to include a schedule for maintenance works. This too will be undertaken as part of the part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.</p>

Funding for these works will principally be from a Revenue Budget, although capital monies may be used for the rebuild of certain elements of the flood defences in Colliston Park.

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Rough Firth and Southerness Point flood warning areas which are part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Dalbeattie to Kippford. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p>
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.

- Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme.
- Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding.
- Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.
- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency –

SEPA will engage with the community and promote Floodline in the Rough Firth and Southernness Point coastal flood warning areas. This will be achieved through direct mailing for new flood warning areas and education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

To support the delivery of the new SEPA flood warning scheme, SEPA will carry out a local launch event and engage directly with residents in the area. This will be supported by local and national media communications. SEPA will also support and participate in local public awareness events, in partnership with the local authority, community council or other local representative organisations, including schools.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A new flood warning scheme is proposed for Dalbeattie. To support the delivery of the new SEPA flood warning scheme, we will carry out communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council

Description from Strategy	<p>Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders

Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

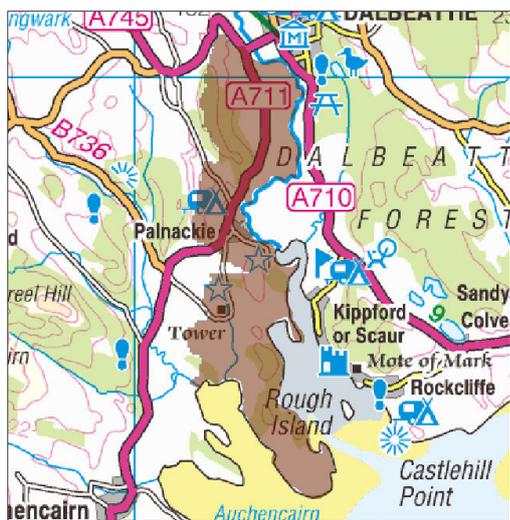
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.20 Flood Risk, Objectives, actions and prioritisation for Palnackie Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located on the south coast of the Solway Local Plan District and incorporates the village of Palnackie (shown below). It is approximately 10km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are fewer than 10 residential properties at risk of flooding. The Annual Average Damages are approximately £3,000.

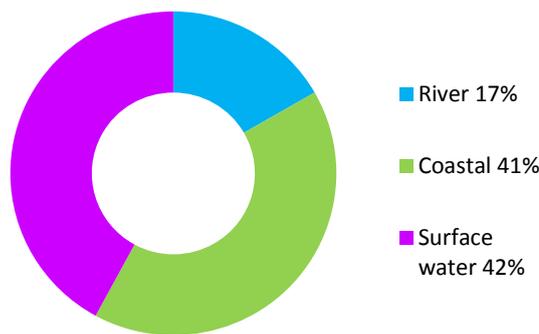


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This Potentially Vulnerable Area was originally designated due to frequent reports of flooding, however, actions were taken in 2005 to mitigate these issues and there are now fewer than 10 residential properties at risk of flooding.

The village of Palnackie is the only settlement within this Potentially Vulnerable Area. The village is at the centre of this narrow area and is mainly surrounded by areas of agriculture and forestry, with some areas of rough grazing. The Urr Water runs along the eastern boundary. Potterland Lane discharges to Orchardton Bay to the south west of the area. The Orchardton Burn flows within the southern half and discharges to the Orchardton Bay.

In Palnackie in 2004 and 2005 a stone lade was replaced along an alternate route within the road boundary, with a new culvert and new outlet. A new surface water pipe was installed in Port Road as the existing culverted watercourse lacked capacity and proved problematic with regard to maintenance.

The area has an extensive frontage onto the Solway Firth, while the eastern boundary runs along the line of the Urr Water, which is tidal over this entire reach. Coastal and river flooding is predicted to affect agricultural land along the eastern boundary and to the north of Orchardton Bay.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Small areas of designated environmental sites of approximately 1km² are at risk of flooding.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.</p> <p>SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans will be considered as these projects are completed.</p>
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.

Timing	<p>The Strategic Mapping and Modelling for surface water will commence in 2016 and will be completed end 2017.</p> <p>The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.</p>
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Action (ID)	Maintain flood protection scheme (140400017)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Continue to maintain the existing Palnackie flood defences. The Palnackie flood protection works were constructed on behalf of Dumfries and Galloway Council in 2004 and involved replacing a stone lade with a culvert and new outlet.
Action Delivery Lead is taking	<p>The works undertaken in 2004 were the replacement of a stone culvert with a new pipe and new outfall to the small harbour area. This was a work of maintenance and is not a Flood Prevention Scheme (as defined in the Flood Prevention (Scotland) Act 1961).</p> <p>Dumfries and Galloway Council will continue to inspect and maintain the pipework that forms carries the watercourse through the village of Palnackie to ensure that it operates at peak efficiency.</p> <p>Given the relatively minor nature of the works, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Rough Firth flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	n/a
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response

to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other

issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.

- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

From 2016 the **Scottish Environment Protection Agency** will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to</p>

	both positive and negative impacts upon natural features and characteristics.
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC)

- Rest Centre Management Arrangements (DGC)
- Flood Rescue Capability (SFRS & Nith Inshore / MCA)
- Flood Forecasting Service (SEPA / Met Office)

Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.

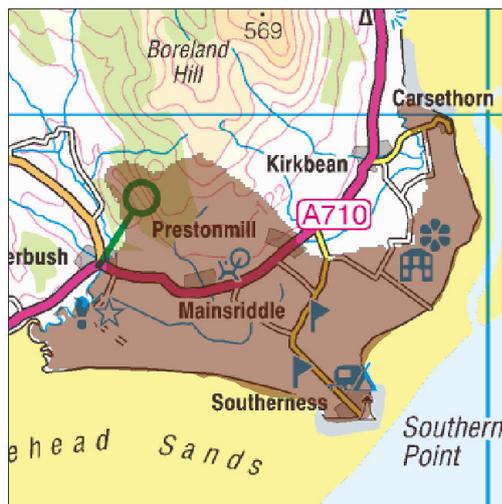
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought. Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.
Action SEPA is taking	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/ SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement. SEPA's land use planning activities will be co-ordinated with the activities of other

	responsible authorities as required.
Action Scottish Water is taking	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 a local authority.

3.21 Flood Risk, Objectives, actions and prioritisation for Southernness and Carsethorn Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located on the south coast of the Solway Local Plan District and incorporates the village of Southernness (shown below). It is approximately 20km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 50 residential properties at risk of flooding.

The Annual Average Damages are approximately £210,000.

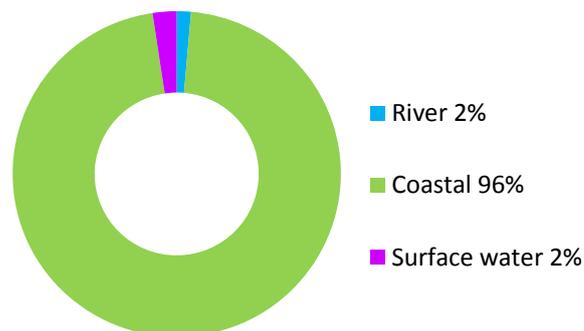


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

There are a number of small settlements including Carsethorn, Southernness and Mainsriddle within this Potentially Vulnerable Area. The Southwick Burn flows south along the western edge of the area and discharges to the Solway Firth at Mersehead, while the Prestonmill Burn flows east to the north of the area and discharges to the Solway Firth at Carsethorn. The lower reaches of the Southwick Burn and Prestonmill Burn are tidal.

Coastal flooding may inundate a large area in the west, bound on two sides by the Southwick Burn and the Solway Firth. Residential properties will be affected in Southernness and Carsethorn; this is supported by historical reports of wave overtopping in Southernness and tidal/drainage issues in Carsethorn.

River flooding within this Potentially Vulnerable Area is concentrated in the west and is primarily attributed to the Southwick Burn. Flooding affects a large area of mainly agricultural land and a network of existing drainage channels, which drain into the Southwick Burn, may exacerbate the extent of flooding.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 50 to 80.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Three designated cultural heritage sites are at risk of flooding, and small areas of environmental importance 4.2km² are also at risk.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study						
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of coastal flooding to residential properties in Carsethorn (14120) Reduce the risk of coastal flooding to residential properties in Southernness (14028)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas. The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.
Action Delivery Lead is taking	Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694 The objective of this study was to provide Dumfries and Galloway Council with a document to

	<p>be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2028).</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
<p>Delivery</p>	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
<p>Funding</p>	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal Flood Warning Service.</p>

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Southernness. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.
Timing	The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.

Action (ID)	Maintain flood protection scheme (140280017)
Objective (ID)	Reduce the risk of coastal flooding to residential properties in Southernness (14028)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>Southernness Flood Protection Scheme was completed in 1983 and consisted of a diversion pipe and field drainage system (pluvial flooding). The standard of protection is not known. Maintenance should be continued.</p> <p>Dumfries and Galloway Council also owns erosion defences of rock armour protecting roads in Carsethorn. There are also privately owned coastal defences in Carsethorn and Southernness including rock armour and stone walls.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will continue to inspect and maintain the Southernness Flood Protection Scheme to ensure that it operates at peak efficiency.</p> <p>Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.</p> <p>The sea defences will be maintained as part of the Council's coastal asset management programme.</p>

Action (ID)	Maintain flood warning (140400030)
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Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Southernness Point flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Carsethorn and Southernness. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p>
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from	Everyone is responsible for protecting themselves and their property from flooding. Property

Strategy	and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue

funding.

- Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum.
- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

	<p>https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information</p> <p>Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.</p>
	<p>Scottish Environment Protection Agency will engage with the community and promote Floodline in the Southernness Point coastal flood warning area. This will be achieved through direct mailing for flood warning areas and education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p>

	<p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to</p>

	<p>emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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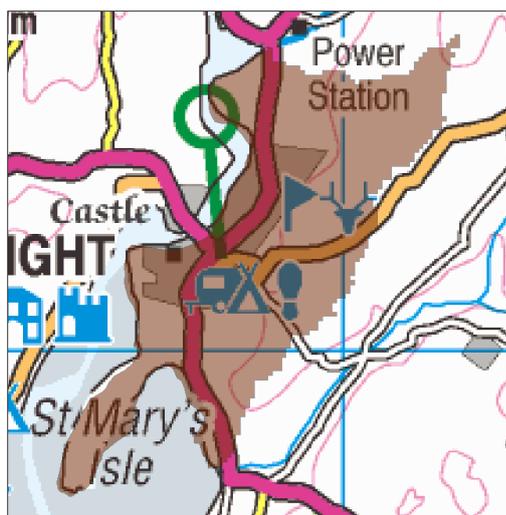
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA’s Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a

	<p>variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	<p>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 a local authority.</p>

3.22 Flood Risk, Objectives, actions and prioritisation for Kirkcudbright Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located on the south coast of the Solway Local Plan District and includes the town of Kirkcudbright (shown below). It is approximately 10km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 90 residential properties and 40 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £240,000.

