Flood Risk Management Strategy

Findhorn, Nairn and Speyside

SEPA

Scottish Environment Protection Agency

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Foreword

Flooding can affect us all. The risk of flooding and its impacts can't be removed entirely from our lives but it can be managed. This strategy takes our knowledge and understanding of flooding and turns it into a set of actions that are planned, prioritised and co-ordinated to tackle flooding in the areas where it affects us the most.

Approximately 1,800 residential and 580 non-residential properties are at risk of flooding in the Findhorn, Nairn and Speyside Local Plan District. Rothes, Nairn, Forres and Elgin are just some of the areas where the greatest impacts of flooding can be found. The annual damages across the region are estimated to be £5.9 million, largely from river flooding. Across Scotland we now estimate 108,000 properties to be at risk, with the expected annual flood damage being in the region of £252 million.

We can expect these numbers to increase. Changes to the climate, how we live and how we use the land bring more and more people and property into flood risk.

Although the risk of flooding will never be removed entirely, this strategy describes the ambition for managing flooding and the priorities for action. A Local Flood Risk Management Plan co-ordinated by The Moray Council provides additional detail on the responsibility for delivery, funding and coordination of actions across the Local Plan District. Taken together, these documents describe the commitment of public bodies to address flooding.

This Flood Risk Management Strategy is published by SEPA and has been approved by Scottish Ministers. It has been produced with the support and collaboration of The Moray Council, The Highland Council, Scottish Water and others with an interest in flood management. SEPA took account of the views received through two public consultations carried out during the development of the strategy and its supporting information.

How we plan for and manage our flood risk has far reaching consequences for Scotland's communities. As well as targeting action and resources in the areas where they can achieve most, the strategies also help to increase awareness of flood risk and improve understanding of how it can affect us.

Terry A'Hearn

Chief Executive Officer
SEPA

Flood Risk Management Strategy

Findhorn, Nairn and Speyside Local Plan District

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Section 1: Flood risk management in Scotland

Findhorn, Nairn and Speyside Local Plan District

1 Flood risk management in Scotland

1.1 What is a Flood Risk Management Strategy?

Flood Risk Management Strategies have been developed to reduce the devastating and costly impact of flooding in Scotland. They coordinate 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 strategies concentrate the work of these organisations to where the risk of flooding and benefits of investment are greatest.

By publishing these strategies, we are giving individuals, communities and businesses the information to better manage their own responsibilities. Everyone can take action with the confidence of knowing what others are doing and when they are doing it.

Flood Risk Management Strategies set out the short to long term ambition for flood risk management in Scotland. The strategies state the objectives, as agreed by responsible authorities, for tackling floods in high risk areas. Actions that will then deliver these objectives are described and prioritised in six-year planning cycles. The decisions are based on the best evidence available on the causes and consequences of flooding. Through this risk-based and plan-led approach, flood management will improve for individuals, communities and businesses at risk in Scotland.

Each strategy should be read alongside its Local Flood Risk Management Plan. The Local Flood Risk Management Plans have been developed by local authorities and provide additional local detail on the funding and delivery timetable for actions between 2016 and 2021. The publication date of the Local Flood Risk Management Plans is June 2016. Both the Flood Risk Management Strategy and Local Flood Risk Management Plan will be updated every six years.

These Flood Risk Management Strategies are approved by Scottish Ministers and published by SEPA, Scotland's strategic flood risk management authority. They have been prepared in collaboration with all 32 local authorities, Scottish Water and other organisations with a responsibility or interest in managing flooding. They are required under the Flood Risk Management (Scotland) Act 2009 and the European Commission's Floods Directive. The actions proposed to manage flood risk in high risk areas have been developed using the best available information at the time. The number of actions that are actually delivered over the six years set out in the strategy will depend on a number of factors including funding availability, and community engagement issues such as potential objections to a particular flood protection scheme.

1.2 How to read this Strategy

Each Flood Risk Management Strategy has three sections:

Section 1 contains background information on the approach taken in Scotland to manage flooding. It explains the duties and aims of organisations involved in tackling flooding, including how they work together and how flood risk management planning is linked to other government policies and initiatives.

Section 2 is the most important section for those individuals and communities seeking to understand their flood risk and its management. For priority areas (called Potentially Vulnerable Areas) there is a short description of the causes and consequences of flooding. The agreed objectives are clearly set out. And, most importantly, the actions that will deliver these objectives are prioritised and described. Section 3 includes supporting information on the sources of flooding in wider river catchments and coastal areas. A glossary is also provided.

1.3 Managing flooding in Scotland

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.

Climate change and future flood risk

The UK Climate Projections (UKCP09) report predicts that climate change may lead to warmer and drier summers, warmer and wetter winters with less snow, and more extreme temperature and rainfall events. The predicted increase in rainfall is expected to variably increase the potential for river and surface water flooding, and similarly, there is expected to be a rise in sea levels that will vary around the coastline.

The predicted increases in flood risk described in Section 3 are solely based on the impact of a changing climate on the magnitude of flooding; they do not take into account any potential increase due to population change, development pressures or urban creep, nor do they take into account any mitigation as a result of actions contained in this or future Flood Risk Management Strategies.

Flood Risk Management Strategies and Local Flood Risk Management Plans

For flood risk management purposes, Scotland has been divided into 14 **Local Plan Districts**. Each Local Plan District will have a set of complementary plans: Flood Risk Management Strategies produced by SEPA, and Local Flood Risk Management Plans produced by a lead local authority. Flood Risk Management Strategies and Local Flood Risk Management Plans aim to make a strong and lasting contribution to sustainable flood risk management, and will be at the heart of efforts to tackle flooding in Scotland. They will help to target and maximise the benefit of public investment.

1.4 How the Flood Risk Management Strategy was developed

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 cuts across the responsibilities of organisations such as SEPA, Scottish Water and emergency responders. To be successful, flood management requires coordination among organisations as set out in this strategy. A willingness to collaborate by those responsible for flood management is essential.

This strategy has been developed in partnership by:

- The Highland Council and The Moray Council (lead local authority);
- Cairngorms National Park;
- Scottish Water; and,
- SEPA.

These organisations 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, Scottish Water and the Cairngorms National Park have made sure that local knowledge and expertise has informed the decision-making.

Consultation, engagement and advice

SEPA has 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. SEPA held two public consultations during the development of the Flood Risk Management Strategies. The first was on the general approach to flood risk management planning and the identification of priority areas (2011); the second, held jointly with local authorities, was on the understanding of flooding in these priority areas and on the objectives and actions to manage flooding (2015).

Further advice has been sought from relevant organisations at key stages. The strategies have benefited from Local Advisory Groups, providing important community and area-based knowledge on both the causes and consequences of flooding and on the appropriate actions for future management. Local Advisory Groups have been especially helpful in considering flood risk management planning in the context of wider plans and initiatives. The North East Local Advisory Group includes representatives from a range of sectors, including government agencies, National Park Authorities, local authorities, non-government organisations, utility companies and land and asset managers.

In producing the Flood Risk Management Strategy, SEPA has also taken advice from a National Flood Management Advisory Group. Over 50 member organisations, reflecting the national importance and impact of flooding on our communities, economy, environment and cultural heritage, have been invited at key stages to provide comment and input.

Some of the work carried out by SEPA has been complex and technical in nature for which we have sought professional advice. Through membership of the Scottish Advisory and Implementation Forum for Flooding (SAIFF), we have received assistance from local authorities, Scottish Water, Forestry Commission Scotland, the National Park Authorities and other key interested organisations. We have also developed some of our methods by working with other organisations with similar responsibilities within the UK and Europe. We have specifically worked with the Environment Agency and English local authorities in the cross border areas.

SEPA's chief statutory function in flood risk management planning is to prioritise future actions across Scotland. To do this, SEPA made a technical, risk-based assessment of the costs and impacts of actions. This independent assessment was used alongside information from partner organisations to jointly agree priorities and identify indicative delivery dates for actions. A National Prioritisation Advisory Group, with representatives from the Scottish Government, COSLA, Scottish Water and local authorities, 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.

Strategic Environmental Assessment and Habitats Regulation Appraisal

SEPA undertook a strategic environmental assessment to assess the significant environmental effects of the Flood Risk Management Strategies. Our assessment was published in an environmental report, and we consulted the public on our findings. We have published a post-adoption statement, which describes how we have taken account of the environmental assessment and the consultation responses, and how we will monitor any significant environmental effects of the Flood Risk Management Strategies.

We also undertook a Habitats Regulations Appraisal to ensure that the Flood Risk Management Strategies will not adversely affect the integrity of Special Areas of Conservation and Special Protection Areas. We consulted Scottish Natural Heritage and Natural England on our appraisal method and took their views into account. We have applied mitigation measures where required.

1.5 Roles and responsibilities for flood risk management planning

Individuals have a personal responsibility to protect themselves and their property from flooding. However, public bodies have responsibilities too and are working together to reduce the impacts of flooding in Scotland. Responsibility for flood risk management planning falls primarily to SEPA, local authorities and Scottish Water. Some of the key roles are outlined below and more information is available from the SEPA website.

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. For more information visit: www.floodlinescotland.org.uk. You can also check how your area could be affected by flooding by looking at SEPA's flood maps.

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 uses the natural features of the land to store and slow down the flow of water.

In running Floodline, we provide direct warnings, 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 in partnership with the Met Office through the Scottish Flood Forecasting Service. SEPA has piloted surface water flood forecasting to help urban areas improve their resilience to and preparedness for flooding. The development and wider roll-out of this service is being considered alongside the technical, resource and communication challenges associated with providing surface water flooding guidance.

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.

Local authorities and lead local authorities

Local authorities work together for flood risk management planning purposes through a lead local authority. The lead local authority must perform several important functions over and above the general flood-related duties and powers given to local authorities. Most significantly, the lead local authority, having contributed with other local authorities to the production of the Flood Risk Management Strategy, must prepare a Local Flood Risk Management Plan. Although the lead local authority is responsible for the production of the plan, its content will be drawn from and agreed by all relevant local authorities, other responsible authorities and SEPA. Local authorities have been working collaboratively in the manner described above to develop these Local Flood Risk Management Plans.

It is the responsibility of your local authority to implement its flood protection actions agreed within the Flood Risk Management Strategy, including new schemes or engineering works and their statutory requirements to monitor, clear and maintain watercourses. You can help your local authority to manage flooding by letting them know if debris is blocking watercourses or if flood defences have been tampered with.

During severe flooding, local authorities will work with the emergency services and coordinate shelter for people evacuated from their homes.

Scottish Water

Scottish Water is a responsible authority for flood risk management and is working closely with SEPA, local authorities and others to coordinate plans to manage flood risk.

Scottish Water has the public drainage duty and is responsible for 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.

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.

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 Ministers have also approved this Flood Risk Management Strategy.

- **Scottish Natural Heritage** has provided general and local advice in the development of this Flood Risk Management Strategy. Flooding is seen as natural process that can maintain the features of interest at many designated environmental sites, so Scottish Natural Heritage helps to ensure that any changes to patterns of flooding do not adversely affect the natural environment. Scottish Natural Heritage also provides advice on the impacts 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 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 scientific support, forecasts and weather warnings. SEPA and the Met Office work together through our partnership the Scottish Flood Forecasting Service.

- The **emergency services** provide emergency support 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 its regular assessments of historic sites. As such, flooding is considered as one of the many factors which inform the development and delivery of its management and maintenance programmes.

1.6 Links with other plans and policies

River basin management planning

River basin management aims to protect and improve the condition of our rivers, lochs, estuaries and coastal waters. Taking action to reduce flood risk in Scotland provides 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 has 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 plans.

Land use and spatial planning

Land use planning decisions are one of the most powerful tools available to manage flood risk. The alignment of flood risk management and land use planning policy is pivotal to achieving sustainable flood risk management. Decisions relating to flood risk management can have significant implications for the location of development and, likewise, decisions relating to the location of development can impact on flood risk. Land use planning has the potential to contribute to sustainable flood risk management through the location, use and design of new development and the redevelopment of existing areas. Actions that deliver national level land use planning policies are summarised in Annex 2.

SEPA is a statutory consultee providing advice on planning applications with regards to flood risk. Guidance aims to minimise flood risk to development and ensure no adverse effects occur elsewhere.

Land use planning objectives and actions have been agreed with responsible authorities, which will ensure that flood risk is adequately taken into account throughout the planning process.

Emergency planning and response

Emergency plans are prepared under the Civil Contingencies Act 2004. They are in place across Scotland and are prepared by Category 1 and 2 Responders, such as Police Scotland and the Scottish Ambulance Service. Emergency plans ensure the effective management of response to emergencies. Emergency plans can either be generic and deal with all emergencies or specific to deal with, for example, flooding. The information contained in the Flood Risk Management Strategies can be used to inform wider emergency response plans for flooding.

Many organisations have specific roles and responsibilities during an emergency response to a flood for example, local authorities, the Scottish Fire and Rescue Services, Police Scotland and SEPA. In many cases, this response is augmented by the work of voluntary organisations, communities and individuals. During an

emergency, the response by these agencies will be co-ordinated through regional and local resilience partnerships.

Scottish Water investment plans

There is a close relationship between Flood Risk Management Strategies and Scottish Water's investment plans. Sewer flooding is not considered in detail in this strategy although it remains a high priority for Scottish Water and its customers. Scottish Water's close involvement in flood risk management planning aims to ensure that there is strong coordination between the management of sewer and surface water flooding and the actions to be taken forward by local authorities.

1.7 Supporting information

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 this 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 this strategy. A glossary of terms is also available.

- **Reference to flood risk.** During the development of this 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.

1.8 Next steps and monitoring progress

Flood risk management planning has progressed significantly in recent years. Scotland now has the most advanced nationally consistent and locally informed understanding of the causes and consequences of flooding that it has ever had. SEPA is committed to improving this knowledge and understanding during subsequent planning cycles, accepting that these first Flood Risk Management Strategies are based on the best available current knowledge and data.

SEPA has prioritised actions based on funding assumptions provided by Scottish Government and the capacity of local authorities to deliver within the next six years. Lead local authorities will provide an interim report on the progress of delivering all actions in the Local Flood Risk Management Plan not earlier than two years and not later than three years from its publication. A final report will also be prepared at the end of the first planning cycle.

A second set of Flood Risk Management Strategies and Local Flood Risk Management Plans will be published in December 2021 and June 2022 respectively.

Licensing acknowledgements

Full data licensing acknowledgements can be found in Annex 3 of this strategy.

Flood Risk Management Strategy

Findhorn, Nairn and Speyside Local Plan District

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

Section 2: Understanding and managing flooding

2.1 Summary of flooding in the Findhorn, Nairn and Speyside Local Plan District

The Findhorn, Nairn and Speyside Local Plan District extends from the Moray Firth in the north to the Grampian mountains in the south. It has an area of approximately 4,800km^2 and a coastline with a length of approximately 70km. There are 14 Potentially Vulnerable Areas in the Findhorn, Nairn and Speyside Local Plan District.

Flood risk in the Findhorn, Nairn and Speyside

There are approximately 1,800 residential properties and 580 non-residential properties at risk of flooding within the Local Plan District. This equates to approximately 2% of all properties at risk of flooding nationally. Within the Local Plan District, approximately 4% of all residential properties and 10% of all non-residential properties are at risk and it is estimated that 63% of these are located within Potentially Vulnerable Areas. The Annual Average Damages (see glossary) from flooding are approximately £5.9 million, with an estimated 53% of the damages for the entire Local Plan District accounted for in the Potentially Vulnerable Areas.

The main source of flooding is from rivers which accounts for approximately 72% of the Annual Average Damages (Figure 1). The Annual Average Damages caused by river floods are £4.2 million with those caused by surface water and coastal floods being approximately £1.2 million and £430,000 respectively.

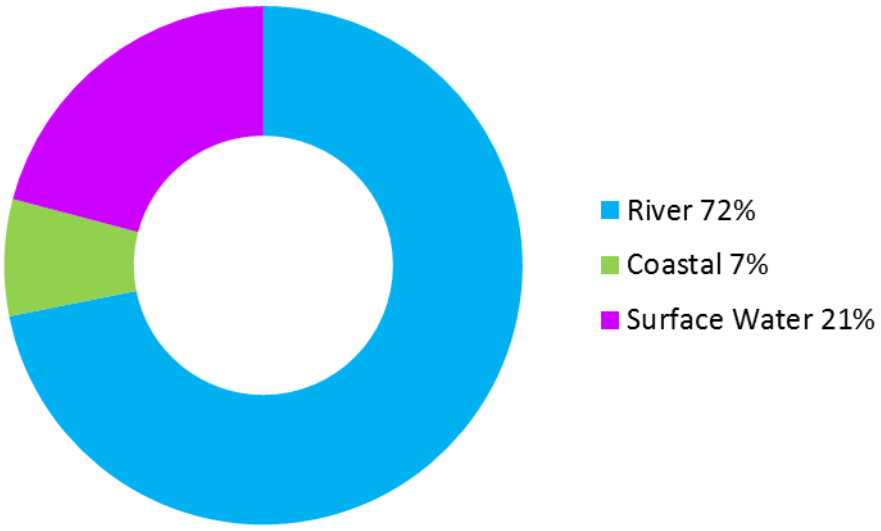


Figure 1: Annual Average Damages by flood source

Table 1 and Figure 3 show the number of properties at risk and the Annual Average Damages caused by flooding in the main towns and cities within the Local Plan District. This includes damages to residential properties, non-residential properties, transport and agriculture.

Please note that economic damages to airports and rail infrastructure are not included as information on damages at this scale is not available.

	Residential and non-residential properties at risk of flooding[1]	Annual Average Damages
Rothes	350	£330,000
Nairn[2]	340	£550,000
Forres	250	£390,000
Elgin	200	£490,000
Kinloss	110	£350,000
Lossiemouth	100	£240,000
Aviemore	80	£93,000
Nethy Bridge	70	£230,000
Cawdor	60	£260,000
Kingussie	60	£92,000

Table 1: Main areas at risk of flooding

Background information on the Findhorn, Nairn and Speyside Local Plan District

The extent of the Findhorn, Nairn and Speyside Local Plan District and the location of the Potentially Vulnerable Areas are shown in Figure 2.

The population of the Findhorn, Nairn and Speyside Local Plan District is approximately 100,000 with Elgin being the largest settlement. The Local Plan District contains two local authorities (Moray Council and The Highland Council) and areas of the Cairngorms National Park.

Approximately 1% of the area of the Findhorn, Nairn and Speyside Local Plan District is classified as urban. The predominant types of land cover are montane habitats, coniferous woodland, heather grassland, and heather, which each cover between 11% and 18% of the area.

[1] Flood protection schemes in Rothes, Forres (Burn of Mosset) and Lhanbryde are designed for a 1 in 100 year flood plus an allowance for climate change. The numbers of properties listed in Table 1 as “at risk” are in relation to a 1 in 200 year event and therefore do not take account of the protection provided by these schemes. Flood protection schemes in Elgin and Forres (River Findhorn) are designed for a 1 in 200 year flood and properties protected by these schemes are not include in the numbers of properties listed in Table 1 as “at risk”.
[2] Nairn is split between two Local Plan Districts; Highland and Argyll and Findhorn, Nairn and Speyside. The numbers of properties listed in Table 1 as “at risk” in Nairn include the total number located in both Local Plan Districts.

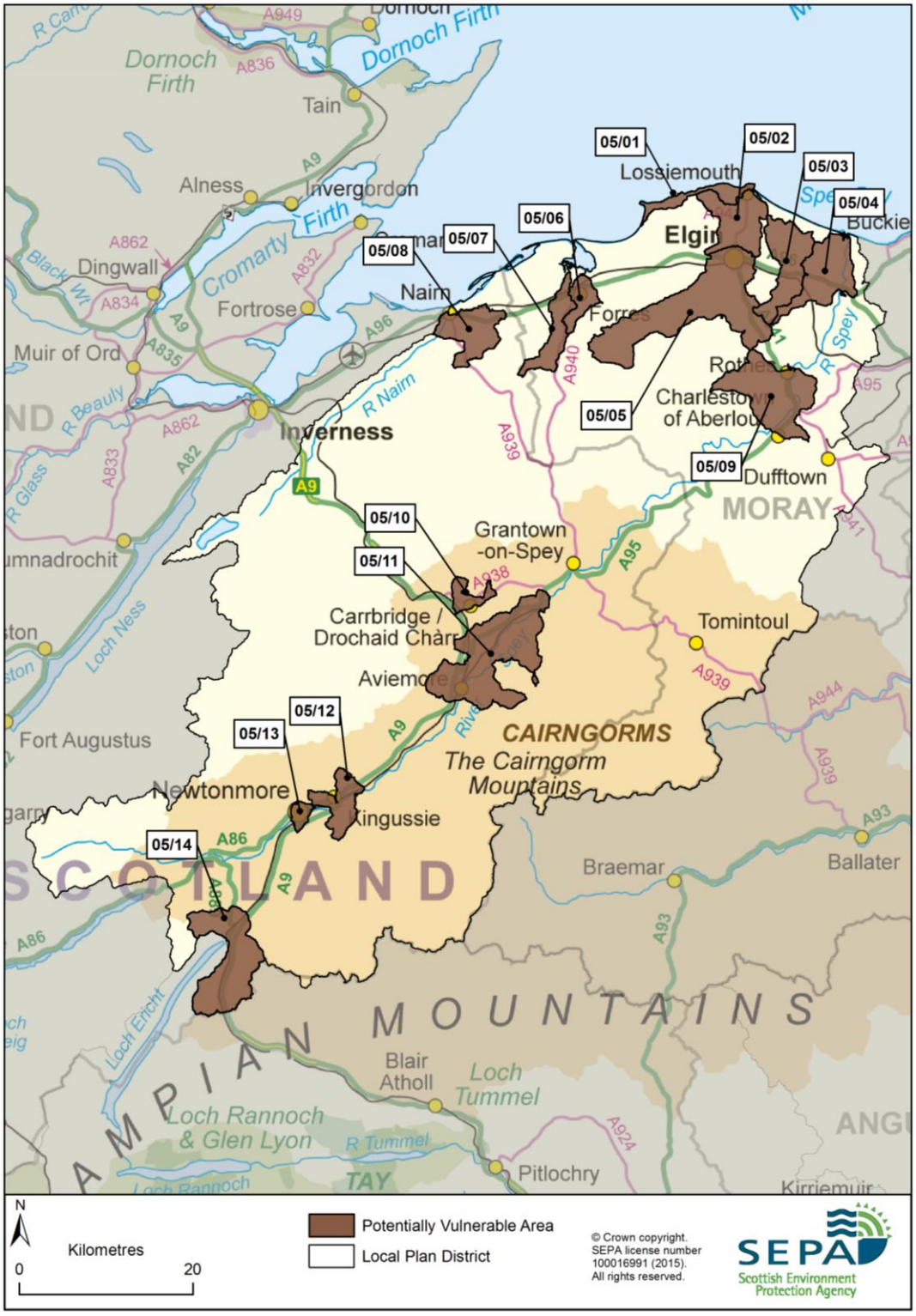


Figure 2: Findhorn, Nairn, Speyside Local Plan District with Potentially Vulnerable Areas identified

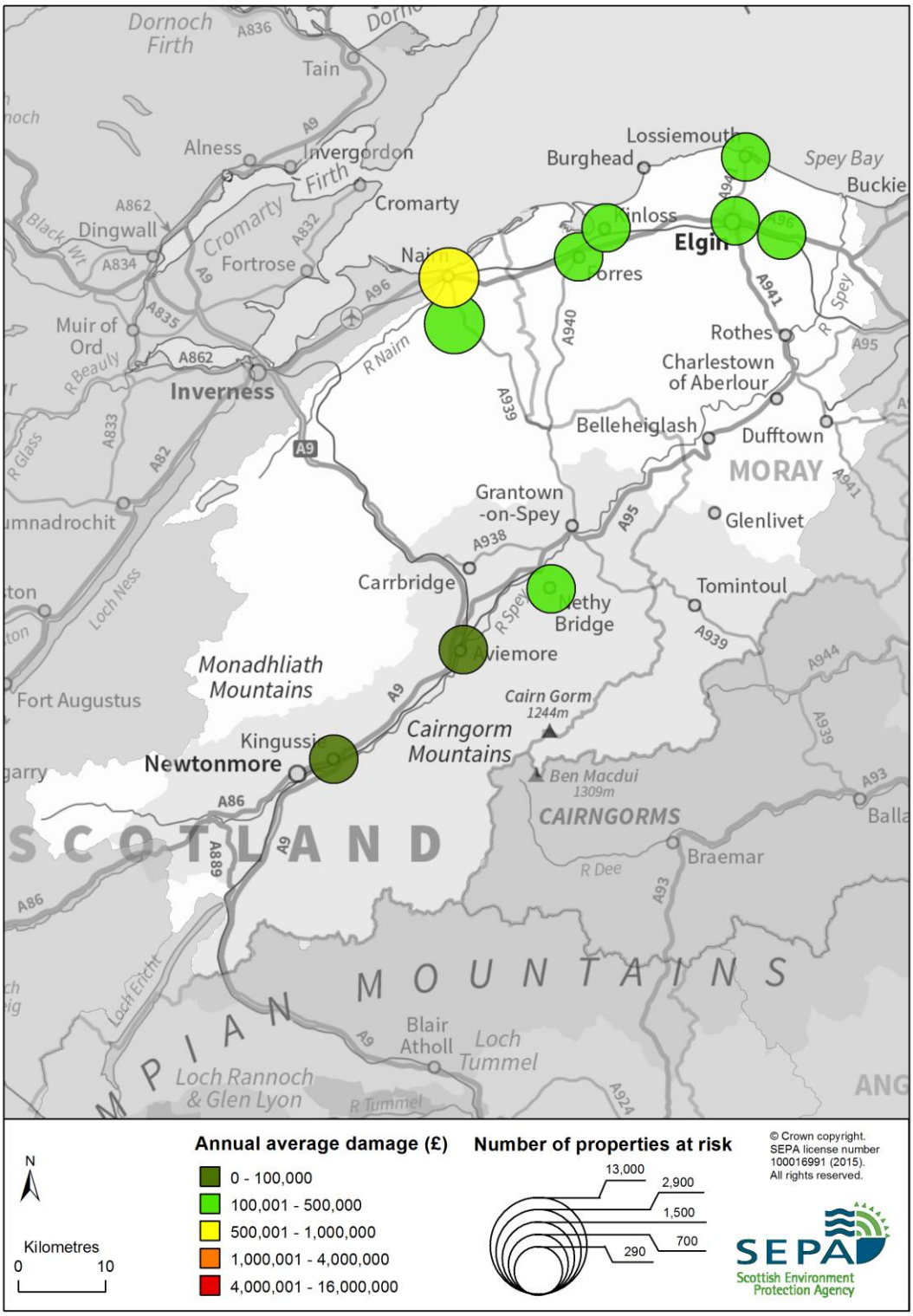


Figure 3: Findhorn, Nairn, Speyside Local Plan District areas with most properties at risk of flooding and associated damages

Objectives and actions in the Findhorn, Nairn and Speyside Local Plan District

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

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

Target area	Objective(s)	ID	Indicators
Applies across the Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 1,800 residential properties • 580 non-residential properties • 3,900 people
Applies across the Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 1,800 residential properties • 580 non-residential properties • 3,900 people

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	**Reduce overall flood risk.** (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	**Reduce overall flood risk.** (500002)		
Delivery lead:	-		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and the Resilient Communities Initiative, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	**Reduce overall flood risk.** (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. Local authorities will be undertaking additional awareness raising activities, further details will be set out in the Local FRM Plans.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	**Reduce overall flood risk.** (500002)		
Delivery lead:	Local authority, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. The local authorities produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.		

Action (ID):	**EMERGENCY PLANS / RESPONSE** (5000020014)		
Objective (ID):	**Reduce overall flood risk.** (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	**Avoid an overall increase in flood risk.** (500001) **Reduce overall flood risk.** (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

2.2 Potentially Vulnerable Areas

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

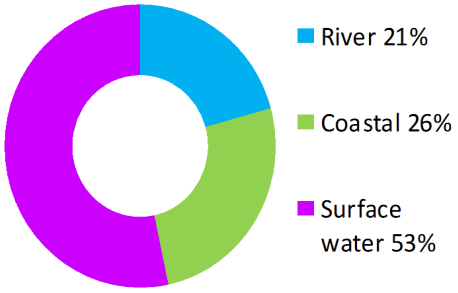
PVA	Flood protection scheme/ works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning*	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/ response	Planning policies
05/01							✓	N/A	✓	✓			✓	✓	✓		✓	✓
05/02				✓			✓	N/A	✓	✓			✓	✓	✓		✓	✓
05/03	✓						✓	✓	N/A	✓			✓	✓	✓		✓	✓
05/04	✓						✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
05/05	✓					✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
05/06	✓					✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
05/07	✓					✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
05/08	✓			✓			✓	N/A	✓	✓			✓	✓	✓		✓	✓
05/09	✓					✓	✓	✓	✓	✓			✓	✓	✓		✓	✓
05/10	✓							N/A	✓	✓			✓	✓	✓		✓	✓
05/11	✓			✓			✓	N/A	✓	✓			✓	✓	✓		✓	✓
05/12	✓			✓			✓	N/A	✓	✓			✓	✓	✓		✓	✓
05/13	✓					✓	✓	N/A	✓	✓		✓	✓	✓	✓		✓	✓
05/14	✓						✓	N/A	N/A	✓			✓	✓	✓		✓	✓

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

Burghead to Lossiemouth (Potentially Vulnerable Area 05/01)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Summary of flooding impacts



At risk of flooding

- 30 residential properties
- 40 non-residential properties
- £120,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

Burghead to Lossiemouth (Potentially Vulnerable Area 05/01)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Background

This Potentially Vulnerable Area is located on the Moray Firth (shown below). It is approximately 14km^2.

The area is characterised by a long coastline and by small watercourses draining northwards into the Moray Firth.

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It includes Burghead, Hopeman and the north west part of Lossiemouth. The A941, B9040, B9135 and B9013 all pass through the area.

There are approximately 30 residential and 40 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £120,000 with the majority caused by surface water flooding.

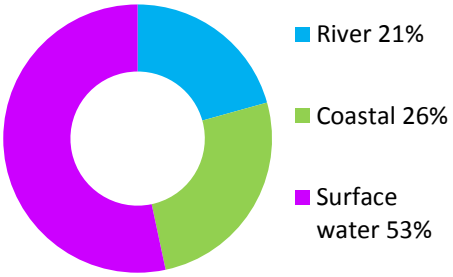


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Coastal flood risk is mainly limited to properties close to the seafront in Burghead and in Brandeburgh, Lossiemouth. Flooding from wave action is not fully represented in the assessment of flood risk in this Potentially Vulnerable Area and it is likely that both the number of properties at risk and the damages from coastal flooding are underestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. 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.

There are four designated cultural heritage sites and small areas of environmental importance at risk of flooding. These include Special Areas of Conservation and

Sites of Special Scientific Interest at Masonshaugh, Clashach-Covesea, and Lossiemouth Shore.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 3,500)	20	30	50
Non-residential properties (total 400)	10	40	40
People	40	70	100
Community facilities	0	0	0
Utilities assets	0	<10	<10
Transport links (excluding minor roads)	Roads at 10 locations	Roads at 30 locations	Roads at 30 locations
Environmental designated areas (km^2)	0.2	0.2	0.2
Designated cultural heritage sites	3	4	4
Agricultural land (km^2)	0.2	0.2	0.2

Table 1: Summary of flooding impacts[1]

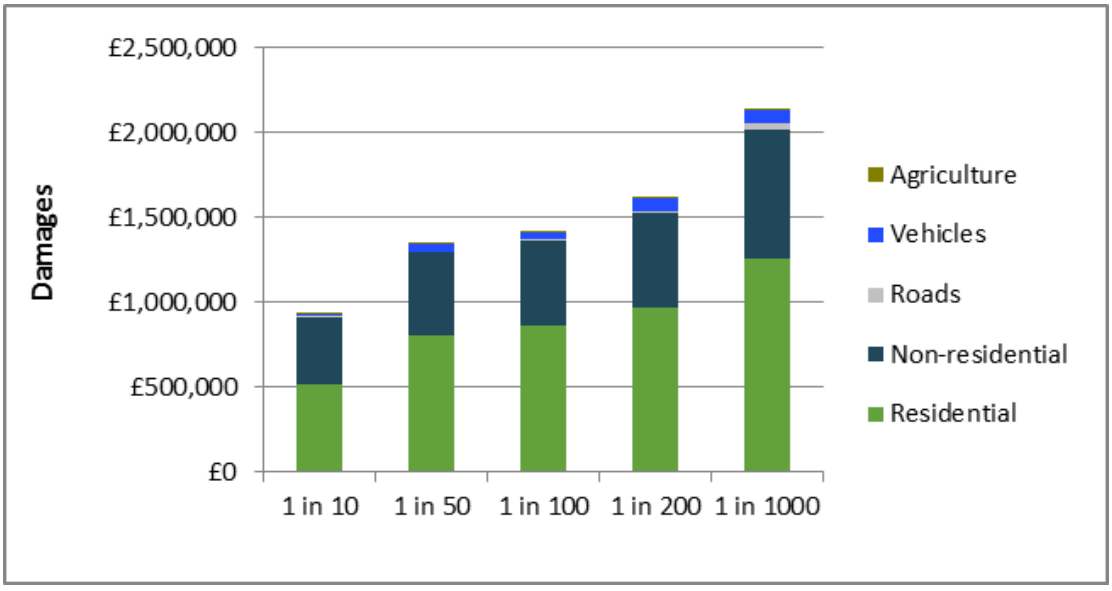


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

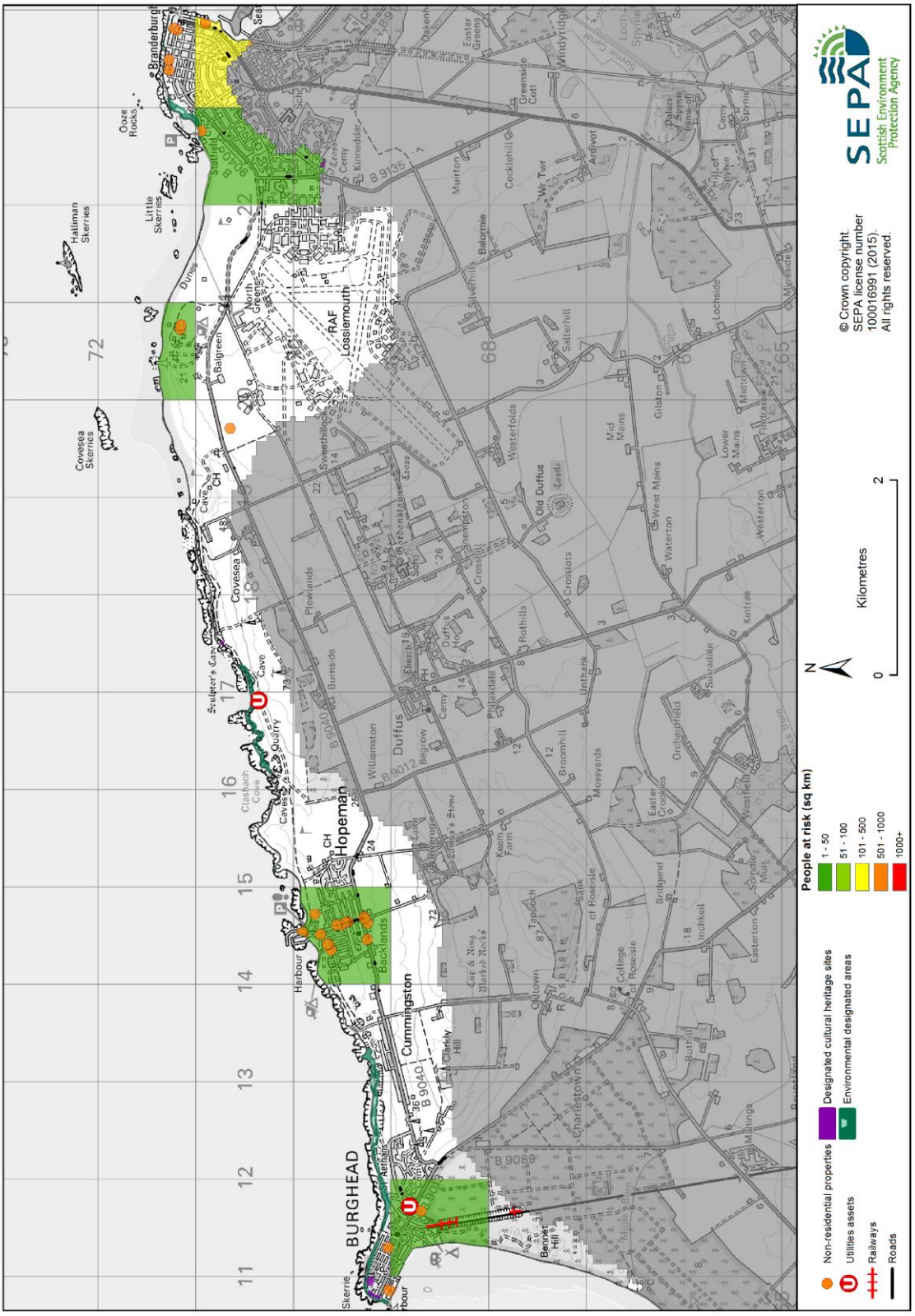


Figure 3: Impacts of flooding

History of flooding

The earliest flood on record is the Great Muckle Spate of August 1829, which affected large parts of north east Scotland. In September 1852, a combined river and coastal flood resulted in extensive flooding on the River Lossie along with harbour flooding at Lossiemouth due to large waves. In January 1869 a coastal flood affected roads and properties and damaged harbour works at Burghead.

