

# Tay Estuary and Montrose Basin Local Plan District Local Flood Risk Management Plan

## Content

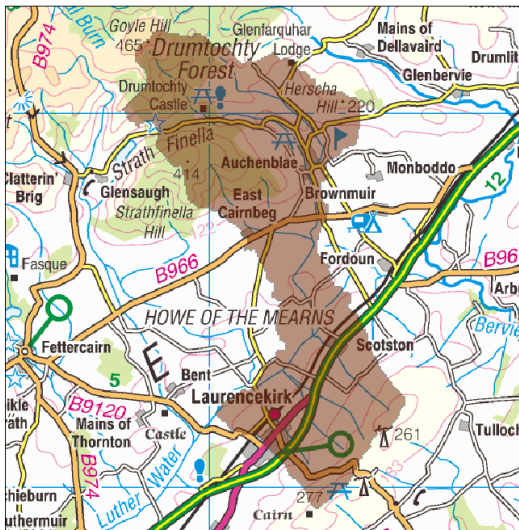
<b>PVA 07/01</b>	<b>Laurencekirk</b>
<b>PVA 07/02</b>	<b>Fettercairn</b>
<b>PVA 07/03</b>	<b>North of Brechin</b>
<b>PVA 07/04</b>	<b>Montrose Basin</b>
<b>PVA 07/05</b>	<b>Brechin</b>
<b>PVA 07/06</b>	<b>Lunan Water</b>
<b>PVA 07/07</b>	<b>Arbroath</b>
<b>PVA 07/08</b>	<b>Coast North of Arbroath</b>
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# Laurencekirk (Potentially Vulnerable Area 07/01)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Aberdeenshire Council	River North Esk (Tayside)

## Background

This Potentially Vulnerable Area is 40km<sup>2</sup> (shown below). It is situated in the north east of the River North Esk catchment and includes Laurencekirk and Auchenblae. The main source of flooding is the Luther Water.



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There are approximately 20 residential properties at risk of flooding. The Annual Average Damages are approximately £110,000.

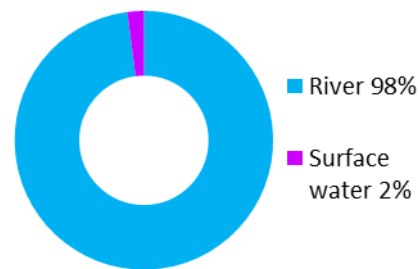


Figure 1: Annual Average Damages by flood source

## Summary of flooding impacts

Work carried out since the National Flood Risk Assessment in 2011 has concluded that the risk of flooding in this Potentially Vulnerable Area is now relatively low. The designation of this Potentially Vulnerable Area will be reviewed in the next flood risk management planning cycle.

The main risk of flooding in this area is to Auchenblae from the Luther Water.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to agricultural land. A small number of non-residential properties identified as being at flood risk in this area are no longer functioning as commercial properties. The Dundee to Aberdeen railway line is also notably impacted.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in

the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Laurencekirk (Potentially Vulnerable Area 07/03)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_01\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_01_Full.pdf)

## **Objectives to manage flooding in Laurencekirk**

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. The following objectives have been set for Laurencekirk Potentially Vulnerable Area:

- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Laurencekirk

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. The actions shaded have been selected as the most appropriate for Laurencekirk Basin 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	<b>Awareness raising</b>	Surface water plan/study	<b>Emergency plans/response</b>
Maintain flood protection scheme	<b>Strategic mapping and modelling</b>	<b>Flood forecasting</b>	<b>Self help</b>	<b>Maintenance</b>	<b>Planning Policies</b>

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
		Strategic mapping and modelling (Scottish Water)			
Flood forecasting					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning policies					

## Details of actions to manage flooding in Laurencekirk

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Laurencekirk PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Strategic mapping and modelling – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					

Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

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

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.