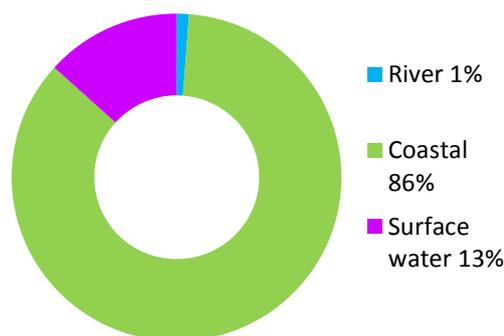


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The main settlement in this Potentially Vulnerable Area is Kirkcudbright, which is situated on the banks of the River Dee. The River Dee is tidal in this area and flows along the western boundary and discharges to Kirkcudbright Bay in the Solway Firth. Coastal flooding is predicted to affect residential properties along the River Dee, transport routes, notably the A711 and A755, and agricultural land to the north of Mutehill. The Buckland Burn/Gribdae Burn flows outwith the Potentially Vulnerable Area in a south westerly direction and discharges into Kirkcudbright Bay at Mutehill, on the southern boundary. There are privately owned coastal defences of rock armour in Doon Bay/Mill Hall.

River flooding within the area is identified along the western boundary and is attributed to the River Dee. The Dee is a managed watercourse and flows may be affected by the storage and release of water by Scottish Power in their operation of the Galloway Hydro Scheme; this is likely to have a positive contribution to managing flood risk within the area. The Mill Burn is known to have previously overflowed onto Millburn Street and onto school grounds.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Most of the receptors at risk lie within Kirkcudbright and include properties, utilities and roads; one designated cultural heritage site is also at risk.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 90 to 200 and the number of non-residential properties from approximately 40 to 50.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study						
Natural flood management study						
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – ScW						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of coastal flooding to properties in Kirkcudbright (14029)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to</p>

	<p>be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2028).</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
<p>Delivery</p>	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
<p>Funding</p>	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
<p>Coordination</p>	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p> <p>Coordination with SEPA should reflect the work undertaken in 2015 to implement a Coastal Flood Warning Service.</p>

Action (ID)	Natural Flood Management Study (140400003)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	As part of the wider Galloway Glens Landscape Partnership Scheme, Dumfries and Galloway Council propose to investigate whether Natural Flood Management measures can be utilised on the small tributaries of the Dee to reduce flood risk to settlements in the Dee catchment and provide other ecological and habitat benefits.
Action Delivery Lead is taking	<p>Often expensive engineered flood defence works are difficult to fund if the value of the assets protected is in relation low. These factors increase the interest in lower cost, catchment scale approaches to flood risk management. Natural Flood Management (NFM) is the alteration, restoration or use of landscape features to reduce flood risk. Altering features often includes ‘soft engineering’ this has been defined as engineering with natural materials such as soil, woody debris and also using living systems such as woodland and functioning peat bogs.</p> <p>This approach can also give wider biodiversity, water quality and carbon storage benefits. NFM aims to reduce downstream maximum water height of a flood (the flood peak) or to delay the arrival of the flood. These aims are achieved by restricting the progress of water through a catchment by either, storing water, increasing soil infiltration, slowing water and /or reducing water flow connectivity.</p> <p>A combination of strategies is often the most effective and NFM must be seen as complementing traditional flood management techniques rather than replacing them.</p> <p>Useful links</p> <p>http://www.bbc.co.uk/news/uk-politics-25752320</p> <p>http://www.thejournal.co.uk/north-east-analysis/analysis-news/northumberland-pioneering-flood-defence-scheme-9347131</p> <p>http://www.ceh.ac.uk/news-and-media/blogs/what-difference-could-natural-flood-management-techniques-make</p> <p>http://researchbriefings.files.parliament.uk/documents/POST-PN-396/POST-PN-396.pdf</p> <p>http://www.forestry.gov.uk/fr/infd-7zuclx</p> <p>http://www.forestry.gov.uk/fr/INFD-7ZUCL6</p> <p>http://www.independent.co.uk/news/uk/home-news/uk-flooding-how-a-yorkshire-flood-blackspot-worked-with-nature-to-stay-dry-a6794286.html</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch Ken and River Dee Marshes SPA.</p>
Delivery	Undertake a study (external consultancy) to investigate the possible opportunities and impacts of using natural flood management techniques in the upper catchment of the Ken/Dee.

	Identify possible locations for pilot projects funded through the Galloway Glens Landscape Partnership Scheme to implement Natural Flood Management (NFM) techniques. Using flood modelling techniques assess the likely impact of using these techniques to ensure positive benefits in terms of flood risk alleviation and habitat benefits. A long list of possible areas for implementing NFM techniques will be created and investigated in detail for their feasibility, benefits and possible disbenefits. From this list a short list of potential projects will be produced which will be considered for implementation through the Galloway Glens LPS subject to landowner approval and funding availability.
Funding	<p>Phase 1 – Consultancy study</p> <p>Heritage Lottery Fund – Development stage funding for the Galloway Glens LPS - £21,000</p> <p>Council funding through the Flood Management team - £21,000</p> <p>Potential community engagement funding through the Climate Action Fund</p> <p>Phase 2 - On the Ground Project Delivery</p> <p>HLF Landscape Partnership scheme if round 2 is successful region of £100,000</p> <p>SRDP Environmental Cooperation Fund (to assist with landowner negotiations and detailed scheme design) £20,000</p> <p>SRDP individual landowner applications – works on the ground £200,000</p> <p>SEPA - WFD funding - £50,000</p> <p>Peatland Action (if running) – peatland restoration projects - £50,000</p> <p>Council capital works budgets - £20,000</p>
Coordination	Delivery would be through the Galloway Glens Landscape Partnership Scheme team in conjunction with our Council’s Flood Risk Management team and SEPA’s Catchment Management Officer. Implementation would also all include working with private and public sector landowners and local communities.
Timing	The Natural Flood Management Study is due for delivery during 2016/17.

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA’s grant in aid settlement.
Coordination	A flood protection study is proposed for Kirkcudbright. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection

	study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.
Timing	The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.

Action (ID)	Strategic mapping and modelling (140400019)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Water
Description from Strategy	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.
Action Delivery Lead is taking	Scottish Water will undertake further investigation and modelling in the Kirkcudbright sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009. The action will be delivered between 2016-2019.
Funding	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination	<p>Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.</p> <p>It will be necessary for this work to link with the requirement upon Dumfries and Galloway Council to deliver a Surface Water Plan/Study (140350018).</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Kirkcudbright Bay flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

Coordination	A flood protection study is proposed for Kirkcudbright. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-

	<p>return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>
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Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on

individual responsibility and provide them with details of the subsidised flood products scheme and available grants.

- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the Kirkcudbright Bay coastal flood warning area. This will be achieved through direct mailing for flood warning areas and education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

	<p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p>

	<p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p>

	<ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	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/>

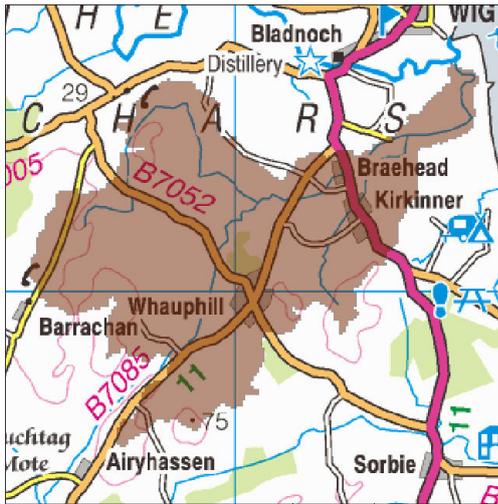
SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.

3.23 Flood Risk, Objectives, actions and prioritisation for Braehead and Whauphill Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located in the south west of the Solway Local Plan District and incorporates the villages of Kirkinner and Whauphill (shown below). It has an area of approximately 25km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are fewer than 10 residential and non-residential properties at risk of flooding.

The Annual Average Damages are approximately £200,000.

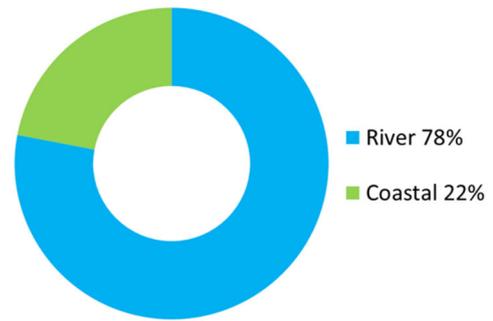


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The area has no direct coastal frontage onto Wigtown Bay however the north east of the area is within 500m of the coastline. Coastal flooding is predicted to affect non-residential properties and agricultural land.

River flooding within this area is primarily attributed to the River Bladnoch, Maltkiln Burn and the canal. The Maltkiln Burn flows in a north westerly direction and discharges to the River Baldnoch; the River Baldnoch then discharges to Wigtown Bay. River flooding is seen at Capenoch Croft where the Maltkiln Burn is culverted under the B7052. The main transport route with a risk of flooding is the A746. Flooding from the canal also poses a risk to agricultural land and sections of road at Baryerrock.

Utilities and sections of the road network are predicted to be affected by surface water flooding where the B7052 crosses the Maltkiln Burn at Capenoch Croft and where it crosses The Canal at Baryerrock.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. It shows that there are limited impacts people, non-residential properties, utilities and roads within the area.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>Continue to maintain the Inner Wigtown Bay flood warning area which is part of the Solway coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	n/a
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding . Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented. • Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products

scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.

- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at:

<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote Floodline in the Inner Wigtown Bay coastal flood warning area. This will be achieved through direct mailing for flood warning areas and education events.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>

Action (ID)	Planning Policies (140330001)
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Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	<p>Planning Authority – Dumfries and Galloway Council</p>
Description from Strategy	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	<p>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 a local authority.</p>

3.24 Flood Risk, Objectives, actions and prioritisation for Isle of Whithorn and Garlieston Potentially Vulnerable Area

Background

This Potentially Vulnerable Area is located towards the south west of the Solway Local Plan District and incorporates the towns of Whithorn, Garlieston and Isle of Whithorn (shown below). It is approximately 30km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 90 residential properties and 30 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £470,000.

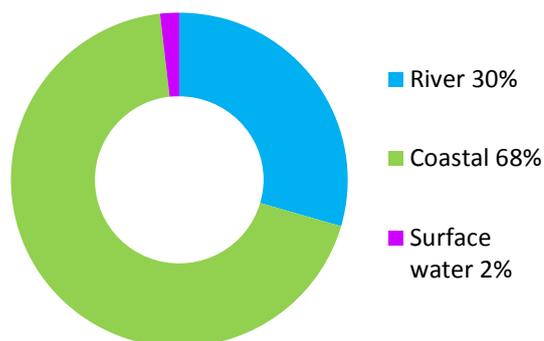


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This Potentially Vulnerable Area has extensive frontage onto Wigtown Bay. The area includes only part of Garlieston and Isle of Whithorn and figures for the whole towns are not presented in this report, however the full area of both towns are included in further assessment carried out by Dumfries and Galloway Council.