A coastal flood in February 1983 affected many businesses on Shore Street and the former railway site. In addition, vessels were damaged and a 50 feet stretch of harbour wall at Lossiemouth was breached. There was coastal flooding in December 2012, leading to homes in Lossiemouth being evacuated and further flooding in December 2013. Surface water flooding affected a number of properties in Hopeman in August 2014 and again in October 2014. At the time of finalising the strategy documents, Moray Council are investigating the possibility of remedial works in the area.

Objectives to manage flooding in Potentially Vulnerable Area 05/01

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Burghead to Lossiemouth Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 30 residential properties • £120,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 30 residential properties • £120,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/01

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Burghead to Lossiemouth Potentially Vulnerable Area.

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

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000010016)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will be seeking to develop the flood hazard mapping in the Banff to Lossiemouth area to improve understanding of the coastal flood risk. The extent and timing of the completed improvements will be dependent on detailed scoping and data availability.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Findhorn to Lossiemouth' flood warning area which is part of the Moray Firth coastal flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. SEPA 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. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

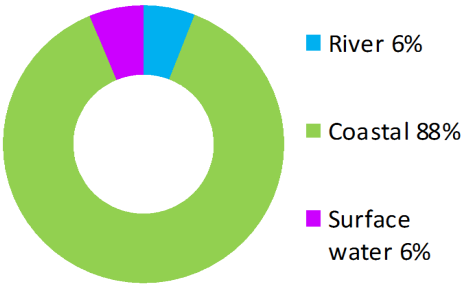
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Spynie (Potentially Vulnerable Area 05/02)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Summary of flooding impacts



At risk of flooding

- 80 residential properties
- 10 non-residential properties
- £260,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

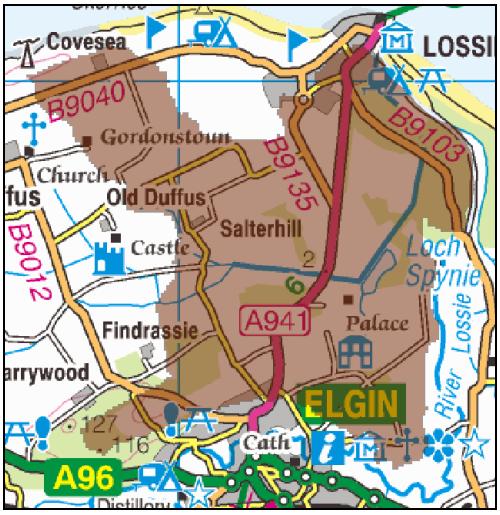
Spynie (Potentially Vulnerable Area 05/02)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Background

This Potentially Vulnerable Area covers the mostly rural area between Lossiemouth and Elgin (shown below). It is approximately 37km^2.

The main watercourse in the area is the Spynie Canal which joins the River Lossie in Lossiemouth.



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Several roads pass through the area, including the A941, B9040, B9135 and the B9103.

There are approximately 80 residential and 10 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £260,000 with the majority caused by coastal flooding.

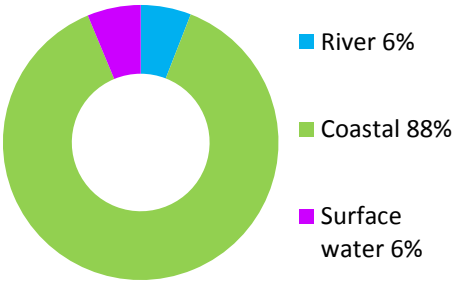


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Parts of Lossiemouth including the Seatown area are at risk of coastal flooding. There is extensive flood risk to agricultural land from the River Lossie and the Spynie Canal and their associated drainage systems.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Seven designated cultural heritage sites are potentially at risk of flooding within this area, as are sites of environmental importance, including Loch Spynie Special Protection Area and Site of Special Scientific Interest.

The damages associated with floods of different scale are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties.

The location of the impacts is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 3,100)	40	80	120
Non-residential properties (total 110)	<10	10	10
People	90	170	260
Community facilities	0	<10 Educational buildings	<10 Educational buildings
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 30 locations	Roads at 90 locations	Roads at 90 locations
Environmental designated areas (km^2)	<0.1	2.6	3
Designated cultural heritage sites	3	7	7
Agricultural land (km^2)	1.3	11.6	12.9

Table 1: Summary of flooding impacts[1]

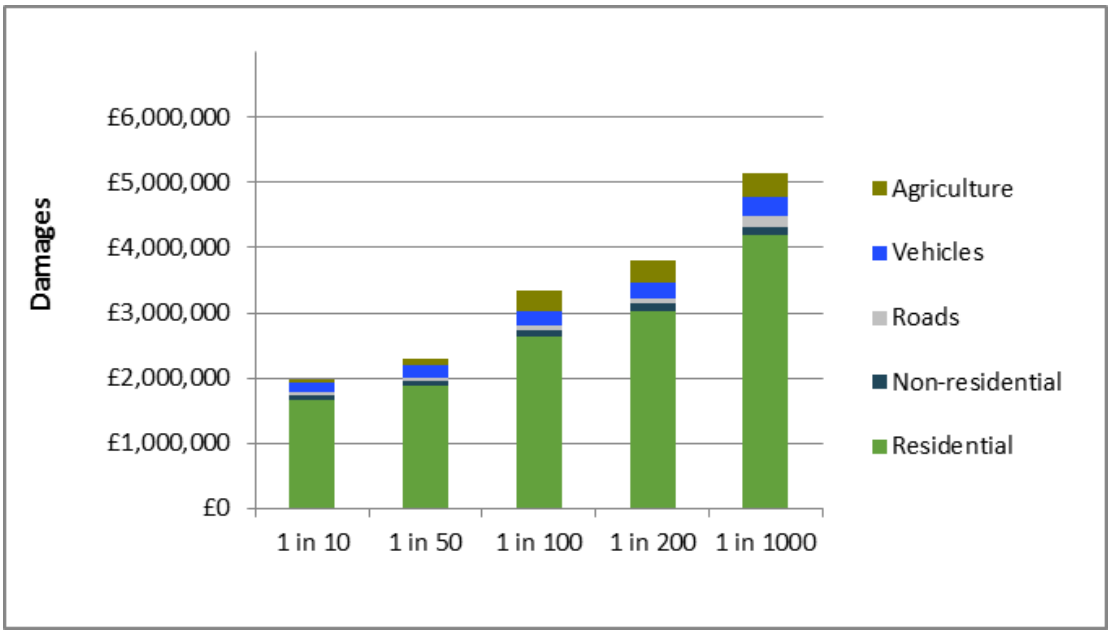


Figure 2: Damages by flood likelihood

History of flooding

The area was affected by flooding in the Great Muckle Spate of 1829. More recently, in 1997 and 2002, breaches of agricultural embankments along the River Lossie caused extensive areas of farmland to flood.

[1] Some receptors are counted more than once if flooded from multiple sources

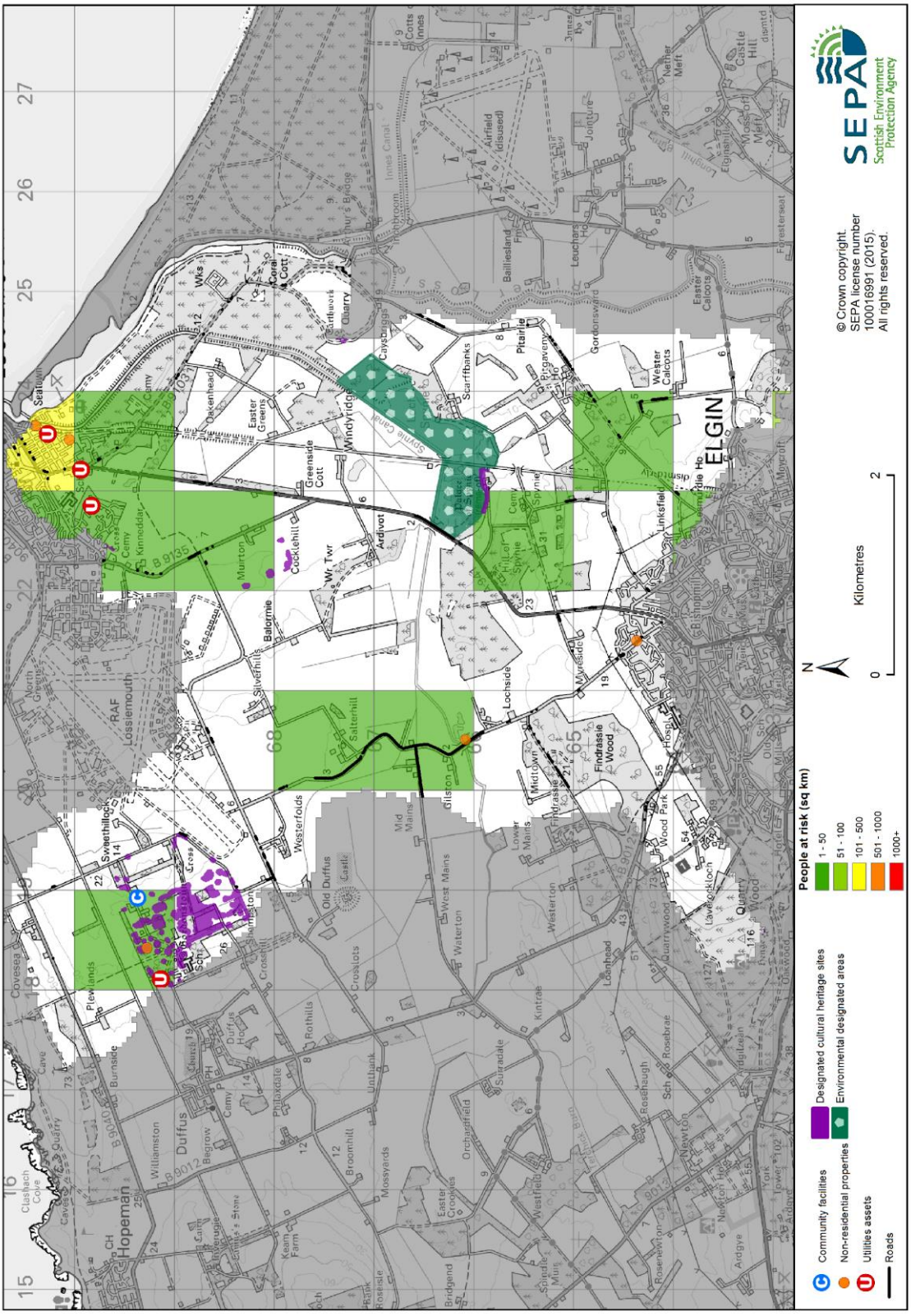


Figure 3: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 05/02

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Spynie Potentially Vulnerable Area.

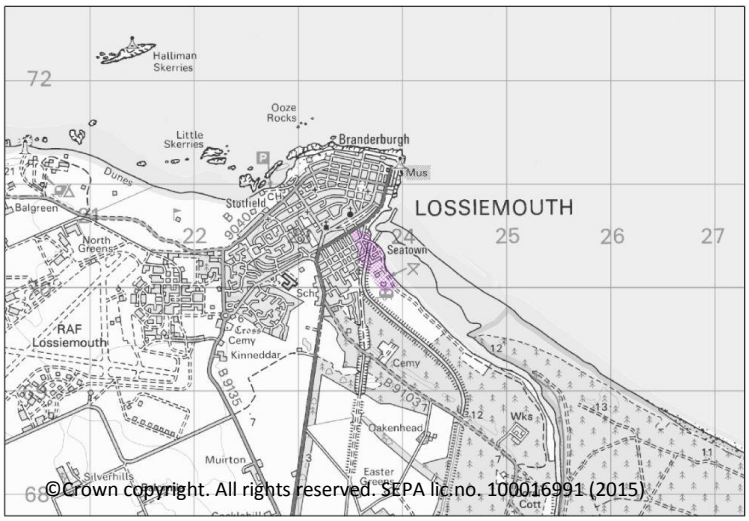
Reduce flood risk to the Seatown area of Lossiemouth from river and coastal flooding

Indicators:

- 130 people
- £270,000 Annual Average Damages from residential properties

Objective ID: 500201

Target area:



Target area	Objective	ID	Indicators within PVA
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 80 residential properties • £260,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 80 residential properties • £260,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/02

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Spynie Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION STUDY** (5002010005)		
Objective (ID):	Reduce flood risk to the Seatown area of Lossiemouth from river and coastal flooding (500201)		
Delivery lead:	The Moray Council		
Priority:	National:	Within local authority:	
	43 of 168	**1 of 2**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A flood protection study is required to consider a scheme for Seatown in Lossiemouth. The scheme should include investigation of direct defences to reduce the risk of flooding from the river and sea. Other actions may also be considered to develop the most sustainable range of options.		
Potential impacts			
Economic:	The study could benefit 80 residential and two non-residential properties at risk of flooding in this location, with potential damages avoided of up to £8.4 million.		
Social:	The development of flood protection works following the study would potentially reduce flood risk to 176 people. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Negative impacts through disturbance to the local community during the construction phase should be considered.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for visual impact of the defence. To be in accord with the FRM Strategy, the		

Environmental:	responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the Moray Firth Special Area of Conservation.

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000010016)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will be seeking to develop the flood hazard mapping in the Banff to Lossiemouth area to improve understanding of the coastal flood risk. The extent and timing of the completed improvements will be dependent on detailed scoping and data availability.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Findhorn to Lossiemouth' flood warning area which is part of the Moray Firth coastal flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. This area has a complex system of drainage ditches and canals to drain the farmland to the north of Elgin. There are numerous pumps which lift water from the surrounding land into the Spynie Canal. The Spynie Canal drains under gravity, discharging into the River Lossie at Lossiemouth through flap valves at low tide. The flap valves prevent the tide flowing back up the canal. There are embankments alongside the Spynie Canal along much of its length. The land drainage systems and embankments are maintained by the landowners.		

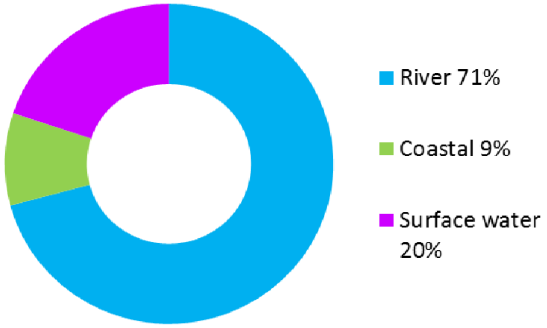
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Lhanbryde (Potentially Vulnerable Area 05/03)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Summary of flooding impacts



At risk of flooding

- 60 residential properties
- 10 non-residential properties
- £160,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

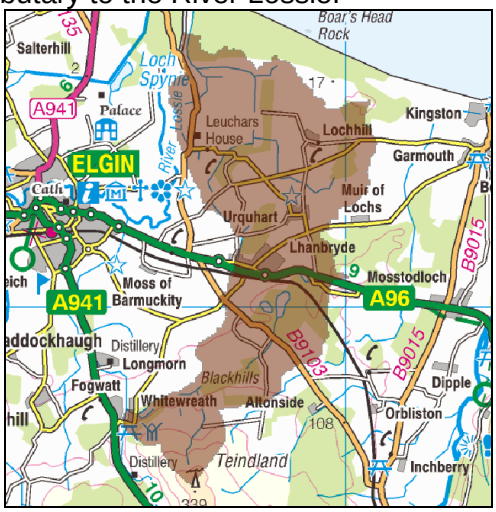
Lhanbryde (Potentially Vulnerable Area 05/03)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Background

This Potentially Vulnerable Area covers the rural areas to the east of Elgin and includes Lhanbryde (shown below). It is approximately 40km^2.

The main watercourse in this Potentially Vulnerable Area is the Longhill Burn which becomes the Innes Canal, a tributary to the River Lossie.



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Lhanbryde benefits from a flood protection scheme that was completed in 2005. An estimated 30 residential and five non-residential properties benefit from this scheme.

There are approximately 60 residential and 10 non-residential properties at risk of flooding.

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

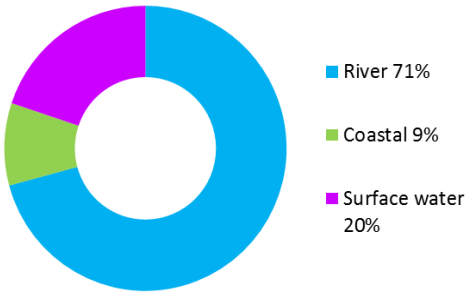


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The Lhanbryde Flood Protection Scheme is designed for a one in 100 year flood plus an allowance for climate change. The assessment of flood risk presented in this report takes account of the protection provided by the scheme up to and including the one in 100 year event. No allowance is made for the residual benefits that the flood protection scheme provides for events which exceed this standard of protection. As a result the number of residential properties, non-residential properties and people reported to be at risk of river flooding in this area is considered to be overestimated. The Annual Average Damages from river flooding are also considered to be overestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads that may be affected by flooding including the A96 and B9103, whilst the Elgin to Keith railway is also at risk of flooding in several locations. Three designated cultural heritage sites and areas of environmental importance are also at risk. This includes the Site of Special Scientific Interest at Scaat Craig.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads and agricultural land. The location of the impacts is shown in Figure 3.

	1 in 10	1 in 200	1 in 1000
	High likelihood	Medium likelihood	Low likelihood
Residential properties (total 1,300)	10	60	80
Non-residential properties (total 60)	<10	10	20
People	30	130	170
Community facilities	0	0	0
Utilities assets	0	<10	<10
Transport links (excluding minor roads)	Roads at 60 locations Rail at <10 locations	Roads at 90 locations Rail at <10 locations	Roads at 90 locations Rail at <10 locations
Environmental designated areas (km^2)	<0.1	<0.1	<0.1
Designated cultural heritage sites	2	3	4
Agricultural land (km^2)	2.9	5.7	7.6

Table 1: Summary of flooding impacts[1]

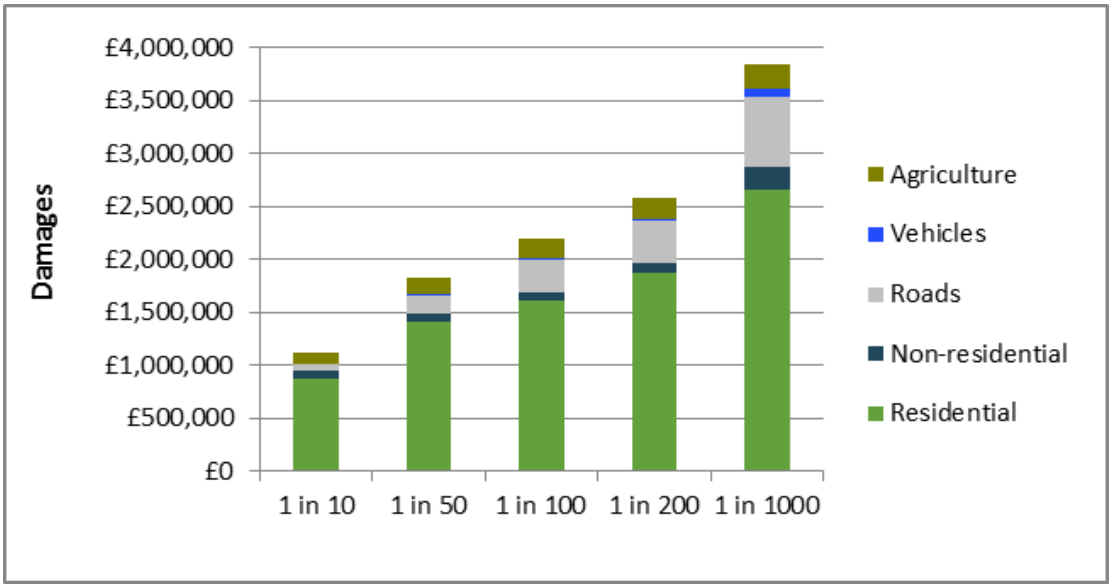


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

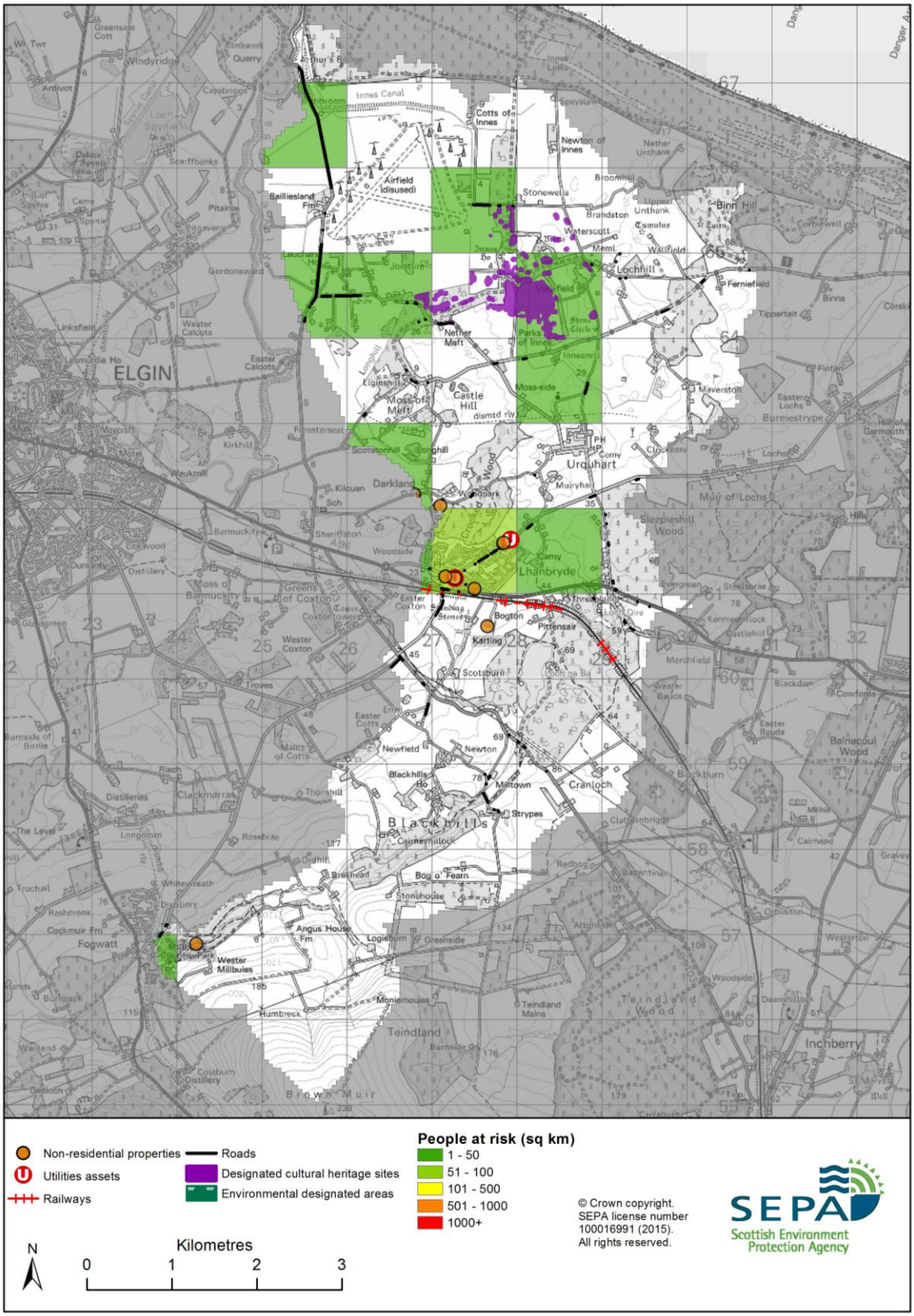


Figure 3: Impacts of flooding

History of flooding

The village of Lhanbryde was flooded on five separate occasions during the 1990s. The most severe was in July 1997, which caused flooding and damage to around 30 properties. In April 2000, the Longhill Burn again caused flooding to properties.

Objectives to manage flooding in Potentially Vulnerable Area 05/03

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Lhanbryde Potentially Vulnerable Area.

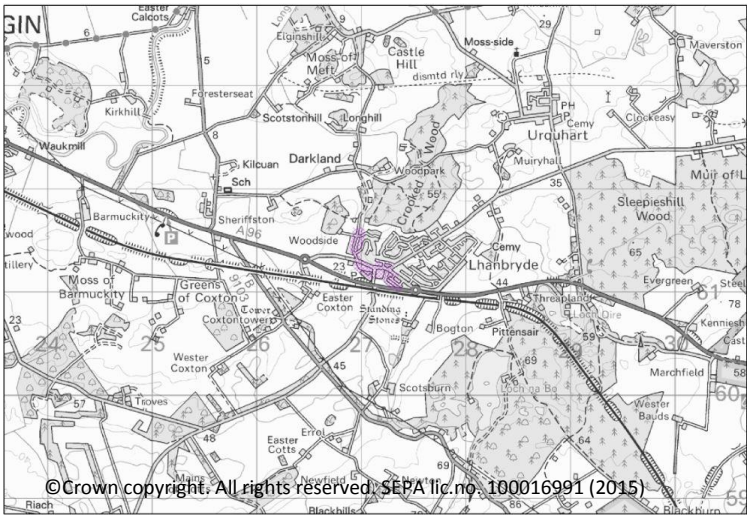
Maintain the Lhanbryde Flood Protection Scheme and accept existing levels of flood risk from the Longhill Burn

Indicators:

- An estimated 70 people will continue to be protected (to a 1 in 100 year standard of protection)
- <10 non-residential properties will continue to be protected (to a 1 in 100 year standard of protection)

Objective ID: 500301

Target area:



Target area	Objective	ID	Indicators within PVA
Lhanbryde	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5300	• 3 locations of the A96 with a total length of 20m
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 60 residential properties • £160,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 60 residential properties • £160,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/03

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Lhanbryde Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5300021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5300)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5003010017)		
Objective (ID):	Maintain the Lhanbryde Flood Protection Scheme and accept existing levels of flood risk from the Longhill Burn (500301)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Lhanbryde flood protection scheme. The existing scheme provides a 1 in 100 year standard of protection to 30 residential and five non-residential properties, including an allowance for climate change.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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 (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Spey Bay (Potentially Vulnerable Area 05/04)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	River Spey, Spey Bay coastal

Summary of flooding impacts

At risk of flooding

- 40 residential properties
- <10 non-residential properties
- £120,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

Spey Bay (Potentially Vulnerable Area 05/04)

Local Planning District	Local authority	Main catchments
Findhorn, Nairn and Speyside	The Moray Council	River Spey, Spey Bay coastal

Background

This Potentially Vulnerable Area is located south of Spey Bay on the Moray Firth (shown below). It is approximately 42km^2.

The River Spey flows along the eastern edge of the area and the A96 passes through it.

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Garmouth, Mosstodloch and part of Kingston are located in the Potentially Vulnerable Area.

There are approximately 40 residential and fewer than 10 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £120,000 with the majority caused by river flooding.

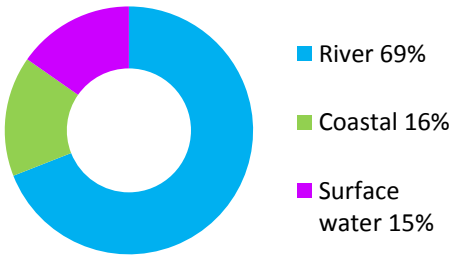


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The main risks of river and coastal flooding in area are associated with the floodplain of the River Spey east of Garmouth and the tidal reaches around Spey Bay. The coastline is particularly dynamic in the vicinity of Spey Bay with episodes of erosion and accretion occurring in response to spates on the River Spey and to coastal storms.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads at risk of flooding include the A96, B9015 and B9104. Of particular concern is that Kingston can be cut off from the rest of the area due to flooding of the access road to and from the village. Five stretches of the Elgin to Keith railway line also have a risk of being flooded. Three designated cultural heritage sites and a large area of environmental importance are shown to be at risk. These include Special Areas of Conservation, Special Protection Areas, and Sites of Special Scientific Interest at Spey Bay, Moray and Nairn coast and the lower River Spey.

The damages associated with floods of different scale are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads.

The location of the impacts is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 1,200)	<10	40	50
Non-residential properties (total 90)	<10	<10	<10
People	20	90	120
Community facilities	0	0	0
Utilities assets	0	<10	<10
Transport links (excluding minor roads)	Roads at 40 locations Rail at <10 locations	Roads at 70 locations Rail at <10 locations	Roads at 80 locations Rail at <10 locations
Environmental designated areas (km^2)	11	15	16
Designated cultural heritage sites	3	3	3
Agricultural land (km^2)	2	4	5

Table 1: Summary of flooding impacts[1]

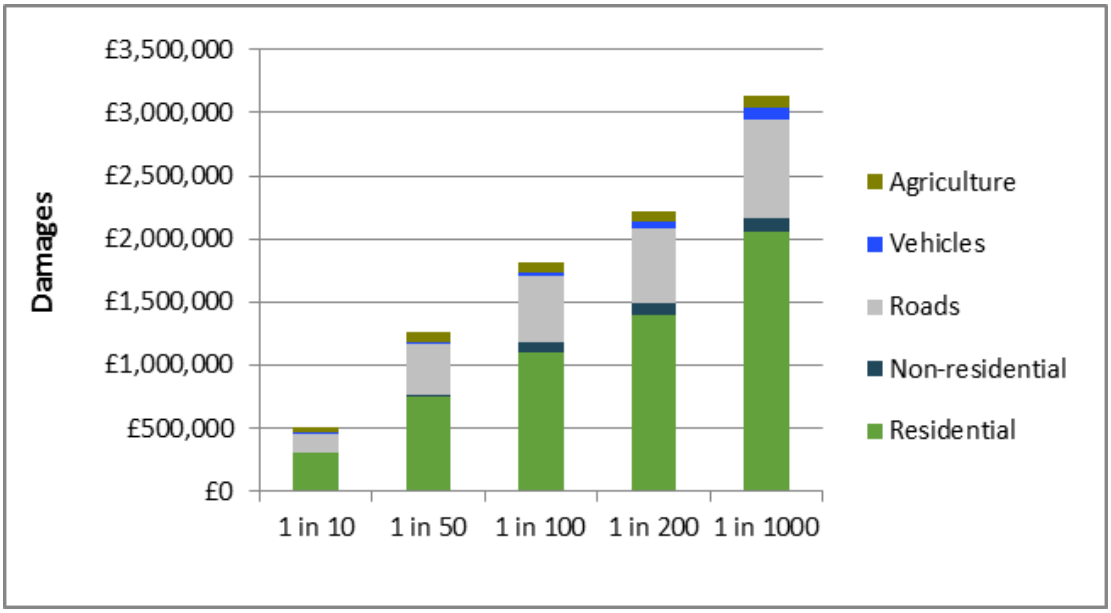


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

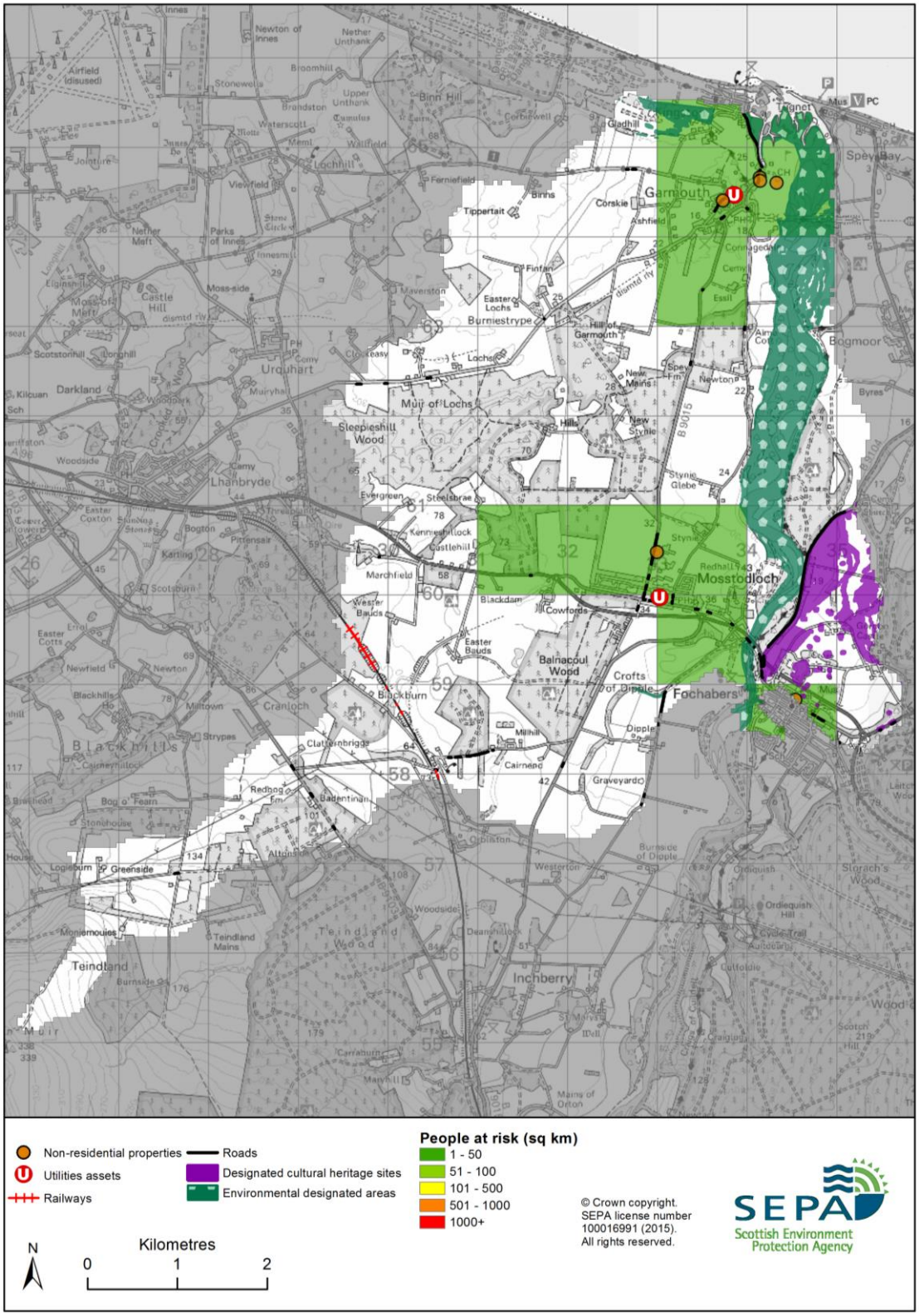


Figure 2: Impacts of flooding

History of flooding

The earliest recorded flood was in 1829, when flooding from the Spey during the Great Muckle Spate destroyed the bridge to Elgin. In 1887 the neighbourhoods of Kingston and Garmouth were flooded by the Spey, with the roads between the two areas impassable. The Spey has flooded Garmouth regularly, including in 1892, 1928, 1985, 1997, 2002 and 2009. A spate on the River Spey in the early 1960s led to two buildings being washed away.