Scottish Water will undertake further investigation and modelling in the Laurencekirk DOA (2016-2019) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Aberdeenshire Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Aberdeenshire Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Aberdeenshire Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Aberdeenshire Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Aberdeenshire Council will also develop emergency plans/response and work with any community flood action groups.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Aberdeenshire Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six year of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Self help – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Aberdeenshire Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Aberdeenshire Council provides a range of flood protection products at cost price with free delivery across Aberdeenshire. The products are available for all types of flooding.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Aberdeenshire Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Aberdeenshire Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Aberdeenshire Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Aberdeenshire Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Aberdeenshire Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Aberdeenshire Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Aberdeenshire Council will coordinate emergency plans/response with related actions (shaded only in table above).

Aberdeenshire Council has developed an Operational Flood Response Plan, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Aberdeenshire Council will conduct assessments at known hotspots and prepare resources as required. Aberdeenshire Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. The Operational Flood Response Plan will undergo review on an annual basis to reflect operational or responsibility changes. A debrief and plan review will also be carried out after the Plan is activated.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Aberdeenshire Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Laurencekirk (Potentially Vulnerable Area 07/01)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Aberdeenshire Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Aberdeenshire Council is a local planning authority and will work with the regional planning authority, the Aberdeen City and Shire Strategic Development Planning Authority.

As a consultee on planning applications, Aberdeenshire Council's Flood & Coast Protection team will work directly with colleagues in the Planning Service to ensure that appropriate policies and measures are put in place to reduce flood risk. Planning applications are assessed against the flooding standards set out in the current Aberdeenshire Local

Development Plan, and in future those in the proposed Aberdeenshire Local Development Plan 2016.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

SEPA's planning activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

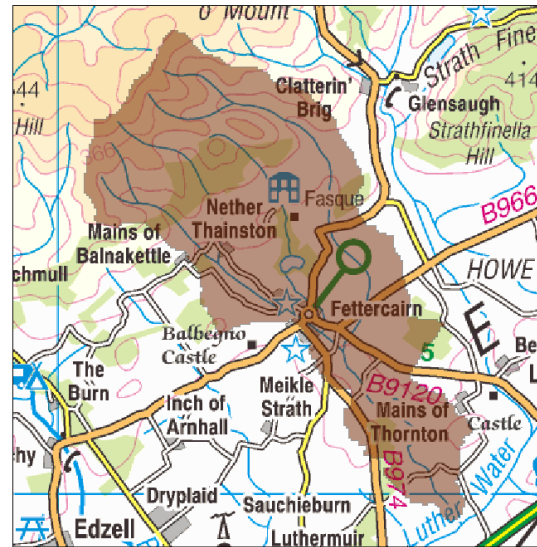
## Fettercairn (Potentially Vulnerable Area 07/02)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Aberdeenshire Council	River North Esk (Tayside)

### Background

This Potentially Vulnerable Area is 32km<sup>2</sup> and is situated in the River North Esk catchment (shown to the right). It includes Fettercairn and the main watercourses are the Dowrie Burn and its tributaries, the Burn of Cauldcotts, the Crichie Burn and the Craigmoston Burn.

There are approximately 50 residential properties and 10 non-residential properties at risk of flooding. The Annual Average Damages are approximately £140,000. All damages are derived from river flooding.



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### Summary of flooding impacts

The highest risk of flooding is in Fettercairn and Craigmoston from the Burn of Cauldcotts and Craigmoston Burn.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Fettercairn (Potentially Vulnerable Area 07/02)'

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_02\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_02_Full.pdf)

### Objectives to manage flooding in Montrose Basin

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. The following objectives have been set for Fettercairn Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in Fettercairn caused by river flooding (objective ID 7003)
- Avoid an overall increase in flood risk (Objective ID 7001) and reduce overall flood risk (Objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.



## Actions to manage flooding in Fettercairn

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. The actions shaded have been selected as the most appropriate for Fettercairn 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Maintain flood protection scheme (existing)					
Flood forecasting					
Community flood action groups					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning policies					

## Details of actions to manage flooding in Fettercairn

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Fettercairn PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Maintain flood protection scheme – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

The existing Fettercairn Flood Protection scheme provides relief from watercourse flooding. This includes an informal flood storage area on the Burn of Cauldcotts constructed in 2011.