River flooding is primarily attributed to the Ket Burn. This poses a risk to residential and non-residential properties in Whithorn and the Whithorn Priory. Flooding from the Kevan and Broughton Burns is predicted to affect sections of road network, notably the A746, and agricultural land. There is also a potential risk of flooding from the Drummullin Burn in the Isle of Whithorn, and the Pouton and Inch Burns in Garlieston.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 90 to 100.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land. Nine designated cultural heritage sites are at risk of flooding.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Potentially Vulnerable Area

14/24 – Isle of Whithorn and Garlieston

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study						
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (141220020)
Objective (ID)	Reduce the risk of coastal flooding to properties in Isle of Whithorn (14121) Reduce the risk of coastal flooding to properties in Garlieston (14032)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>A study is recommended to further develop the understanding of coastal flooding along the Solway coastline. This study should build on from the previous shoreline management plan to investigate flooding and coastal erosion, wave overtopping and the current coastal protection offered. The study may focus in detail on Potentially Vulnerable Areas however it could also look at the risk to other areas.</p> <p>The study will help to develop an understanding of coastal issues and identify where further work may be required to mitigate against flooding.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council published Stage 1 of the Dumfries and Galloway Shoreline Management Plan in 2005. A copy of this document can be found at http://www.dumgal.gov.uk/index.aspx?articleid=4694</p> <p>The objective of this study was to provide Dumfries and Galloway Council with a document to be used when setting priorities for coastal defence management. It takes into account the issues of public safety, the preservation of property and infrastructure, the preservation (and</p>

	<p>where possible the enhancement) of the environment and the likely costs of defence management along a coastline. This report provides an understanding of the processes shaping the coast, based on a mixture of geomorphological analysis, interpretation of available data in waves, tides, movements of beach sediment and past shoreline changes.</p> <p>The intention of this new study is to follow similar lines with the focus of the study being limited to the areas of the coastline which are susceptible to flooding and / or erosion.</p> <p>The study will make use of a number of datasets including:</p> <ul style="list-style-type: none"> • Potentially Vulnerable Areas • Target Warning Areas for Solway Coastal Flood Warning • SEPA third generation coastal and (where appropriate) river flood mapping • Historical records of flooding and coastal erosion • Coastal flood studies e.g. Stranraer Harbour • LiDAR and digital terrain mapping in general • Property and infrastructure • SNH National Coastal Change Assessment Outputs • Environmental information e.g. SSSI, RAMSAR, etc. <p>In the initial works, consideration will be given to targeting higher risk locations allowing the potential for flood protection works to be identified in time to be considered for further development, funding and construction in the second cycle (2022-2028).</p> <p>Dumfries and Galloway Council will ensure that as part of the study the action will not have an adverse effect on the integrity of the Loch of Inch and Torrs Warren SPA, Luce Bay and Sands SAC, Solway Firth SAC, and Upper Solway Flats and Marshes SPA.</p>
Delivery	<p>The delivery of this study will be towards the end of the first cycle. The study will commence in 2016/17 but is going to require to be progressed over a number of years, as costs are likely to be high.</p>
Funding	<p>This study will be funded by Dumfries and Galloway Council.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>Coordination will be required with a number of bodies:</p> <ul style="list-style-type: none"> • Scottish Environment Protection Agency (SEPA) • Scottish National Heritage (SNH) • Historic Environment Scotland • Environment Agency • South Ayrshire Council • Cumbria County Council <p>Coordination will also be required with any coastal flood studies being undertaken for the Solway LPD. In the first cycle this is limited to Creetown (14/17) Action ID – 140230005.</p>

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)

Potentially Vulnerable Area

14/24 – Isle of Whithorn and Garlieston

Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Gretna to Portpatrick area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Garlieston. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.
Timing	The Strategic Mapping and Modelling for coastal will commence in 2018 and will be completed end 2018.

Action (ID)	Maintain flood protection scheme (141210017)
Objective (ID)	Reduce the risk of coastal flooding to properties in Isle of Whithorn (14121)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	<p>Whithorn Flood Protection Scheme was completed in 1991 and consisted of channel improvements to the Ket Burn and sewer relaying. The standard of protection is not known. Maintenance should be continued.</p> <p>Dumfries and Galloway Council has a number of coastal defences within this area including harbour walls and masonry/concrete walls at the Isle of Whithorn and Portyerrock. There are also privately owned seawalls in Isle of Whithorn and Rigg Bay</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will continue to inspect and maintain the Whithorn Flood Protection Scheme to ensure that it operates at peak efficiency.</p> <p>Given the relatively minor nature of the Scheme, the inspection works will be scheduled as part of the Council's duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.</p> <p>The sea defences will be maintained as part of the Council's coastal asset management programme.</p>

Action (ID)	Maintain flood warning (140400030)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from	Continue to maintain the Outer Wigtown Bay flood warning area which is part of the Solway

Strategy	<p>coastal flood warning scheme.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>
Funding	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection study is proposed for Isle of Whithorn and Garlieston. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is

	recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps.</p> <p>This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding.</p> <p>Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically

Floodline) and the Scottish Flood Forum.

- Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline).
- Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants.
- Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart).
- Dumfries and Galloway Council use their annual Broadcast publication, sent to all properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.
- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with the community and promote

	<p>Floodline in the Outer Wigtown Bay coastal flood warning area. This will be achieved through direct mailing for flood warning areas and education events.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.</p> <p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.</p>
	<p>Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk</p>

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p>

	<p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements

	<p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC) • Flood Rescue Capability (SFRS & Nith Inshore / MCA) • Flood Forecasting Service (SEPA / Met Office) <p>Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.</p>
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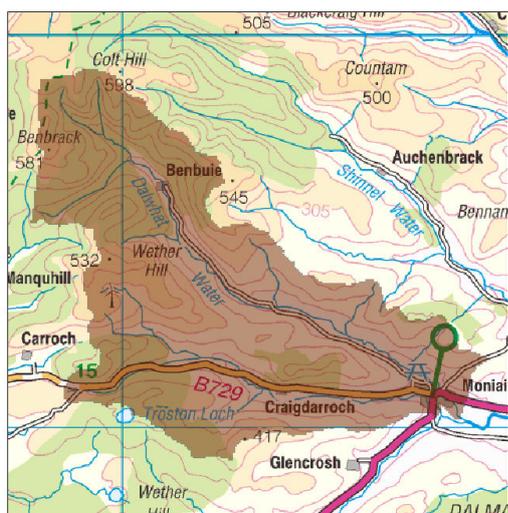
Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	Scottish Planning Policy and accompanying Planning Advice Notes set out 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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA’s Strategy.
Action Delivery Lead is taking	<p>The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p> <p>At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.</p>
Action SEPA is taking	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

	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
Action Scottish Water is taking	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 a local authority.

3.25 Flood Risk, Objectives, actions and prioritisation for Moniaive Candidate Potentially Vulnerable Area

Background

This candidate Potentially Vulnerable Area includes the town of Moniaive which is located in the centre of the Solway Local Plan District (shown below). The Craigdarroch Water and the Dalwhat Water flow through the area. It is approximately 55km².



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 20 residential properties at risk of flooding.

The Annual Average Damages are approximately £55,000.

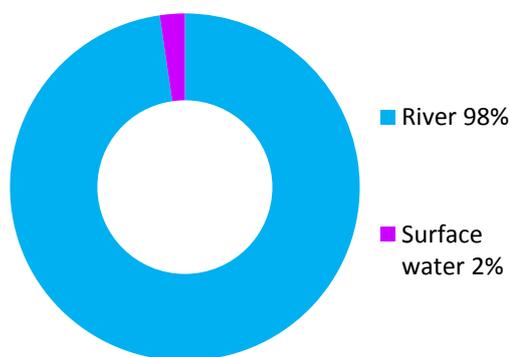


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This area was not originally identified as a Potentially Vulnerable Area in 2011. However, updated information on flood risk identified that this area should be regarded as a candidate Potentially Vulnerable Area due to the risk to people and properties.

Flood risk in the area is mostly attributed to river flooding from the Craigdarroch Water and the Dalwhat Water. The Dalwhat Water flows from the north east of the area, with the Craigdarroch Water flowing from the west. The confluence of the two watercourses is in Moniaive where there is a risk of flooding to residential properties.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
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Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection study						
Awareness raising						
Emergency plans/response						
Maintain flood protection scheme						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood Protection Study (140380005)
Objective (ID)	Reduce the risk of flooding in Moniaive (14038)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	A flood protection scheme has previously been built in Moniaive to address flooding experienced within the town. As the scheme was built more than 50 years ago it is recommended that a study is undertaken to assess the current flood risk within Moniaive and if further work is required to reduce the level of risk in the area now or in the future, due to climate change.
Action Delivery Lead is taking	<p>The Moniaive Flood Study was published in draft form in December 2015 and is currently being reviewed and will be further updated following the flooding event of 30 December 2015. The report is published on www.dumgal.gov.uk/flooding</p> <p>The main findings of the study are as follows:</p> <ul style="list-style-type: none"> • Despite the rating of poor for some assets, the defences withstood the overtopping of the flood waters during the December 2013 flood, with no reports of breaching or failure of defences. • Options to provide a 1:200 year return period standard of protection do not produce a positive benefit cost ratio. This means that investment of this nature would be uneconomical and would not be eligible for any future grant funding (based on current guidelines). • A low cost option to improve defences in one location, upstream of the main road bridge offers a cost benefit of unity, meaning this work may be appropriate. While it does not however fully provide 1:200 year return period standard of protection, it would provide defences in a location that is critical to protecting a large proportion

	<p>of the town.</p> <p>Any flood defence improvements or significant capital spent would benefit from some flow gauging over a period of time to improve the flow estimates. This will be considered along with improvements in community resilience; potentially installing flow monitor to also give warning to community of an exceedance event.</p> <p>The study will however be updated following the flooding events experienced in late December 2015. It is understood however that like the 2013 event the defences were overtopped rather than breached.</p> <p>The report also makes a number of recommendations on maintenance works required to the 1963 Moniaive Flood Prevention (protection) Scheme. These are detailed below in Maintain flood protection scheme (ID140380017). It may be appropriate to carry out this maintenance work in conjunction with considering options for defence improvements. The consideration of this is an action upon the Council.</p>
Delivery	<p>There is no Action upon the Authority to deliver capital works in the first cycle. Works of maintenance and repair will be undertaken in accordance with statutory obligations to maintain existing Flood Prevention (protection) Schemes – see maintain flood protection scheme (ID140380017). At the same time consideration will be given to improvement in defences upstream of the road bridge to offer protection to a large portion of the town.</p> <p>Property Level Protection will continue to be offered through the Council’s subsidised scheme – see Self Help (ID140400011). Given specific knowledge on properties at risk, a targeted approach will be taken.</p>
Funding	<p>The delivery of Property Level Protection will be through the Subsidised Flood Products Scheme and will be funded from Council Revenue Budgets.</p> <p>Delivery of repair works to existing defences will be from the Revenue Budget.</p>
Coordination	<p>The Council will co-ordinate with the community through the Community Council.</p> <p>There will be coordination through any scheme development and delivery with all responsible authorities.</p>