Objectives to manage flooding in Potentially Vulnerable Area 05/04

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Spey Bay Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Spey Bay	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5301	• 4 locations of the A96 with a total length of 60m
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 40 residential properties • £120,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 40 residential properties • £120,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/04

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Spey Bay Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5301021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5301)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000010016)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will be seeking to develop the flood hazard mapping in the Banff to Lossiemouth area to improve understanding of the coastal flood risk. The extent and timing of the completed improvements will be dependent on detailed scoping and data availability. SEPA will be seeking to incorporate additional surface water hazard mapping information into the flood maps to improve understanding of flood risk. Approximately 700km² of improved data is currently available within this Local Plan District.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Boat O' Brig to Spey Viaduct' flood warning area which forms part of the Spey river flood warning scheme. Continue to maintain the 'Spey Viaduct to Spey Bay' flood warning area which takes account of combined coastal and river flooding and forms part of both the Spey river flood warning scheme and the Moray Firth coastal flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**COMMUNITY FLOOD ACTION GROUPS** (5000020012)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Community		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	There are community groups in the Garmouth and Kingston area who have engaged with the authorities with respect to flooding issues in the past.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. SEPA will engage with the community and promote Floodline. This will be achieved through property level protection events delivered by the Scottish Flood Forum and SEPA led education events. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. The shingle bank and lagoon at Kingston, located just outside this Potentially Vulnerable Area, are monitored by the Moray Council in response to residents' concerns that the bank may erode and result in significant property damage. The height and shape of the shingle bank changes in response to storms and is on occasions overtopped by waves. The River Spey is a very active system and in the past, when the mouth of the Spey has moved to the west, the council has relocated the mouth of the river in order to prevent it from causing erosion to the village of Kingston.		

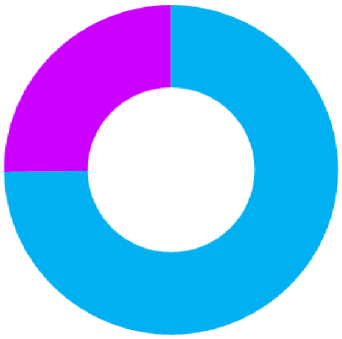
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Elgin (Potentially Vulnerable Area 05/05)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	River Lossie

Summary of flooding impacts



At risk of flooding

- 140 residential properties
- 110 non-residential properties
- £750,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

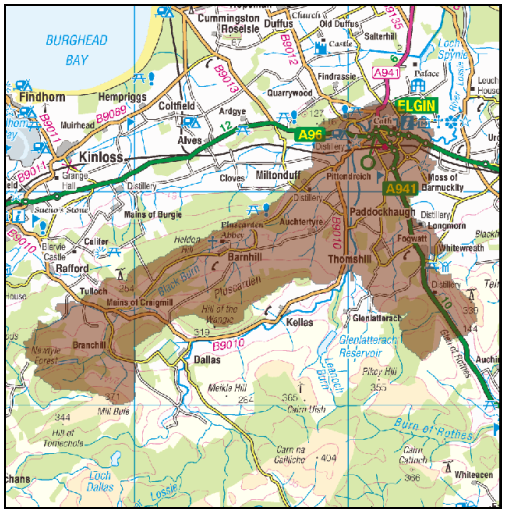
Elgin (Potentially Vulnerable Area 05/05)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	River Lossie

Background

This Potentially Vulnerable Area covers the town of Elgin and the mostly rural areas to the south (shown below). It is approximately 110km^2.

The main watercourse in this area is the River Lossie.



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The Elgin Flood Protection Scheme was completed in 2015. An estimated 600 residential and 270 non-residential properties benefit from the protection afforded by this scheme.

There are approximately 140 residential and 110 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £750,000 with the majority caused by river flooding.

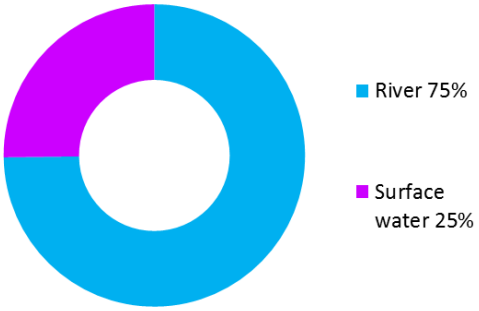


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The Elgin Flood Protection Scheme is designed for a one in 200 year flood plus an allowance for climate change. The assessment of flood risk presented in this report takes account of the protection provided by the scheme up to and including the one in 200 year event. No allowance is made for the residual benefits that the flood protection scheme provides for events which exceed this standard of protection. As a result the Annual Average Damages from river flooding is considered to be overestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A96, A941 and B9010. The railway line through Elgin is at risk of flooding at several locations. Nine designated cultural heritage sites and a small area of environmental importance are shown to be at risk. This includes small areas of Scaat Craig Site of Special Scientific Interest.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties.

The location of the impacts is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 11,000)	20	140	1,000
Non-residential properties (total 1,300)	20	110	430
People	50	320	2,300
Community facilities	0	<10 Includes; healthcare facilities and educational buildings	<10 Includes; healthcare facilities and educational buildings
Utilities assets	10	20	30
Transport links (excluding minor roads)	Roads at 150 locations Rail at 5 locations	Roads at 270 locations Rail at 30 locations	Roads at 530 locations Rail at 50 locations
Environmental designated areas (km^2)	<0.1	<0.1	<0.1
Designated cultural heritage sites	5	9	11
Agricultural land (km^2)	3	5.9	7.9

Table 1: Summary of flooding impacts[1]

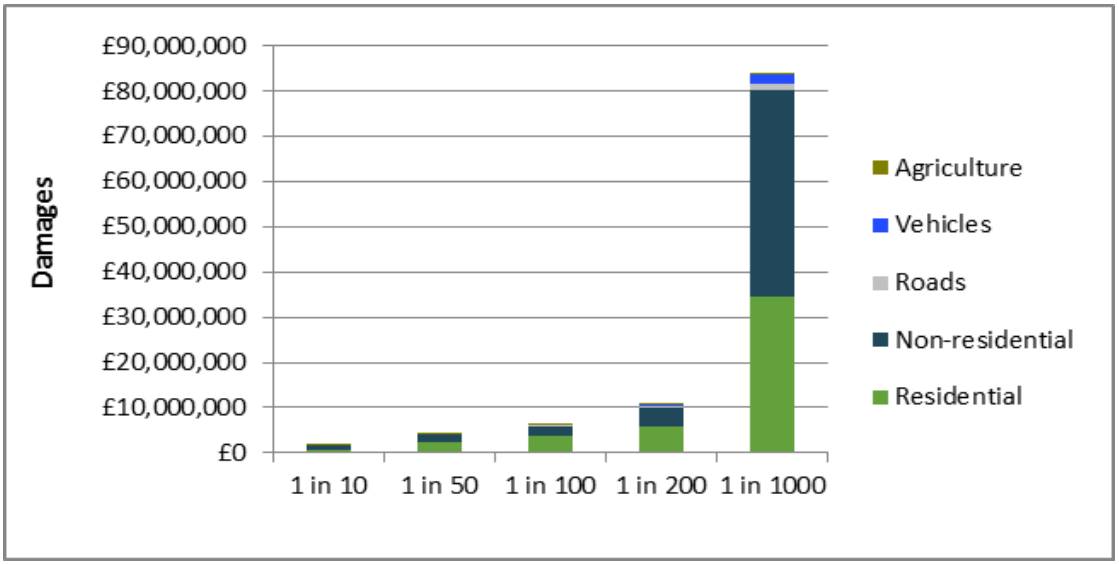


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

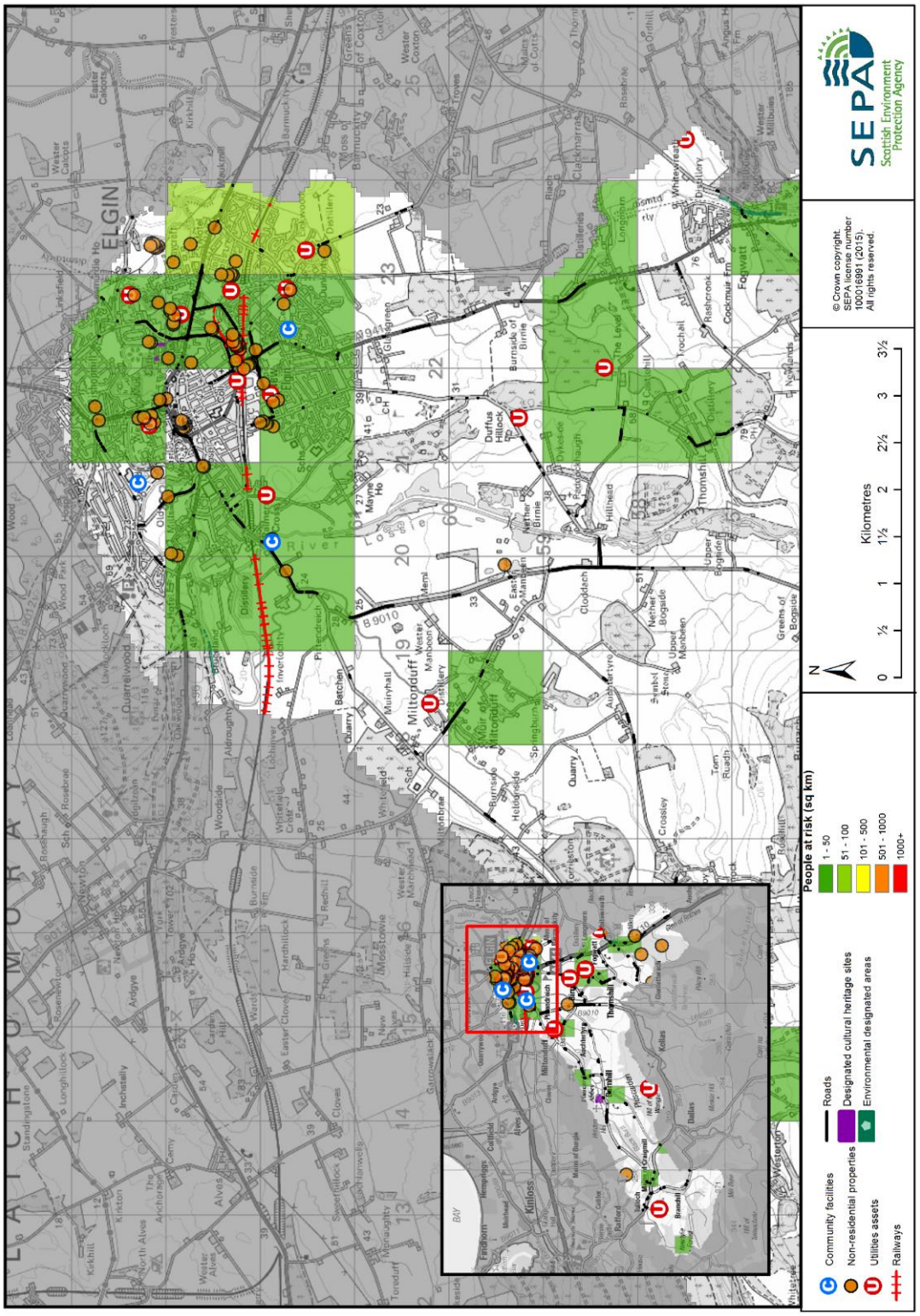


Figure 3: Impacts of flooding

History of flooding

The earliest recorded floods were in 1826 and in 1829, when the area between Fochabers and Elgin was flooded and a bridge was washed away during the Great Muckle Spate. There are records of floods in 1852, 1864, 1873, 1874, 1915, and 1924 associated with the River Lossie, Black Burn, Linkwood Burn and surface water. Many of these floods affected property and resulted in the temporary closure of the railway line.

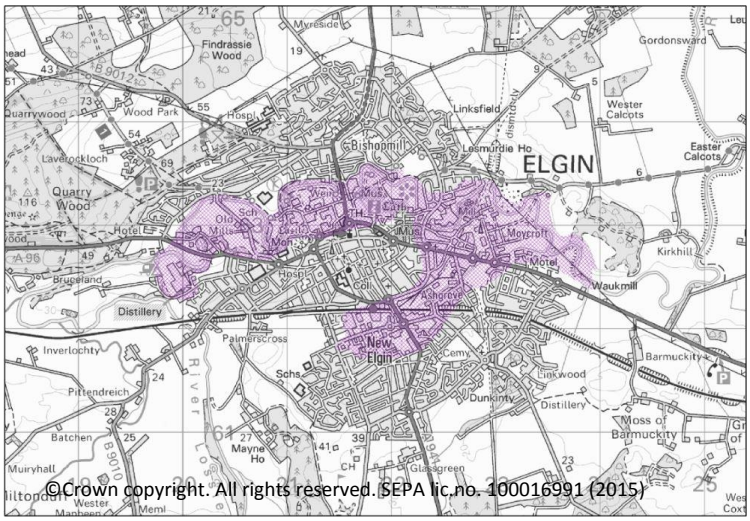
In July 1997 a flood caused £35 million of damage to property, infrastructure, transport links and agriculture in Elgin. Flood defences were breached and 1,200 people were evacuated. In 2000, the River Lossie breached its banks flooding 15 properties, whilst in 2002 hundreds of residents were evacuated following flooding from the River Lossie caused by heavy rainfall. In 2004 water seeped through a flood bank flooding the Chanonry Industrial Estate. In September 2009 heavy rainfall resulted in flooding in residential areas of Elgin, with areas downstream from the town being inundated from local watercourses and surface water. The A96 was also flooded.

In August 2014, the River Lossie experienced a significant spate however, the partially complete flood defences held out. Around 45 properties were affected by flooding in Dallas. Whilst Dallas lies upstream of Elgin on the River Lossie, it lies outside the boundaries of this Potentially Vulnerable Area. There was surface water flooding in parts of Elgin (Chanonry, Lossie Green and around the Auction Mart in New Elgin most notably). Elgin Railway Station was flooded and the rail service suspended.

Objectives to manage flooding in Potentially Vulnerable Area 05/05

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Elgin Potentially Vulnerable Area.

Maintain the Elgin Flood Protection Scheme and accept existing levels of flood risk from the River Lossie, Tyock Burn, and Linkwood Burn

Indicators:	Target area:
• An estimated 270 non-residential properties will continue to be protected (to a 1 in 200 year standard of protection) • An estimated 1,300 people will continue to be protected (to a 1 in 200 year standard of protection)	 ©Crown copyright. All rights reserved. SEPA lic.no. 100016991 (2015)
Objective ID: 500501	

Target area	Objective	ID	Indicators within PVA
Elgin	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5302	• 19 locations of the A96 with a total length of 90m
Elgin	Reduce risk from surface water flooding in Elgin	500504	* See note below
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 140 residential properties • £750,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 140 residential properties • £750,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 05/05 there are 90 residential properties at risk and Annual Average Damages of £190,000.

Actions to manage flooding in Potentially Vulnerable Area 05/05

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Elgin Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5302021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5302)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (5005040018)		
Objective (ID):	Reduce risk from surface water flooding in Elgin (500504)		
Delivery lead:	The Moray Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**STRATEGIC MAPPING AND MODELLING** (5000010016)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will be seeking to incorporate additional surface water hazard mapping information into the flood maps to improve understanding of flood risk. Approximately 700km² of improved data is currently available within this Local Plan District.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5005010017)		
Objective (ID):	Maintain the Elgin Flood Protection Scheme and accept existing levels of flood risk from the River Lossie, Tyock Burn, and Linkwood Burn (500501)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Elgin flood protection scheme. The existing scheme provides a 1 in 200 year standard of protection for 600 residential and 270 non-residential properties, including an allowance for climate change.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Borough Briggs', 'Cooper Park', 'Kingsmill', 'Tyock, Chanonry and Elgin East End' and 'Old Mills' flood warning areas in Elgin which warn of flooding from the River Lossie as part of the Lossie river flood warning scheme. Continue to maintain 'Glen Moray Distillery' flood warning area which warns of flooding from the River Lossie and the 'Miltonduff' and 'Miltonduff Distillery' flood warning areas on the Black Burn as part of the Lossie river flood warning scheme. A review and rationalisation of these flood warning areas will be undertaken to take account of the Elgin Flood Protection Scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. From 2016 SEPA will engage with the community and promote Floodline. This will be achieved through property level protection events delivered by the Scottish Flood Forum and SEPA led education events. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

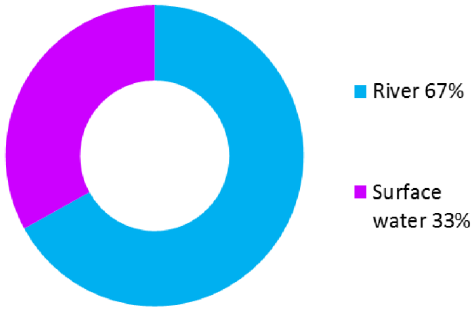
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Forres (Potentially Vulnerable Area 05/06)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Summary of flooding impacts



At risk of flooding

- 200 residential properties
- 20 non-residential properties
- £380,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

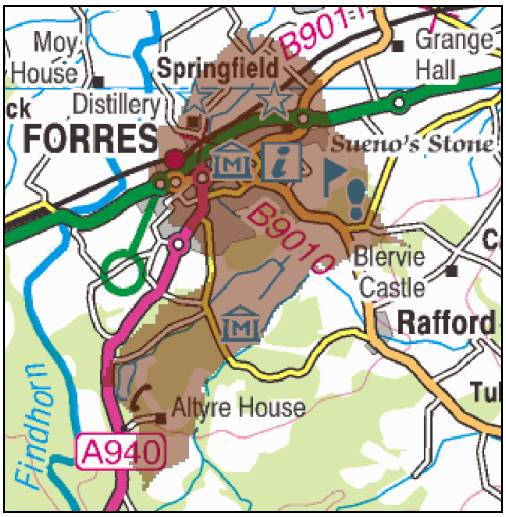
Forres (Potentially Vulnerable Area 05/06)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	Moray coastal

Background

This Potentially Vulnerable Area covers most of Forres and the surrounding rural areas to the south and east (shown below). It is approximately 13km^2.

The main watercourse in this area is the Burn of Mosset.



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Forres benefits from two flood protection schemes, one on the Burn of Mosset and one on the River Findhorn. An estimated 1,700 residential and 120 non-residential properties benefit from these two schemes.

Approximately 200 residential and 20 non-residential properties remain at risk of flooding in this area.

The Annual Average Damages are approximately £380,000 with the majority caused by river flooding.

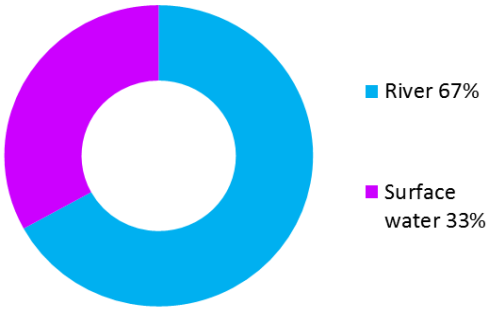


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The Burn of Mosset Flood Protection Scheme is designed for a one in a 100 year flood with an additional allowance for climate change. The assessment of flood risk presented in this report takes account of the protection provided by the scheme up to and including the one in 100 year event. No allowance is made for the residual benefits that the flood protection scheme provides for events which exceed this standard of protection. As a result the number of residential properties, non-residential properties and people reported to be at risk of river flooding in this Potentially Vulnerable Area is considered to be overestimated. The Annual Average Damages from river flooding are also considered to be overestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. Roads affected by flooding include the A96, A940, B9010 and B9011. The Inverness to Aberdeen railway is at risk of flooding at several locations. Three designated cultural heritage sites are also at risk of flooding.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10	1 in 200	1 in 1000
	High likelihood	Medium likelihood	Low likelihood
Residential properties (total 4,100)	10	200	1,300
Non-residential properties (total 390)	<10	20	160
People	30	440	2,900
Community facilities	0	<10 Educational buildings	<10 Educational buildings
Utilities assets	<10	10	30
Transport links (excluding minor roads)	Roads at 20 locations Rail at <10 locations	Roads at 80 locations Rail at <10 locations	Roads at 110 locations Rail at <10 locations
Environmental designated areas (km^2)	0	0	0
Designated cultural heritage sites	3	3	4
Agricultural land (km^2)	1.2	1.5	2.8

Table 1: Summary of flooding impacts[1]

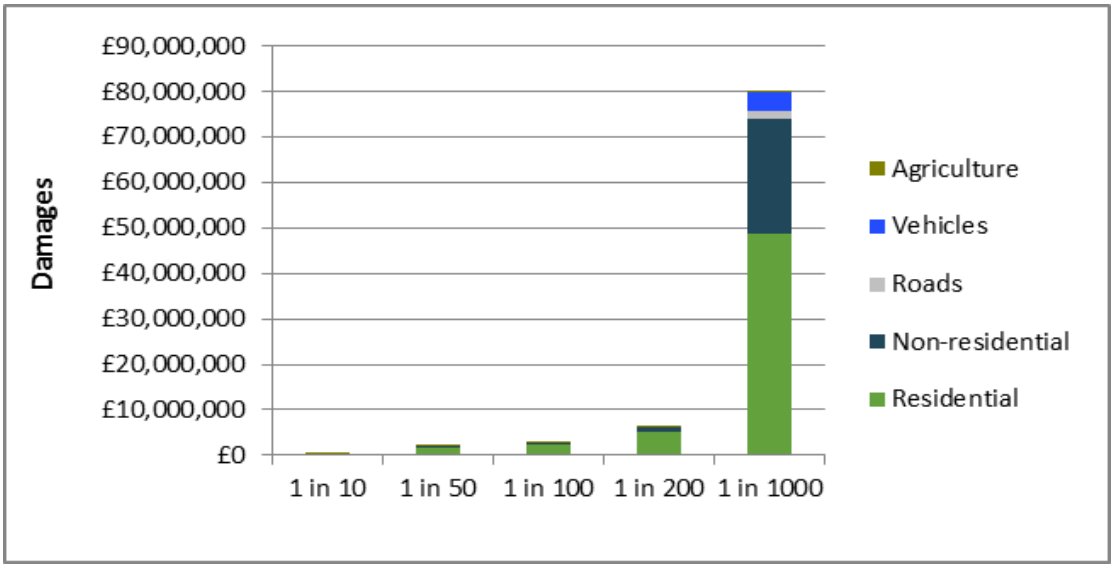


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

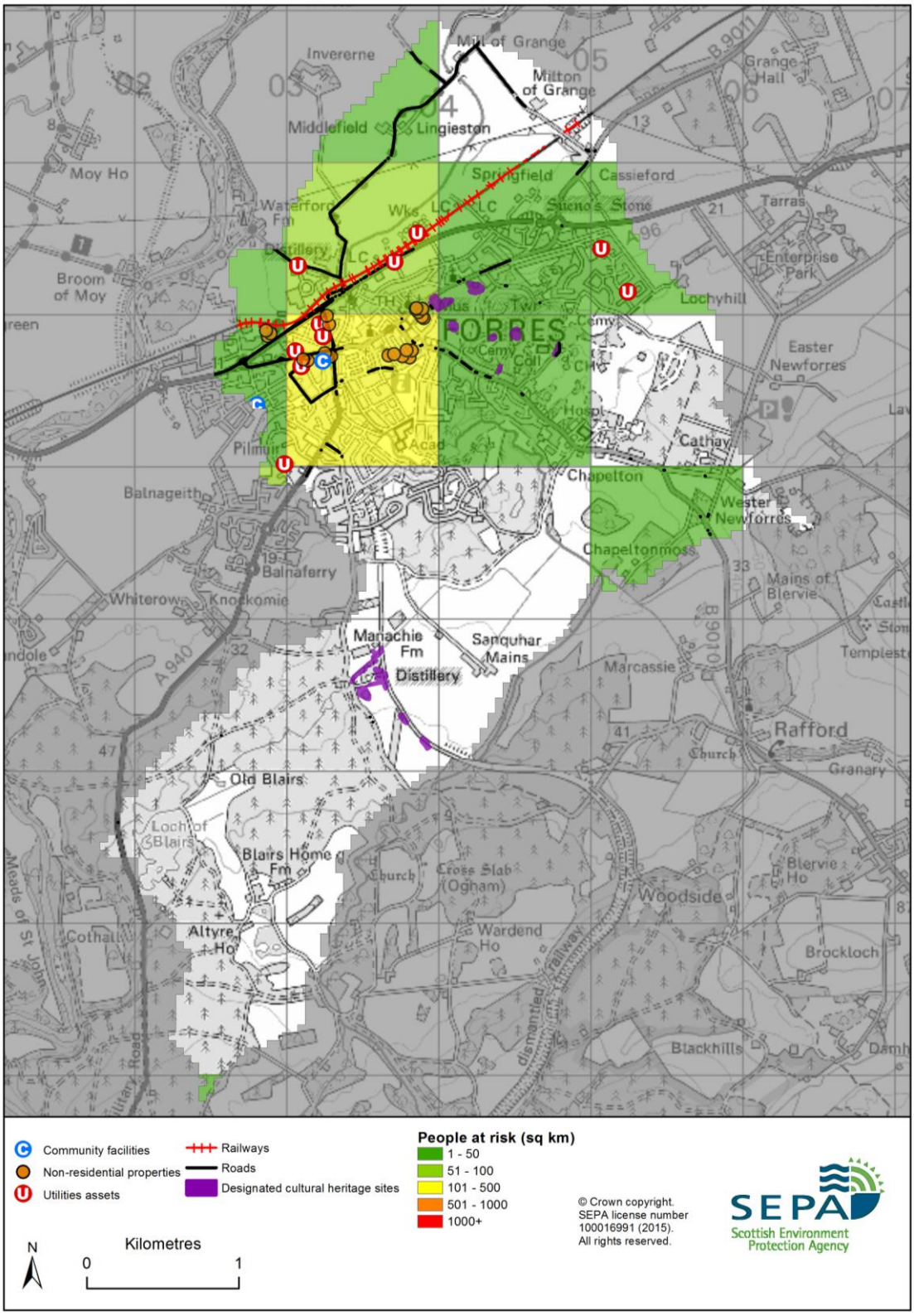


Figure 3: Impacts of flooding

History of flooding

The earliest recorded flood was in 1829, when Forres was flooded from the River Findhorn and Forres Burn during the Great Muckle Spate. In August 1990 a large pond in Sanquhar burst its banks flooding the west end of the town, bridges were washed away and properties in Bogton Place, Burdshaugh, St Catherine, Iowa Place, Tyler Street and Robertson Place were flooded.

The highest impact flood occurred in 1997 when the Burn of Mosset burst its banks, inundating 430 residential properties and 27 non-residential properties at an estimated cost of £3.7 million.

The Burn of Mosset flooded properties in November 2002. Additionally, Fleurs Road and Fleurs Place regularly suffer from surface water flooding.

Objectives to manage flooding in Potentially Vulnerable Area 05/06

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Forres Potentially Vulnerable Area.

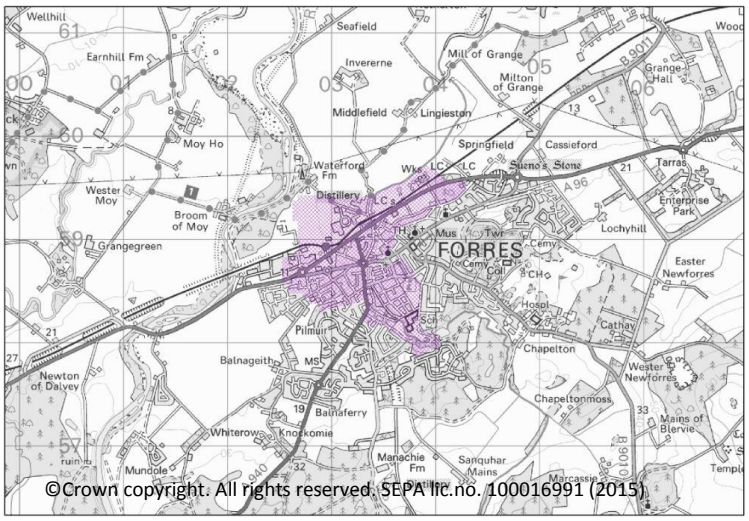
Maintain the Forres (Burn of Mosset) Flood Protection Scheme and accept existing levels of flood risk from the Burn of Mosset

Indicators:

- An estimated 40 non-residential properties will continue to the protected (to a 1 in 100 year standard of protection
- An estimated 1,700 people will continue to be protected (to a 1 in 100 year standard of protection)

Objective ID: 500601

Target area:



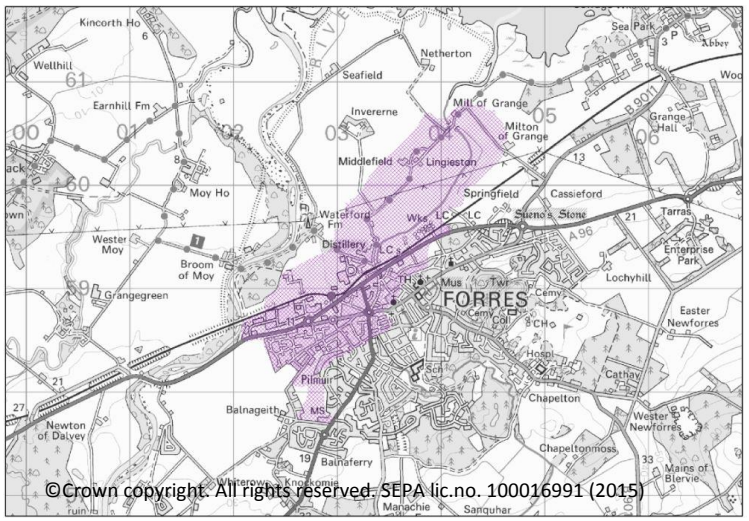
Maintain the Forres (River Findhorn) Flood Protection Scheme and accept existing levels of flood risk from the River Findhorn

Indicators:

- An estimated 80 non-residential properties will continue to be protected (to a 1 in 200 year standard of protection)
- An estimated 2,000 people continue to be protected (to a 1 in 200 year standard of protection)

Objective ID: 500602

Target area:



Target area	Objective	ID	Indicators within PVA
Forres	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5303	• 7 locations of the A96 with a total length of 760m
Forres	Reduce risk from surface water flooding in Forres	500605	* See note below
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 200 residential properties • £380,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 200 residential properties • £380,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 05/06 there are 190 residential properties at risk and Annual Average Damages of £130,000.

Actions to manage flooding in Potentially Vulnerable Area 05/06

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Forres Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5303021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5303)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (5006050018)		
Objective (ID):	Reduce risk from surface water flooding in Forres (500605)		
Delivery lead:	The Moray Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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. An integrated catchment study will be carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5006010017)		
Objective (ID):	Maintain the Forres (Burn of Mosset) Flood Protection Scheme and accept existing levels of flood risk from the Burn of Mosset (500601)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Burn of Mosset Flood Protection Scheme in Forres. The existing scheme provides a 1 in 100 year standard of protection, including an allowance for climate change, to 792 residential and 41 non-residential properties.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5006020017)		
Objective (ID):	Maintain the Forres (River Findhorn) Flood Protection Scheme and accept existing levels of flood risk from the River Findhorn (500602)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the River Findhorn and Pilmuir Flood Protection Scheme in Forres. The existing scheme provides a 1 in 200 year standard of protection, including an allowance for climate change, to 908 residential and 83 non-residential properties.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Forres' and the 'Waterford, Seafield and Invererne' flood warning areas which are part of the Findhorn river flood warning scheme. This will include the review and rationalisation of flood warning areas in the Findhorn taking account of the Forres flood protection schemes.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

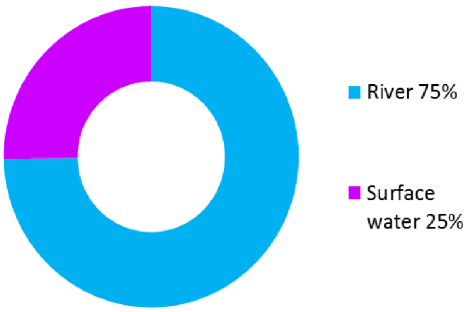
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

River Findhorn (Potentially Vulnerable Area 05/07)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council, The Highland Council	River Findhorn

Summary of flooding impacts



At risk of flooding

- 100 residential properties
- <10 non-residential properties
- £200,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

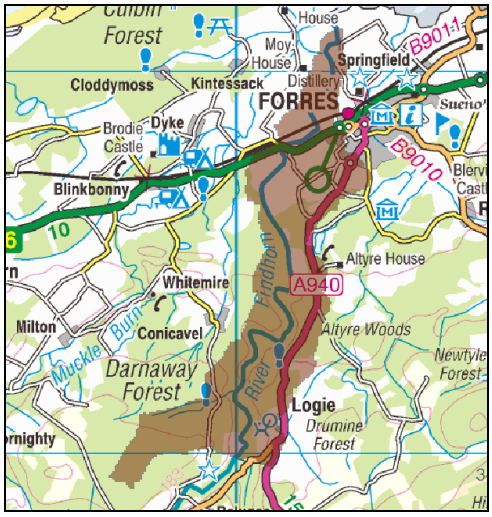
River Findhorn (Potentially Vulnerable Area 05/07)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council, The Moray Council	River Findhorn

Background

This Potentially Vulnerable Area covers the west of Forres and the mainly rural areas to the south (shown below). It is approximately 23km^2.

The main watercourse in this area is the River Findhorn.



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Forres benefits from two flood protection schemes, one on the Burn of Mosset and one on the River Findhorn. An estimated 1,700 residential and 120 non-residential properties benefit from these two schemes.

Approximately 100 residential and fewer than 10 non-residential properties remain at risk of flooding in this area.

The Annual Average Damages are approximately £200,000 with the majority caused by river flooding.