Aberdeenshire Council will maintain the existing Flood Protection Scheme ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out Aberdeenshire Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Aberdeenshire Council will coordinate maintaining flood protection scheme with related actions (shaded only in table above).

Aberdeenshire Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Flood forecasting – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Community flood action groups – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	<b>Community flood action groups</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Community flood action groups</b>					

Aberdeenshire Council will coordinate community flood action groups with related actions (shaded only in table above).

Aberdeenshire Council will work with the Fettercairn Flood Resilience Group to reduce flood risk, improve preparedness and increase resilience against flooding. Aberdeenshire Council will provide regular updates

Aberdeenshire Council will ensure stocks of sandbags are delivered to the Distillery for distribution by the community. A water level indicator board has been erected on the Cauldcots Burn near the Royal Arch as an aid to residents in deciding when sandbags should be deployed.

Aberdeenshire Council will also maintain the existing watercourse gauges at the Distillery and Town Centre which provide the Fettercairn Flood Resilience Group with early warning.

Aberdeenshire Council will continue to co-ordinate with existing community flood action groups throughout the next 6 years on a priority needs basis where resources allow.

Aberdeenshire Council funding for its own activities to support the Fettercairn Flood Resilience Group will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Awareness raising – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Aberdeenshire Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Aberdeenshire Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Aberdeenshire Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Aberdeenshire Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Aberdeenshire Council will also develop emergency plans/response and work with any community flood action groups.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Aberdeenshire Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six year of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Aberdeenshire Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Aberdeenshire Council provides a range of flood protection products at cost price with free delivery across Aberdeenshire. The products are available for all types of flooding.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Aberdeenshire Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Aberdeenshire Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Aberdeenshire Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Aberdeenshire Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Aberdeenshire Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Aberdeenshire Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Emergency plans/response – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Aberdeenshire Council will coordinate emergency plans/response with related actions (shaded only in table above).

Aberdeenshire Council has developed an Operational Flood Response Plan, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Aberdeenshire Council will conduct assessments at known hotspots and prepare resources as required. Aberdeenshire Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. The Operational Flood Response Plan will undergo review on an annual basis to reflect operational or responsibility changes. A debrief and plan review will also be carried out after the Plan is activated.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Aberdeenshire Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Fettercairn (Potentially Vulnerable Area 07/02)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Aberdeenshire Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Aberdeenshire Council is a local planning authority and will work with the regional planning authority, the Aberdeen City and Shire Strategic Development Planning Authority.

As a consultee on planning applications, Aberdeenshire Council's Flood & Coast Protection team will work directly with colleagues in the Planning Service to ensure that appropriate policies and measures are put in place to reduce flood risk. Planning applications are assessed against the flooding standards set out in the current Aberdeenshire Local

Development Plan, and in future those in the proposed Aberdeenshire Local Development Plan 2016.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

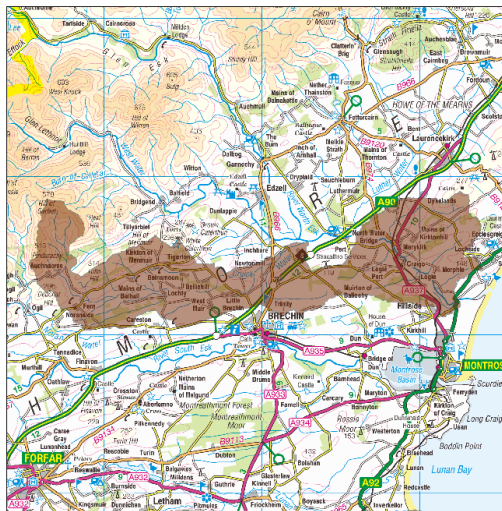
SEPA's planning activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# North of Brechin (Potentially Vulnerable Area 07/03)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Aberdeenshire Council, Angus Council	River North Esk (Tayside)