Action (ID)	Maintain flood protection scheme (140380017)
Objective (ID)	Reduce the risk of flooding in Moniaive (14038)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	A flood protection scheme was built in Moniaive to address flooding experienced within the town. The level of protection offered by the scheme is not currently known. A flood protection study is being carried out by Dumfries and Galloway Council to establish the level of protection offered by the current scheme and potential further work to reduce flood risk.
Action Delivery Lead is taking	The Moniaive Flood Study was published in draft form in December 2015 and is currently being reviewed and will be further updated following the flooding event of 30 December 2015. The report is published on www.dumgal.gov.uk/flooding

	<p>The report recommends the following:</p> <p>Asset inspections have suggested that a variable condition in the defences and a general lack of regular maintenance of some defences. Despite this, the defences withstood the overtopping of the flood waters during the December 2013 flood, with no reports of breaching or failure of defences.</p> <p>Further structural inspection and maintenance of these assets is recommended to ensure that they are fit for purpose. Furthermore, the overall condition and standard of the defences could be improved by maintenance and minor refurbishments to locally raise and set a uniform crest gradient.</p> <p>Without this maintenance the defences will deteriorate over time to the point where the defences no longer function as they should. At this point they will either need to be replaced or refurbished which may be more costly than frequent maintenance works.</p> <p>It is clear from the CCTV footage that the culverts are in need of regular maintenance. Major blockages should be removed as a priority. Recommendations for culverts include the removal of blockages, cleaning of culverts, regular inspections and remedial works to flap valves. If it is deemed necessary the damaged culverts should be repaired or replaced.</p> <p>Dumfries and Galloway Council will undertake to bring the defences up to a “good” standard to extend their lifespan and reduce the likelihood of failure.</p> <p>When reviewing the details of the works necessary to bring the defences up to a good standard of repair, consideration will be given to implementing the recommendations to improve the standard of protection upstream of the road bridge which potentially offers a greater level of protection to a large portion of the town – see Flood Protection Study (ID140380005).</p> <p>General inspection works not directly associated with the Flood Prevention (Protection) Scheme will be scheduled as part of the Council’s duties in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009.</p>
Delivery	<p>The repairs to the defences and maintenance on the culverted (piped) sections will be undertaken during 2016/17 through 2017/18.</p> <p>When reviewing the details of the works necessary to bring the defences up to a good standard of repair, consideration will be given to implementing the recommendations to improve the standard of protection upstream of the road bridge which potentially offers a greater level of protection to a large portion of the town.</p> <p>This study will be completed in 2016/17.</p>
Funding	<p>Funding for these works of maintenance and repair will principally be from a Revenue budget. If improvement works are carried out at the same time these may be funded from a Council Capital budget.</p> <p>Local authorities have received a 1 year funding settlement from the Scottish Government up until 31 March 2017.</p>
Coordination	<p>Dumfries and Galloway Council will co-ordinate with the community through the Community Council.</p> <p>There will be coordination through any scheme development and delivery with all</p>

responsible authorities.

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
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.
Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	Dumfries and Galloway Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible. Since 2010, Dumfries and Galloway Council has operated a subsidised flood products scheme offering grants towards the costs of property level protection products e.g. floodgates, non-return valves, air brick covers, absorbent sandbags and other equipment that will reduce impact of property flooding e.g. sump pumps. This scheme will continue to be funded through a revenue budget with details available at www.dumgal.gov.uk/flooding .

	Dumfries and Galloway Council will support local communities in establishing Community Resilience Groups. Individual groups will assist in their communities responding to events, including but not limited to flooding. With respect to community preparedness for, response to and recovery from flooding, the Community Resilience Groups and Dumfries and Galloway Council will work with the Scottish Flood Forum.
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Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • Dumfries and Galloway Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies, details of works undertaken and details of the subsidised flood products scheme. • Dumfries and Galloway Council operate a subsidised flood products scheme offering grants towards property level protection. The scheme has been effective and the Council will continue to operate with the only caveat being a continuation of revenue funding. • Dumfries and Galloway Council operate a Flood Pod which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Pod displays logos from various agencies in addition to the Council including the Fire and Rescue Service, SEPA (specifically Floodline) and the Scottish Flood Forum. • Dumfries and Galloway Council operate a Flood Trailer which is used to transport property level protection equipment to any location in the region where significant imminent flood risk is likely. The Flood Trailer displays logos from both the Council and SEPA (specifically Floodline). • Following the use of the Flood Pod or the Flood Trailer, officers from the Council's Flood Risk Management Team visit properties in the location, specifically targeting those that borrowed or used property level protection equipment, to advise on individual responsibility and provide them with details of the subsidised flood products scheme and available grants. • Dumfries and Galloway Council support two local Flood Action Groups, at Moffat and Cree Valley (Newton Stewart). • Dumfries and Galloway Council use their annual Broadcast publication, sent to all

properties in the region, to advertise the subsidised flood products scheme or other issues around flooding, most recently in 2015, a piece on the Whitesands Project was presented.

- Dumfries and Galloway Council will support partner agencies in work they undertake to promote awareness of flood risk. Most recently the launch by SEPA of the Coastal Flood Warning Scheme allowed Dumfries and Galloway Council to include on the SEPA leaflet, issued to 4000 properties, details of the subsidised flood products scheme. Council officers from the Flood Risk Management Team attended the launch event held at Isle of Whithorn, a location where property has directly benefited from property level protection.
- Through the continued development of flood studies at higher risk locations, officers from the Flood Risk Management Team attend community council events to discuss elements of flood risk management.
- The Council's Flood Risk Management Team have attended meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations

Dumfries and Galloway Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Dumfries and Galloway Council will continue to use a revenue budget to fund staff whose role will include awareness raising.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will engage with communities and promote Floodline using most the appropriate mix of methods for the area. These could include direct mailings, education activities, participation in local events and relevant flooding messages in the media.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

SEPA's awareness raising activities will be co-ordinated with the activities of other

	responsible authorities as required.
	Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Dumfries and Galloway Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>Dumfries and Galloway Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>Dumfries and Galloway Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>Dumfries and Galloway Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Dumfries and Galloway Council will continue to use a revenue budget to fund a maintenance programme that meets the requirements of Sections 18 and 59 of the Flood Risk Management (Scotland) Act 2009.</p>

	In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>Dumfries and Galloway Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard Dumfries and Galloway has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The Dumfries and Galloway Major Emergency Scheme (MES) is the delivery vehicle for the Local Resilience Partnership, and the MES has a suite of arrangements which set out the framework for responding to emergencies. The suite includes the following which are relevant to a flooding incident;</p> <ul style="list-style-type: none"> • LRP Generic Arrangements • Warning and Informing Core Competency documents • Caring for People Core Competency Documents • Flooding Specific Arrangements <p>To further enhance these arrangements, the MES has regular exercises and training events incorporated into its work schedule, and these address a range of activities and involve a wide range of agencies and organisations. The most recent multi-agency exercise specific to Flooding was held during October 2015.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Property Level Protection Scheme (DGC) • Flood Pod (DGC / SFRS) • Community Resilience Arrangements (DGC) • Emergency Catering Arrangements (DGC) • Rest Centre Management Arrangements (DGC)

- Flood Rescue Capability (SFRS & Nith Inshore / MCA)
 - Flood Forecasting Service (SEPA / Met Office)
- Dumfries and Galloway Council will continue to use a revenue budget to fund its responsibilities under the Civil Contingencies Act 2004.

Action (ID)	Planning Policies (140330001)
Objective (ID)	Avoid an overall increase in flood risk (14033) Reduce overall flood risk (14040)
Delivery Lead	Planning Authority – Dumfries and Galloway Council
Description from Strategy	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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.
Action Delivery Lead is taking	The current Dumfries and Galloway Local Development Plan (LDP) was adopted in September 2014 and will be replaced in September 2019 (or before) and run for a further 5 years. During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best available information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought. Dumfries and Galloway Council fund the delivery of a planning service from revenue budgets.
Action SEPA is taking	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/ SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement. SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.

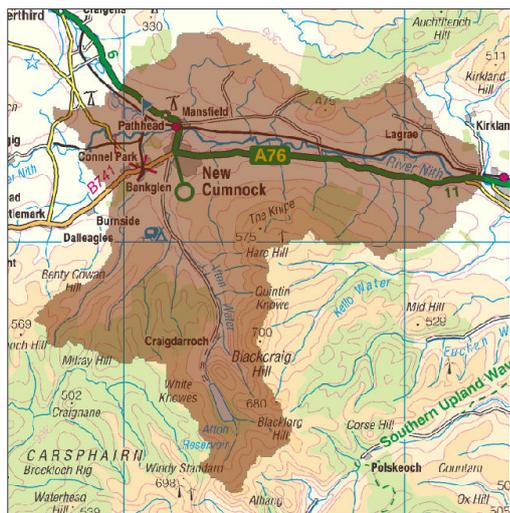
Action Scottish
Water is taking

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 a local authority.

3.26 Flood Risk, Objectives, actions and prioritisation for New Cumnock Candidate Potentially Vulnerable Area

Background

This candidate Potentially Vulnerable Area covers an area in the River Nith catchment. It is approximately 120km² and includes the town of New Cumnock (shown below).



Reprinted from Solway Flood Risk Management Strategy, SEPA (December 2015)

There are approximately 240 residential properties and 60 non-residential properties at risk of flooding.

The Annual Average Damages are £520,000.

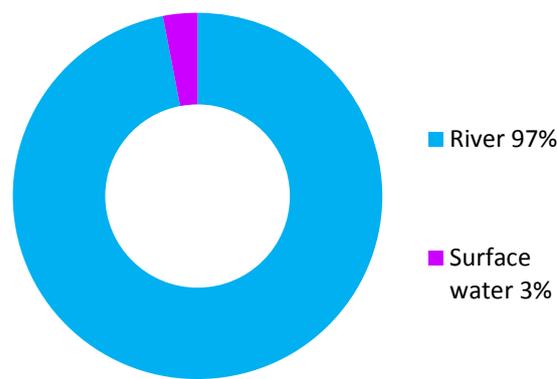


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This area was not originally identified as a Potentially Vulnerable Area in 2011. However, updated information on flood risk from the new hazard maps identified that this area should be regarded as a candidate Potentially Vulnerable Area due to the risk to people and properties.

River flooding presents the greatest risk to residential properties in New Cumnock as well as to transport links, notably the A76 and B741. The River Nith flows from the west of the area through New Cumnock before flowing east toward Kirkconnel. The Afton Water and Connel Burn both flow from the south of the area toward New Cumnock where they join the River Nith. These are generally steep catchments which flatten out close to New Cumnock where there is a risk of flooding to residential properties.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 240 to 290 and the number of non-residential properties from approximately 60 to 70.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land.