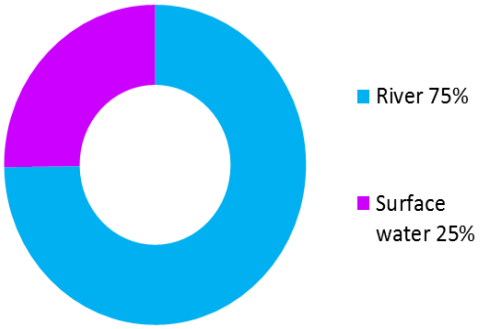


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The Forres (Findhorn and Pilmuir) Flood Protection Scheme is designed for a one in a 200 year flood with an additional allowance for climate change. The assessment of flood risk presented in this report takes account of the protection provided by the scheme up to and including the one in 200 year flood. No allowance is made for the residual benefits that the flood protection scheme provides for events which exceed this standard of protection. As a result the Annual Average Damages from river flooding are considered to be overestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads affected by flooding include the A96 and A940, and the Inverness to Aberdeen railway line has a risk of being flooded at several locations. Six designated cultural heritage sites are at risk of flooding within this area. Designated environmental sites at risk include Lower Findhorn Woods Special Area of

Conservation and Site of Special Scientific Interest (SSSI), Darnaway and Lethen Forest Special Protection Area and Randolph's Leap SSSI.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads. The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 1,100)	<10	100	410
Non-residential properties (total 70)	<10	<10	40
People	<10	220	900
Community facilities	0	<10 Educational buildings	<10 Educational buildings
Utilities assets	0	0	<10
Transport links (excluding minor roads)	Roads at 30 locations Rail at <10 locations	Roads at 40 locations Rail at <10 locations	Roads at 50 locations Rail at <10 locations
Environmental designated areas (km^2)	1.1	1.3	1.3
Designated cultural heritage sites	5	6	6
Agricultural land (km^2)	0.5	2.2	3.0

Table 1: Summary of flooding impacts[1]

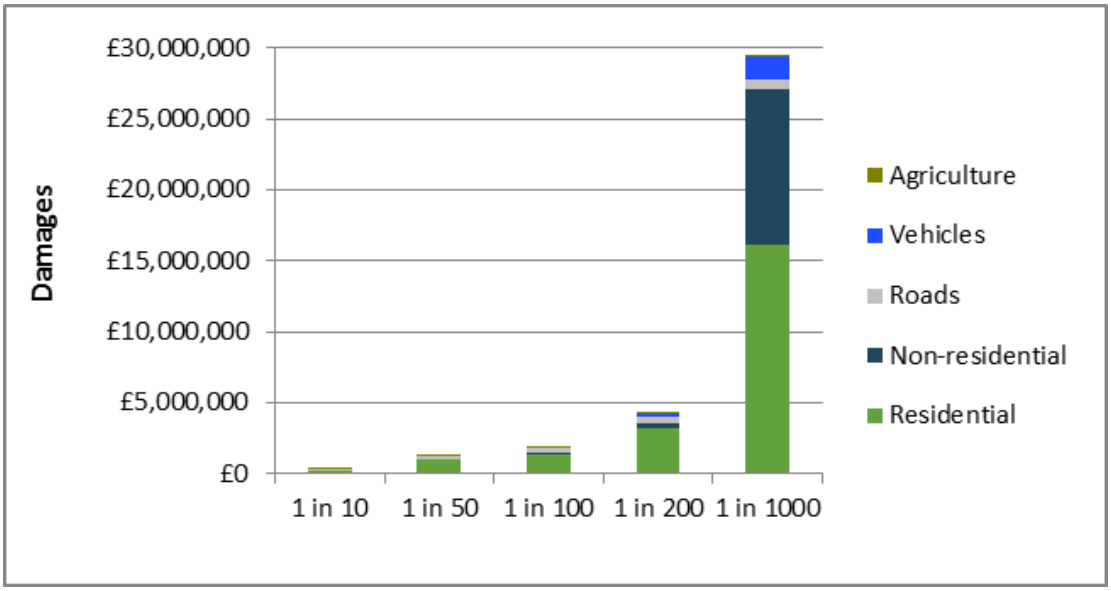


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

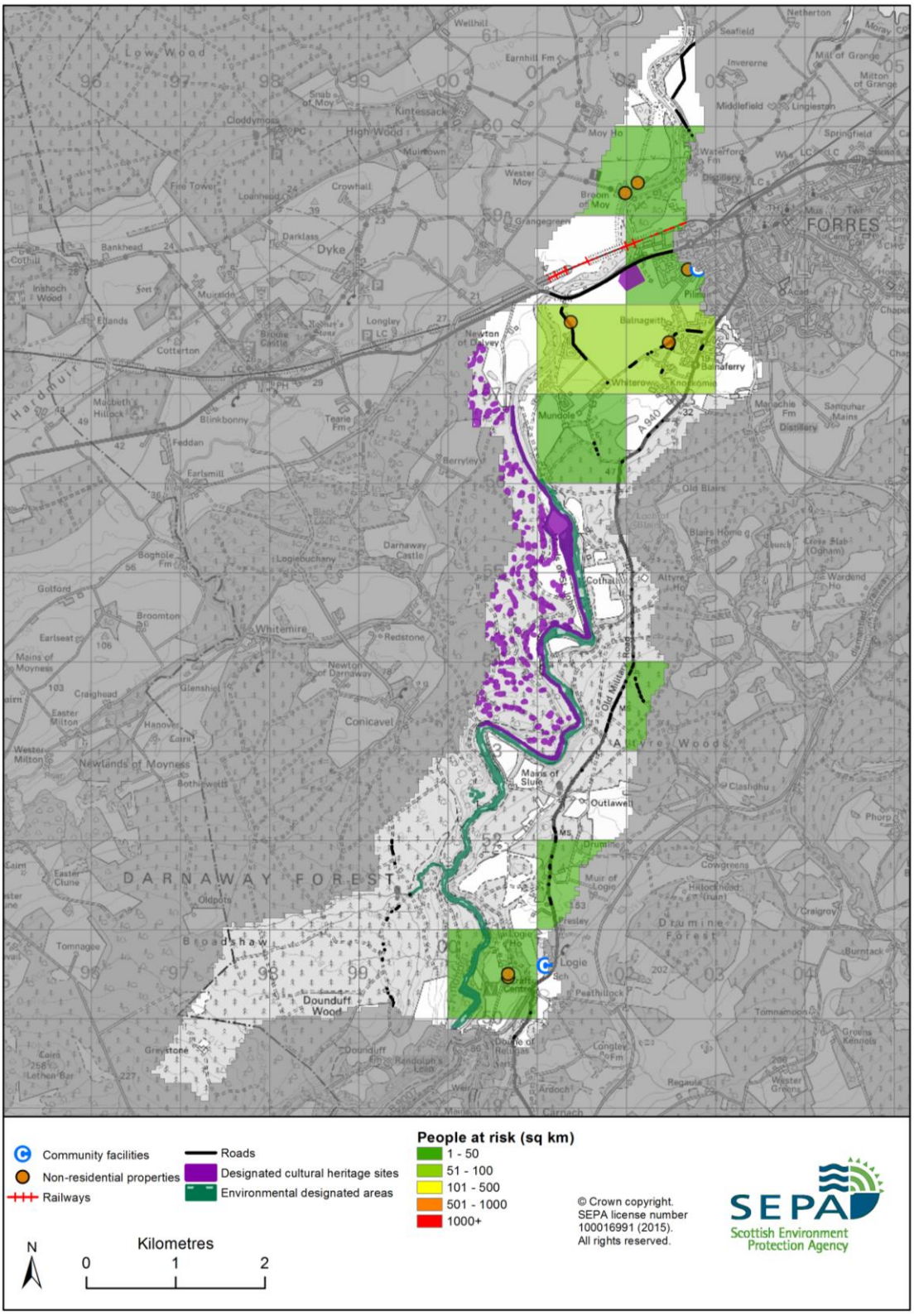


Figure 3: Impacts of flooding

History of flooding

The earliest flood on record is the Great Muckle Spate of August 1829, which affected large areas of north east Scotland. There were several major floods during the 1950s and the flood of 17 August 1970 is one of the largest floods on Scottish record. In September 2002 surface water flooding affected properties and the filling station in the Pilmuir area of Forres.

Objectives to manage flooding in Potentially Vulnerable Area 05/07

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for River Findhorn Potentially Vulnerable Area.

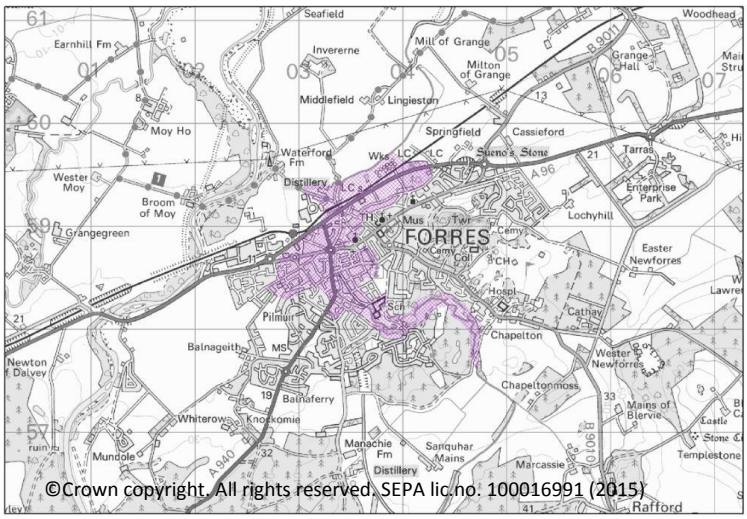
Maintain the Forres (Burn of Mosset) Flood Protection Scheme and accept existing levels of flood risk from the Burn of Mosset

Indicators:

- An estimated 40 non-residential properties will continue to be protected (to a 1 in 100 year standard of protection)
- An estimated 1,700 people will continue to be protected (to a 1 in 100 year standard of protection)

Objective ID: 500701

Target area:



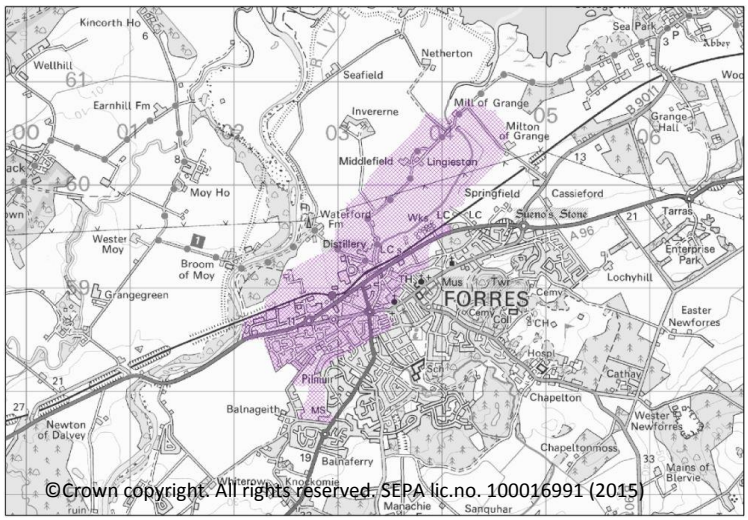
Maintain the Forres (River Findhorn) Flood Protection Scheme and accept existing levels of flood risk from the River Findhorn

Indicators:

- An estimated 80 non-residential properties will continue to be protected (to a 1 in 200 year standard of protection)
- An estimated 2,000 people will continue to be protected (to a 1 in 200 year standard of protection)

Objective ID: 500702

Target area:



Target area	Objective	ID	Indicators within PVA
River Findhorn	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5304	• 4 locations of the A96 with a total length of 110m
Forres	Reduce risk from surface water flooding in Forres	500705	* See note below
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 100 residential properties • £200,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 100 residential properties • £200,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 05/07 there are 40 residential properties at risk and Annual Average Damages of £51,000.

Actions to manage flooding in Potentially Vulnerable Area 05/07

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for River Findhorn Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5304021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5304)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (5007050018)		
Objective (ID):	Reduce risk from surface water flooding in Forres (500705)		
Delivery lead:	The Moray Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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. An integrated catchment study will be carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5007010017)		
Objective (ID):	Maintain the Forres (Burn of Mosset) Flood Protection Scheme and accept existing levels of flood risk from the Burn of Mosset (500701)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Burn of Mosset Flood Protection Scheme in Forres. The existing scheme provides a 1 in 100 year standard of protection, including an allowance for climate change, to 792 residential and 41 non-residential properties.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5007020017)		
Objective (ID):	Maintain the Forres (River Findhorn) Flood Protection Scheme and accept existing levels of flood risk from the River Findhorn (500702)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the River Findhorn and Pilmuir Flood Protection Scheme in Forres. The existing scheme provides a 1 in 200 year standard of protection, including an allowance for climate change, to 908 residential and 83 non-residential properties.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Broom of Moy', 'Forres', 'Red Craig' and 'Waterford, Seafield and Invererne' flood warning areas which are part of the Findhorn river flood warning scheme. This will include the review and rationalisation of flood warning areas in the Findhorn taking account of the Forres flood protection schemes.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council and The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

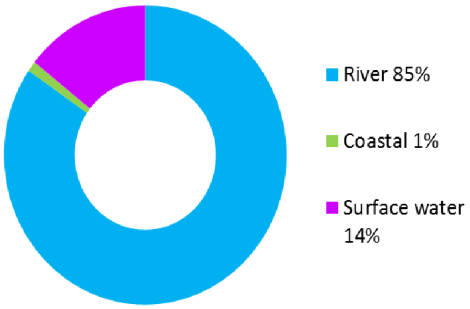
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Nairn East and Auldearn (Potentially Vulnerable Area 05/08)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Nairn

Summary of flooding impacts



At risk of flooding

- 80 residential properties
- 30 non-residential properties
- £230,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

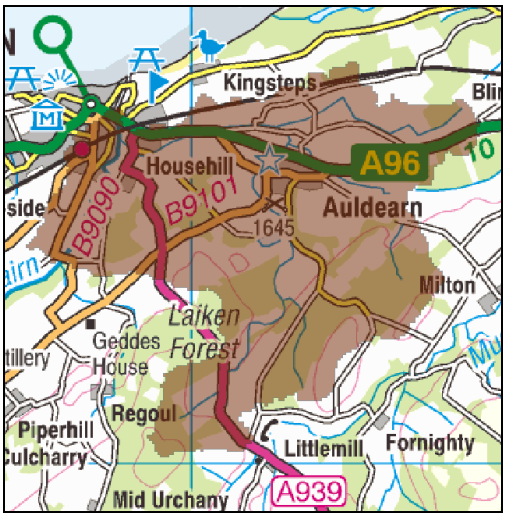
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	Maintain flood warning	Awareness raising	*Surface water plan/study*	Emergency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

Nairn East and Auldearn (Potentially Vulnerable Area 05/08)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Nairn

Background

This Potentially Vulnerable Area covers the south eastern section of Nairn as well as Auldearn and surrounding rural areas (shown below). It is approximately 33km^2.



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The A96, A939 and B9090 and B9101 all pass through the area. The main watercourse is the River Nairn.

There are approximately 80 residential and 30 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £230,000 with the majority caused by river flooding.

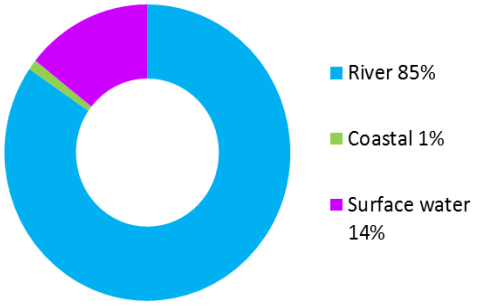


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Flooding from the River Nairn affects the Church Road and Howford Road areas of Nairn and Househill. The Auldearn Burn also contributes to flood risk in Nairn, Auldearn and Newmill. Surface water flood risk is concentrated on agricultural land, however there are further localised areas of surface water flood risk across Nairn and in Househill and Auldearn.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A96, A939 and B9090 and B9101. The Inverness to Aberdeen railway line is also at risk of flooding at several locations. Six designated cultural heritage sites are at risk.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties and roads. The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 1,700)	20	80	110
Non-residential properties (total 210)	20	30	40
People	50	180	240
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 70 locations Rail at 10 locations	Roads at 110 locations Rail at 10 locations	Roads at 120 locations Rail at 10 locations
Environmental designated areas (km^2)	0	0	0
Designated cultural heritage sites	5	6	6
Agricultural land (km^2)	1	2	2

Table 1: Summary of flooding impacts[1]

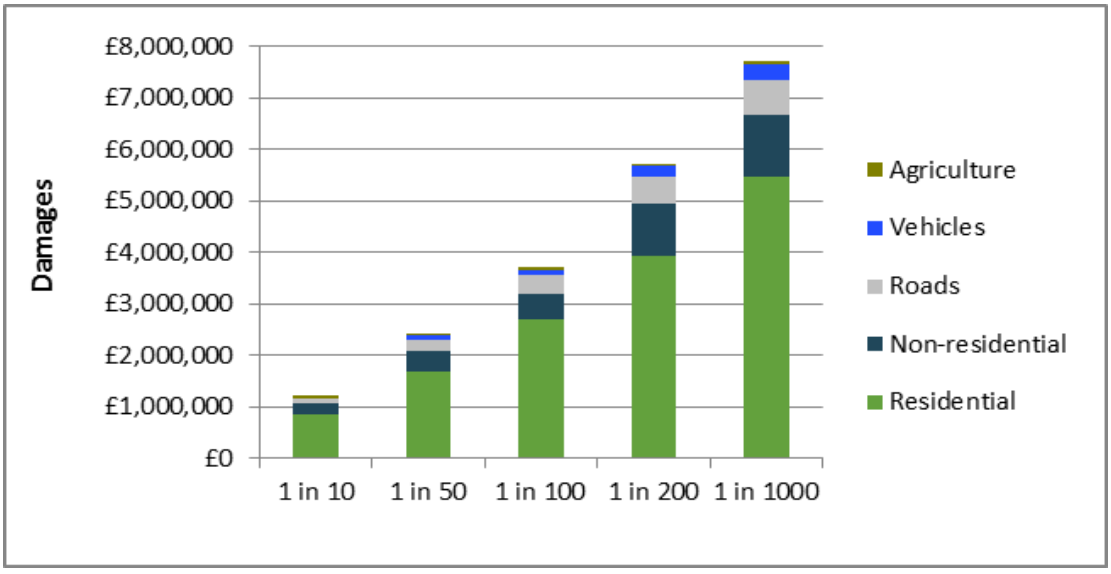


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

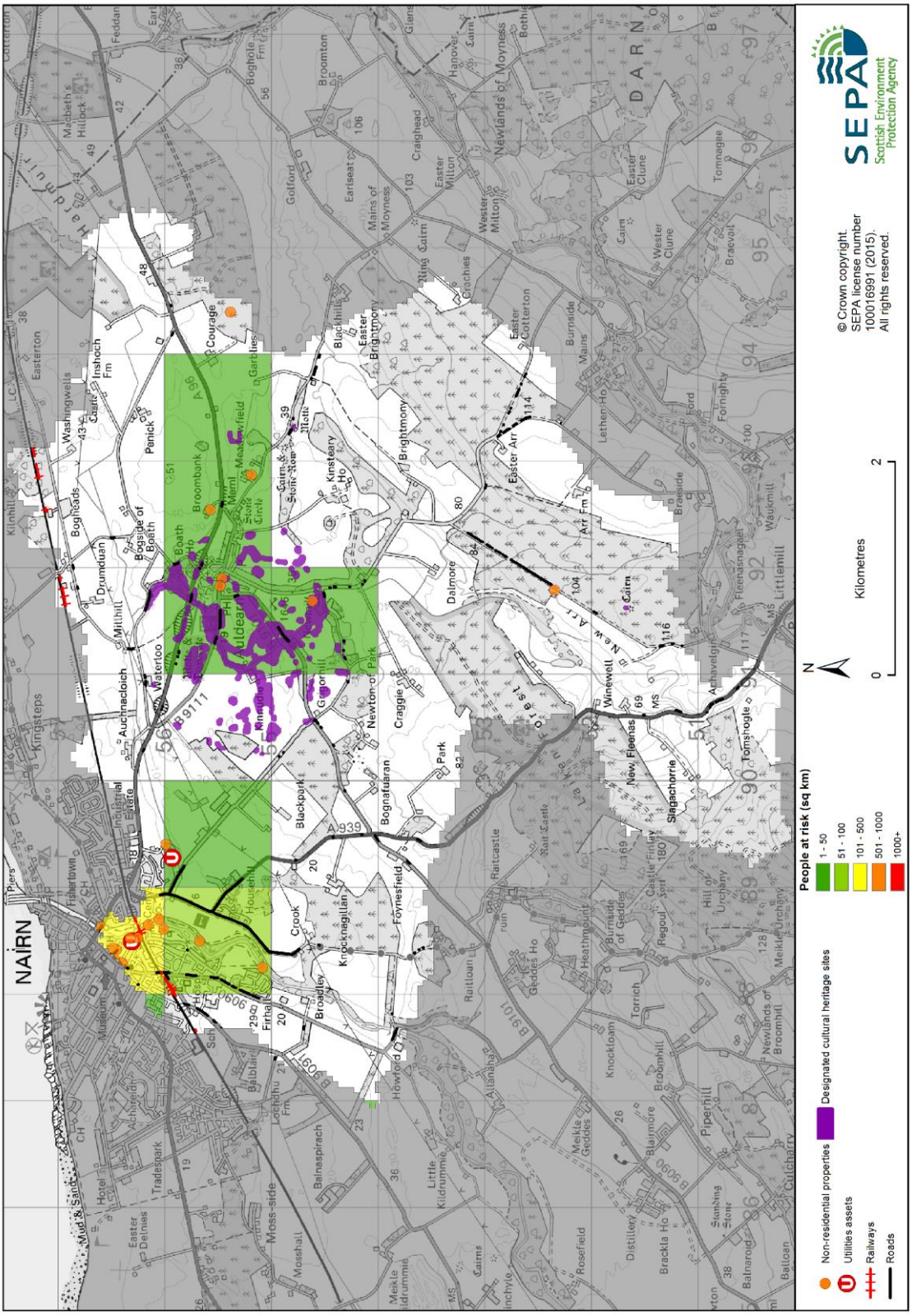


Figure 3: Impacts of flooding

History of flooding

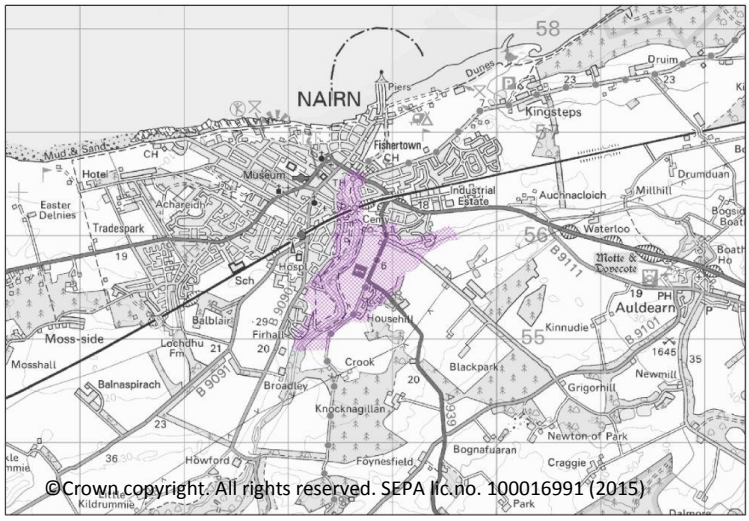
The earliest recorded flood was in 1782, when one half of the bridge in Nairn was washed away. There were major floods on the River Nairn in 1820, 1825, 1829 (The Great Muckle Spate), 1865, 1874, 1877, 1914, 1915, 1937 and 1993. The Firhall Suspension Bridge and the Jubilee Bridge both collapsed and properties were affected during the July 1956 flood on the River Nairn.

In July 1997, January 2005 and in 2014 properties and roads in Nairn were flooded from the Auldearn Burn.

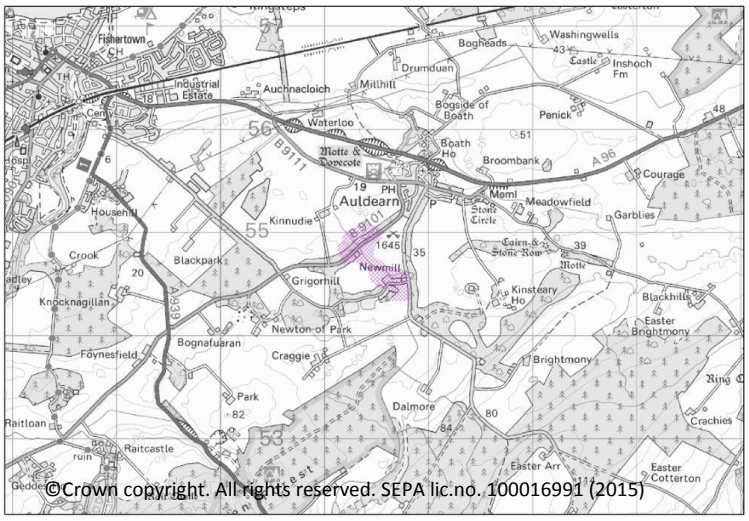
Objectives to manage flooding in Potentially Vulnerable Area 05/08

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Nairn East and Auldearn Potentially Vulnerable Area.

Reduce flood risk in Nairn from the River Nairn and the Auldearn Burn

Indicators:	Target area:
• 130 people • £110,000 Annual Average Damages from residential properties	 ©Crown copyright. All rights reserved. SEPA lic.no. 100016991 (2015)
Objective ID: 500801	

Reduce flood risk to Newmill from the Auldearn Burn

Indicators:	Target area:
• 10 people • £16,000 Annual Average Damages from residential properties	 ©Crown copyright. All rights reserved. SEPA lic.no. 100016991 (2015)
Objective ID: 500802	

Target area	Objective	ID	Indicators within PVA
Nairn East and Auldearn	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding	5305	• 7 locations of the A96 with a total length of 120m
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 80 residential properties • £230,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 80 residential properties • £230,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/08

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Nairn East and Auldearn Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5305021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A96 at risk of flooding (5305)		
Delivery lead:	Transport Scotland		
Status:	**Not started**	Indicative delivery:	**2028-2033**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A96.		

Action (ID):	**FLOOD PROTECTION STUDY** (5008010005)		
Objective (ID):	Reduce flood risk in Nairn from the River Nairn and the Auldearn Burn (500801)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	86 of 168	**6 of 23**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	The study should include investigation of modification of conveyance, direct defences and natural flood management (river and floodplain restoration and sediment management) to reduce risk from the Auldearn Burn in Nairn. Direct defence should also be considered to reduce flood risk from the River Nairn. Other actions should also be considered to identify the most sustainable options for flood risk management.		

Potential impacts	
Economic:	The study could benefit 57 residential and nine non-residential properties at risk of flooding in this location, with potential damages avoided of up to £3.9 million.
Social:	An estimated 125 people may benefit from flood protection works. The communities which may benefit from flood protection works have a higher than average proportion of vulnerable residents. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Flood protection works may also benefit the railway, roads (A96 and A939) and two energy production/electricity utility sites, thus reducing the impacts of flooding to the wider community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on habitats and ecology. The Nairn conservation area is unlikely to be impacted by any future flood protection works. The Auldearn Burn (water body ID 20307) is identified by river basin management planning to be at less than good status for its physical condition. Future works could improve the condition of the rivers or degrade them. Opportunities to improve the condition of the rivers should be considered by coordinating with river basin management planning.

Action (ID):	**FLOOD PROTECTION STUDY** (5008020005)		
Objective (ID):	Reduce flood risk to Newmill from the Auldearn Burn (500802)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	152 of 168	**20 of 23**	
Status:	**Not started**	Indicative delivery:	**2022-2027**
Description:	A flood protection study is required to consider a scheme for Newmill to reduce risk from Auldearn Burn. The study should include investigation of modification of conveyance actions and direct defences. Other actions may also be considered to develop the most sustainable range of options.		

Potential impacts	
Economic:	The study should confirm the economic impacts and number of properties at risk. Currently it is estimated that five residential and one non-residential property are at risk of flooding in this location, with potential damages avoided of up to £550,000.
Social:	The social benefits including to people and to community facilities will be confirmed once the hydraulic study has been carried out. A reduction in flood risk would have a positive benefit to the health and

Social:	wellbeing of the community and socially vulnerable people. Reducing flood risk to the B9101 and other local roads may benefit the wider community. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on habitats and ecology. The Nairn conservation area is unlikely to be impacted by any future flood protection works. A battlefield cultural heritage site may benefit from flood protection works. The physical condition of the Auldearn Burn (water body ID 20307) 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.

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Nairn', 'Nairn (River Park)' and 'Nairn Side (Cawdor)' flood warning areas which are part of the Nairn river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

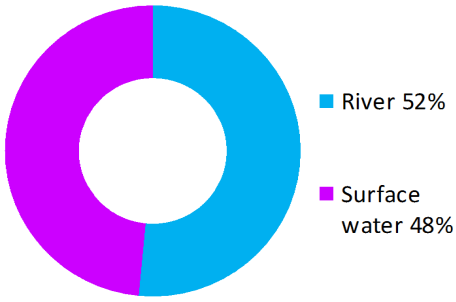
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Rothes and Aberlour (Potentially Vulnerable Area 05/09)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	River Spey

Summary of flooding impacts



At risk of flooding

- 350 residential properties
- 100 non-residential properties
- £390,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

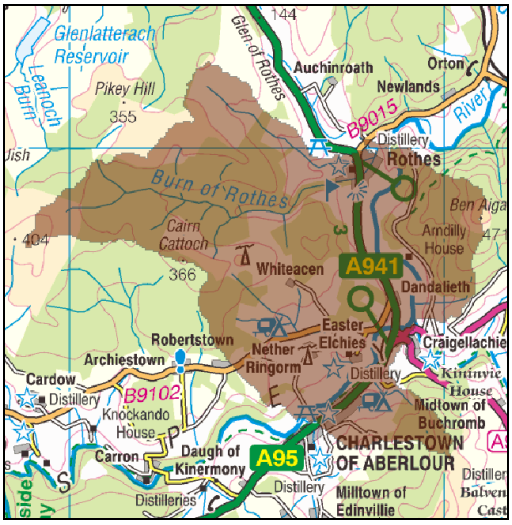
Rothes and Aberlour (Potentially Vulnerable Area 05/09)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Moray Council	River Spey

Background

This Potentially Vulnerable Area covers Rothes and Charlestown of Aberlour along with the surrounding rural areas (shown below). It is approximately 61km^2.

The main river in the area is the River Spey. There are also several smaller watercourses including the Burn of Rothes, Back Burn, and Black Burn.



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Rothes Flood Protection Scheme was completed in 2011 and benefits an estimated 370 residential and 35 non-residential properties. It provides protection from flooding on the Back Burn, Burn of Rothes and the Black Burn up to a one in 100 year flood plus an allowance for climate change.

There are approximately 350 residential and 100 non-residential properties at risk of flooding. The Annual Average Damages are approximately £390,000, split between river and surface water flooding.

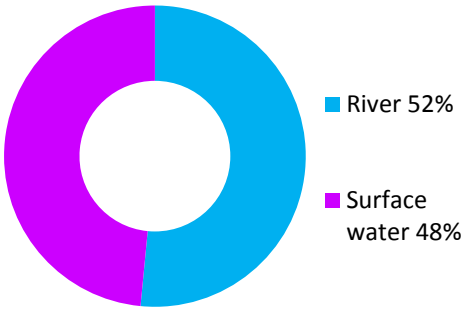


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The Rothes Flood Protection Scheme is designed for a one in 100 year flood plus an allowance for climate change. The assessment of flood risk presented in this report takes account of the protection provided by the scheme up to and including the one in 100 year flood. No allowance is made for the residual benefits that the flood protection scheme provides for events which exceed this standard of protection. As a result the number of residential properties, non-residential properties and people reported to be at risk of river flooding in this area is considered to be overestimated. The Annual Average Damages from river flooding are also considered to be overestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. 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.

Roads potentially affected by flooding include the A941, A95 and B9102. Six designated cultural heritage sites and areas of environmental importance are at risk. These include Special Areas of Conservation and Sites of Special Scientific Interest along the River Spey.

The damages associated with floods of different likelihood are shown in Figure 2. The highest damages are to residential properties followed by non-residential properties. The location of the impacts is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 1,200)	30	350	380
Non-residential properties (total 240)	30	100	100
People	70	780	830
Community facilities	0	0	0
Utilities assets	<10	<10	10
Transport links (excluding minor roads)	Roads at 50 locations	Roads at 80 locations	Roads at 80 locations
Environmental designated areas (km^2)	2	2	3
Designated cultural heritage sites	5	6	6
Agricultural land (km^2)	2	3	3

Table 1: Summary of flooding impacts[1]

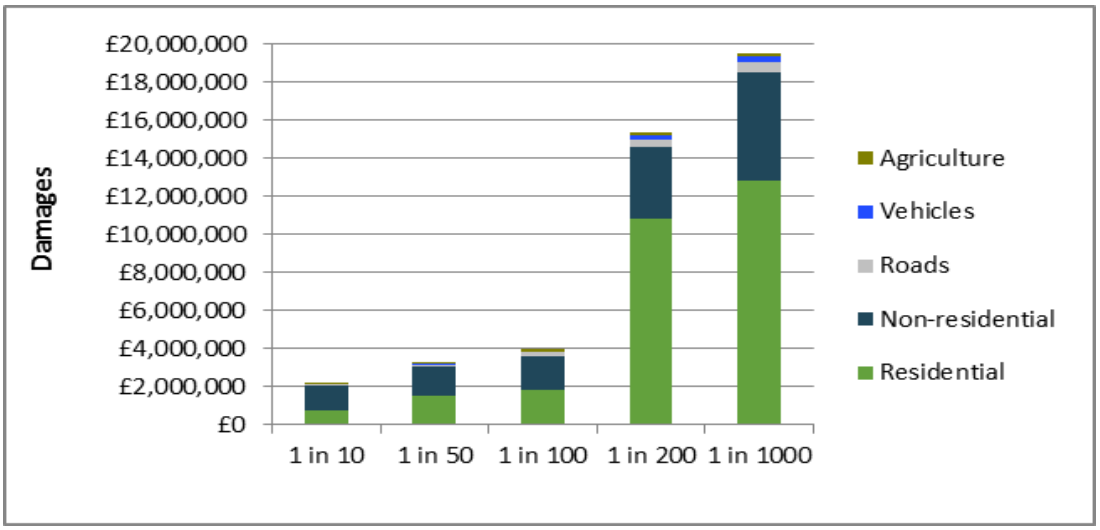


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

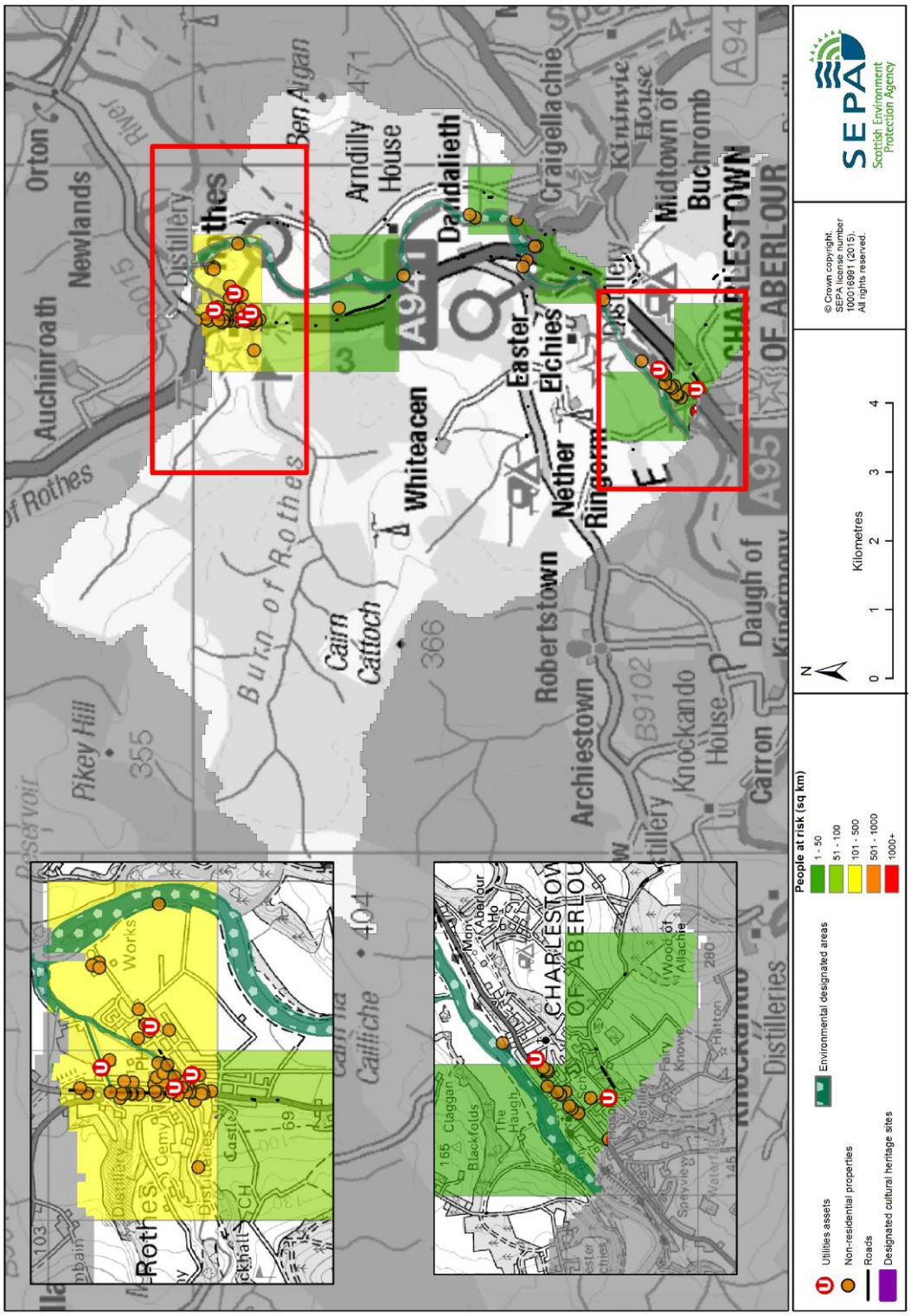


Figure 3: Impacts of flooding

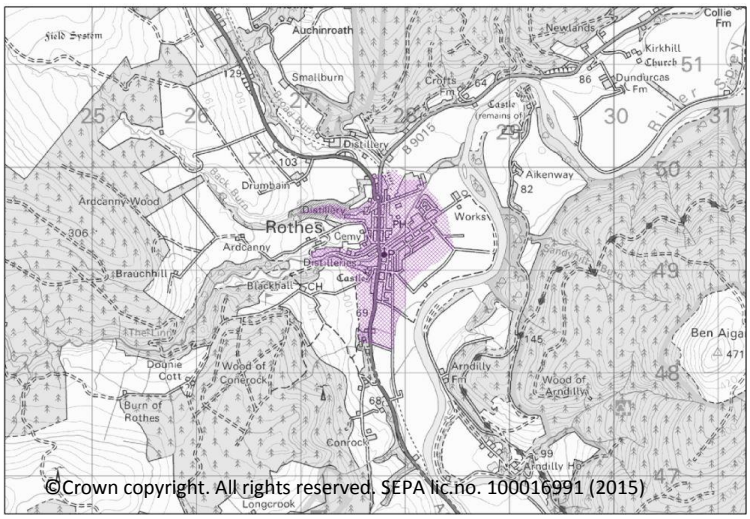
History of flooding

There is a long history of flooding in Rothes from the smaller watercourses such as the Burn of Rothes, Back Burn and Black Burn. The earliest recorded flood was in 1846, when heavy rainfall damaged crops in Knockando and Rothes. Notable floods occurred more recently in 2002, 2004, 2005, 2007, and 2009.