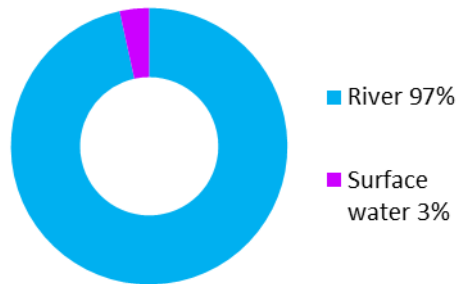
## Background

This Potentially Vulnerable Area is 124km<sup>2</sup>. It is situated at the mouth of the River North Esk catchment where it meets the North Sea (shown below). It includes Marykirk and the main watercourses are the River North Esk and its tributaries the Cruick Water and Keithock Burn.



There is a risk of river flooding and surface water flooding, with the majority of damages caused by river flooding.

There are approximately 20 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £110,000.



**Figure 1: Annual Average Damages by flood source**

## Summary of flooding impacts

Work carried out since the National Flood Risk Assessment in 2011 has concluded that the risk of flooding in this Potentially Vulnerable Area is now relatively low. The designation of this Potentially Vulnerable Area will be reviewed in the next flood risk management planning cycle.

Flood risk is spread out across the Potentially Vulnerable Area and flooding occurs to small pockets of land adjacent to the River North Esk and its tributaries. The Dundee to Aberdeen railway line is also notably impacted.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'North of Brechin (Potentially Vulnerable Area 07/03)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_03\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_03_Full.pdf)

## **Objectives to manage flooding in North of Brechin**

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. The following objectives have been set for North of Brechin Potentially Vulnerable Area:

- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in North of Brechin

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. The actions shaded have been selected as the most appropriate for North of Brechin 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Maintain flood warning					
Flood forecasting					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning policies					

## Details of actions to manage flooding in North of Brechin

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the North of Brechin PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Strategic mapping and modelling – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the Cruick Water and Lower North Esk areas to improve understanding of flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.

SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km<sup>2</sup> of improved surface water data is currently available within this Local Plan District.

River mapping improvements and surface water mapping improvements are SEPA-led. Mapping improvements on the Cruick Water are expected to be carried out in 2017 to 2018. Surface water mapping improvements are expected to be carried out in 2016 to 2017.

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.

Scottish Water will undertake further investigation and modelling in the Brechin (2018-2020), Laurencekirk (2016-2019) and Montrose (2016-2019) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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



SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintain flood warning – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Inchbare, Marykirk and the Logie Mill and Craigo flood warning areas which are part of the North Esk river flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

<b>Flood forecasting – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Aberdeenshire Council, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Aberdeenshire Council, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Aberdeenshire Council and Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, which will be shared across to North of Brechin PVA, Aberdeenshire Council and Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Aberdeenshire Council and Angus Council will also develop emergency plans/response and work with any community flood action groups.

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

disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council and Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Aberdeenshire Council and Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Aberdeenshire Council provides a range of flood protection products at cost price with free delivery across Aberdeenshire. The products are available for all types of flooding.

Funding for self help will largely be by the individual property and business owner, although Aberdeenshire Council and Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Aberdeenshire Council, Angus Council and Scottish water will coordinate their maintenance activities with related actions (shaded only in table above).

Aberdeenshire Council and Angus Council each have a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Aberdeenshire Council and Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Aberdeenshire Council and Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Aberdeenshire Council and Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council and Aberdeenshire Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plans for North of Brechin, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk in Logie Mill, Edzell and Inchbare. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations.

Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Aberdeenshire Council has developed an Operational Flood Response Plan, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk at Marykirk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Aberdeenshire Council will conduct assessments at known hotspots and prepare resources as required. Aberdeenshire Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).



Aberdeenshire Council's Operational Flood Response Plan will undergo review on an annual basis to reflect operational or responsibility changes. A debrief and plan review will also be carried out after the Plan is activated.