For further details see [The Solway Local Plan District Flood Risk Management Strategy](#)

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Delivery Timeframes for Actions	Year 1 16/17	Year 2 17/18	Year 3 18/19	Year 4 19/20	Year 5 20/21	Year 6 21/22
Flood protection scheme/works						
Community flood action groups						
Property level protection scheme						
Maintain flood warning						
Awareness raising						
Emergency plans/response						
Strategic mapping and modelling – SEPA						
Flood forecasting						
Self help						
Maintenance						
Planning policies						

Action (ID)	Flood protection scheme/works (140390006)
Objective (ID)	Reduce risk of river flooding to residential properties and non-residential properties in New Cumnock (14039)
Delivery Lead	East Ayrshire Council
Description from Strategy	It is recommended that the council progress work on the proposed flood protection scheme in New Cumnock. Previous flooding and the New Cumnock Flood Study have shown a risk of flooding in the area and identified actions that would help mitigate the risk, including construction of flood defences along the Afton Water and Connel Burn and sediment management along the Afton Water.
Environmental considerations from Strategy	Flood protection schemes can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. There are no international or national level environmental designations that are likely to be directly impacted by this action. There is likely to be a loss of natural and semi-natural habitat in the footprint and vicinity of the direct defences. Downstream of the areas where conveyance is modified there may be slight negative impacts on water quality through increased erosion and sedimentation on the Afton Water and River Nith. There will be a loss of habitat and displacement of species where engineering works are undertaken; however, these habitats

	may re-establish and species return following works.
Action Delivery Lead is taking	<p>The proposed scheme may benefit 95 residential and non-residential properties at risk of flooding in this area.</p> <p>East Ayrshire Council has appointed a consultant to design a flood protection scheme for New Cumnock, with an estimated cost of £3.1m.</p> <p>Protected species habitat surveys have been undertaken, with further surveys required on the Afton Water due to otter activity.</p> <p>The site investigation works for the scheme is anticipated to be undertaken in early 2016.</p>
Delivery	Scheme will commence 2016 and will be completed by 2018
Environmental Action Delivery Lead	East Ayrshire Council have consulted with SNH and Nith District Salmon Fishery Board and their recommendations are being implemented. East Ayrshire planning have carried out the Environmental Impact Screening, based on the consultations and the Habitat surveys. And no EIA is required.
Funding	East Ayrshire Council Revenue Budget provided by the Scottish Government
Coordination	<p>There will be coordination through scheme development and delivery with all responsible authorities.</p> <p>There will be a need to coordinate with SEPA on the delivery of the improved flood warning scheme for the Nith and how that will assist in advance warning of likely flood events impacting upon New Cumnock.</p>

Action (ID)	Strategic mapping and modelling (140400016)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	SEPA will seek to develop flood mapping in the Upper River Nith area to improve understanding of flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.
Funding	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination	A flood protection scheme is planned for New Cumnock. SEPA will work with the local authority to ensure that strategic mapping and modelling developments reflect the changes in flood risk resulting from new flood protection scheme where appropriate and relevant.
Timing	The Strategic Mapping and Modelling for the upper River Nith will commence in 2016 and will be completed in mid-2017.

Action (ID)	Maintain Flood Warning (140390020)
Objective (ID)	Reduce risk of river flooding to residential properties and non- residential properties in New Cumnock (14039)
Delivery Lead	East Ayrshire Council
Description from Strategy	<p>East Ayrshire Council have a flood warning system for New Cumnock which monitors levels on the River Nith, Afton water and Connel Burn.</p> <p>When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that the flood warning service is timely and accurate.</p>
Action Delivery Lead is taking	<p>Water level monitors are already in place on the River Nith, Afton Water and Connel Burn at New Cumnock.</p> <p>Pre-determined warning levels have been set for each location – Level 1 provides a warning that water levels have risen and Level 2 provides a warning that the watercourse is due to overtop. At both levels warning text alerts are sent to recipients, Level 1 advising them to be aware, Level 2 advising that action is required.</p> <p>Public meetings have been held in New Cumnock and the take up of the alert system has increased, particularly following the flood event in December 2015.</p>
Funding	The current Flood Warning system is funded by East Ayrshire Council Revenue Budget provided by the Scottish Government.
Coordination	A flood protection scheme is proposed for New Cumnock. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the existing flood warning system.
Timing	Ongoing

Action (ID)	Flood Forecasting (140400009)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Scottish Environment Protection Agency
Description from Strategy	<p>The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p>
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.

Coordination	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.
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Action (ID)	Property Level Protection Scheme (140390008)
Objective (ID)	Reduce risk of river flooding to residential properties and non- residential properties in New Cumnock (14039)
Delivery Lead	East Ayrshire Council
Description from Strategy	East Ayrshire Council have implemented a property level protection scheme in New Cumnock. The council have provided the property level protection (including the installation of fixed elements) and have provided training on the use of this equipment in conjunction with the flood warning levels and appropriate actions. A flood warning system has been installed by East Ayrshire Council to support this action.
Action Delivery Lead is taking	<p>The properties that were flooded in the December 2013 event were provided with door guards and airbrick covers, where requested. These were fitted by East Ayrshire Council and training given on their operation.</p> <p>Following the December 2015 event Property Level Protection (PLP) is being provided to further properties affected by the recent floods, again upon request.</p>

Action (ID)	Community Flood Action Groups (140390012)
Objective (ID)	Reduce risk of river flooding to residential properties and non-residential properties in New Cumnock (14039)
Delivery Lead	Community
Description from Strategy	The community has formed the New Cumnock Flood Working Party, to help raise awareness of flood risk in the area.
Action Delivery Lead is taking	<p>East Ayrshire Council regularly organises meetings of the Working Party.</p> <p>Membership includes local residents, Elected Members, landowners, East Ayrshire Council, SEPA, Scottish Water, Transport Scotland and Scotland TranServe.</p> <p>Public meetings are organised by the local MSP and the Working Group provides updates to the local community.</p> <p>The Working Group is chaired by the local Elected Member.</p>

Action (ID)	Self Help (140400011)
Objective (ID)	Reduce overall flood risk (14040)

Delivery Lead	-
Description from Strategy	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. Dumfries and Galloway Council has a Flood Product Subsidy Scheme in place, it is recommended that this should be continued. Residential or business properties that are identified as being at risk of flooding are eligible for the scheme. There are various products to reduce the impact of flooding to properties which can be purchased as part of the scheme.
Action Delivery Lead is taking	<p>East Ayrshire Council will support residential and business property owners and occupiers in ensuring their property is as flood resilient as possible.</p> <p>In 2015 sensors were installed at Connel Burn, Afton Water and River Nith to monitor the level of the watercourses. Two warning levels at each location have been established and when these levels are triggered warning messages are sent via SMS text to those recipients that have signed up to receive them. East Ayrshire Council will encourage more residents and businesses within the village to sign up for these messages.</p> <p>East Ayrshire Council has supplied and fitted property level protection to a number of properties impacted by the event of December 2013.</p>

Action (ID)	Awareness raising (140400013)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Responsible Authorities
Description from Strategy	<p>SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>
Action Delivery Lead is taking	<p>East Ayrshire Council undertake a number of measures to raise public awareness of flood risk and responsibilities.</p> <ul style="list-style-type: none"> • East Ayrshire Council have a number of pages on the Council website dealing with flood risk management, including responsibilities placed upon the individual and public bodies • East Ayrshire Council has established a working group within New Cumnock since the flood event in 2014 to inform the development of the Flood Scheme for the village • East Ayrshire Council will support partner agencies in work they undertake to

promote awareness of flood risk.

- Through the continued development of flood studies at higher risk locations, officers from the Council attend community council events to discuss elements of flood risk management.
- Council officers will attend meetings organised by colleagues in the Safety and Resilience Team who have been instrumental in establishing community resilience groups across the region. Resilience to flooding events is a crucial element of these groups and the opportunity to present allows the opportunity to raise awareness of flood risk and how responsibilities lie with individuals as well as public organisations
- East Ayrshire Council will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

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. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.

More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

Scottish Water will keep responsible authorities informed of its awareness raising activities through the Local Plan District partnerships.

Scottish Environment Protection Agency will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible.

Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline). Where they exist, SEPA will engage with community resilience groups and community safety partnerships.

For the new flood protection scheme, SEPA will support the local authority's communications and engagement activities with media activity, local public awareness events and education engagement with schools. SEPA will also deliver joint communications with local authorities for Floodline customers in any newly protected flood warning area.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.

A flood protection scheme is proposed for New Cumnock. SEPA will support the local authority's communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required.

Forestry Commission Scotland will support Dumfries and Galloway Council, SEPA and other responsible authorities, raising awareness of flood risk mitigation measures, including raising the profile of woodland creation and forest management as part of natural flood management where these can make a positive contribution to flood risk management. Information on woodland creation and forest management and information on grants

available for Woodland for Water are available at www.scotland.forestry.gov.uk

Action (ID)	Maintenance (140400007)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	East Ayrshire Council
Description from Strategy	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.
Action Delivery Lead is taking	<p>East Ayrshire Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of bodies of water to determine whether works of clearance and repair would substantially reduce the risk of flooding.</p> <p>A schedule of works is produced which is available for public inspection. The works falls into a number of categories in accordance with Guidance published by the Scottish Government. High risk locations such as screens and some smaller culverts are inspected on a scheduled basis, generally with a higher frequency in the winter months when flows are higher and leaves and other waterborne debris can be an issue. Works of clearance are carried out during the inspection and are not specifically "scheduled".</p> <p>Watercourse and other water bodies will be subject to a desk-based assessment following which those in higher risk locations will be visually inspected. These locations are generally going to be within urban areas. These visual inspections will be undertaken on a frequency of 6 months - annual. Any works identified will be scheduled in accordance with Section 59 of the Act.</p> <p>East Ayrshire Council will also review the locations at which visual inspections are undertaken, based on changing circumstances. For example a new flooding issue, or concern raised by a member of the public will lead to officers undertaking further regular inspection works.</p> <p>East Ayrshire Council will work with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>In scheduling and undertaking any works of Clearance and Repair, due regard will be given to both positive and negative impacts upon natural features and characteristics.</p>
Action Scottish Water is taking	<p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p> <p>Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID)	Emergency Plans/Response (140400014)
Objective (ID)	Reduce overall flood risk (14040)
Delivery Lead	Category 1 and 2 Responders
Description from Strategy	<p>Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dumfries and Galloway Council along with the Scottish Fire and Rescue Service, SEPA and the Scottish Flood Forum have procured a Flood Pod. The Pod can be deployed to an area at risk of a flood emergency and is filled with flood protection equipment which is issued to the public.</p>
Action Delivery Lead is taking	<p>East Ayrshire Council along with other Category 1 Responders and the Category 2 Responders plan and exercise for a multi-agency response to flooding events, in accordance with the requirements of the Civil Contingencies Act 2004, etc.</p> <p>In this regard East Ayrshire Council has well established Multi-Agency arrangements for dealing with disruptive events, including flooding. The primary document is the East Ayrshire Council Civil Contingencies Response and Recovery Plan, which is controlled by the Ayrshire Civil Contingencies Team (ACCT).</p> <p>To further enhance these arrangements, ACCT organises regular exercises and training events and these address a range of activities and involve a wide range of agencies and organisations.</p> <p>In addition to this multi-agency activity, a number of agencies have capabilities and arrangements which either mitigate the effects of flooding or support the response to flooding, for example;</p> <ul style="list-style-type: none"> • Water Level Monitoring at New Cumnock (EAC) • Rest Centre Management Arrangements (EAC) • Flood Forecasting Service (SEPA / Met Office)