Objectives to manage flooding in Potentially Vulnerable Area 05/09

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Rothes and Aberlour Potentially Vulnerable Area.

Maintain the Rothes Flood Protection Scheme and accept existing levels of flood risk from the Burn of Rothes, Back Burn and Black Burn

Indicators:	Target area:
• An estimated 800 people will continue to be protected (to a 1 in 100 year standard of protection) • An estimated 40 non-residential properties will continue to be protected (to a 1 in 100 year standard of protection)	 ©Crown copyright. All rights reserved. SEPA lic.no. 100016991 (2015)
Objective ID: 500901	

Target area	Objective	ID	Indicators within PVA
Rothes	Reduce risk of flooding to one electricity substation	5306	• 1 electricity sub-station
Rothes and Aberlour	Reduce risk from surface water flooding in Rothes and Aberlour	500903	* See note below
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 350 residential properties • £390,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 350 residential properties • £390,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 05/09 there are 60 residential properties at risk and Annual Average Damages of £190,000.

Actions to manage flooding in Potentially Vulnerable Area 05/09

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Rothes and Aberlour Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5306021)		
Objective (ID):	Reduce risk of flooding to one electricity substation (5306)		
Delivery lead:	Asset owner		
Status:	**Under development**	Indicative delivery:	**2016-2021**
Description:	Asset owners will carry out a flood protection works to reduce flooding to one electricity sub-station in Rothes.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (5009030018)		
Objective (ID):	Reduce risk from surface water flooding in Rothes and Aberlour (500903)		
Delivery lead:	The Moray Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5000020017)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Aberlour Flood Protection Scheme (1991).		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (5009010017)		
Objective (ID):	Maintain the Rothes Flood Protection Scheme and accept existing levels of flood risk from the Burn of Rothes, Back Burn and Black Burn (500901)		
Delivery lead:	The Moray Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the Rothes Flood Protection Scheme. The existing scheme provides a 1 in 100 year standard of protection, including an allowance for climate change, to 365 residential and 35 non-residential properties.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Aberlour, Craigellachie and Dandaleith' and 'Rothes' flood warning areas which form part of the Spey river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Moray Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

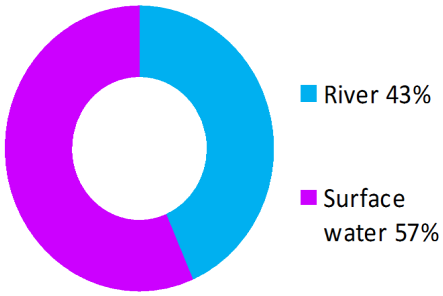
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Carrbridge (Potentially Vulnerable Area 05/10)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Summary of flooding impacts



At risk of flooding

- <10 residential properties
- <10 non-residential properties
- £9,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

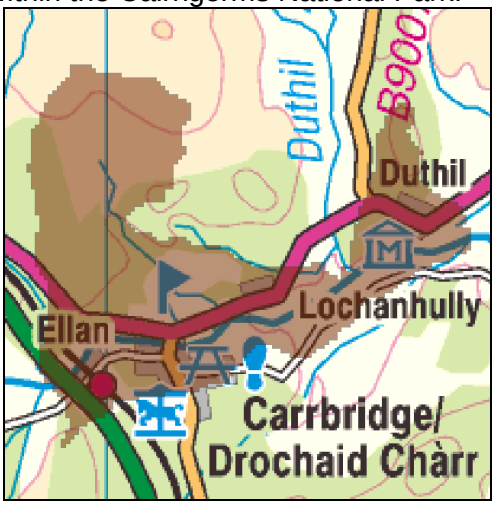
Carrbridge (Potentially Vulnerable Area 05/10)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Background

This Potentially Vulnerable Area covers the community of Carrbridge and the surrounding mainly rural areas (shown below).

It is approximately 10km^2 and is located within the Cairngorms National Park.



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The A9, A938 and B9153 pass through the area. The main watercourse in the area is the River Dulnain.

There are fewer than 10 residential and non-residential properties at risk of flooding.

The Annual Average Damages are approximately £9,000 with the majority caused by surface water flooding.

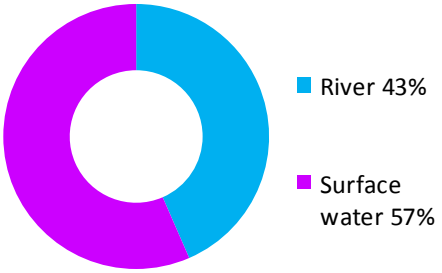


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A9, A938 and B9153. The Inverness to Perth railway line has a risk of being flooded in several locations.

Designated cultural heritage sites and small areas of environmental importance are at risk. This includes parts of the Special Area of Conservation along the River Spey.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to non-residential properties and agricultural land.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 380)	<10	<10	<10
Non-residential properties (total 60)	<10	<10	<10
People	<10	<10	10
Community facilities	0	0	0
Utilities assets	0	0	0
Transport links (excluding minor roads)	Roads at 20 locations Rail at <10 locations	Roads at 30 locations Rail at <10 locations	Roads at 30 locations Rail at <10 locations
Environmental designated areas (km^2)	0.2	0.3	0.3
Designated cultural heritage sites	1	1	1
Agricultural land (km^2)	0.3	0.6	0.7

Table 1: Summary of flooding impacts[1]

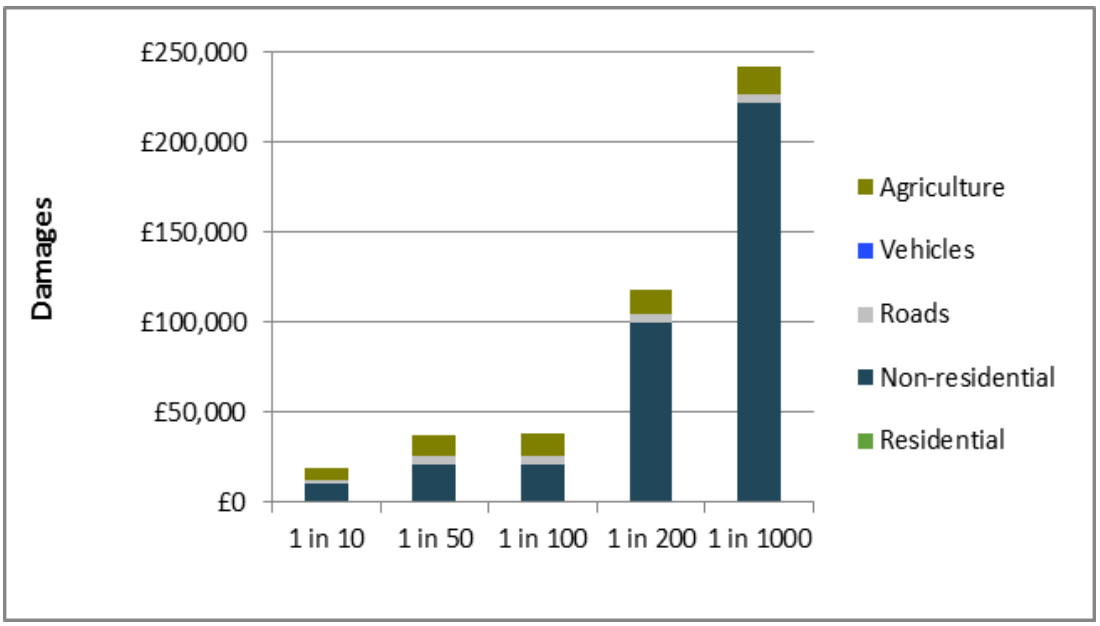


Figure 2: Damages by flood likelihood

History of flooding

The earliest recorded flood was on the River Dulnain in 1829 during the Great Muckle Spate, which severely damaged the local bridge. There were river floods in 1875 and 1892. In 1914 a serious rail accident occurred at Carrbridge, when a bridge was swept away resulting in the death of five people. In 1923 there was flooding at Carrbridge, resulting in four bridges being destroyed and a two mile stretch of road closed for over a month. More recently, the River Dulnain flooded in 2004 and 2014.

[1] Some receptors are counted more than once if flooded from multiple sources

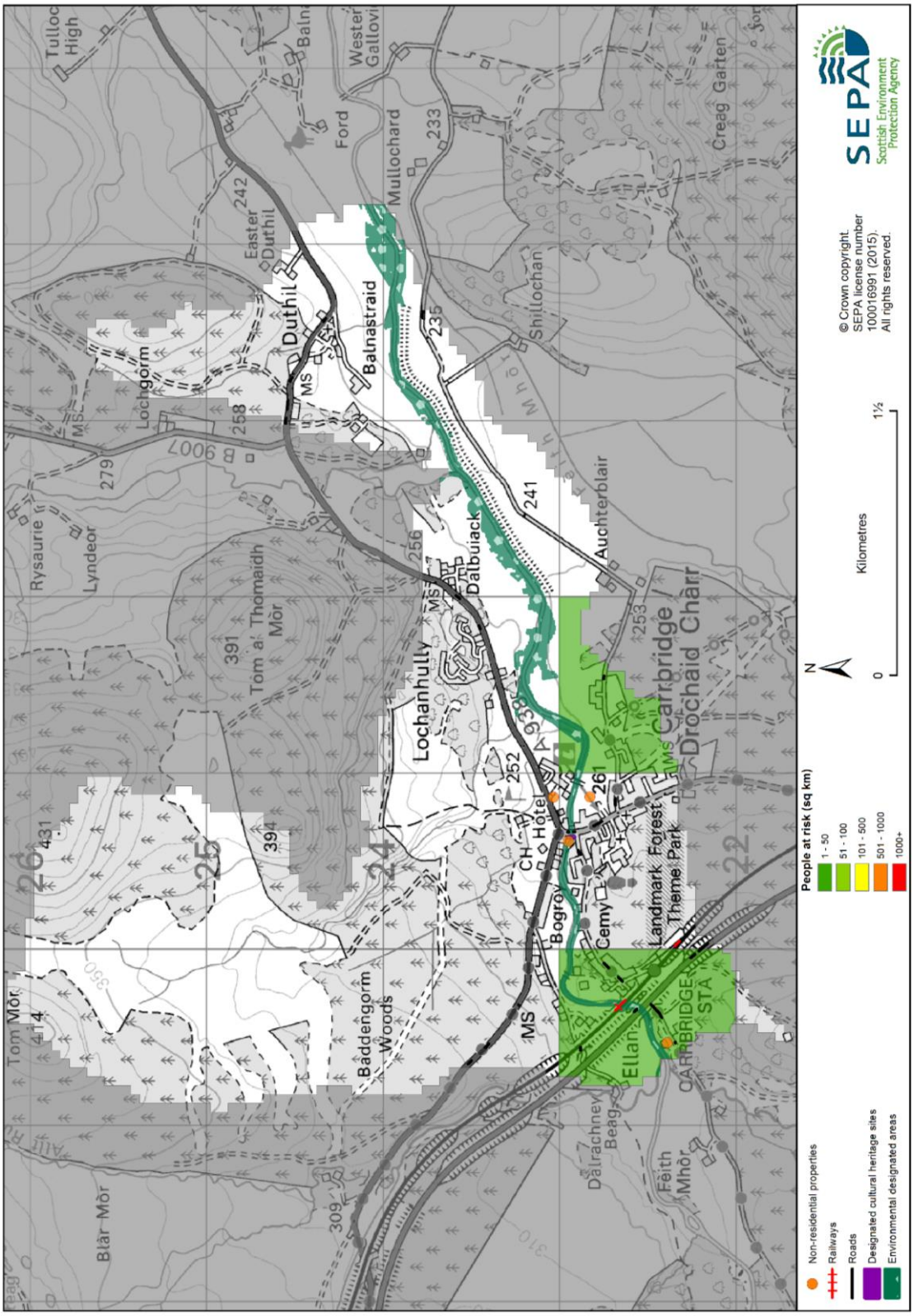


Figure 3: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 05/10

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Carrbridge Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Carrbridge	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding	5307	• 3 locations on the A9 with a total length of 90m
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• <10 residential properties • £9,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• <10 residential properties • £9,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/10

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Carrbridge Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5307021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding (5307)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2022-2027**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A9.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Sluggan to Dulnain Bridge' flood warning area on the River Dulnain which forms part of the Spey river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

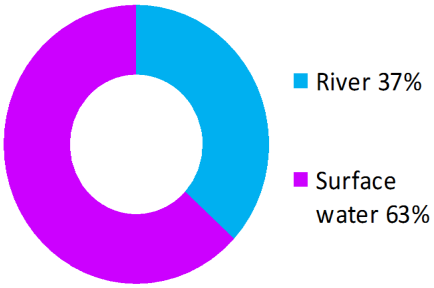
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Aviemore and Boat of Garten (Potentially Vulnerable Area 05/11)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Summary of flooding impacts



At risk of flooding

- 70 residential properties
- 30 non-residential properties
- £180,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

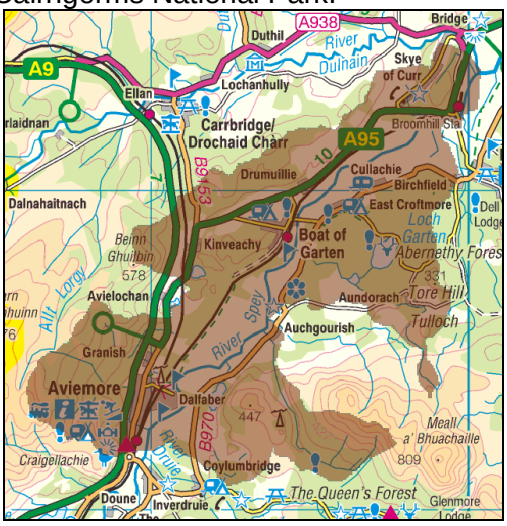
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	Maintain flood warning	Awareness raising	*Surface water plan/study*	Emergency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

Aviemore and Boat of Garten (Potentially Vulnerable Area 05/11)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Background

This Potentially Vulnerable Area covers Aviemore, Boat of Garten and the surrounding area (shown below). It is approximately 94km^2 and is within the Cairngorms National Park.



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The A95, A9, B970 and B9153 roads pass through the area and the main watercourse is the River Spey.

There are approximately 70 residential and 30 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £180,000 with the majority caused by surface water flooding.

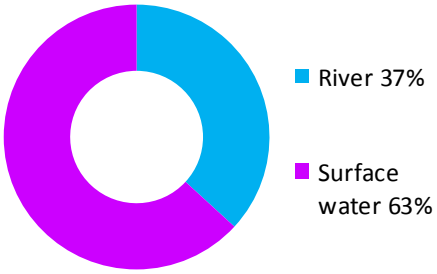


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

There are areas of surface water flood risk located across Aviemore. River flood risk mostly affects agricultural land adjacent to the River Spey but also impacts on small parts of built-up areas in Aviemore including from the Aviemore Burn.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A95, A9, B970 and B9153. The Inverness to Perth railway line and the historic Strathspey railway line are at risk of flooding in several locations.

Two designated cultural heritage sites and small areas of environmental importance are also shown to be at risk within this area. These include Special Areas of Conservation, Special Protection Areas, and Sites of Special Scientific Interest at Abernethy, Kinveachy Forest, Glenmore Forest, and the Cairngorms National Park.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 2,400)	20	70	100
Non-residential properties (total 490)	10	30	30
People	40	160	220
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 60 locations Rail at 20 locations	Roads at 80 locations Rail at 30 locations	Roads at 90 locations Rail at 30 locations
Environmental designated areas (km^2)	4	4	4
Designated cultural heritage sites	2	2	2
Agricultural land (km^2)	5	7	7

Table 1: Summary of flooding impacts[1]

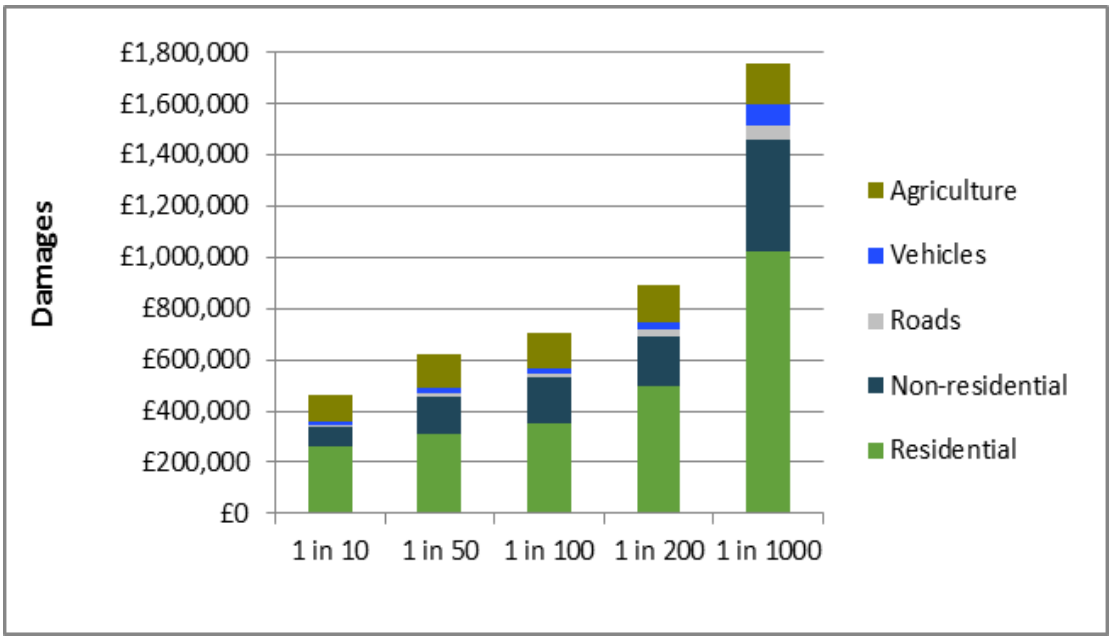


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

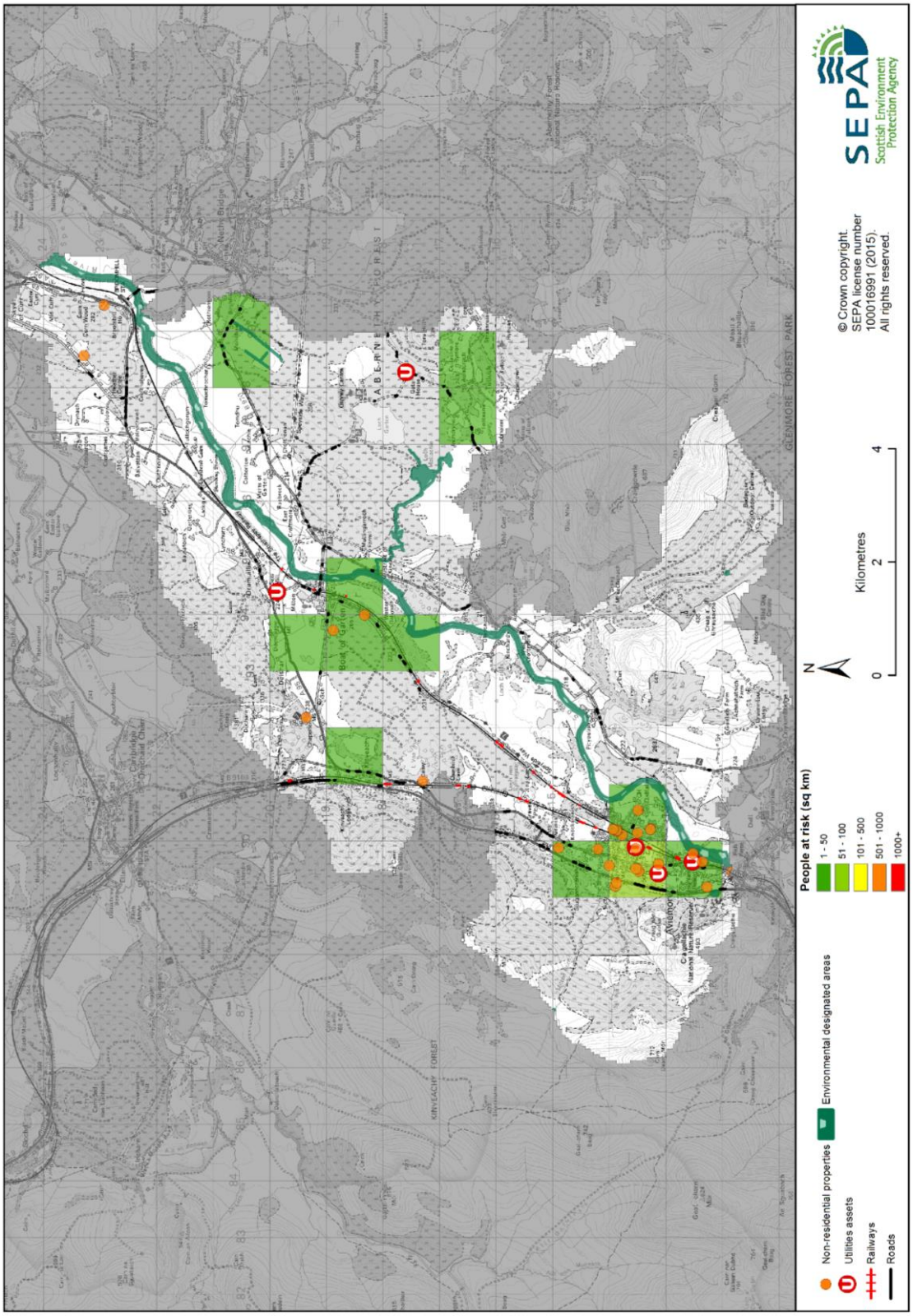


Figure 3: Impacts of flooding

History of flooding

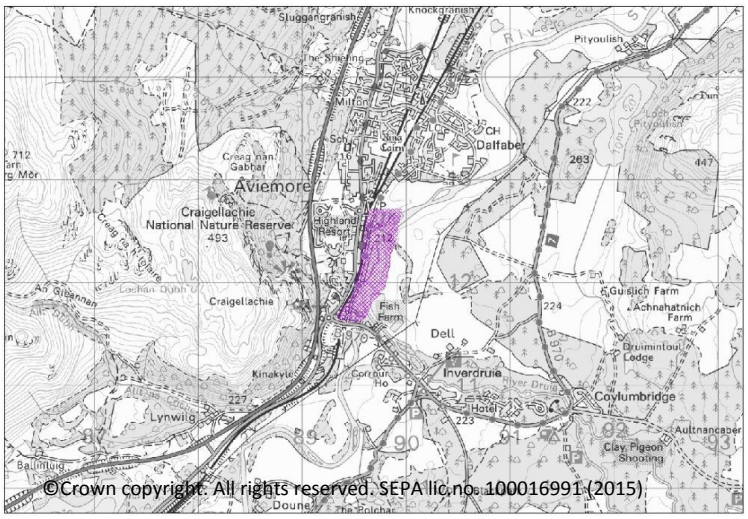
The earliest recorded flood was in 1763, when the Ruidh Magaig Burn damaged the road bridge. The River Spey flooded in 1829 (The Great Muckle Spate), 1865, 1868, 1869, 1875, 1887, 1888, 1892, 1894, 1898, 1906, 1973, 1975, 1978, 1979, 1981, 1983, 1984, 1986, 1989, 1990, 1997 and 2006.

Flooding on the Aviemore Burn also occurred in 1990 and at the same time the Spey was in spate. In January 2005 the Aviemore Burn flooded due to an undersized culvert which has subsequently been replaced.

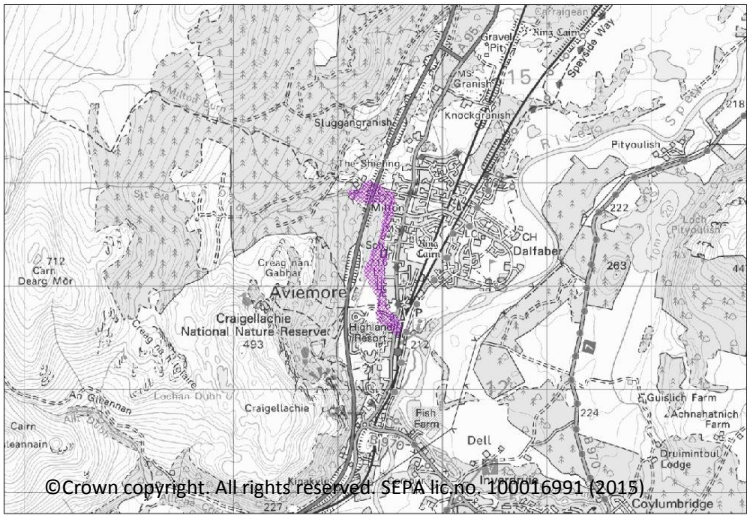
Objectives to manage flooding in Potentially Vulnerable Area 05/11

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Aviemore and Boat of Garten Potentially Vulnerable Area.

Reduce flood risk to Aviemore from the River Spey

Indicators:	Target area:
• £25,000 Annual Average Damages from residential properties • £15,000 Annual Average Damages from non-residential properties	
Objective ID: 501101	

Reduce flood risk to Aviemore from the Aviemore Burn

Indicators:	Target area:
• £1,100 Annual Average Damages from residential properties	
Objective ID: 501102	

Target area	Objective	ID	Indicators within PVA
Aviemore and Boat of Garten	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding	5308	• 9 locations on the A9 with a total length of 1.3km
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 70 residential properties • £180,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 70 residential properties • £180,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/11

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Aviemore and Boat of Garten Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5308021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding (5308)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2022-2027**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A9.		

Action (ID):	**FLOOD PROTECTION STUDY** (5011010005)		
Objective (ID):	Reduce flood risk to Aviemore from the River Spey (501101)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	120 of 168	**12 of 23**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A flood protection study is required to assess direct defences to reduce risk in Aviemore from the River Spey.		
Potential impacts			

Economic:	The flood protection study should confirm the economic impacts and number of properties at risk. Currently it is estimated that eight residential and five non-residential properties are at risk of flooding in this locations, with potential damages avoided of up to £1.2 million.
Social:	An estimated 18 people may benefit from flood protection works. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Flood protection works may also reduce flooding to the railway line and the energy production/electricity utility site, thus benefitting the wider community. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on habitats and ecology. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the River Spey Special Area of Conservation. There is potential to impact on the River Spey Site of Special Scientific Interest. The physical condition of the River Spey (water body ID 23097) 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.

Action (ID):	**FLOOD PROTECTION STUDY** (5011020005)		
Objective (ID):	Reduce flood risk to Aviemore from the Aviemore Burn (501102)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	156 of 168	**22 of 23**	
Status:	**Not started**	Indicative delivery:	**2022-2027**
Description:	A hydraulic study is to be taken forward to confirm flood risk in Aviemore from the Aviemore Burn and if appropriate investigate options to reduce flood risk. It is thought that flood risk in Aviemore is currently underestimated.		
Potential impacts			
Economic:	The study should confirm the economic impacts and number of properties at risk. Currently it is estimated that two residential and two non-residential properties are at risk of flooding in this location, with potential damages avoided of up to £83,000. However, the history of flooding suggests that the potential benefits are likely to be higher.		
Social:	The study should look to confirm the number of people and other receptors (such as the A9 road) at risk of flooding from the Aviemore Burn. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Negative impacts through disturbance to the local community		

Social:	during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the River Spey Special Area of Conservation, Kinveachy Forest Special Area of Conservation, and Kinveachy Forest Special Protection Area.

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Aviemore/Dalfaber' and 'Aviemore/Dalfaber to Grantown' flood warning areas which form part of the Spey river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

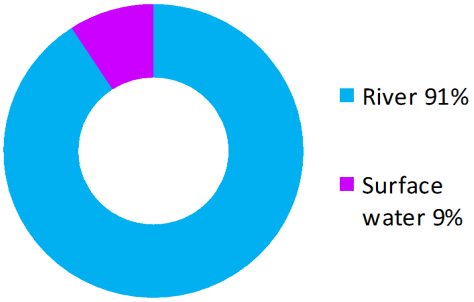
Action (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, 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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Kingussie (Potentially Vulnerable Area 05/12)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Summary of flooding impacts



At risk of flooding

- 30 residential properties
- 20 non-residential properties
- £92,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

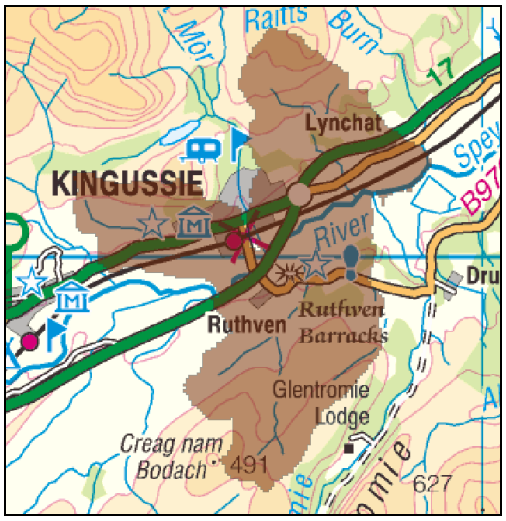
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	Maintain flood warning	Awareness raising	*Surface water plan/study*	Emergency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

Kingussie (Potentially Vulnerable Area 05/12)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Background

This Potentially Vulnerable Area covers the town of Kingussie and surrounding rural areas (shown below). It is approximately 24km^2 and located within the Cairngorms National Park.



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The main river in the area is the River Spey. There are also several smaller burns including the Gynack Burn which flows through the centre of Kingussie.

There are approximately 30 residential and 20 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £92,000 with the majority caused by river flooding.