Formed in 2012, the Edzell Flood Group and Angus Council have prepared an Emergency Flood Plan for Edzell, which details roles and responsibilities and co-ordination arrangements for flood events. Angus Council will continue to work with the Edzell community flood action groups to set out arrangements to reduce flood risk, improve preparedness and increase resilience against flooding.

Angus Council has provided officer support and a suite of information highlighting sources of flooding, emergency kit advice, flood response advice and contact information for partner agencies such as SEPA, Scottish Water, Scottish Flood Forum etc. Angus Council will continue to co-ordinate with the Edzell Flood Group throughout the next 6 years on a priority needs basis where resources allow.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Aberdeenshire Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – North of Brechin (Potentially Vulnerable Area 07/03)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA, Aberdeenshire Council and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Aberdeenshire Council is a local planning authority and will work with the regional planning authority, the Aberdeen City and Shire Strategic Development Planning Authority.

As a consultee on planning applications, Aberdeenshire Council's Flood & Coast Protection team will work directly with colleagues in the Planning Service to ensure that appropriate policies and measures are put in place to reduce flood risk. Planning applications are assessed against the flooding standards set out in the current Aberdeenshire Local

Development Plan, and in future those in the proposed Aberdeenshire Local Development Plan 2016.

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

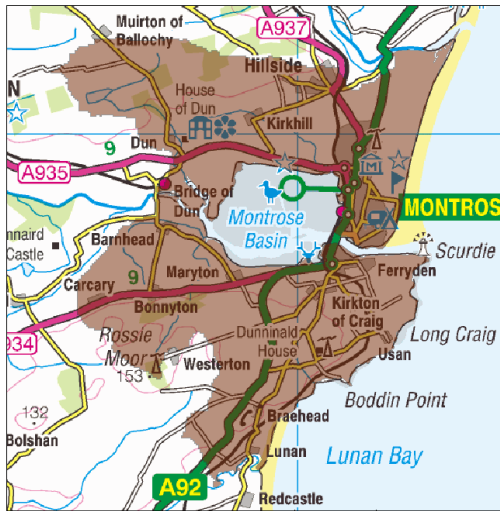
SEPA's planning activities are funded by Scottish Government through SEPA's grant in aid settlement. Aberdeenshire Council and Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# Montrose Basin (Potentially Vulnerable Area 07/04)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	Kincardine and Angus coastal

## Background

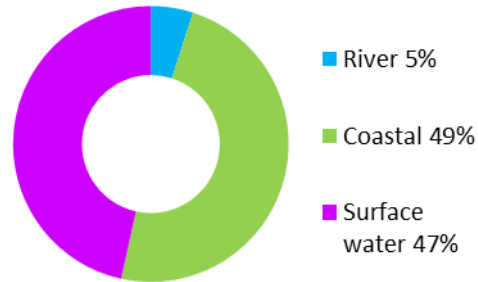
This Potentially Vulnerable Area is 63km<sup>2</sup> and is made up of small coastal watercourses that flow into the Montrose Basin and Montrose Bay (shown below). It includes the towns of Montrose and Ferryden.



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The area has a risk of river, coastal and surface water flooding with the majority of damages caused by coastal and surface water flooding.

There are approximately 130 residential properties and 90 non-residential properties at risk of flooding. The Annual Average Damages are approximately £700,000.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

The highest risk of coastal flooding is from the North Sea and Montrose Basin to Montrose, Ferryden and Bridge of Dun. The highest risk of surface water flooding is in Montrose and Ferryden.