Action (ID)	Planning Policies (140330001)
Objective (ID)	<p>Avoid an overall increase in flood risk (14033)</p> <p>Reduce overall flood risk (14040)</p>
Delivery Lead	Planning Authority – East Ayrshire Council

<p>Description from Strategy</p>	<p>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, development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see SEPA's Strategy.</p>
<p>Action Delivery Lead is taking</p>	<p>The East Ayrshire Local Development Plan (LDP) is in the process of being adopted. The proposed LDP was approved in Feb 2015 and following a statutory consultation period was submitted to Scottish Ministers for examination in October 2015. The finalised version is expected to be completed and adopted in November 2016.</p> <p>During the consideration of development sites proposed for the LDP, all were assessed against various criteria including flood risk, utilising the best information available. Sites considered unsuitable were discounted, others considered suitable or potentially suitable were include with the caveat that further works e.g. flood risk assessment and drainage impact assessment may be required.</p>
<p>Action SEPA is taking</p>	<p>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/</p> <p>SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>
<p>Action Scottish Water is taking</p>	<p>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 a local authority.</p>

3.27 Other flood risk activities by local authorities in Solway Local Plan District

The Plan presents the actions to manage flood risk in Solway Local Plan District. These actions are at a LPD-wide scale or are targeted at specific PVA. In addition to the actions in this Plan, responsible authorities are undertaking other activities to manage flood risk. There are activities included in the Flood Risk Management (Scotland) Act 2009 that are undertaken by each local authority in the LPD. The main activities that have a significant effect and should be considered in conjunction with the Plan are summarised as follows:

3.27.1 Flood Study at Carsphairn

Within the Solway LPD, the location of most recent concern, and one where a flood study has been recently produced, is Carsphairn. Flooding in December 2013 and January 2015 has highlighted the flood risk within this community and the study was published in draft form. Following this, Dumfries and Galloway Council have agreed that development work on the Carsphairn flood study be progressed utilising revenue funding with a future report to this Committee for support for a Council funded Capital project if development work proves definitively that a scheme is worth constructing.

On the 30 December 2015, Carsphairn was flooded for the third time in two years; this most recent event the worst of the three, with 28 properties flooded. Continuing to use revenue monies from the Flood Risk Management budget, the flood study will be refreshed with the impacts of this event.

The findings of the original report have indicated that there is a potential scheme to protect the community from the flood risk posed by the nearby Water of Deugh. This is very much at the initial stages, but does show that there is potential for a flood protection scheme that offers a benefit cost ratio of 1:1.27. In refreshing this original report Dumfries and Galloway Council will seek to develop the following:

- Options for a flood protection scheme and / or measures that will reduce the risk of flooding.
- Options for short-term improvements, improvements in early warning and recommendations for Community-led resilience that can effectively reduce the impacts of any future significant out-of-channel flow event.

This work will be commenced in 2016/17 and if a flood protection scheme is shown to have a positive benefit cost ratio then design will be undertaken in 2017/18.

The delivery of major capital works is unlikely to be implemented within the first cycle (2016-2022) due to the lack of Scottish Government Grant funding.

3.27.2 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 by each local authority within the LPD for public inspection. Under s.59 of the Act, the local authority 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 each local authority in the LPD are included in Annex 4 of the Plan.

3.27.3 Section 56: General Power to manage flood risk

Without affecting the implementation of actions in this Plan, a local authority 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.

This may include carrying out flood protection works, which may not be identified as actions in the Plan. Where a local authority has a commitment to carry out such flood protection works or any other activities within the period of the current FRM cycle and not included as actions in this Plan, these works are identified in Annex X of the Plan.

4 Annexes

4.1 Annex 1: LPD roles & responsibilities

4.1.1 Roles and responsibilities for flood risk management planning

Individuals are the first line of defence against flooding. However, public bodies have responsibilities too and are working together to reduce the impacts of flooding in Scotland. Responsibility for flood risk management planning falls in the main to SEPA, local authorities and Scottish Water. However, individuals have a personal responsibility to protect themselves and their property.

Some of the key roles are outlined below and more information is available from the SEPA website.

4.1.2 Your responsibilities

Organisations and individuals 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.

The first step to being prepared is signing up to Floodline so you can receive messages to let you know where and when flooding is likely to happen. Other useful tools and advice on how to be prepared are available on the Floodline website including a quick guide to who to contact in the event of a flood. You can also check how your area could be affected by flooding by looking at SEPA's flood maps.

4.1.3 SEPA

SEPA is Scotland's national flood forecasting, flood warning and strategic flood risk management authority. We have a statutory duty to produce Scotland's Flood Risk Management Strategies. As described above, we 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. Natural flood management is the use of the natural features of the land to store and slow down the flow of water.

In running Floodline, we provide live flooding information and advice on how to prepare for or cope with the impacts of flooding 24 hours a day, seven days a week. To help us forecast for flooding we work closely with the Met Office.

To raise awareness of flooding at a national level SEPA runs education initiatives, community engagement programmes and an annual campaign to promote the useful advice and information available through Floodline. We work in partnership with local authorities, Neighbourhood Watch Scotland, Ready Scotland and others to share our resources and help to promote preparedness and understanding of how flood risk is managed.

4.1.4 Local authorities

Local authorities work together for flood risk management planning purposes through a single lead authority which has the responsibility to produce a Local Flood Risk Management Plan. Local authorities have been working collaboratively in the manner described above to develop these.

It is the responsibility of your local authority to implement its flood protection actions agreed within the Flood Risk Management Strategy, including to new schemes or works and the requirement to clearance and repair of watercourses. You can help your local authority to manage flooding by letting them know if debris is blocking watercourses or if flood defences are tampered with.

During severe flooding, local authorities will work with the emergency services and coordinate shelter for people evacuated from their homes.

The lead authority for the Solway Local Plan District is:

- Dumfries and Galloway Council.

Other local authorities who are responsible authorities for the Solway Local Plan District are:

- Scottish Borders Council.
- East Ayrshire Council;

4.1.5 Scottish Water

Scottish Water is a responsible authority for flood risk management and is working closely with SEPA, local authorities and other responsible authorities to coordinate plans to manage flood risk.

Scottish Water is responsible for the drainage of surface water from roofs and paved ground surfaces within a property boundary. Scottish Water can help to protect properties from flooding caused by overflowing or blocked sewers. To find out more about waste water flooding visit the Scottish Water website.

4.1.6 National parks

The two National Park Authorities, Loch Lomond and Trossachs National Park and Cairngorms National Park, were designated as responsible authorities for flood risk management purposes in 2012. Both have worked with SEPA, local authorities and Scottish Water to help develop Flood Risk Management Strategies and Local Flood Risk Management Plans. They also fulfil an important role in land use planning, carrying out or granting permission for activities that can play a key role in managing and reducing flood risk.

Neither National Park is a responsible authority for the Solway Local Plan District.

4.1.7 Other organisations

- The Scottish Government oversees the implementation of the Flood Risk Management (Scotland) Act 2009 which requires the production of Flood Risk Management Strategies and Local Flood Risk Management Plans. Scottish Ministers are responsible for setting the policy framework for how organisations collectively manage flooding in Scotland. Scottish Government has also approved this Flood Risk Management Strategy.
- Scottish Natural Heritage has provided general and local advice in the development of this Flood Risk Management Strategies. Flooding is seen as natural process that can maintain the features of interest at many designated sites, so Scottish Natural Heritage helps to ensure that any changes to patterns of flooding do not adversely affect the environment. Scottish Natural Heritage also provides advice on the impact of Flood Protection Schemes and other land use development on designated sites and species.
- Forestry Commission Scotland was designated in 2012 as a responsible authority for flood risk management planning purposes and has engaged in the development of the Flood Risk Management Strategies through national and local advisory groups. This reflects the widely held view that forestry can play a significant role in managing flooding.
- During the preparation of the first flood risk management plans Network Rail and Transport Scotland have undertaken works to address flooding at a number of frequently flooded sites. Further engagement is planned with SEPA and local authorities to identify areas of future work. There is the opportunity for further works to be undertaken during the first flood risk management planning cycle although locations for these works are yet to be confirmed.
- Utility companies have undertaken site specific flood risk studies for their primary assets and have management plans in place to mitigate the effects of flooding to their assets and also minimise the impacts on customers.
- The Met Office provides a wide range of forecasts and weather warnings. SEPA and the Met Office work together through the Scottish Flood Forecasting Service.
- The emergency services provide emergency relief when flooding occurs and can coordinate evacuations. You should call the emergency services on 999 if you are concerned about your safety or the safety of others and act immediately on any advice provided.
- Historic Environment Scotland considers flooding as part of their regular site assessments. As such, flooding is considered as one of the many factors which inform the development and delivery of its management and maintenance programmes.
- The Scottish Flood Forum is a Scottish charitable organisation that provides support for those who are

affected by, or are at risk of, flooding. It provides flood advice, information, awareness, education and training to individuals and communities to help reduce the risk of flooding; in partnership with the local authority, provides support during the recovery process following a flood incident and aims to support the development of resilient communities.

4.2 Annex 2: Consultation and engagement

From 22 December 2014 a national consultation on the current state of knowledge of flood risk across Scotland and what the potential solutions may be, was undertaken with the public on the work carried out to develop draft Flood Risk Management Strategies.

The consultation was run jointly between SEPA and local authorities and involved the publication of draft information that is contained in the strategies and local plans. The consultation was carried out in 2 phases:

- Phase 1 commenced on 22 December 2014 and initially provided a summary of the main sources and impacts of flooding.
- Phase 2 commenced on 2 March 2015 when the proposed initial objectives to manage the identified flood risk were made available alongside a short list of potential measures, as well as information on the draft local flood risk management plans.

There was an opportunity for all to comment on the all the information provided between 2 March and 2 June 2015 through an on-line system – Citizen Space. To augment this, paper copies of the draft Implementation Plan for the Solway Local Plan District were provided at eight locations across Dumfries and Galloway and officers attended drop-in sessions offering public the opportunity to discuss proposals and assist in completing on-line feedback. Along with feedback directly from the public, all Elected Members of Dumfries and Galloway Council were consulted through the Area Committee process in September and October 2014. Feedback from both was used to help form the final Flood Risk Management Strategy and Local Flood Risk Management Plan for the Solway Local Plan District. The final Flood Risk Management Strategies for the 14 LPDs were approved by the Scottish Government and published by SEPA in December 2015. Further information is also available on SEPA's web site here -

<http://apps.sepa.org.uk/FRMStrategies/>

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

4.3.1 S18 Schedule of Clearance and Repair

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

Local Authority Method of public access to the S18 Schedule:

- Dumfries and Galloway Council – <http://www.dumgal.gov.uk/index.aspx?articleid=8938>
- East Ayrshire Council – <http://www.ayrshireroadsalliance.org/Adverse-road-conditions/Flooding.aspx>
- Scottish Borders Council - <http://www.scotborders.gov.uk/info/1228/emergencies-flooding>

4.4 Annex 4: Supporting information

The following information has been extracted from the Solway Flood Risk Management Strategy

4.4.1 Sources of flooding described in this strategy

The Flood Risk Management Strategy addresses the risk of flooding from rivers, the coast and surface water. The risk of flooding from rivers is usually due to rainfall causing a river to rise above bank level spreading out and inundating adjacent areas. Coastal flooding is where the risk is from the sea. Sea levels can change in response to tidal cycles or atmospheric conditions. Over the longer term sea levels and coastal flood risk may change due to climate change. Surface water flooding happens 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. There can be interactions between these sources of flooding, but for the purposes of this strategy they are dealt with independently.