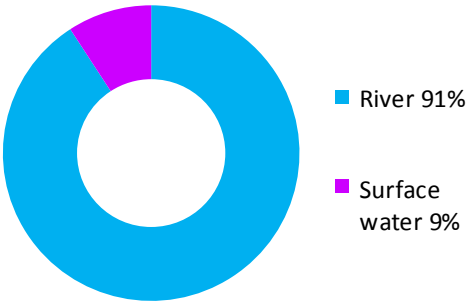


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Kingussie is mostly elevated above the floodplain of the River Spey. The Gynack Burn, a tributary of the River Spey, flows through the town and is the main source of river flooding to properties in Kingussie.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A9, A86, B970 and B9152. The Inverness to Perth railway line has a risk of being flooded at several locations. Two designated cultural heritage sites and an extensive area of environmental importance are shown to be at risk within this area. This includes small areas of Insh Marshes, however it should be noted that flooding of Insh Marshes is essential to maintain the natural characteristics of the site and its designated features.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 700)	<10	30	40
Non-residential properties (total 130)	<10	20	30
People	<10	70	100
Community facilities	0	0	<10 Educational buildings
Utilities assets	0	<10	<10
Transport links (excluding minor roads)	Roads at 20 locations Rail at <10 locations	Roads at 30 locations Rail at 10 locations	Roads at 30 locations Rail at 10 locations
Environmental designated areas (km^2)	12	12	12
Designated cultural heritage sites	2	2	2
Agricultural land (km^2)	4	4	4

Table 1: Summary of flooding impacts[1]

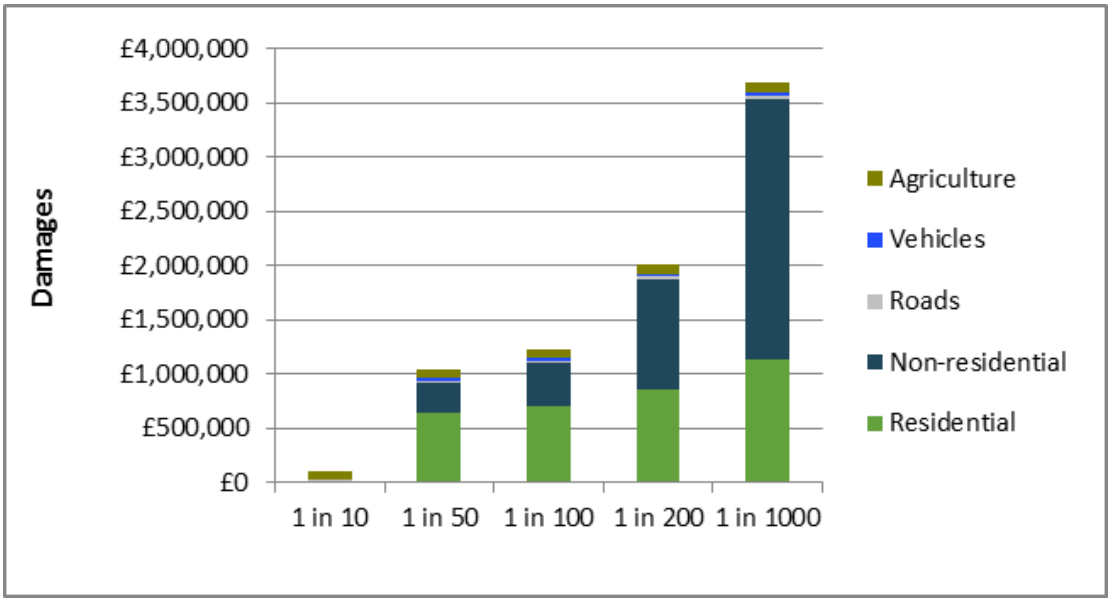


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

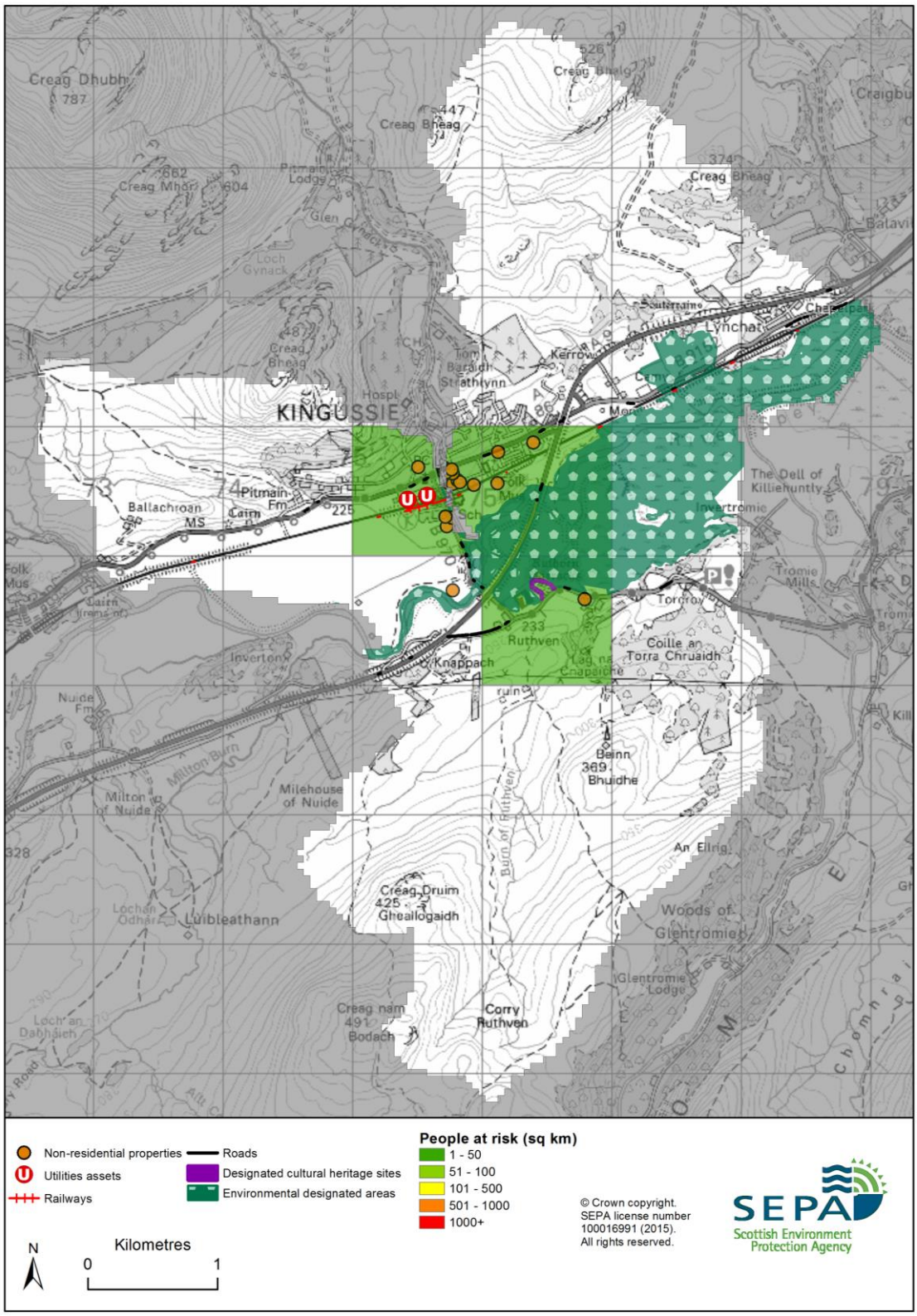


Figure 3: Impacts of flooding

History of flooding

This Potentially Vulnerable Area was affected by the Great Muckle Spate in 1829. The River Spey flooded in 1849, 1883, 1901, 1903, 1904, 1906, 1989, and 1990 with some of these floods associated with snow melt. Flooding affected properties, roads and the railway. Flooding of the railway has sometimes led to the closure of the main line from Perth to Inverness resulting in considerable disruption and economic impacts outside the Potentially Vulnerable Area.

There were floods from the Gynack Burn in 1888, 1990, 2005, 2006, 2008 and 2014, affecting properties and making roads impassable. In 2014, the railway line was closed due to flooding from the Gynack Burn.

Objectives to manage flooding in Potentially Vulnerable Area 05/12

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Kingussie Potentially Vulnerable Area.

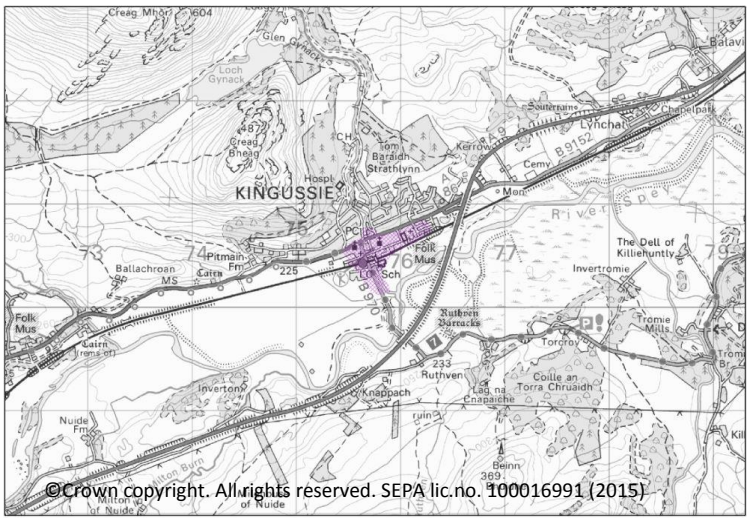
Reduce flood risk to Kingussie from the Gynack Burn

Indicators:

- £39,000 Annual Average Damages from residential properties
- £21,000 Annual Average Damages from non-residential properties

Objective ID: 501201

Target area:



Target area	Objective	ID	Indicators within PVA
Kingussie	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding	5309	• 3 locations on the A9 covering a total length of 50m.
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 30 residential properties • £92,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 30 residential properties • £92,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/12

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Kingussie Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5309021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding (5309)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2022-2027**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A9.		

Action (ID):	**FLOOD PROTECTION STUDY** (5012010005)		
Objective (ID):	Reduce flood risk to Kingussie from the Gynack Burn (501201)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	49 of 168	**2 of 23**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A flood protection study is required to identify an appropriate combination of actions to reduce flood risk. Options to be investigated include upstream storage in Loch Gynack, direct defences through Kingussie, widening of the railway bridge to improve conveyance and natural flood management (sediment management). Other actions may also be considered to reach the most sustainable options.		

Potential impacts	
Economic:	The study could benefit 36 residential and 16 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £1.8 million.
Social:	An estimated 79 people may benefit from flood protection works. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. There may also be a reduction of flood risk to the railway, local roads, and an energy production/electricity utility site, reducing disruption to the wider community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on habitats and ecology. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the River Spey Special Area of Conservation, Insh Marshes Special Area of Conservation, and River Spey - Insh Marshes Special Protection Area. There is potential to impact on the Insch Marshes Site of Special Scientific Interest and Special Area of Conservation. The physical condition of the River Gynack (water body ID 23137) 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.

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Kingussie to Kincraig' and 'Newtonmore to Kingussie' flood warning areas which form part of the Spey river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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 (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. The Highland Council operates a flood monitor on the Gynack Burn next to the Spey Street bridge to provide early warning of potential flooding.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Newtonmore (Potentially Vulnerable Area 05/13)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Summary of flooding impacts

At risk of flooding

- 20 residential properties
- 20 non-residential properties
- £41,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

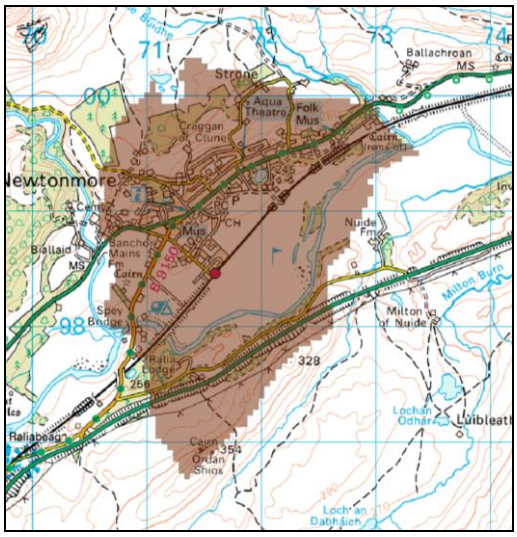
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	Community flood action groups	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency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

Newtonmore (Potentially Vulnerable Area 05/13)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Background

This Potentially Vulnerable Area covers the town of Newtonmore and surrounding rural area (shown below). It is located within the Cairngorms National Park and is approximately 6km^2.



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The A9, A86 roads and the Inverness to Perth railway pass through the area. The main watercourse is the River Spey.

There are approximately 20 residential and 20 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £41,000 with the majority caused by surface water flooding.

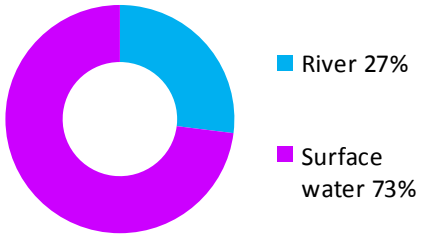


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Surface water flood risk is found in localised areas mainly to the south east of Newtonmore. Local knowledge indicates that this assessment underestimates the surface water flood risk in Newtonmore.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads potentially affected by flooding include the A9, A86 and B9150. The Inverness to Perth railway line is potentially at risk of flooding at several locations. Designated environmental sites are at risk, including small areas of Insh Marshes. However, it should be noted that flooding of Insh Marshes is essential to maintain the natural characteristics of the site and its designated features.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 660)	<10	20	20
Non-residential properties (total 110)	<10	20	30
People	20	40	50
Community facilities	0	0	0
Utilities assets	0	0	0
Transport links (excluding minor roads)	Roads at 10 locations Rail at <10 locations	Roads at 20 locations Rail at <10 locations	Roads at 20 locations Rail at <10 locations
Environmental designated areas (km^2)	1	2	2
Designated cultural heritage sites	0	0	0
Agricultural land (km^2)	0.5	1	1

Table 1: Summary of flooding impacts[1]

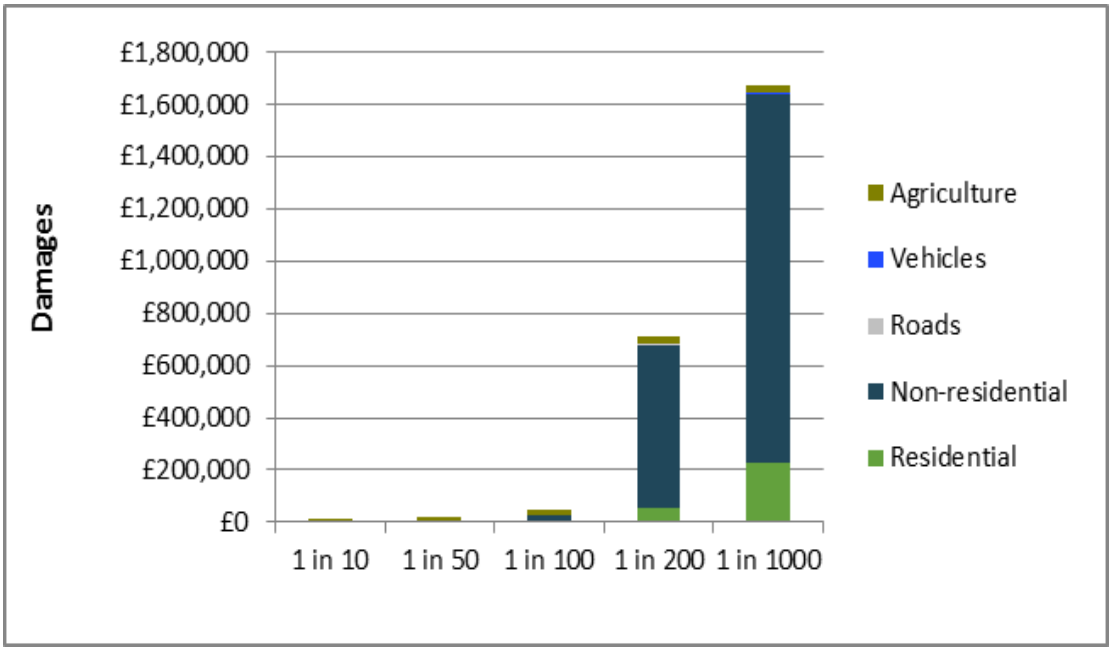


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

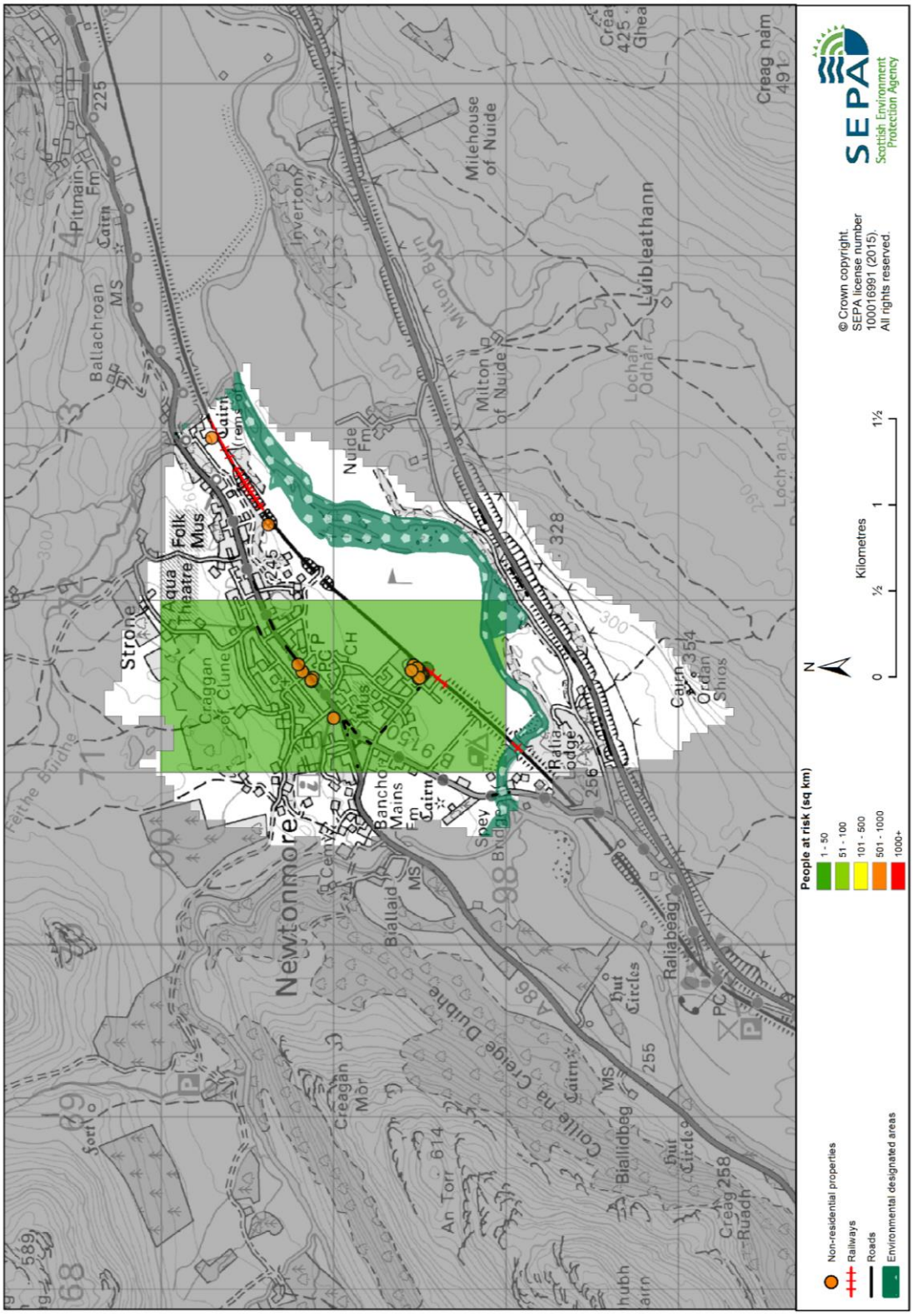


Figure 3: Impacts of flooding

History of flooding

The earliest recorded flood is the Great Muckle Spate of 1829. In 1894 property in Newtonmore was flooded by a burn overtopping its banks. The River Spey caused flooding in 1989 and 1990. In 1997 torrential rain overwhelmed gullies causing the A86 to be flooded.

Surface water and sewer flooding occurred in 2010, 2011 and 2012. The main areas affected by surface water flooding are:

- Main Street between the junctions of Old Glen Road and Laggan Road;
- Main Street from Balavil Hotel to Church Terrace junction and from the village hall to the war memorial and school;
- Church Terrace from Balavil Brae south west towards Craighdu Road.

Objectives to manage flooding in Potentially Vulnerable Area 05/13

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Newtonmore Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Newtonmore	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding	5310	• 2 locations on the A9 with a total length of 370m
Newtonmore	Reduce risk from surface water flooding in Newtonmore	501303	* See note below
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 20 residential properties • £41,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 20 residential properties • £41,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 05/13 there are 20 residential properties at risk and Annual Average Damages of £30,000.

Actions to manage flooding in Potentially Vulnerable Area 05/13

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Newtonmore Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5310021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding (5310)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2022-2027**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A9.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (5013030018)		
Objective (ID):	Reduce risk from surface water flooding in Newtonmore (501303)		
Delivery lead:	The Highland Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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 (ID):	**STRATEGIC MAPPING AND MODELLING** (5000020019)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**MAINTAIN FLOOD WARNING** (5000020030)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Continue to maintain the 'Spey Dam to Newtonmore' flood warning area which forms part of the Spey river flood warning scheme.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**COMMUNITY FLOOD ACTION GROUPS** (5000020012)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Community		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Newtonmore Community has been actively engaged with The Highland Council in discussions on causes of flooding in Newtonmore and potential solutions.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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 (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001) Reduce overall flood risk (500002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Dalwhinnie (Potentially Vulnerable Area 05/14)

Local Plan District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

Summary of flooding impacts

At risk of flooding

- 20 residential properties
- <10 non-residential properties
- £170,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected 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

Dalwhinnie (Potentially Vulnerable Area 05/14)

Local Planning District	Local authority	Main catchment
Findhorn, Nairn and Speyside	The Highland Council	River Spey

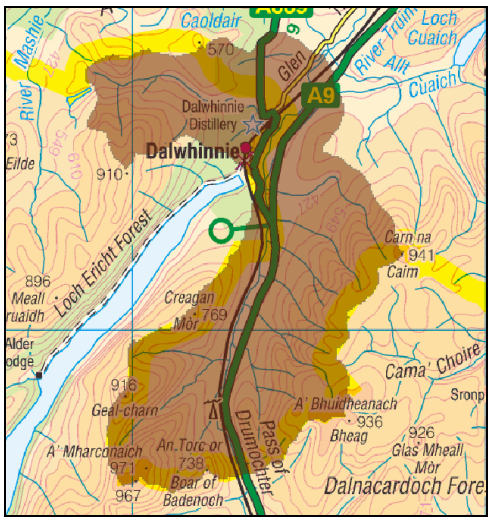
Background

This Potentially Vulnerable Area covers the town of Dalwhinnie and the surrounding rural area (shown right). It is approximately 63km^2 and large parts of it are within the Cairngorms National Park.

The River Truim is the main river in this Potentially Vulnerable Area and there are many small burns draining off the steep hillsides.

There are approximately 20 residential and fewer than 10 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £170,000, all caused by river flooding.



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Summary of flooding impacts

The risk of river flooding in this area is associated with the River Truim and its tributaries, particularly around Dalwhinnie and along the A9 corridor. A number of the tributaries have been dammed and diverted for hydropower projects and there is a need to improve understanding of how this affects flood risk.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads including the A9 and A889, and several locations on the Inverness to Perth railway line have a risk of being flooded. One designated cultural heritage site and small areas of environmental importance are at risk.

The damages associated with floods of different likelihood are shown in Figure 1. For this Potentially Vulnerable Area the highest damages are to non-residential properties and residential properties.

The location of the impacts of flooding is shown in Figure 2.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 80)	20	20	20
Non-residential properties (total 20)	<10	<10	<10
People	40	50	50
Community facilities	0	0	0
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at <10 locations Rail at <10 locations	Roads at <10 locations Rail at <10 locations	Roads at <10 locations Rail at <10 locations
Environmental designated areas (km^2)	1	1	1
Designated cultural heritage sites	1	1	1
Agricultural land (km^2)	1	2	2

Table 1: Summary of flooding impacts[1]

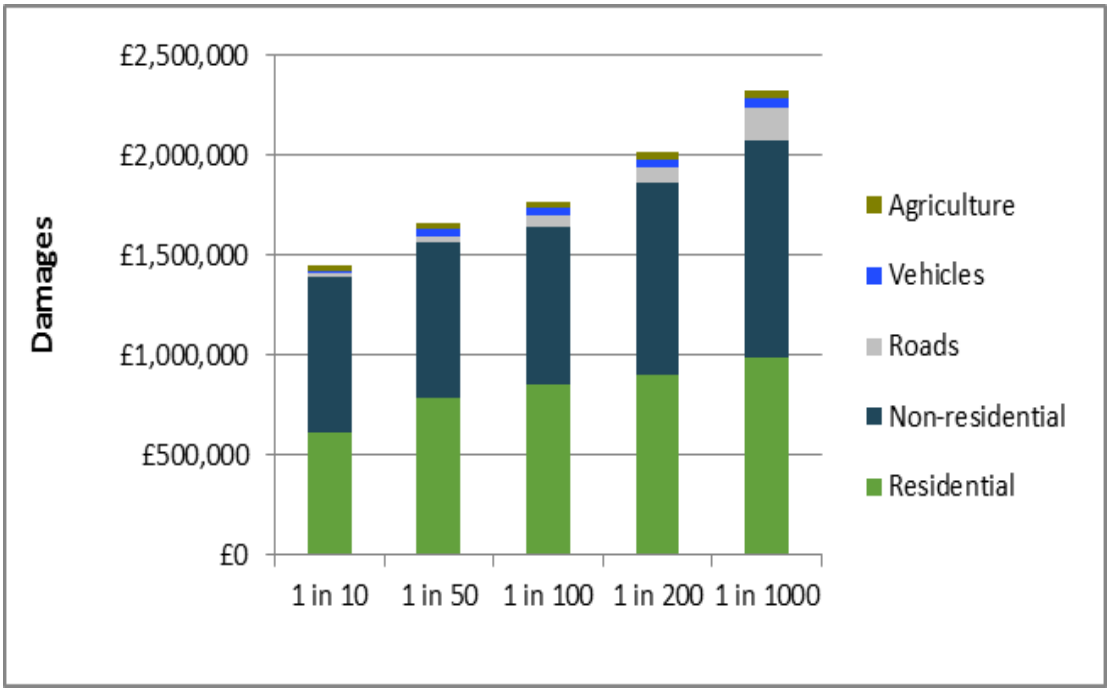


Figure 1: Damages by flood likelihood

History of flooding

There is no record of flooding in this Potentially Vulnerable Area.

[1] Some receptors are counted more than once if flooded from multiple sources

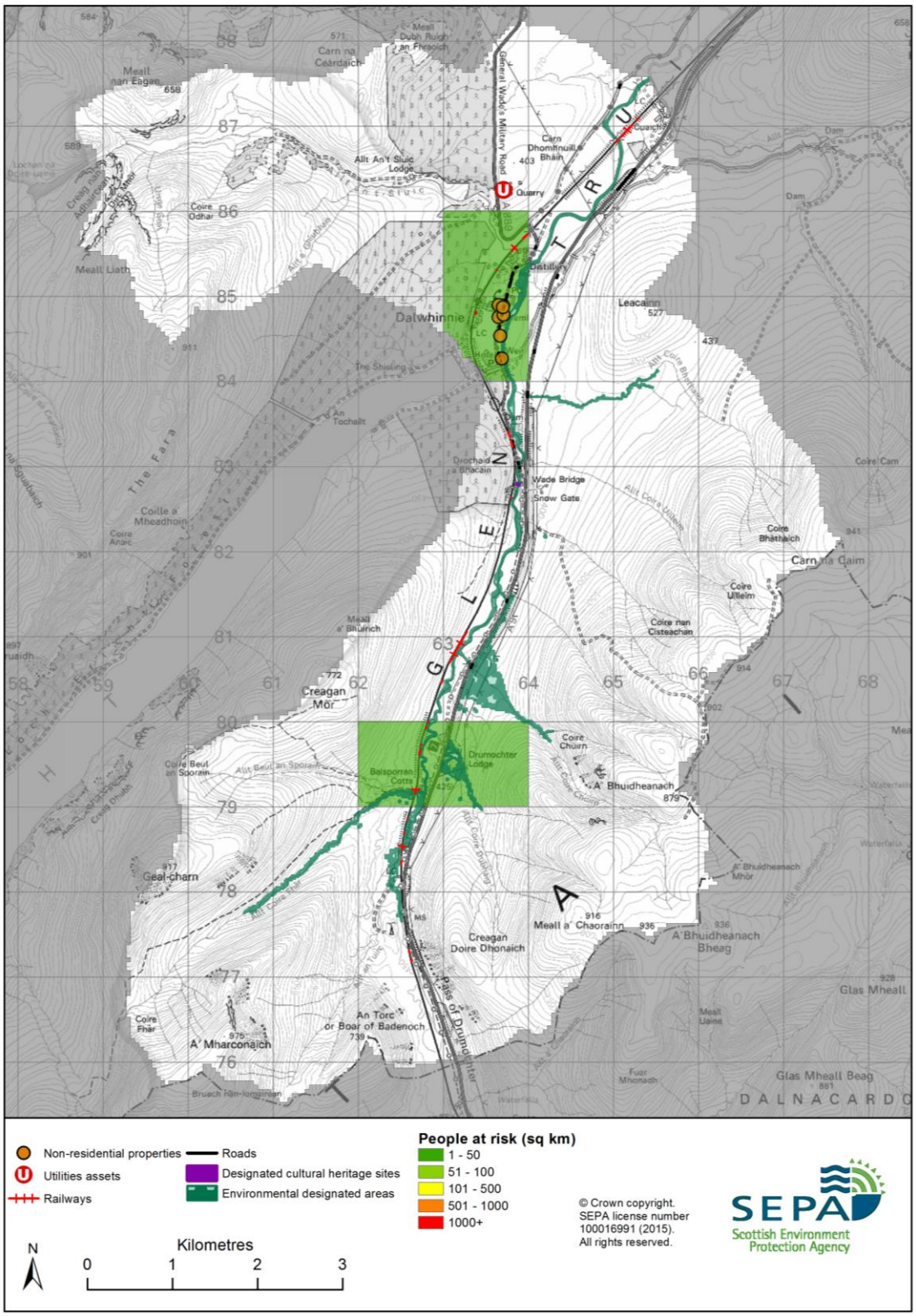


Figure 2: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 05/14

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. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Dalwhinnie Potentially Vulnerable Area.

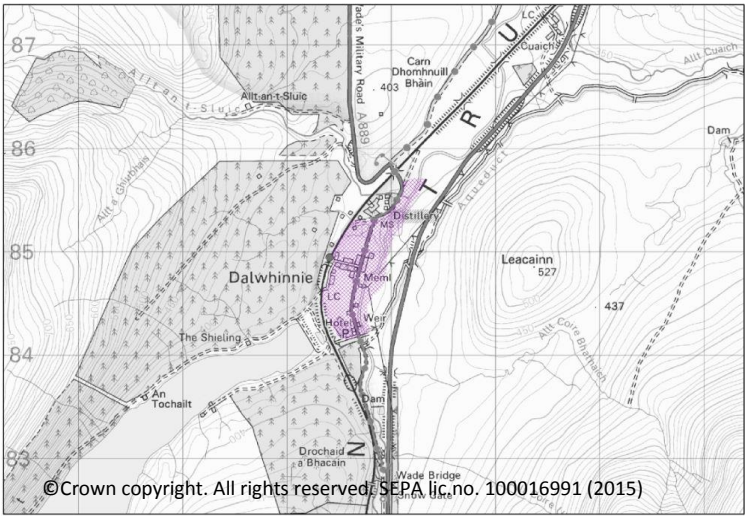
Reduce economic damages and flood risk to Dalwhinnie from River Truim

Indicators:

- 20 people
- £43,000 Annual Average Damages from residential properties
- £80,000 Annual Average Damages from non-residential properties

Objective ID: 501401

Target area:



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Target area	Objective	ID	Indicators within PVA
Dalwhinnie	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding	5311	• 3 locations on the A9 with a total length of 330m
Applies across Findhorn, Nairn and Speyside Local Plan District	Avoid an overall increase in flood risk	500001	• 20 residential properties • £170,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Reduce overall flood risk	500002	• 20 residential properties • £170,000 Annual Average Damages
Applies across Findhorn, Nairn and Speyside Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 05/14

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 was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Dalwhinnie Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (5311021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the A9 at risk of flooding (5311)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2022-2027**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A9.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (5014020016)		
Objective (ID):	Reduce economic damages and flood risk to Dalwhinnie from River Truim (501401)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will review existing modelling for this area to determine if any improvements can be made to the flood maps. SEPA will also engage with Transport Scotland to support the modelling studies being undertaken in this area as part of the A9 Dualling Programme. SEPA will support the local authority if further detailed study beyond a strategic scale is required.		

Action (ID):	**FLOOD FORECASTING** (5000020009)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Findhorn Nairn Moray and Speyside' flood alert area.		

Action (ID):	**SELF HELP** (5000020011)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (5000020013)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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. 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.		

Action (ID):	**MAINTENANCE** (5000020007)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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 (ID):	**EMERGENCY PLANS/RESPONSE** (5000020014)		
Objective (ID):	Reduce overall flood risk (500002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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.		

Action (ID):	**PLANNING POLICIES** (5000010001)		
Objective (ID):	Avoid an overall increase in flood risk (500001)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Flood Risk Management Strategy

Findhorn, Nairn and Speyside Local Plan District

This section provides supplementary information on the characteristics and impacts of river, coastal and surface water flooding. Future impacts due to climate change, the potential for natural flood management and links to river basin management are also described within these chapters.

Detailed information about the objectives and actions to manage flooding are provided in Section 2.

Section 3: Supporting information

3.1 Introduction

In the Findhorn, Nairn and Speyside Local Plan District, river flooding is reported across two distinct river catchments. Coastal flooding and surface water flooding are reported across the whole Local Plan District.

A summary of the number of properties and Annual Average Damages from river, coastal and surface water flooding is outlined in Table 1.

	Total number of properties at risk[1]	Annual Average Damages	Local authority
River catchments			
Spey catchment group	700	£1.8 million	The Highland Council The Moray Council
Findhorn catchment group	560	£2.4 million	The Highland Council The Moray Council
Coastal flooding			
Portgordon to Nairn coastal area	160	£430,000	The Highland Council The Moray Council
Surface water flooding			
Findhorn, Nairn, and Speyside Local Plan District	1,100	£1.2 million	The Highland Council The Moray Council

Table 1: Summary of flood risk from various sources within the Findhorn, Nairn and Speyside Local Plan District

[1] Total number of residential and non-residential properties at risk of flooding

3.2 River flooding

Findhorn, Nairn and Speyside Local Plan District

This chapter provides supplementary information on river flooding at the catchment level. It provides an overview of the catchment's natural characteristics, flood risk and the existing actions to manage flooding. It outlines the likely impact of climate change and the potential for natural flood management.

Detailed information about the objectives and actions to manage flooding are provided in Section 2.

In the Findhorn, Nairn and Speyside Local Plan District, river flooding is reported across two distinct river catchments (Figure 1):

- Spey catchment group
- Findhorn catchment group.

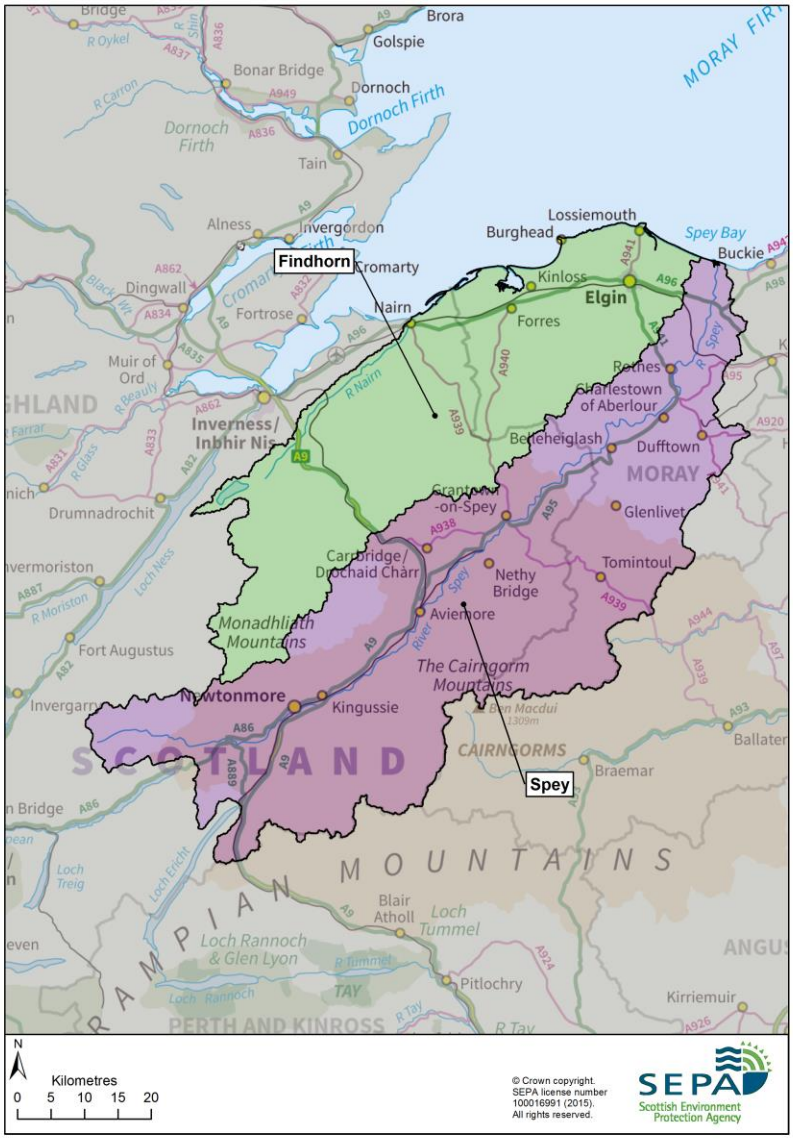

Figure 1: River catchments within the Findhorn, Nairn and Speyside Local Plan District

River flooding
Spey catchment group

Catchment overview

The Spey river catchment area (Figure 1) covers the southern and eastern area of the Findhorn, Nairn and Speyside Local Plan District and has an area of approximately 3,000km^2. The River Spey itself flows north east to the Moray Firth and has a number of significant tributaries that drain the surrounding area. These include the Burn of Rothes, which flows through Rothes; the River Fiddich through Dufftown; the River Livet and River Avon near Drumin, and the River Dulnain through Carrbridge.

The predominant land cover in the catchment is montane habitats, which cover 23% of the total area, mainly in the south. Acid grassland, coniferous woodland, heather and heather grassland each cover between 10-15% of the area. The area along the coast has an annual rainfall of between 600-900mm, with the inland areas receiving between 900-1,200mm per annum.