For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties and roads. The Dundee to Aberdeen railway line is also notably impacted.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Montrose Basin (Potentially Vulnerable Area 07/04)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_04\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_04_Full.pdf)

## Objectives to manage flooding in Montrose Basin

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. The following objectives have been set for Montrose Basin Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties and risk to people in Montrose caused by coastal flooding (objective ID 7007, 7008)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Montrose and Ferryden where practical (objective ID 7005)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Montrose Basin

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. The actions shaded have been selected as the most appropriate for Montrose Basin 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

The delivery of selected actions by year over the six-year plan cycle is summarised overleaf.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Maintain flood protection scheme (existing)					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
New flood warning					
Maintain flood warning					
Flood forecasting					
Community flood action groups					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning policies					

## Details of actions to manage flooding in Montrose Basin

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Montrose Basin PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Flood protection study – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection study</b>					

Angus Council will undertake a flood protection study for Montrose to be delivered by financial year 2018/19. This will assess whether flood defences and natural flood management can be used to reduce flood risk. Natural flood management options will consider wave and surge attenuation. The study will also consider the viability of property level protection. The study will take a sustainable approach and consider the interactions between actions and effects on coastal processes along the shoreline, This will be in line with Angus Shoreline Management Plan.

The study has the potential to benefit 104 residential properties and 43 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £5.2 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the study area. The study could also benefit three utilities and three roads located within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to enhance and restore the environment will be considered by coordinating with river basin management planning. The proposed actions will not have an adverse effect on the integrity of the nationally and locally designated sites in the study area (Montrose Basin Special Protection Area, Montrose Basin SAC or SSSI), which could be positively or negatively impacted. These include conservation areas, listed buildings, Sites of Special Scientific Interest and Ramsar sites.



Angus Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA, SNH and landowners, Montrose Port Authority, Montrose Golf Links Community etc.

Angus Council will coordinate the flood protection study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the flood protection study with related actions (shaded only in table above).

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintain flood protection scheme – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

The existing Montrose Flood Protection scheme provides protection from coastal processes. This extends from the northern end of the splash seawall frontage to the eastern boundary of Montrose Port. These measures include a piled sea wall with a rock armour toe, rock flank protection, rock armour revetment with two strong points and a small dune system and gabion mattress.

Angus Council will maintain the existing Flood Protection Scheme ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Where required Angus Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc. Maintenance of the Flood Protection Schemes will also be in line with Angus Shoreline Management Plan.

Angus Council will coordinate maintaining flood protection scheme with related actions (shaded only in table above).

Angus Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

### Strategic mapping and modelling – Montrose Basin (Potentially Vulnerable Area 07/04)

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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies

### Delivery of selected action

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the Montrose area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. As a local authority study is proposed in this area, SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Mapping improvements in this area are dependent on a local authority study. However, wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

A coastal flood protection study is proposed for Montrose and a new coastal flood warning scheme is under consideration for the Aberdeenshire coast from Peterhead to Montrose. SEPA will ensure that any new information about flood risk resulting from the proposed study and flood warning developments is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.

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.

Scottish Water will undertake further investigation and modelling in the Montrose sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>New flood warning – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
Flood protection scheme/works	Natural flood management works	<b>New flood warning</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>New flood warning</b>					

Flood warning is required for communities at risk of coastal flooding along the Aberdeenshire coast from Peterhead to Montrose. A flood forecasting system will be required before the flood warning scheme can be developed.

The flood forecasting system is to be updated by autumn 2017. The new flood warning service is to be launched in spring 2018.

A coastal flood protection study is proposed for Montrose. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in developing the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Maintain flood warning – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Kinnaird/Bridge of Dun flood warning area which is part of the South Esk river flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

<b>Flood forecasting – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Community flood action groups – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	<b>Community flood action groups</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Community flood action groups</b>					

Angus Council will coordinate community flood action groups with related actions (shaded only in table above).

Angus Council will work with existing community flood action groups to set out arrangements to reduce flood risk, improve preparedness and increase resilience against flooding. Angus Council is engaging with Ferryden and Craig Community Council (formed in 2014) and Aulton Way Community Flood Group (formed in 2015) who are currently developing the scope of the group. Angus Council will co-ordinate these works with Scottish Water and emergency services when required.

Angus Council has provided each community group with a suite of information highlighting sources of flooding, emergency kit advice, flood response advice and contact information for partner agencies such as SEPA, Scottish Water, Scottish Flood Forum etc.