The following aspects of flooding have not been incorporated into the FRM Strategy:

- **Groundwater** is generally a contributing factor to flooding rather than the primary source. It is caused by water rising up from underlying rocks or flowing from springs.
- **Reservoir breaches** have been assessed under separate legislation (Reservoirs (Scotland) Act 2011). Further information and maps can be found on SEPA’s website.
- The Flood Risk Management (Scotland) Act 2009 does not require SEPA or responsible authorities to assess or manage **coastal erosion**. However, SEPA has included consideration of erosion in the Flood Risk Management Strategies by identifying areas that are likely to be susceptible to erosion and where erosion can exacerbate flood risk. As part of considering where actions might deliver multiple benefits, we have looked to see where the focus of coastal flood risk management studies coincides with areas of high susceptibility to coastal erosion. Subsequent detailed studies and scheme design will need to consider coastal erosion in these areas.
- **Coastal flood modelling.** The information on coastal flooding used to set objectives and identify actions is based on SEPA modelling using simplified coastal processes and flooding mechanisms at work during a storm. Wave overtopping cannot be accurately modelled at a national scale due to the importance of local factors such as prevailing wind conditions, the depth and profile of the near-shore sea bed or the influence of any existing defences or management structures. As a result, coastal flood risk may be underestimated in some areas. Conversely, in locations with wide and flat floodplains, the modelling may overestimate flood risk. To address this, in a number of locations where more detailed local models were available they have been incorporated into the development of the Flood Risk Management Strategies. Where wave overtopping has been specifically identified as a concern – but where no further detailed modelling is available – particular compensation has been made in the selecting actions to address coastal flood risk.

Commonly used terms

Below are explanatory notes for commonly used terms in the FRM Strategy. A glossary of terms is also available in Section 5 Glossary.

- **Reference to flood risk.** During the development of the FRM Strategy flood risk has been assessed over a range of likelihoods. For consistency in reporting information within the strategies, unless otherwise stated, all references to properties or other receptors being ‘at risk of flooding’ refer to a medium likelihood flood (up to a 1 in 200 chance of flooding in any given year). By exception, references will be made to high or low risk flooding, which should be taken to mean a 1 in 10 chance/likelihood or 1 in 1000 chance/likelihood of flooding in any given year respectively.

Chance / likelihood of flooding	
High	1 in 10 year
Medium	1 in 200 year
Low	1 in 1000 year

- **Annual Average Damages** have been used to assess the potential economic impact of flooding within an area. Depending on its size or severity each flood will cause a different amount of damage to a given area. Annual Average Damages are the theoretical average economic damages caused by flooding when considered over a very long period of time. It does not mean that damage will occur every year: in many years there will be no damages, in some years minor damages and in a few years major damages may occur. High likelihood events, which occur more regularly, contribute proportionally more to Annual Average Damages than rarer events. Within the Flood Risk Management Strategies Annual Average Damages incorporate economic damages to the following receptors: residential properties, non-residential properties, vehicles, emergency services, agriculture and roads. They have been calculated based on the principles set out in the Flood Hazard Research Centre Multi-Coloured Handbook (2010).

- **History of flooding.** The history of flooding sections of this document report floods that have occurred up to July 2015.

4.4.2 Flood risk management planning process

Flood risk management in Scotland aims to manage flooding in a sustainable way. Sustainable flood risk management considers where floods are likely to occur in the future and takes action to reduce their impact without moving the problem elsewhere. It considers all sources of flooding, whether from rivers, the sea or from surface water. It delivers actions that will meet the needs of present and future generations whilst also protecting and enhancing the environment.

The sustainable approach to managing flood risk works on a six year planning cycle, progressing through the key stages outlined below.

Identifying priority areas at significant flood risk

The first step to delivering a risk-based, sustainable and plan-led approach to flood risk management was SEPA's **National Flood Risk Assessment**, which was published in 2011. The assessment considered the likelihood of flooding from rivers, groundwater and the sea, as well as flooding caused when heavy rainfall is unable to enter drainage systems or the river network. The likelihood of flooding was examined alongside the estimated impact on people, the economy, cultural heritage and the environment. It significantly improved our understanding of the causes and consequences of flooding, and identified areas most vulnerable to floods.

Based on the National Flood Risk Assessment, SEPA identified areas where flooding was considered to be nationally significant. These areas are based on catchment units as it is within the context of the wider catchment that flooding can be best understood and managed. These nationally significant catchments are referred to as **Potentially Vulnerable Areas**. In Scotland, 243 Potentially Vulnerable Areas were identified. They are estimated to contain 92% of the total number of properties at risk.

A small number of Candidate Potentially Vulnerable Areas were identified after the National Flood Risk Assessment in light of new information that warranted further assessment and appraisal. They are included in the flood risk management planning process. The National Flood Risk Assessment will be updated to inform each subsequent planning cycle.

Improving the understanding of flooding

SEPA developed **flood hazard and flood risk maps** between 2012 and 2014. These maps improved our understanding of flooding and helped inform the subsequent selection of actions to manage flood risk in Potentially Vulnerable Areas. The flood hazard maps show information such as the extent of flooding, water level, as well as depth and velocity where appropriate. The flood risk maps provide detail on the impacts on people, the economy, cultural heritage and the environment.

In 2012 SEPA also developed an **assessment of the potential for natural flood management**. The assessment produced the first national source of information on where natural flood management actions would be most effective within Scotland.

Flood hazard and flood risk maps and the assessment of the potential for natural flood management can be viewed on the SEPA website www.sepa.org.uk.

Identifying objectives and selecting actions

The objectives and actions to manage flooding will provide the long-term vision and practical steps for delivering flood risk management in Scotland.

Working collaboratively with local partnerships, SEPA has agreed the objectives for addressing the main flooding impacts. Actions that could deliver these agreed objectives have been appraised for their costs and benefits to ensure the right combinations are identified and prioritised. The actions considered in the development of this strategy include structural actions (such as building floodwalls, restoring flood plains, or clearance and repair works to rivers) and non-structural actions (such as flood warning, land use planning or improving our emergency response). Structural and non-structural actions should be used together to manage flood risk effectively.

An assessment of the potential for natural flood management was used to help identify opportunities for using the land and coast to slow down and store water. Natural flood management actions were recommended in areas where they could contribute to the management of flood risk. In such instances these actions were put forward as part of flood protection or natural flood management studies.

Local Government and Communities Directorate
 Planning and Architecture Division

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 D: 12 February 2016

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 1 Longcraig Road
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 EH30 9TD



01146 Screening - Dumfries and Galloway Council - Solway Local Flood Risk Management Plan

Dear Alice,

With reference to the Screening document you submitted on 21 January 2016.

The Consultation Authorities have now considered your screening request as per **Section 9(3) of the Environmental Assessment (Scotland) Act 2005**. For convenience I have set out, in the table below, their individual views on whether there is a likelihood of significant environmental effects.

Please note, these are the views and opinions of the Consultation Authorities on the likelihood of significant environmental effects arising from the plan or programme and not a judgement on whether an SEA is required. It is therefore for the Responsible Authority to determine whether an SEA is required in the circumstances. I have attached the individual letters from the Consultation Authorities, outlining their views and opinions. Where possible the Consultation Authorities may have offered supplementary information and/or advice for you to consider, which you should find helpful.

CONSULTATION AUTHORITY	LIKELIHOOD OF SIGNIFICANT ENVIRONMENTAL EFFECTS
Historic Environment Scotland	No
Scottish Environment Protection Agency	No
Scottish Natural Heritage	No
OVERALL VIEW ON LIKELIHOOD OF SIGNIFICANT ENVIRONMENTAL EFFECTS	No

As the Consultation Authorities have now notified you of their views, you should now refer to the 2005 Act to consider your next step. You should of course take into account the advice offered by the Consultation Authorities.

You should note, as per Section 10 of the 2005 Act, within 28 days of your determination about whether an SEA is required or not, a copy of the determination and any related

statement of reasons must be passed to the Consultation Authorities. This may be done via the SEA Gateway.

If you have any queries or would like me to clarify any points, please call me on 0131 244 7650.

Yours sincerely

Johnathan Whittlestone
SEA Gateway Officer

4.6 Annex 6: Acknowledgements

The information described in this Annex relates to the Figures and Maps that have been generated by SEPA and have been reproduced in this Local Flood Risk

Management Plan from the Solway Flood Risk Management Strategy. The Solway 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

Lead authorities acknowledge the provision of flood models and other supporting data and information from local authorities in Scotland and their collaboration in the production of flood risk management information.

Scottish Water

Local authorities acknowledge the inclusion of surface water flooding data generated by Scottish Water in preparation of flood risk information.

4.7 Annex 7 – Compliance with Section 34 of the Flood Risk Management (Scotland) Act 2009

The Solway LPD LFRMP has been produced in conjunction with the Responsible Authorities. Section 34 of the Flood Risk Management (Scotland) Act 2009 sets out that the lead local authority shall prepare Local Flood Risk Management Plan and describes the requirements. It places duties upon lead local authorities, other responsible authorities and SEPA to agree the these plans, and in agreeing to these plans they must agree not only their actions contained in the plans, but that the plans comply with Section 34 and Schedule 1. Table 4 was provided by Dumfries and Galloway Council to assist each responsible authority with providing their agreement to the Plan.