The catchment includes seven Potentially Vulnerable Areas:

- Spey Bay (05/04)
- Rothes and Aberlour (05/09)
- Carrbridge (05/10)
- Aviemore and Boat of Garten (05/11)
- Kingussie (05/12)
- Newtonmore (05/13)
- Dalwhinnie (05/14).

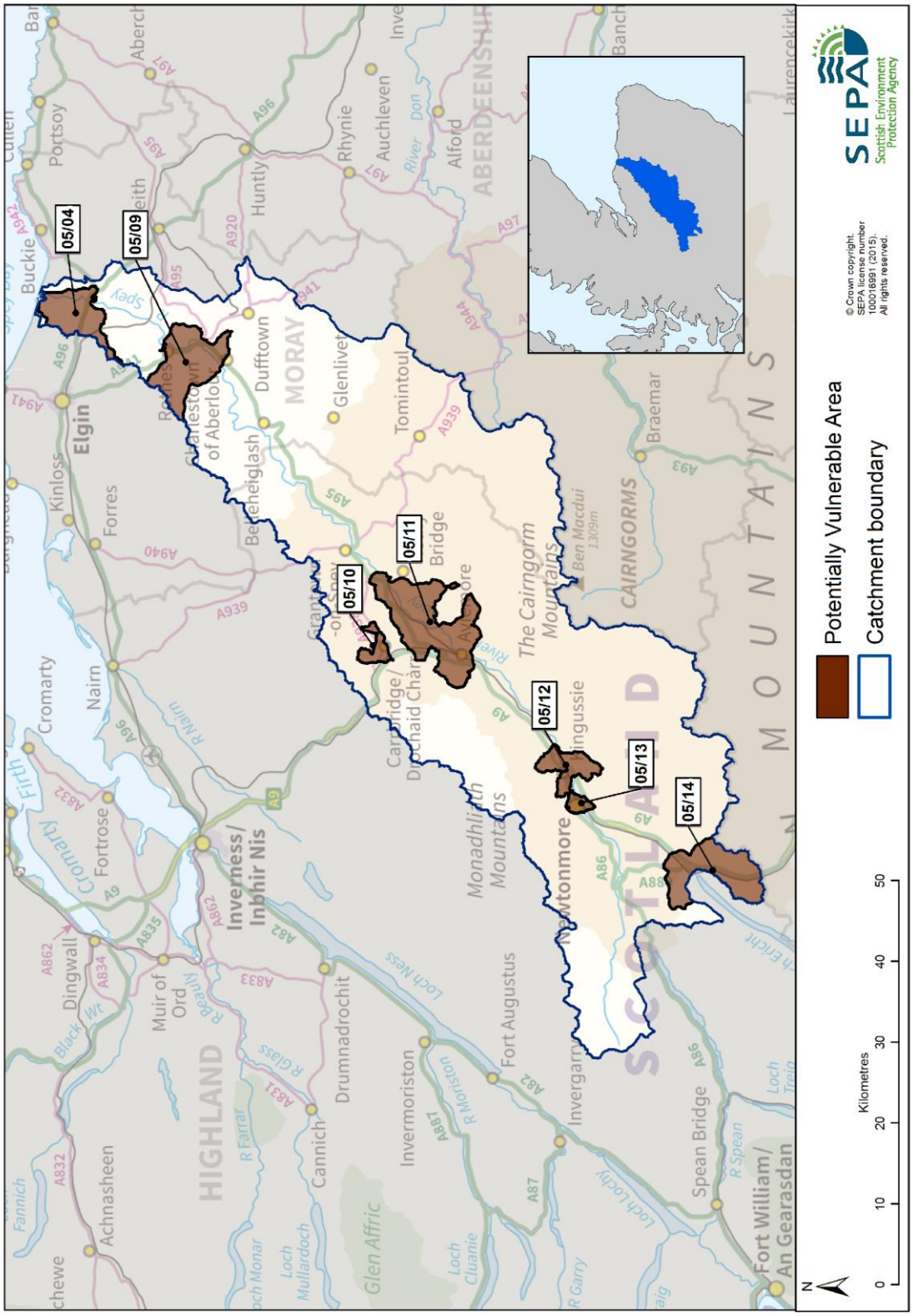

Figure 1: Spey river catchments area and Potentially Vulnerable Areas

Flood risk in the catchment

There are approximately 540 residential properties and 160 non-residential properties at risk of river flooding in the Spey river catchment area. Approximately 71% of residential and 65% of non-residential properties are located within the seven Potentially Vulnerable Areas.

Main areas at risk

The main areas that have greater than 20 residential properties at risk of river flooding are shown in Table 1.

	Residential and non-residential properties at risk of river flooding	Annual Average Damages
Rothes	340	£180,000
Kingussie	60	£80,000
Dalwhinnie	30	£160,000
Spey Bay	20	£35,000

Table 1: Main areas at risk of river flooding

Rothes benefits from a flood protection scheme, which was designed to provide protection against flooding up to a 1 in 100 year event with an additional allowance for climate change. The assessment of the number of properties at risk in Rothes in table 1 is based on the 1 in 200 year event and does not take account of the residual protection provided by the flood protection scheme. The actual number of properties at risk therefore will be significantly less than reported in table 1. Annual Average Damage in Rothes will also be overestimated as a result.

Economic activity and infrastructure at risk

The Annual Average Damages from river flooding are estimated to be £1.8 million. This accounts for around 31% of the Annual Average Damages for the Findhorn, Nairn and Speyside Local Plan District. The damages are distributed as follows:

- 41% residential properties (£730,000)
- 34% non-residential properties (£610,000)
- 10% agricultural land (£180,000)
- 7% emergency services (£130,000)
- 6% roads (£99,000)
- 2% vehicles (£32,000).

Figure 2 shows the location of Annual Average Damages from river flooding across the area.

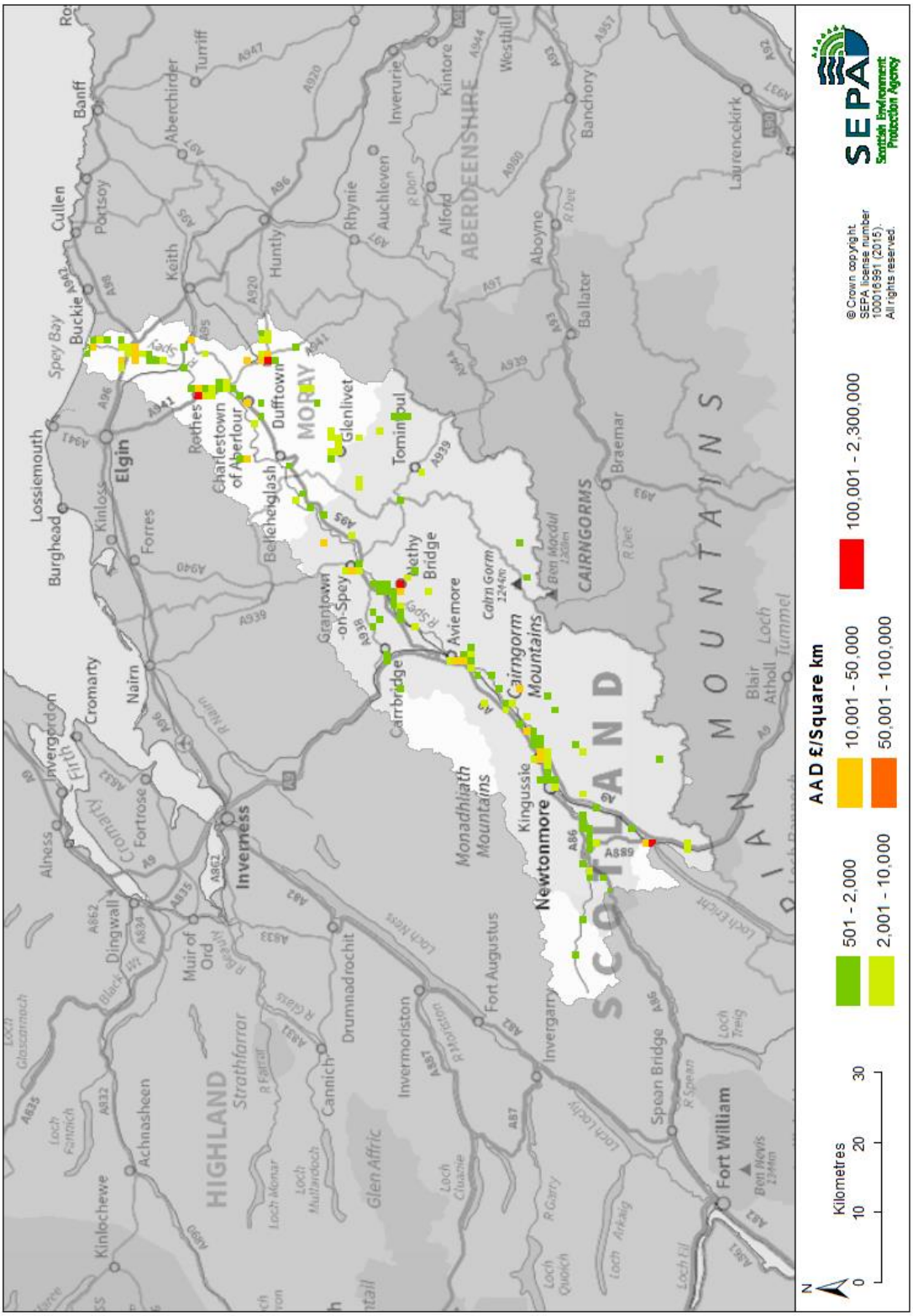

Figure 2: Annual Average Damages from river flooding

Table 2 shows the approximate numbers of further infrastructure assets which are at risk of flooding within this catchment.

	Number at risk	Further detail
Community facilities	<10	Emergency services
Utility assets	20	Includes; electricity substations, oil/gas extraction sites and telephone exchanges.
Roads (excluding minor roads)	370 locations	Notably the A9 and A95
Railway routes	60 locations	Aberdeen to Inverness
Agricultural land (km^2)	21	n/a

Table 2: Infrastructure at risk of river flooding

Designated environmental and cultural heritage sites at risk

Within the catchment there are approximately 40 designated cultural heritage sites with a risk of river flooding. These sites include scheduled monuments, gardens and designed landscapes, battlefields and listed buildings.

Approximately 176km^2 of designated environmental area is at risk of river flooding including Special Areas of Conservation, Special Protection Areas, and Sites of Special Scientific Interest. The designated sites which have the largest areas at risk include the Insh Marshes, the Cairngorms, Alvie, and Kinveachy Forest. However, many sites such as Insh Marshes benefit from or are resilient to flooding.

History of river flooding

The River Spey catchment area experienced considerable flooding during the 1829 Great Muckle Spate, when several bridges were destroyed. There have been many floods recorded from the River Spey, Gynack Burn, Burn of Rothes and River Dulnain.

The Spey has flooded Garmouth regularly, including in 1892, 1928, 1985, 1997, 2002 and 2009. A spate on the River Spey in the early 1960s led to two buildings being washed away in Kingston. The Spey has also flooded roads and properties in Newtonmore, Aviemore and Carrbridge on a number of occasions. Flooding occurs in Kingussie from the Gynach Burn, with the most recent occurrence in August 2014.

There is a long history of flooding in Rothes from smaller watercourses, such as the Burn of Rothes, Back Burn and Black Burn. The earliest recorded flood was in 1846, when heavy rainfall damaged crops in Knockando and Rothes. Notable floods occurred more recently in 2002, 2004, 2005, 2007, and 2009.

Large parts of north east Scotland were affected by flooding in August 2014 due to storms caused by hurricane Bertha. The railway line in Kingussie was flooded and the A938 road near Carrbridge was undermined.

Managing flood risk

A range of public bodies have responsibility for managing flood risk in Scotland and they are working closer than ever before to target action in the areas where the greatest benefit can be gained. Members of the public also have a role to play and are the first line of defence against flooding by taking action to protect themselves and their property from flooding. Further information about roles and responsibilities is provided in Section 1.

Existing actions that are in place to manage flood risk and that are in addition to the information presented in Section 2 are described below.

River flood warning schemes

There are 11 flood warning areas for river flooding in the Spey river catchment, listed below in Table 3. These are the areas where SEPA has detailed models to predict flooding on specific rivers. The locations of the flood warning areas are shown in Figure 3.

Flood warning area	Residential properties within flood warning areas	% of properties registered (January 2014)
Aberlour, Craigellachie and Dandaleith	22	23%
Aviemore/Dalfaber	39	100%
Aviemore/Dalfaber to Grantown	49	24%
Boat O'Brig to Spey Viaduct	101	19%
Grantown to Aberlour	27	33%
Kincraig to Inverdruie	6	100%
Kingussie to Kincraig	12	42%
Newtonmore to Kingussie	67	22%
Rothes (River Spey)	122	37%
Sluggan to Dulnain Bridge	5	40%
Spey Dam to Newtonmore	3	33%

Table 3: Flood warning areas

Awareness raising campaigns and community groups

There are a number of different action groups in this area including the Innes Community Council and flood action group in Kingston.

Other Actions

The Spey Catchment Initiative carried out natural flood management / river restoration works on a tributary upstream of the River Dulnain.

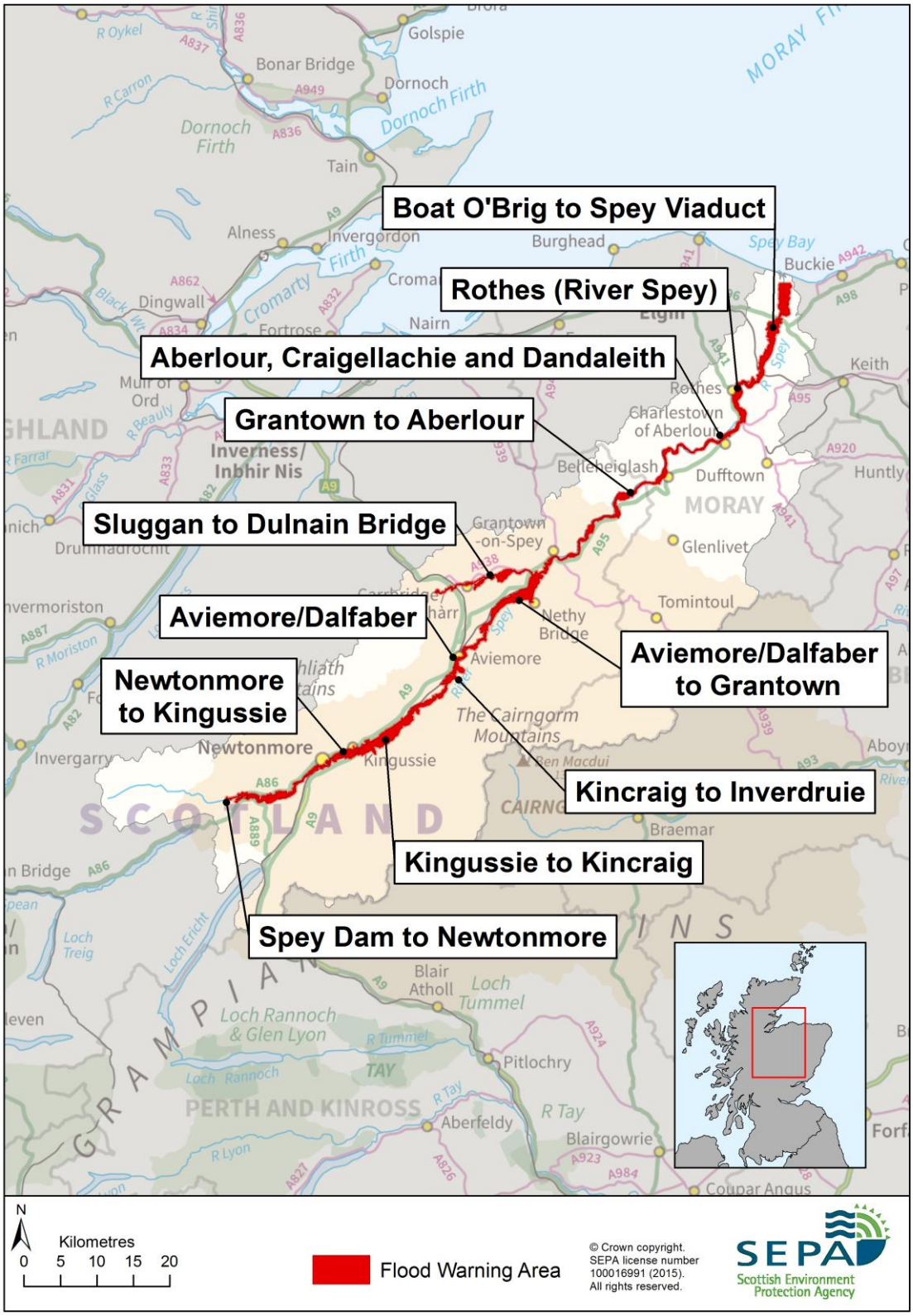

Figure 3: Flood warning areas

Climate change and future flood risk

The UK Climate Projections (UKCP09) predicts that climate change may lead to warmer and drier summers, warmer and wetter winters with less snow, and more extreme temperature and rainfall. The predicted increase in rainfall and river flows may increase the potential for river flooding.

Under the UKCP09 high emissions scenario for 2080, average peak river flows for the Spey catchment may increase by 24%. This would potentially increase in the number of residential properties at risk of river flooding from approximately 540 to 670, and the number of non-residential properties from approximately 160 to 200.

The predicted increases in flood risk are solely based on the impact of a changing climate on the magnitude of flooding; they do not take into account any potential increase due to population change, development pressures or urban creep, nor do they take into account any mitigation as a result of actions contained in this or future Flood Risk Management Strategies.

Potential for natural flood management

The assessment of the potential for natural flood management is shown on SEPA's flood maps (http://www.sepa.org.uk/environment/water/flooding/flood-maps/). The maps indicate the potential for runoff reduction, floodplain storage and sediment management. They show areas where natural flood management could be effective and where further detailed assessment should take place. This information was used to identify where local authorities could include natural flood management as part of flood risk management schemes and studies. The proposed schemes and studies are listed in the relevant Potentially Vulnerable Area chapters of this document.

Runoff reduction

There are widespread areas with the potential to manage flooding by reducing runoff within the Spey river catchment. However, most of the Potentially Vulnerable Areas do not have any significant areas of potential for runoff reduction either within or immediately adjacent to them. It is therefore unlikely that actions taken to reduce rainfall runoff will have a significant impact on flood risk within these Potentially Vulnerable Areas. An exception is Dalwhinnie (05/14) where there are significant areas of potential within the Potentially Vulnerable Area. However there is a need to improve understanding of flood mechanisms and risk levels in this area prior to progressing with any runoff reduction actions.

Floodplain storage

There are significant areas of potential for floodplain storage within the Spey catchment, along the entire length of the River Spey, and in more scattered small areas in the upland areas either side of the Spey valley. All of the Potentially Vulnerable Areas show significant potential for floodplain storage, particularly those directly along the River Spey. It is likely that floodplain storage could improve flood risk in the Potentially Vulnerable Areas and should be considered further. Dalwhinnie (05/14) however, only shows limited scattered patches of areas with potential for floodplain storage and therefore it is unlikely that there would be a significant impact on flood risk.

Sediment management

Although a lot of the river systems have substantial reaches that are in approximate sediment balance, there are also significant lengths of river which are predominantly eroding or depositing. The Potentially Vulnerable Areas which show the largest amount of erosion or deposition are Spey Bay (05/04), Rothes and Aberlour (05/09), Carrbridge (05/10), Aviemore and Boat of Garten (05/11), and Newtonmore (05/13). Actions to manage sediment in these Potentially Vulnerable Areas could potentially reduce flood risk.

River flooding
Findhorn catchment group

Catchment overview

The Findhorn river catchment group covers the northern and western area of the Findhorn, Nairn and Speyside Local Plan District. It consists of three separate river catchments, the River Findhorn, the River Nairn and the River Lossie. The River Findhorn and River Nairn are the largest rivers in the west of the catchment and flow north east to the Moray Firth. These rivers and their numerous tributaries drain the higher ground in the south of the area. The River Lossie is the largest river in the east of the area. It flows south to north discharging into the Moray Firth.

The predominant land cover is coniferous woodland, which covers 21% of the total area; this is mainly located in the north and west of the catchment area. Improved grassland, heather grassland and bog each cover approximately 12% of the catchment. The area along the coast has an annual rainfall of between 400-900mm with inland areas receiving between 1,200-1,500mm per annum.

The catchment includes seven Potential Vulnerable Areas, which are located near to the coast towards the downstream ends of the major river systems (Figure 1):

- Burghead to Lossiemouth (05/01)
- Spynie (05/02)
- Lhanbryde (05/03)
- Elgin (05/05)
- Forres (05/06)
- River Findhorn (05/07)
- Nairn East and Auldearn (05/08).

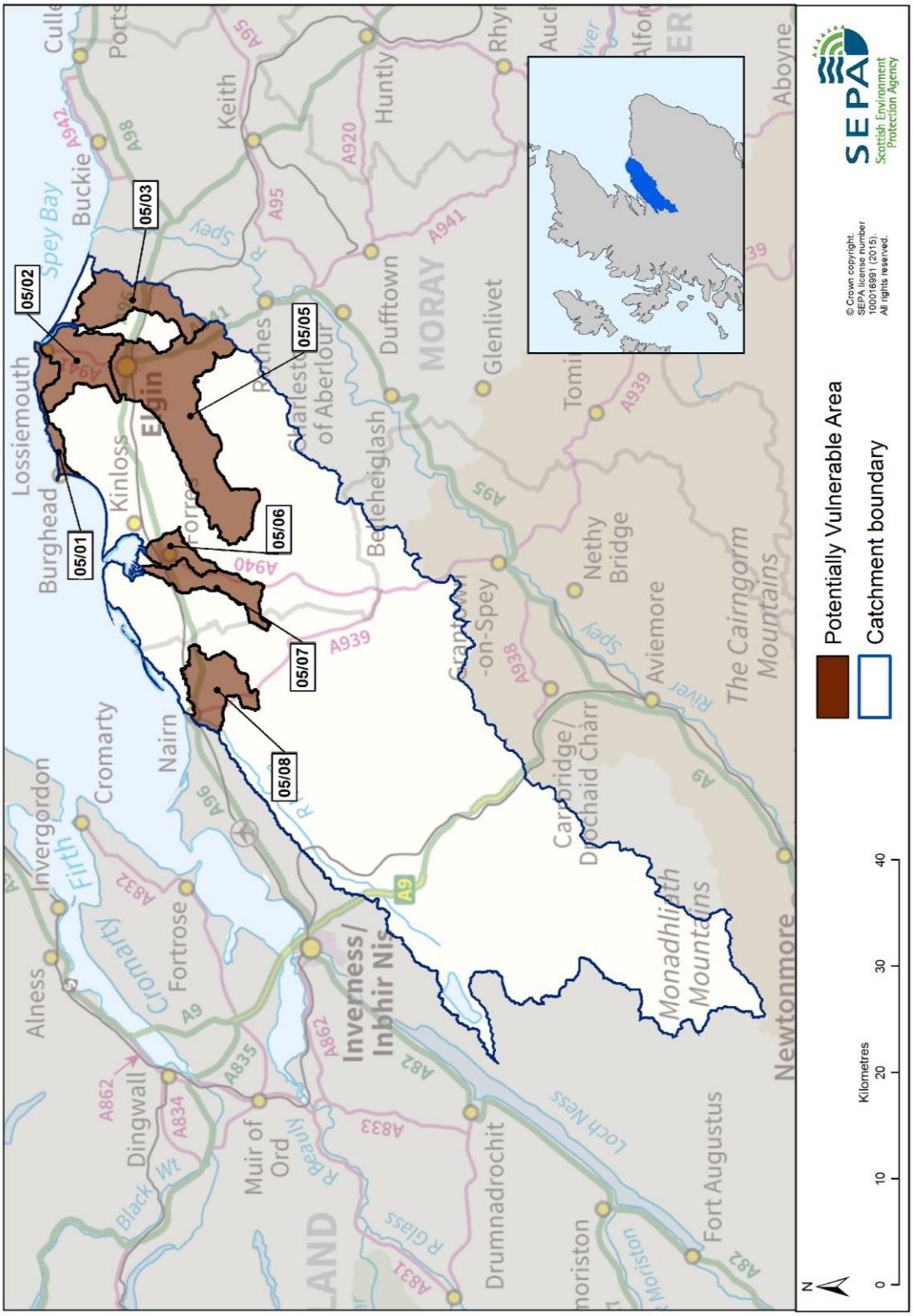

Figure 1: Findhorn river catchment group and Potentially Vulnerable Areas

Flood risk in the catchment

There are 460 residential properties and 100 non-residential properties are at risk of river flooding. Approximately 29% of residential and 46% of non-residential properties at risk are within the seven Potentially Vulnerable Areas.

Main areas at risk

The main areas that have more than 20 residential properties at risk of river flooding are shown in Table 1.

	Residential and non-residential properties at risk of river flooding	Annual Average Damages
Nairn[1]	310	£310,000
Kinloss	100	£320,000
Elgin	60	£350,000
Cawdor	60	£260,000
Lhanbryde	30	£75,000
Forres	10	£220,000

Table 1: Main areas with a risk of river flooding

Lhandbryde and Forres (Burn of Mosset) both benefit from a flood protection scheme, which provides protection against flooding up to 1 in 100 year event, with an additional allowance for climate change. The assessment of the number of properties at risk in Lhandbryde and Forres in Table 1 is based on the 1 in 200 year event and does not take account of the residual protection provided by the flood protection scheme. The actual number of properties at risk therefore will be significantly less than reported in Table 1.

Economic activity and infrastructure at risk

The Annual Average Damages from river flooding are estimated to be £2.4 million. This accounts for around 41% of the estimated damages for the Findhorn, Nairn and Speyside Local Plan District. The damages are distributed as follows:

- 58% residential properties (£1.4 million)
- 22% non-residential properties (£520,000)
- 6% agriculture (£150,000)
- 6% emergency services (£140,000)
- 5% roads (£120,000)
- 2% vehicles (£55,000).

Figure 2 shows the location of Annual Average Damages from river flooding across the area.

[1] Nairn is split between two Local Plan Districts; Highland and Argyll and Findhorn, Nairn and Speyside. The numbers of properties listed in Table 1 as “at risk” in Nairn include the total number located in both Local Plan Districts.

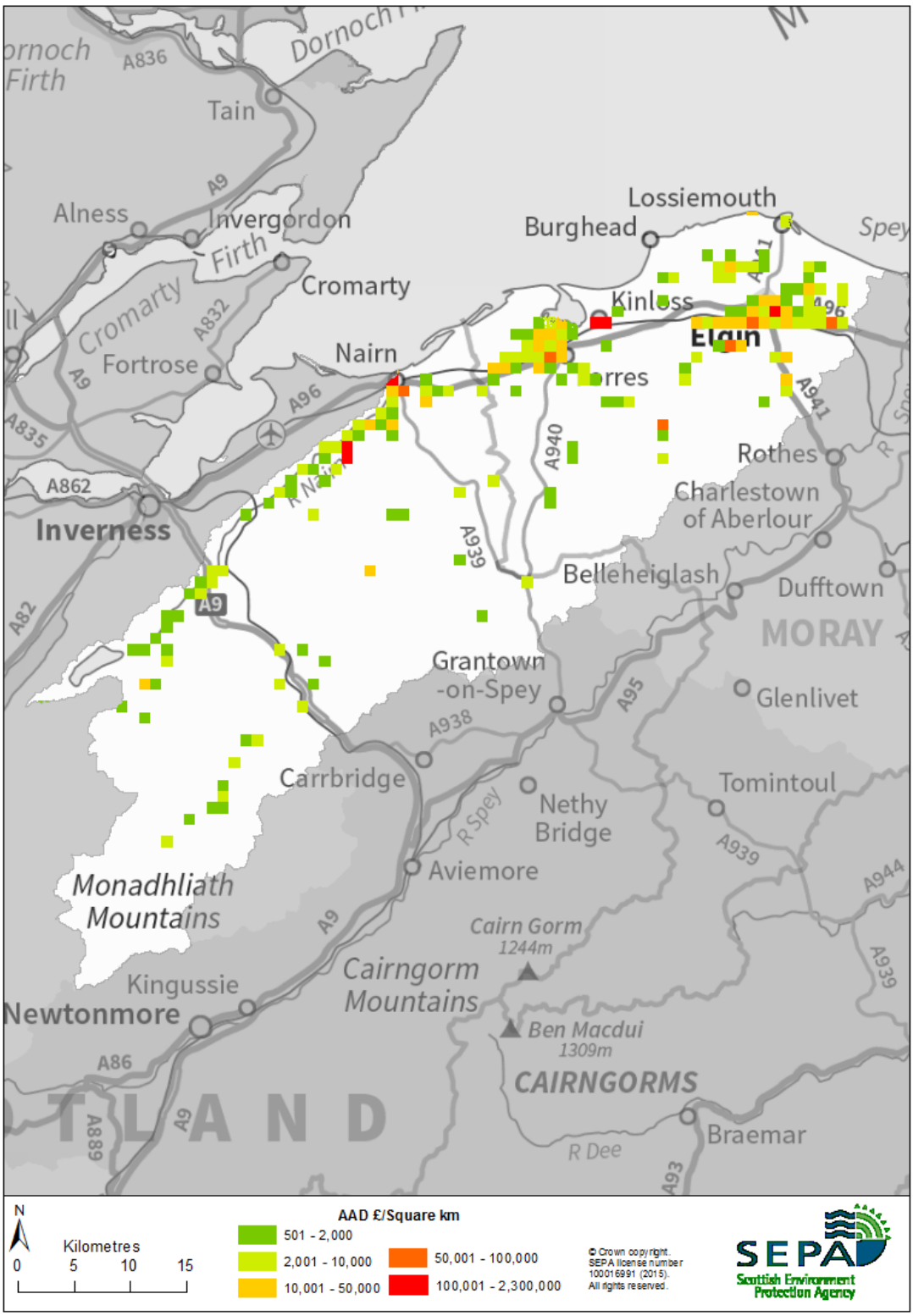

Figure 2: Annual Average Damages from river flooding

Table 2 shows the approximate numbers of further infrastructure assets which are at risk of flooding within this catchment.

	Number at risk	Further detail
Community facilities	<10	Includes; educational buildings and healthcare facilities
Utility assets	<10	Includes; electricity substations, telephone exchanges and fuel extraction sites
Roads (excluding minor roads)	400 locations	Includes the A96
Railway routes	40 locations	Aberdeen to Inverness
Agricultural land (km^2)	70	n/a

Table 2: Infrastructure at risk of river flooding

Designated environmental and cultural heritage sites at risk

Within the catchment there are 44 designated cultural heritage sites at risk of river flooding. These sites include scheduled monuments, gardens and designed landscapes and listed buildings.

Approximately 7km^2 of designated environmental area is at risk of river flooding, including Special Areas of Conservation, Special Protection Areas, and Sites of Special Scientific Interest. Sites potentially affected include lochs, forests, rivers, and coastline. The designated sites which have the largest areas at risk include Loch Spynie and Culbin Sands, Culbin Forest and Findhorn Bay. However, some sites benefit from or are resilient to flooding.

History of river flooding

There have been a number of floods recorded which were caused by flooding from the River Nairn, River Findhorn, Burn of Mosset, Lhanbryde Burn, River Lossie, and Linkwood Burn. The earliest recorded flood was in 1829 when the Great Muckle Spate flooded large areas of north east Scotland, including Forres. The River Findhorn flooded in 1970. In 1997 Mosset, Lhanbryde and parts of the Lossie catchment flooded. More recently the River Lossie flooded in 2002.

In August 2014, large parts of north east Scotland were impacted by flooding. The River Lossie experienced a significant spate however, the partially complete flood defences in Elgin held out. Around 45 properties were however affected by flooding in Dallas. The transport network was affected after the railway line was flooded and the road at Delnies, near Nairn, was washed away.

Managing flood risk

A range of public bodies have responsibility for managing flood risk in Scotland and they are working closer than ever before to target action in the areas where the greatest benefit can be gained. Members of the public also have a role to play and are the first line of defence against flooding by taking action to protect themselves and their property from flooding. Further information about roles and responsibilities is provided in Section 1.

Existing actions that are in place to manage flood risk and that are in addition to the information presented in Section 2 are described below.

River flood warning schemes

There are 16 flood warning areas for river flooding in this catchment group (Table 3). The majority of the flood warning areas are associated with the River Findhorn through the Forres area and the River Lossie through the Elgin area. The locations of the flood warning areas are shown in Figure 3.

Flood warning area	Number of properties within flood warning area	% of properties registered (January 2014)
Borough Briggs	142	37%
Broom of Moy	53	47%
Cooper Park	40	23%
Dallas	73	26%
Forres	1,493	29%
Glen Moray Distillery	54	4%
Kingsmill	353	64%
Miltonduff	39	31%
Miltonduff Distillery	1	100%
Old Mills	27	59%
Red Craig	36	47%
Tyock, Chanonry and Elgin East End	850	46%
Waterford, Seafield and Invererne	24	46%
Nairn (River Park)	65	22%
Nairn	92	33%
Nairn (Cawdor)	18	17%

Table 3: Flood warning areas

Climate change and future flood risk

The UK Climate Projections (UKCP09) predicts that climate change may lead to warmer and drier summers, warmer and wetter winters with less snow, and more extreme temperature and rainfall. The predicted increase in rainfall and river flows may increase the potential for river flooding.

Under the UKCP09 high emissions scenario for 2080, average peak river flows for the Findhorn group catchment may increase by 24%. This would potentially increase in the number of residential properties at risk of river flooding from approximately 460 to 770, and the number of non-residential properties from approximately 100 to 140.

The predicted increases in flood risk are solely based on the impact of a changing climate on the magnitude of flooding; they do not take into account any potential increase due to population change, development pressures or urban creep, nor do they take into account any mitigation as a result of actions contained in this or future Flood Risk Management Strategies.