Angus Council will continue to co-ordinate with existing community flood action groups throughout the next 6 years on a priority needs basis where resources allow.

Angus Council funding for community flood action groups will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.



<b>Awareness raising – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

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

A new flood warning scheme is proposed for the Aberdeenshire coast from Peterhead to Montrose. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek

opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection study to address flood risk and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Awareness raising</b>	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Surface water plan/study</b>					

Angus Council will prepare Surface Water Management Plans (SWMPs) to cover Montrose and Ferryden. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Angus Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Maintenance – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Angus Council will continue to maintain the existing sea walls, gabions, embankments and revetments around Montrose Basin in line with the Angus Shoreline Management Plan.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan for Montrose, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Montrose Basin (Potentially Vulnerable Area 07/04)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.



Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

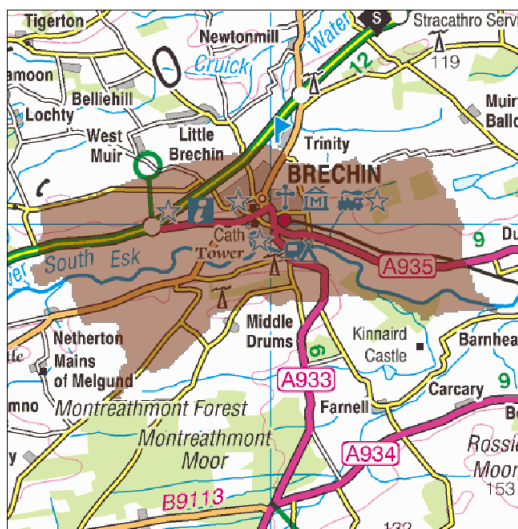
SEPA's planning activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Brechin (Potentially Vulnerable Area 07/05)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	River South Esk (Tayside)

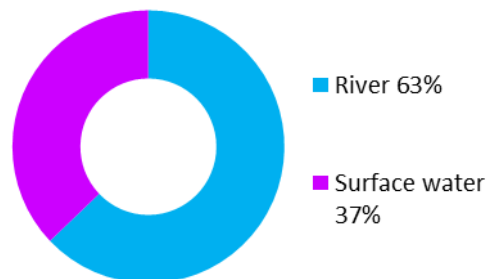
### Background

This Potentially Vulnerable Area is 36km<sup>2</sup> and includes Brechin (shown below). It is situated near the mouth of the River South Esk where it flows into the Montrose Basin. The main sources of flooding are river and surface water.



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There are approximately 100 residential properties and 70 non-residential properties at risk of flooding. The Annual Average Damages are approximately £670,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The highest risk of flooding is in Brechin from the River South Esk. Brechin is also notably impacted by surface water flooding. In Brechin, Angus Council has undertaken detailed studies for the design and build of the Brechin Flood Protection Scheme. The information in this report uses SEPA data which may be different from the flooding information from the Scheme.

For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Brechin (Potentially Vulnerable Area 07/05)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_05\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_05_Full.pdf)

## Objectives to manage flooding in Brechin

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. The following objectives have been set for Brechin Basin Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties and risk to people in Brechin caused by flooding from the River South Esk (objective ID 7011, 7012)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Brechin where practical (objective ID 7009)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Brechin

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. The actions shaded have been selected as the most appropriate for Brechin 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Maintain flood protection scheme					
Natural flood management works					
Natural flood management study					
		Strategic mapping and modelling (Scottish Water)			
Maintain flood warning					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Brechin

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Brechin PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Maintain flood protection scheme – Brechin (Potentially Vulnerable Area 07/05)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

The existing Brechin Flood Prevention Scheme 2015/16 provides protection from river flooding. The existing scheme is located along River Street, Brechin. The scheme comprises a number of features to reduce flood risk in Brechin. This included the construction of a 1.5km flood defence wall, 1.8m high embankment, and installation of 3 submerged pumping stations, improving the Denburn culvert, upgrading existing surface water drainage, numerous headwall outfall structures and raising 300m of the footway in River Street.