Clause of Section 34	Detail on how Clause has been met
S34(1)	The Solway Local Flood Risk Management Plan ('the Plan') was prepared by Dumfries and Galloway Council – designated lead local authority for this LPD.
S34(2a & 2b)	The Plan does not identify the supplemental and implementation part separately, but both are integral to the Plan.
S34(3a)	The Plan includes (within Sections 2 & 3) a summary and description of the objectives (for the LPD and PVA's); the measures and 'other information' (where relevant) to paras 1 to 3 of Schedule 1
S34(3bi, ii & iii)	The Plan includes (within Sections 2 & 3) maps and other information where objectives, measures or other information may alter (including enhance) or restore natural features and characteristics. It also includes any 'further information' the lead authority considers relevant to flood risk management within the LPD.
S34(3ci)	The Plan includes (within Section 1.3 and 4.2) a summary of the steps (1 to 6) of S35, describing the public consultation of the draft Flood Risk Management Strategy for the LPD.
S34(3cii&3ciii)	The Plan includes (within Section 4.2) details of other consultation activities carried out by the lead authority in the preparation of the Plan and any changes to it as a result.
S34(4ai & 4aii)	The Plan includes (within Sections 2 & 3) a description and timetable of how/ when measures (actions) are to be implemented (for measures yet to be commenced) and completed (for existing measures)
S34(4bi & 4bii)	The Plan includes (within Sections 2 & 3) a description of who is responsible for implementing the measure and arrangements for funding the measure
S34(4ci & 4cii) & 4d	The Plan includes (within Sections 2 & 3) a description of how the functions of those identified under S34b will coordinate the implementation of the measures, and specifically, any that may relate to the alteration of (including enhancement) or restoration of natural features and characteristics and surface water run off or urban drainage, and other information the lead authority considers relevant to the implementation of the proposed measure.
S34(5)	The Plan contains, within Section 3.27, other flood risk management activities by local authorities in the Solway Local Plan District that are outwith PVAs
S34(6)	Scottish Ministers have made no further specifications by regulation for inclusion in the Plan
S34(7)	See S34(6)
S34(8)	The Plan has been developed from the Flood Risk Management Strategy for the Solway Local Plan District and is consistent with it.

S34(9-11)	These clauses are descriptive and have no requirements to be satisfied.
Paragraph of Schedule 1	Detail on how paragraph has been met
Para 1(a)	The Plan includes (within Section 3) a description of the objectives set by SEPA for management of the flood risks within each PVA
Para 1(b)	The Plan includes (within Section 3) a description of the measures identified for achieving the objectives
Para 1(ci-ciii)	The Plan includes (within Section 3) a detailed timetable for each measure (including anticipated start and end date), indicating when the measure will be implemented in relation to the 6 year cycle, and review dates as specified in the Act.
Para 2	The Plan includes (within Section 2) a map of the Local Plan District Area and the Potentially Vulnerable Areas as concluded from the National Flood Risk Assessment 2011.
Para 3	The Plan includes within Section 2.1.1 a description on the development of the flood hazard and risk maps (prepared under Section 21 of the Act) and provides links to the where these can be viewed on the SEPA website. The conclusions drawn from the maps are presented in the form of graphs and maps detailing annual average damages within Section 2.2 and within Chapter 3 for each of the 26 Potentially Vulnerable Areas.

Table 4 – details on compliance of Solway LPD LFRMP with Section 34 and Schedule 1 of the Flood Risk Management (Scotland) Act 2009

5 Glossary

Term	Definition
Accretion	Accumulation of sediment.
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.
Annual Average Damages (AAD)	Depending on its size or severity each flood will cause a different amount of damage to a given area. Annual Average Damages are the theoretical average economic damages caused by flooding when considered over a very long period of time. It does not mean that damage will occur every year: in many years there will be no damages, in some years minor damages and in a few years major damages may occur. High likelihood events, which occur more regularly, contribute proportionally more to AADs than rarer events. Within the Flood Risk Management Strategies AADs incorporate economic damages to the following receptors: residential properties, non-residential properties, vehicles, emergency services, agriculture and roads. They have been calculated based on the principles set out in the Flood Hazard Research Centre Multi-Coloured Handbook (2010).
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.
Appraisal baseline	Defines the existing level of flood risk under the current flood risk management regime.
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.
Bathing waters	Bathing waters are classed as protected areas under Annex IV of the Water Framework Directive (WFD). There are 84 designated bathing waters in Scotland ⁱ .
Benefit cost ratio (BCR)	A benefit cost ratio summarises the overall value for money of an action or project. It is expressed as the ratio of benefits to costs (both expressed as present value monetary values). A ratio of greater than 1:1 indicates that the economic benefits associated with an action are greater than the economic costs of implementation; therefore this is taken as the threshold of economic viability. It should be acknowledged that it is not always possible to accurately estimate economic values for all elements of benefit, and BCR is just one a number of techniques used in appraisal.
Blue infrastructure	Blue infrastructure is often complementary to 'green infrastructure' and includes sustainable drainage systems, swales (shallow, broad and vegetated channels designed to store and/or convey runoff and remove pollutants ⁱⁱ), wetlands, rivers, canals (and their banks) and other watercourses ⁱⁱⁱ .
Candidate Potentially Vulnerable Area (PVAc)	Candidate PVAs are those areas identified after the National Flood Risk Assessment (2011), as a result of new information, where the impact of flooding is potentially sufficient to justify further assessment and appraisal. They will be considered for inclusion as new PVAs in the next flood risk management planning cycle.
Catchment	All the land drained by a river and its tributaries.

Term	Definition
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 ^{iv} .
Channel improvement	Where work has been carried out on a river channel allowing an increase in the volume of water it can carry.
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, Coastguard, Mountain Rescue) 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.
Confluence	Where two or more rivers meet.
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.

Term	Definition
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'
Demountable defences	A temporary flood barrier is one that is only installed when the need arises, that is, when flooding is forecast. A demountable flood defence is a particular type of temporary defence that requires built-in parts and therefore can only be deployed in one specific location ^v .
Deposition	A natural process leading to an accumulation of sediment on a river bed, floodplain or coastline.
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).
Episodic erosion	Erosion induced by a single event, such as a storm.
Erosion	A natural process leading to the removal of sediment from a river bed, bank or floodplain or coastline.
Estuarine surge attenuation	A reduction in the wave energy caused by storm surge. Breakwaters (barriers built out into the sea to protect a coast or harbour from the force of waves) or habitats such as saltmarsh can slow down and reduce the inland impact of storm surges (the rising of the sea due to wind and atmospheric pressure changes associated with storms), thereby reducing coastal flood risk.
Estuary	A coastal body of water usually found where a river meets the sea; the part of the river that is affected by tides.
Fault (fault line)	A break or fracture in the earth's crust as a result of the displacement of one side with respect to the other. In Scotland the Great Glen Fault is a major geological fault line cutting diagonally across the Highlands from Fort William to Inverness.

Term	Definition
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.
Flashy watercourse	A 'flashy' river or watercourse has a short lag time (the delay between peak rainfall intensity and peak river discharge), high peak discharge, and quickly returns to average flow. Rivers with these characteristics can be prone to flooding and leave 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.

Term	Definition
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 first planning cycle is 2015 – 2021. The first delivery cycle is lagged by approximately 6 months and is from 2016 -2022.
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 Flood Risk Management Strategies, developed by SEPA, and Local Flood Risk Management Plans produced by lead local authorities.
Flood Risk Management Strategy (FRM Strategy)	Sets out a 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 ^{vi} .
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 ^{vii} .
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.
Floodplain storage	Floodplains naturally store water during high flows. Storage can be increased through natural or man-made features to increase flood depth or slow flows in order to reduce flooding elsewhere.
Gabion	A metal cage filled with rocks often used in river bank protection.

Term	Definition
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.” See also ‘blue infrastructure’ ^{viii} .
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.
Integrated catchment study (ICS)	In urban areas, the causes of flooding are complex because of the interactions between rivers, surface water drainage and combined sewer systems and tidal waters. Scottish Water works with SEPA and local authorities to assess these interactions through detailed studies.
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 Nature Reserve (LNR)	A Local Nature Reserve is a protected area of land designated by a local authority because of its local special natural interest and / or educational value. Local authorities select and designate local nature reserves using their powers under the National Parks and Access to the Countryside Act 1949 ^{ix} .
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.
Montane habitat	This habitat encompasses a range of natural or near-natural vegetation occurring in the montane zone, lying above or beyond the natural tree-line.
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.

Term	Definition
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 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.
Property level protection scheme	Some responsible authorities may have a formal scheme to provide, install and maintain property level protection for properties.
Quality and Standards (Q&S)	The process governing costs and outputs, through which the planning and delivery of improvements to the public drinking water and sewerage services in Scotland is carried out.
Ramsar sites	Ramsar sites are wetlands of international importance designated under the Ramsar Convention.
Receptor	Refers to the entity that may be impacted by flooding (a person, property, infrastructure or habitat). The vulnerability of a receptor can be reduced by increasing its resilience to flooding.
Residual risk	The risk that remains after risk management and mitigation. This may include risk due to very severe (above design standard) storms or risks from unforeseen hazards.
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)
Revetment	Sloping structures placed on banks or at the foot of cliffs in such a way as to deflect the energy of incoming water.
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.

Term	Definition
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.
Runoff reduction	Actions within a catchment or sub-catchment to reduce the amount of runoff during rainfall events. This can include intercepting rainfall, storing water, diverting flows or encouraging infiltration.
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.
Sediment balance	Within a river where erosion and deposition processes are equal over the medium to long-term resulting in channel dimensions (width, depth, slope) that are relatively stable.
Sediment management	Sediment management covers a wide range of activities that includes anything from the small scale removal of dry gravels to the dredging of whole river channels and the reintroduction of removed sediment into the water environment. Historically, sediment management has been carried out for several reasons, including reducing flood risk, reducing bank erosion, for use as aggregate and to improve land drainage.
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 ^x .
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 ^{xi} .
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 ^{xii} .
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.

Term	Definition
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 ^{xiii}
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, Integrated Catchment Studies 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 (UKCP09)	The leading source of climate change information for the UK. 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. See Annex 1 of the UKCP09 Climate change projections report for details ^{xiv} .
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.

ⁱ <http://apps.sepa.org.uk/bathingwaters/> accessed 14/10/2015 last updated 2015

ⁱⁱ <http://www.susdrain.org/delivering-suds/using-suds/suds-components/swales-and-conveyance-channels/swales.html> accessed 12/10/2015 last updated 2012

ⁱⁱⁱ <http://www.gov.scot/Resource/Doc/362219/0122541.pdf> accessed 12/10/2015 last updated 2011

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- ^{iv} <http://www.legislation.gov.uk/ukpga/2004/36/schedule/1> accessed 12/10/2015 last updated 2004
- ^v <http://evidence.environment-agency.gov.uk/FCERM/en/FluvialDesignGuide/Chapter9.aspx?pagenum=10> accessed 12/10/2015 last update 07/03/2012
- ^{vi} <http://www.sepa.org.uk/environment/water/flooding/faqs/>
- ^{vii} http://ec.europa.eu/environment/water/flood_risk/ accessed 12/10/2015 last updated 17/09/2015
- ^{viii} <http://www.gov.scot/Resource/Doc/362219/0122541.pdf> accessed 12/10/2015 last updated 2011
- ^{ix} <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/local-designations/lnr/> accessed 12/10/2015 last updated 12/07/2015
- ^x <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/sssisi/> accessed 12/10/2015 last updated 21/01/2015
- ^{xi} <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/sac/> accessed 12/10/2015 last updated 01/03/2013
- ^{xii} <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/spa/> accessed 12/10/2015 last updated 01/03/2013
- ^{xiii} <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfs#wx=357683&y=355134&scale=2> accessed 12/10/2015 last updated 12/10/2015
- ^{xiv} <http://ukclimateprojections.metoffice.gov.uk> Document © Crown copyright 2009 accessed 01/12/15 last updated 30/04/2012