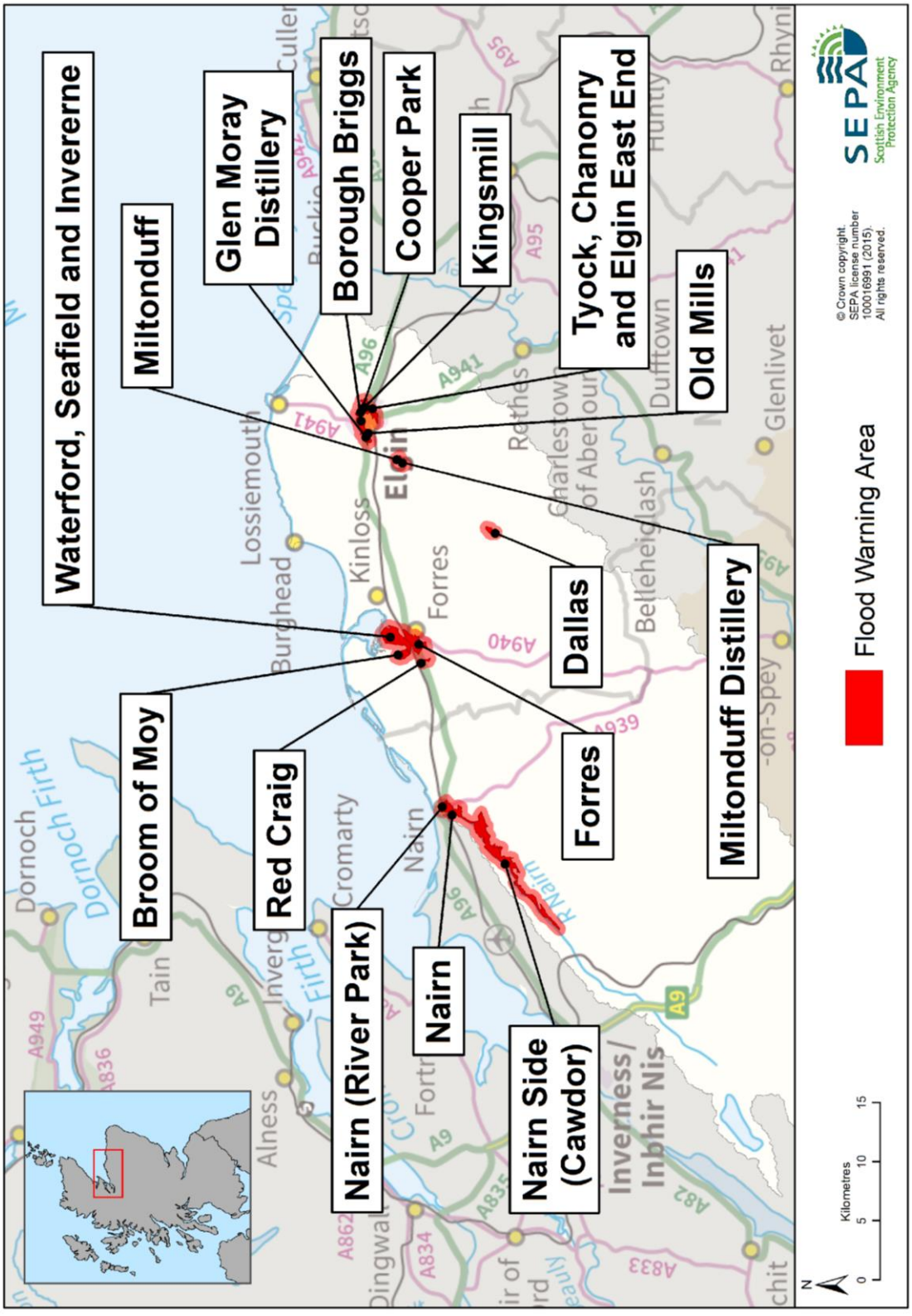

Figure 3: Flood warning areas

Potential for natural flood management

The assessment of the potential for natural flood management is shown on SEPA's flood maps (http://www.sepa.org.uk/environment/water/flooding/flood-maps/). The maps indicate the potential for runoff reduction, floodplain storage and sediment management. They show areas where natural flood management could be effective and where further detailed assessment should take place. This information was used to identify where local authorities could include natural flood management as part of flood risk management schemes and studies. The proposed schemes and studies are listed in the relevant Potentially Vulnerable Area chapters of this document.

Runoff reduction

There are widespread areas with the potential to help manage flooding by reducing runoff within the Findhorn river catchment group. However, as the areas of potential for runoff reduction are neither within nor immediately adjacent to any of the Potentially Vulnerable Areas, it is unlikely that rainfall runoff measures will have a significant impact on flood risk.

Floodplain storage

There are significant areas with potential for floodplain storage within this catchment group, particularly in the vicinity of the main urban areas covered by the Potentially Vulnerable Areas. It is possible that floodplain storage could reduce flood risk and the practicality of enhancing storage of flood water could be considered further for all seven Potentially Vulnerable Areas within the Findhorn catchment group.

Sediment management

Although a lot of the river systems have substantial reaches which are in approximate balance, there are also significant lengths of river where sediments are predominantly either being eroded or deposited. The Potentially Vulnerable Areas which show the largest amount of erosion or deposition are Spynie (05/02), Lhanbryde (05/03), Elgin (05/05), and Forres (05/06). Actions taken to manage sediment in these Potentially Vulnerable Areas could potentially reduce flood risk.

3.3 Coastal flooding

Findhorn, Nairn and Speyside Local Plan District

Portgordon to Nairn

This chapter provides supplementary information on flooding for the coastal area. It provides an overview of the natural characteristics of the coast, a summary of flood risk within the coastal area and a brief history of flooding. It also outlines the likely impact of climate change and the potential for natural flood management.

Information about the objectives and actions to manage flood risk are provided in in Section 2.

In the Findhorn, Nairn and Speyside Local Plan District, coastal flooding is reported across one coastal area: Portgordon to Nairn.

Coastal overview

The Portgordon to Nairn coastal area covers approximately 68km of the Moray Firth coastline from Portgordon in the east to Nairn in the west (Figure 1). There are several towns and villages located close to the coastline including Kingston, Lossiemouth, Hopeman, Burghead, Findhorn, and Nairn. The coastal area contains two local authorities; Moray Council and The Highland Council.

The coastal area is characterised by a series of wide bays with four major rivers; the River Spey, the River Lossie, the River Findhorn, and the River Nairn, discharging into the Moray Firth.

The eastern part of the coastline along to Burghead is characterised by long beach areas[1]. The eastern and central beaches around Spey Bay are predominantly shingle and the spit towards Lossiemouth is predominantly sandy, backed with a dune ridge. Fresh beach material is supplied by erosion of glacial shingle deposits and from the River Spey (one of the few rivers in Scotland still acting as a major source of beach material).

There are six Potentially Vulnerable Areas:

- Burghead to Lossiemouth (05/01)
- Spynie (05/02)
- Lhanbryde (05/03)
- Spey Bay (05/04)
- Forres (05/06)
- Nairn East and Auldearn (05/08).

[1] Much of the information in this section has been taken from Scottish Natural Heritage Research, Survey and Monitoring Report No. 152. Coastal Cells in Scotland: Cell 11 – Shetland (DL Ramsay and AH Brampton, 2000).

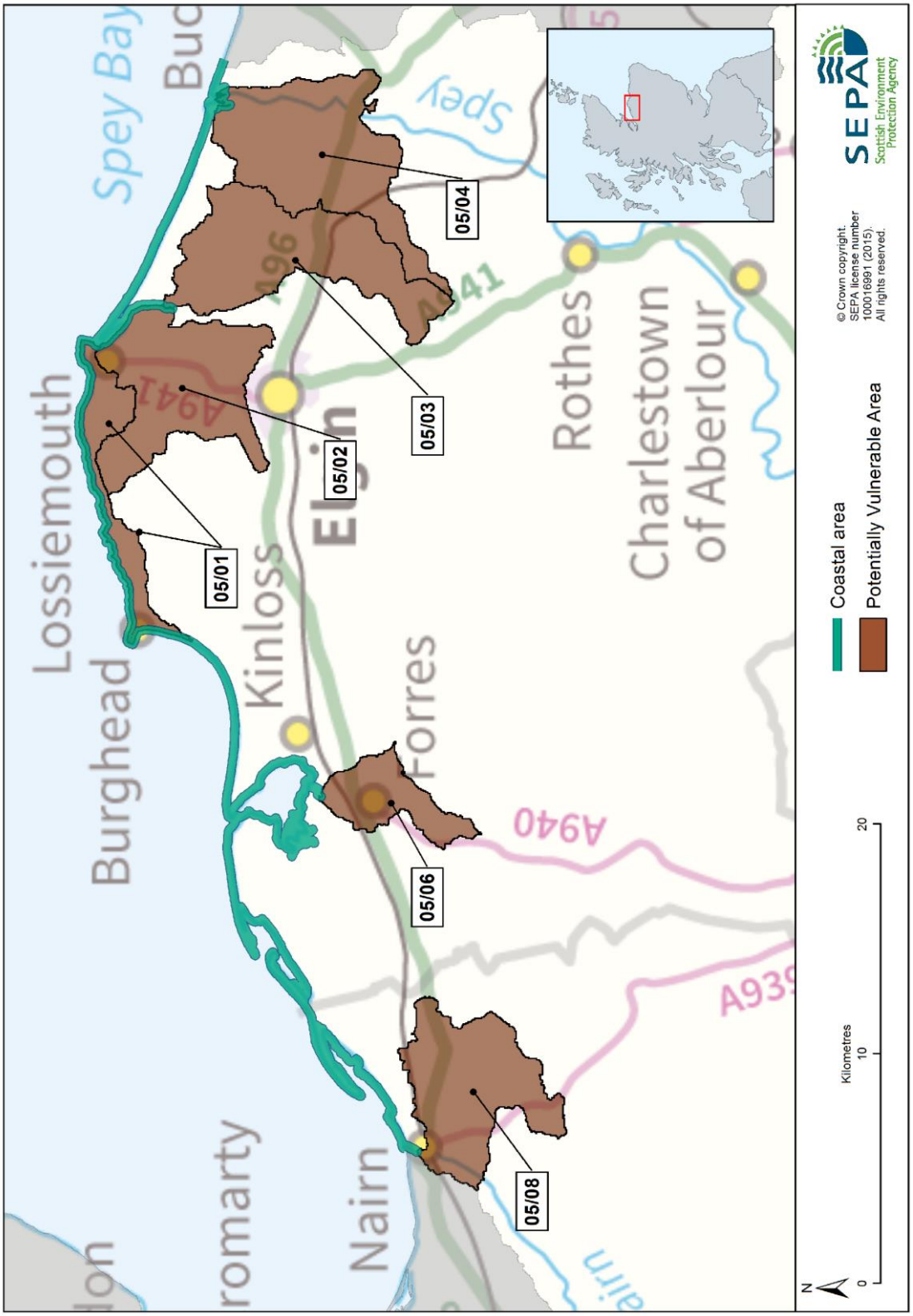

Figure 1: Portgordon to Nairn coastal area and Potentially Vulnerable Areas

Flood risk

Within the Portgordon to Nairn coastal area, there are approximately 130 residential and 30 non-residential properties at risk of coastal flooding. Approximately 64% of residential properties and 50% of non-residential properties at risk are located within Potentially Vulnerable Areas.

Main areas at risk

The majority of residential properties at risk of coastal flooding are located in the Seatown area of Lossiemouth. The Potential Vulnerable Areas that have more than 20 properties at risk of coastal flooding are shown in Table 1. Note that the totals in Table 1 include the whole of the town of Nairn however, only a small part of Nairn is in located in this Local Plan District. Most of the properties at risk of coastal flooding in Nairn are located to the west of the River Nairn and are in the Highland and Argyll Local Plan District.

	Residential and non-residential properties at risk of coastal flooding	Annual Average Damages
Lossiemouth	70	£230,000
Findhorn and Kinloss	50	£86,000
Nairn (total for Local Plan District 1 and 5)	130	£200,000

Table 1: Main areas at risk of coastal flooding

Economic activity and infrastructure at risk

The Annual Average Damages from coastal flooding in the Portgordon to Nairn coastal area are approximately £430,000. Coastal flooding accounts for around 7% of the total damages for the Findhorn, Nairn and Speyside Local Plan District. The damages are distributed as follows:

- 68% residential properties (£290,000)
- 15% roads (£65,000)
- 6% emergency services (£26,000)
- 5% agriculture (£20,000)
- 4% vehicles (£18,000)
- 3% non-residential properties (£16,000).

Figure 2 shows the location of Annual Average Damages from coastal flooding across the area.

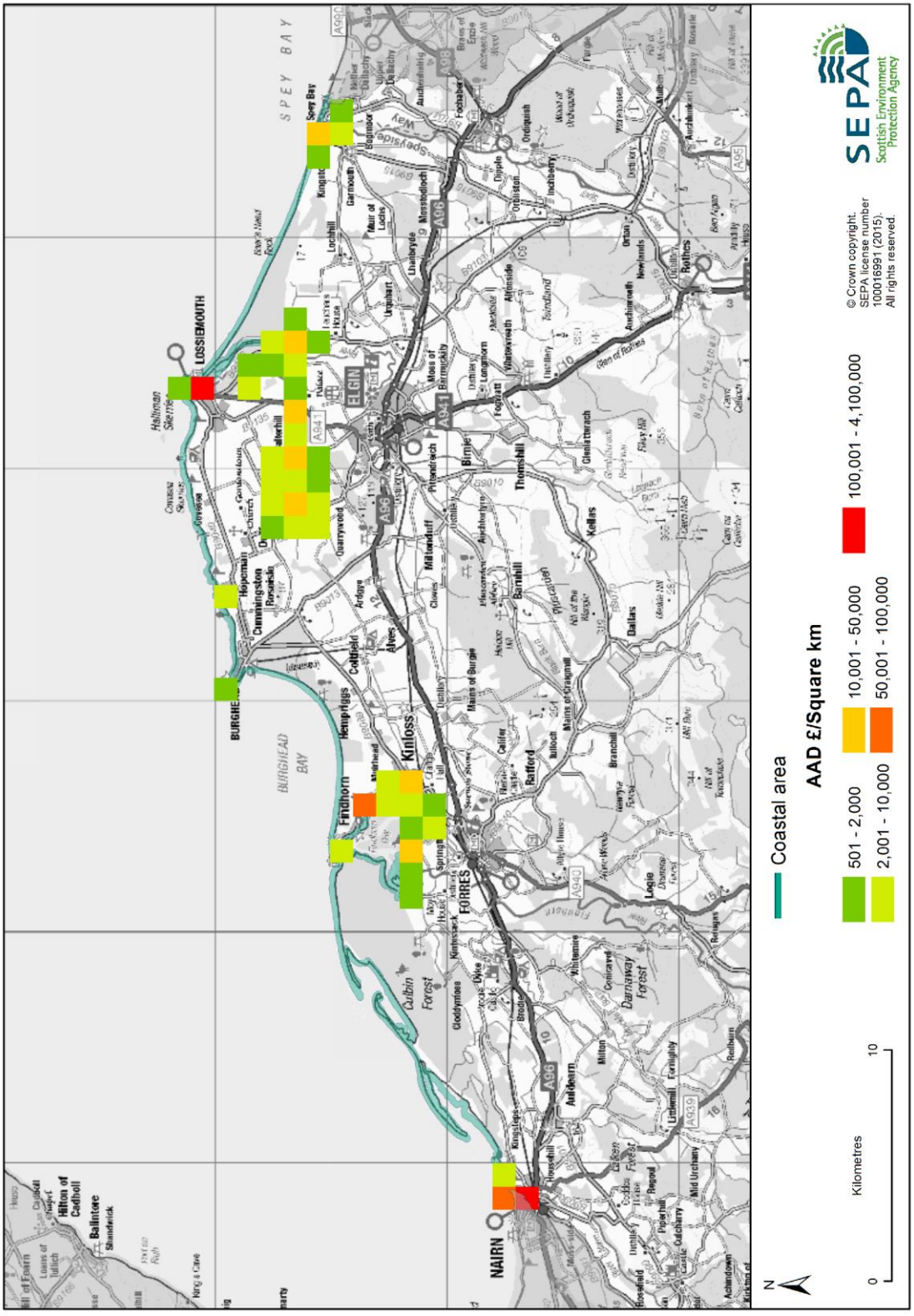

Figure 2: Annual Average Damages from coastal flooding

Table 2 shows further information about infrastructure and agricultural land at risk of coastal flooding.

	Number at risk	Further detail
Community facilities	0	n/a
Utility assets	0	n/a
Roads (excluding minor roads)	50	Notably; A941, B9011, and B9103
Railway routes	1	Aberdeen to Inverness
Agricultural land (km^2)	16	n/a

Table 2: Infrastructure and agriculture at risk of coastal flooding

Designated environmental and cultural heritage sites at risk

There are nine designated cultural heritage sites that have a risk of coastal flooding including scheduled monuments and gardens and designed landscapes.

Approximately 17km^2 of environmental designated area is at risk of coastal flooding, including Special Areas of Conservation, Special Protection Areas, and Sites of Special Scientific Interest. The sites affected include Loch Spynie, Culbin Bar, Culbin Sands, Culbin Forest, and Findhorn Bay.

History of flooding

There have been a number of localised floods with wave action often increasing flood risk. In February 1983 Shore Street in Lossiemouth flooded and a section of the harbour wall was breached. More recently flooding occurred in December 2012, December 2013 and January 2014. Properties had to be evacuated and people had to be rescued from flooded vehicles. Several properties were flooded. Further detail about the history of flooding in this area is available in the relevant Potentially Vulnerable Area chapter in section 2 of this document.

Managing flood risk

A range of public bodies have responsibility for managing flood risk in Scotland and they are working closer than ever before to target action in the areas where the greatest benefit can be gained. Members of the public also have a role to play and are the first line of defence against flooding by taking action to protect themselves and their property from flooding. Further information about roles and responsibilities is provided in Section 1.

Existing actions that are in place to manage flood risk and that are in addition to the information presented in Section 2 are described below.

Coastal flood warning schemes

The Portgordon to Nairn coastal area benefits from the Moray Firth Coastal Flood Warning Scheme. There are three coastal flood warning areas: Ardersier to Nairn, Findhorn to Lossiemouth and Spey Viaduct to Spey Bay (Figure 3).

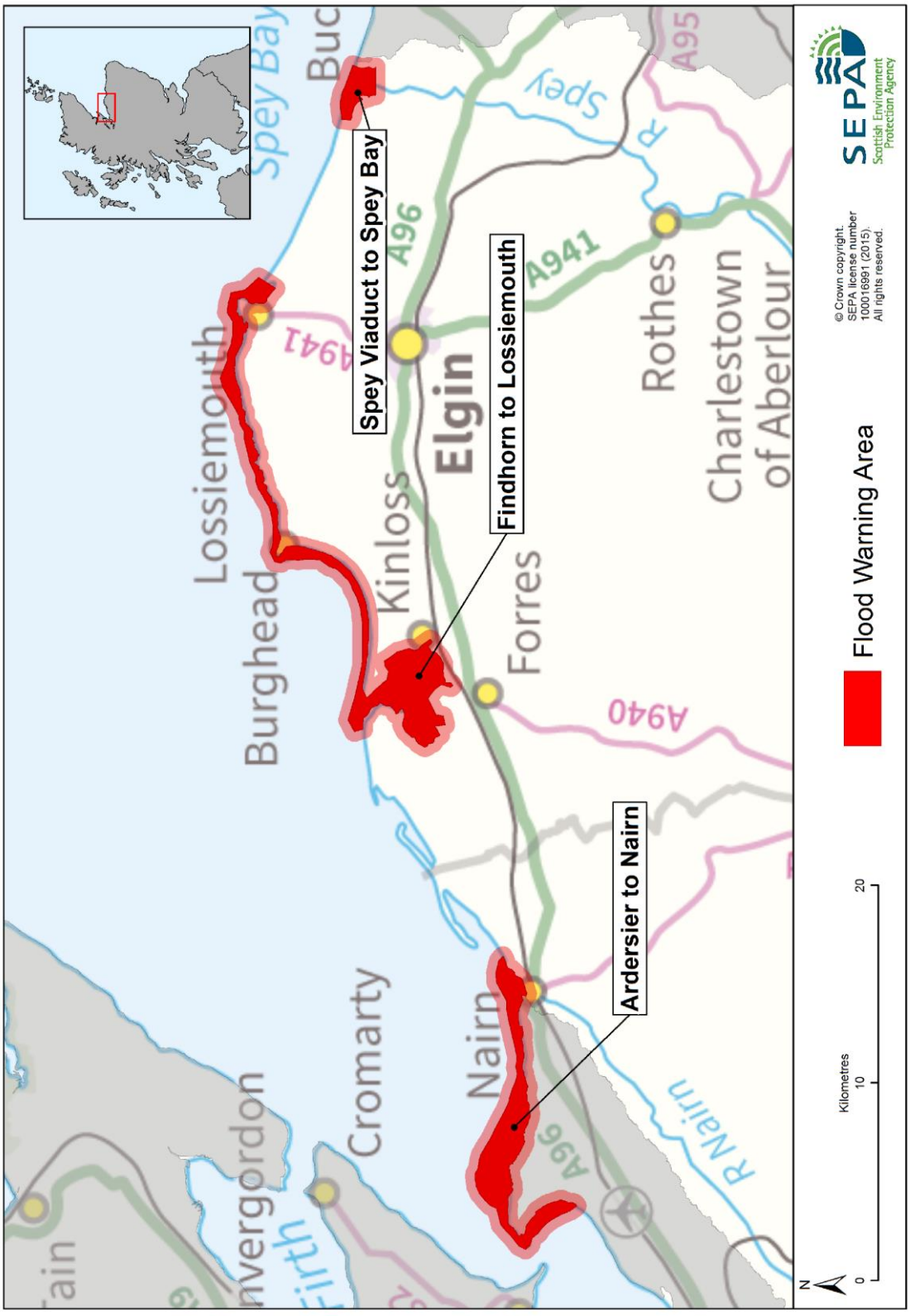

Figure 3: Flood warning areas

Awareness raising campaigns and community groups

There are a number of different action groups in this area including the Innes Community Council and the Flood Action Group in Kingston.

Climate change and future flood risk

UK Climate Projections (UKCP09) predicts that climate change may increase sea levels. The magnitude of sea level rise varies around the coastline.

For the UKCP09 high emissions scenario, the predicted average sea level increase for the Portgordon to Nairn coastal area is 0.5m by 2080. This may increase the number of residential properties at risk of coastal flooding from approximately 130 to 220, and the number of non-residential properties from approximately 30 to 70. Coastal flood modelling by SEPA has not taken into account the impacts of a future climate on wave overtopping or storminess, which could increase the number of properties affected by coastal flooding.

The predicted increases in flood risk are solely based on the impact of a changing climate on the magnitude of flooding; they do not take into account any potential increase due to population change, development pressures or urban creep, nor do they take into account any mitigation as a result of actions contained in this or future Flood Risk Management Strategies.

Potential for natural flood management

The assessment of the potential for natural flood management is shown on SEPA online maps (http://www.sepa.org.uk/environment/water/flooding/flood-maps/). The maps indicate the potential for wave attenuation and estuarine surge attenuation. They show areas where natural flood management could be effective and where further detailed assessment should take place. This information was used to identify where local authorities could include natural flood management as part of flood risk management schemes and studies. The proposed schemes and studies are listed in the relevant Potentially Vulnerable Area chapters of this document.

Estuarine surge

In the Portgordon to Nairn Coastal Area the only areas of potential for estuarine surge attenuation are located in the east, around Lossiemouth and Kingston.

Wave energy

There is potential for wave energy dissipation along much of the coastline in this coastal area. Between Nairn to Lossiemouth there is a substantial amount of potential, particularly around Findhorn Bay, the eastern half of Burghead Bay and the Culbin Forest frontage.

3.4 Surface water flooding

Findhorn, Nairn and Speyside Local Plan District

This chapter provides supplementary information on surface water flooding across the Local Plan District. It provides an overview of the main areas at risk and the history of surface water flooding. The predicted impacts on infrastructure are also identified. The impacts on environmental sites and agricultural land have not been assessed.

Information about the objectives and actions to manage flood risk are provided in Section 2.

Flood risk

Within the Findhorn, Nairn and Speyside Local Plan District there are approximately 730 residential properties and 340 non-residential properties at risk of surface water flooding. 77% of the residential properties at risk from surface water flooding are located within Potentially Vulnerable Areas.

Main areas at risk

The main areas which have greater than 50 residential properties at risk of surface water flooding are shown in Table 1. Table 1 also shows the estimated economic impact of surface water flooding in each area expressed as Annual Average Damages.

	Residential and non-residential properties at risk of surface water flooding	Annual Average Damages
Forres	230	£170,000
Elgin	150	£140,000
Rothes	70	£150,000
Aviemore	80	£89,000

Table 1: Main areas at risk of surface water flooding

Economic activity and infrastructure at risk

The Annual Average Damages in the Findhorn, Nairn and Speyside Local Plan District from surface water flooding are estimated to be £1.2 million. This accounts for 21% of the Annual Average Damages for the Local Plan District. The damages are distributed as follows:

- 53% residential properties (£660,000)
- 38% non-residential properties (£470,000)
- 5% emergency services (£57,000)
- 3% roads (£37,000)
- 1% vehicles (£11,000).

Figure 1 shows the location of Annual Average Damages from surface water flooding across the Local Plan District. The most significant contributing areas to the Annual Average Damages are Rothes, Elgin and Forres.

Table 2 shows the approximate numbers of further infrastructure assets which are at risk of flooding within this Local Plan District.

	Number at risk	Further detail
Community facilities	10	Includes; educational buildings and emergency services.
Utility assets	70	Includes; electricity substations, electricity generation and fuel extraction sites.
Roads (excluding minor roads)	1,900 locations	Notably; A941, A95, A96
Railway routes	190 locations	Aberdeen to Inverness

Table 2: Infrastructure at risk of surface water flooding

Designated environmental and cultural heritage sites at risk

Within the Findhorn, Nairn and Speyside Local Plan District it is estimated that approximately 90 cultural heritage sites are at risk of surface water flooding. These sites include scheduled monuments, gardens and designed landscapes, battlefields and listed buildings.

The impact of surface water flooding on environmental sites has not been assessed and is assumed to be relatively low.

History of surface water flooding

In July 1997, a combination of surface water flooding and river flooding led to significant impacts in Elgin. As a consequence, 1,200 people were evacuated from Elgin and approximately 400 homes were flooded. Roads, railway lines, buildings and fields were flooded when the defences were breached. This caused an estimated £35 million in flood damages.

Rothes experienced significant surface water flooding in addition to river flooding in 2002 and 2009. Forres has historically experienced fairly significant surface water flooding. There have also been a number of other recent localised surface water floods, including at Newmill and Hopeman. Elgin suffered from surface water flooding in 2014, particularly around the railway station.

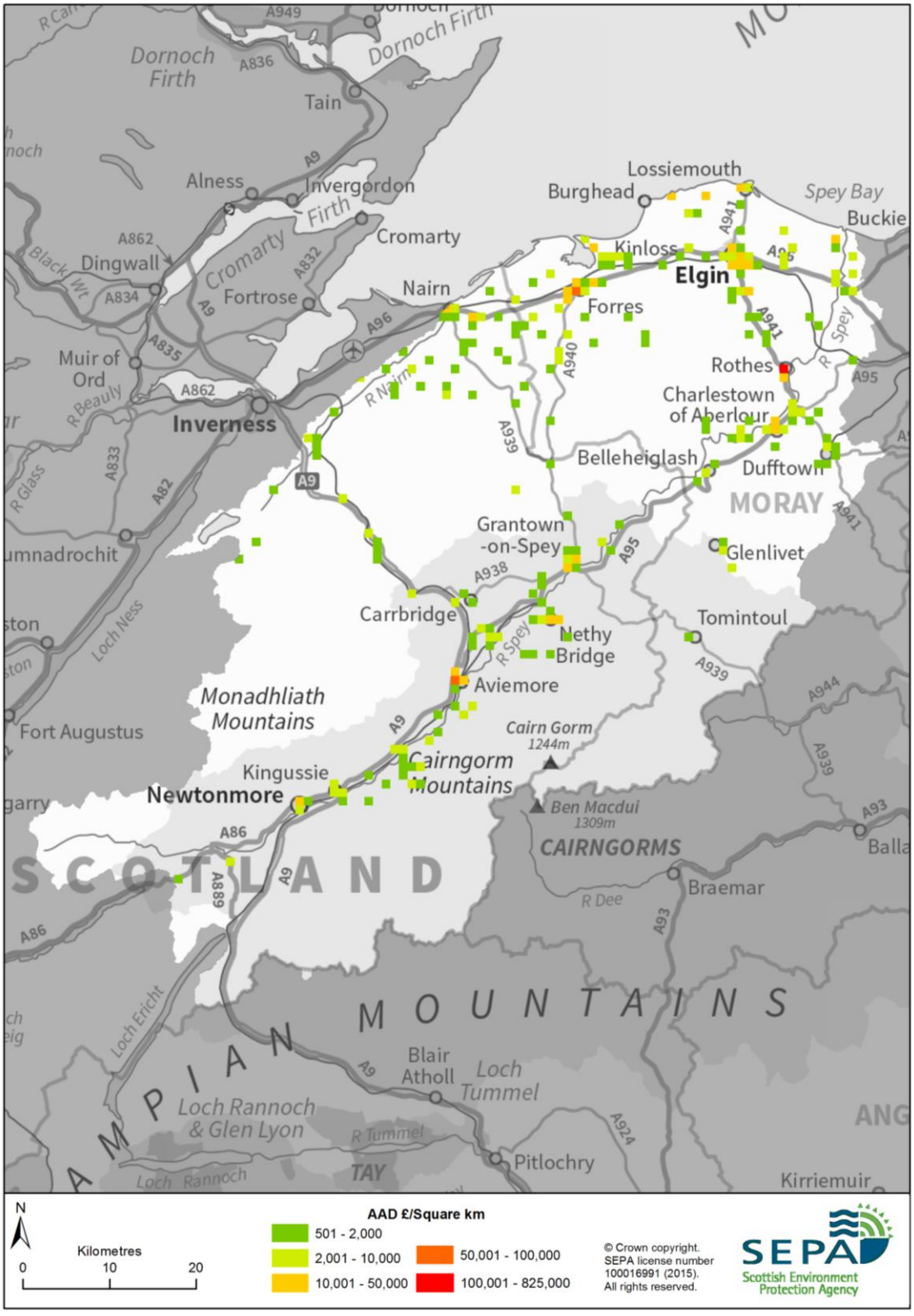

Figure 1: Annual Average Damages from surface water flooding

Managing flood risk

A range of public bodies have responsibility for managing flood risk in Scotland and they are working closer than ever before to target action in the areas where the greatest benefit can be gained. Members of the public also have a role to play and are the first line of defence against flooding by taking action to protect themselves and their property from flooding. Further information about roles and responsibilities is provided in Section 1.

Existing actions that are in place to manage flood risk in this area are described in Section 2.

Surface water management priority areas

The areas at highest risk from surface water flooding have been identified as priority areas. These priority areas were identified using SEPA flood models, supplemented with evidence from historic surface water floods and, where available, more detailed modelling carried out by local authorities. These priority areas require surface water management plans to be prepared, the details of which can be found within the Potentially Vulnerable Area chapters in Section 2.

Climate change and future flood risk

UK Climate Projections (UKCP09) predicts that climate change may lead to warmer and drier summers, warmer and wetter winters with less snow, and more extreme temperature and rainfall. The surface water modelling undertaken considered climate change scenarios with a 20% increase in rainfall intensity.

Under these conditions it is estimated that the number of residential properties at risk of surface water flooding may increase from approximately 730 to 940 and the number of non-residential properties from approximately 340 to 440.

The predicted increases in flood risk are solely based on the impact of a changing climate on the magnitude of flooding; they do not take into account any potential increase due to population change, development pressures or urban creep, nor do they take into account any mitigation as a result of actions contained in this or future Flood Risk Management Strategies.

Annex 1: 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.
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.

Term	Definition
	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.
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

Term	Definition
	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. drainage.
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 fror one or more sources for a particular likelihood.
Flood forecasting	SEPA operates a network of over 250 rainfall, river and coastal monitoring stations throughout Scotland that generate data 24 hours a day. This hydrological information is combined with meteorological information from the Met Office. A team of experts then predict the likelihood and timing of river, coastal and surface water flooding. This joint initiative between SEPA and the Met Office forms the Scottish Flood Forecasting Service.
Flood frequency	The probability that a particular size/severity of flood will occur in a given year (see likelihood).
Flood gate	An adjustable, sometimes temporary, barrier used as a flood defence to control the flow of water within a water system or during a flood. Flood gates can also be part of operational flood defences or protect individual buildings or sites.
Flood guard	Flood guards cover a variety of types of door and window barriers that can be fitted to individual properties and operated by the owners / occupiers prior to a flood event. They act as a physical barrier to water entering the property and can provide protection against frequent and relatively shallow flooding.
Flood hazard	In terms of the FRM Act, hazard refers to the characteristics (extent, depth, velocity) of a flood.
Flood hazard map	Flood hazard maps are required by the FRM Act to show information that describes the nature of a flood in terms of the source, extent, water level or depth and, where appropriate, velocity of water. Flood hazard and risk maps are referred to collectively as flood maps and are available on the SEPA website.
Flood Prevention Scheme / Flood Protection Scheme (FPS)	A flood protection scheme, as defined by the FRM Act, is a scheme by a local authority for the management of flood risk within the authority area. This includes defence measures (flood prevention schemes) formerly promoted under the Flood Prevention (Scotland) Act 1961.
Flood protection study	Flood protection studies aim to refine understanding of the hazard and risk associated with flooding in a particular area, catchment or coastline. They will involve detailed assessment of flood hazard and / or risk and may develop options for managing flood risk.
Flood protection works	Flood protection works can include the same flood defence measures that would make up a formal Flood Protection Scheme but without the legal process, protections and requirements that would come by delivering the works as a scheme.
Flood risk	A measure of the combination of the likelihood of flooding occurring and the associated impacts on people, the economy and the environment.
Flood Risk Assessment (FRA)	Flood Risk Assessments are detailed studies of an area where flood risk may be present. These are often used to inform planning decisions, may help to develop flood schemes and have also contributed to the National Flood Risk Assessment.

Term	Definition
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.
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]

Term	Definition
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 (Local FRM Plan)	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.
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.

Term	Definition
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.
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.
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,

Term	Definition
	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.
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.

Term	Definition
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
[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
[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/sssis/ 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=ufmfsw#x=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

Annex 2: Land use planning

Flood risk management actions from national planning policies
AVOID DEVELOPMENT IN MEDIUM TO HIGH RISK AREAS a) **Planning authorities** work in partnership undertaking catchment-wide Strategic Flood Risk Assessments to inform their development plan allocations in line with SEPA's guidance and Land Use Vulnerability. b) **Planning authorities and SEPA** require the submission of flood risk assessments that accord with SEPA's *Technical Flood Risk Guidance for Stakeholders*, to support planning applications where there is a potential flood risk. The flood risk assessment should be used to demonstrate as far as possible that the development will be safe for its lifetime, without increasing flood risk elsewhere and, where possible, takes opportunities to reduce flood risk overall. c) **SEPA** ensures that its flood risk advice to planning authorities is clear and appropriate. SEPA, in consultation with planning authorities, undertakes an annual assessment of planning advice and its contribution to flood risk. d) **SEPA and planning authorities** engage at an early stage of the development plan process to agree appropriate forms of development to help inform the preparation and implementation of Strategic Flood Risk Assessments.
REDUCE IMPACTS TO EXISTING BUILDINGS a) **SEPA, planning authorities and local communities** are required to engage at an early stage of the development plan process to agree the best long term land uses for areas where relocation, abandonment and/or change of use have been identified to deliver sustainable flood risk management. Where possible, new land uses should aim to achieve multiple benefits for local communities such as the creation of blue / green infrastructure and increased resilience to climate change.
PROTECT AND ENHANCE NATURAL FEATURES THAT HAVE A POSITIVE IMPACT ON REDUCING OVERALL FLOOD RISK a) **SEPA and planning authorities** are required to engage early in the development plan process to identify opportunities for the restoration and protection of natural features which help manage flood risk. Opportunities should be maximised to achieve multiple benefits such as the development of green / blue infrastructure and improved place making. Areas of land that may contribute to flood management should be identified and protected.
NEW DEVELOPMENTS ARE DESIGNED TO ENSURE THAT SURFACE WATER DRAINAGE DOES NOT INCREASE FLOOD RISK ON OR OFF SITE a) **SEPA** prepares guidance for planning authorities and developers on the use of surface water hazard maps for land use planning purposes. b) **Planning authorities** support the implementation of Surface Water Management Plans, developed by the local authorities, through development plan allocations and policies. Surface Water Management Plans should take account of development opportunities that could contribute to the reduction of surface water flood risk. c) **SEPA** engages at an early stage of the development plan process to progress exemplar projects that demonstrate the potential for land use planning to mitigate surface water flooding and contribute to wider environmental benefits.
a) **NEW DEVELOPMENT IS RESILIENT TO PREDICTED FUTURE CHANGES IN CLIMATE Planning authorities** ensure that climate change is considered in Strategic Flood Risk Assessments and Flood Risk Assessments, based upon the best scientific evidence and the information requirements of planners to make informed decisions.

Table 1: Objectives and actions that reflect national Land Use Planning policies and guidance

Annex 3: Acknowledgements

SEPA gratefully acknowledges the cooperation and input that various parties have provided, including *inter alia*, the following organisations:

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Local authorities
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Further detail on the datasets that have been used in the development of the Flood Risk Management Strategies can be found in the Strategic Appraisal Methodology, which is available from the SEPA webpage.