Angus Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Where required Angus Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc.

Angus Council will coordinate maintaining flood protection scheme with related actions (shaded only in table above).

Angus Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Natural flood management works – Brechin (Potentially Vulnerable Area 07/05)</b>					
Flood protection scheme/works	<b>Natural flood management works</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Natural flood management works</b>					

Natural flood management works are continuing following completion of the Brechin Flood Protection Scheme. The works, which include upland reforestation, will be informed by Natural flood management study (described below) and the River South Esk Catchment Management Plan produced by the River South Esk catchment Partnership. Angus Council will work with other partners and stakeholders to help co-ordinate the proposed work. Partners and stakeholders include but are not limited to SEPA, SNH, RSPB, Forestry Commission and Cairngorms National Park Authority. A number of projects have been proposed including the River South Esk restoration pilot projects led by SEPA and the Esk River and Fisheries Trust and contour planting project led by the Forestry commission Scotland. It is expected that the projects will be delivered by 2019/20 and funded by SEPA and Scottish Government.

The economic, social and environmental impacts of the natural flood management actions will be considered. The economic impact of natural flood management actions is difficult to define. However, such actions can reduce flood risk for high likelihood events to 84 residential and non-residential properties in this location. Natural flood management actions can also have a positive impact on the ecological quality of the environment by restoring and enhancing natural habitats.

Angus Council will coordinate these works through the Local Planning District (LPD) partnership and/or separate agreements.

Angus Council will coordinate natural flood management works with related actions (shaded only in table above).

Angus Council funding for natural flood management works will be shared with other as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Natural flood management study – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Natural flood management study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Natural flood management study					

Angus Council is working with the River South Esk Catchment Partnership on a trial Natural Flood Management (NFM) project, comprising of contour and riparian tree planting in Glen Clova, within the Brechin catchment. The economic, social and environmental impacts of the natural flood management actions will be considered in the study.

The economic impact of natural flood management actions is difficult to define. However, such actions can reduce flood risk for high likelihood events. Opportunities to improve the condition of the Melgund Burn and Lemno Burn (Water body IDs 5804 and 5806), which are located within the study area and the physical condition of these rivers is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. Natural flood management actions can also have a positive impact on the ecological quality of the environment by restoring and enhancing natural habitats.

The South Esk pilot catchment project aims to identify and prioritise opportunities for delivering improvements to river habitats whilst helping to reduce flood risk. Phase 1 of the study has been completed and SEPA is currently in discussion with landowners with regard to taking forward some sites to options appraisal and outline design.

Scoping identified a number of reaches in the lower catchment of the River South Esk as priorities for restoration and natural flood management. Proposals for the Melgund Burn and Lemno Burn are now at outline design stage.

The project is ongoing with Phase 1 scoping completed. Phase 2 is underway with outline design to be completed in February 2016. Phase 3 implementation is scheduled for June 2016 to September 2016.

The Melgund Burn component is managed by the Esk Rivers Fisheries Trust and the Lemno Burn component by SEPA.



This pilot catchment project aims to work with local landowners and land managers on a voluntary basis to demonstrate how we could combine improvements to river habitats, with measures that will help to reduce flood risk, whilst ensuring proper consideration of existing land use.

This project is funded through the Water Environment Fund. The fund is managed by SEPA and is supported by the Scottish Government, Scottish Natural Heritage and the Forestry Commission. The fund aims to restore rivers, lochs and their catchments which have been damaged by historical activities.

Angus Council will coordinate the natural flood management study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the natural flodd management study with related actions (shaded only in table above).

Angus Council funding for natural flood management studies will be shared with other as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
		<b>Strategic mapping and modelling (Scottish Water)</b>			

Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

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.

Scottish Water will undertake further investigation and modelling in the Brechin sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintain flood warning – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Brechin, Kinnaird/Bridge of Dun and the Finavon and Tannadice flood warning areas which are part of the South Esk river flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

There are ongoing natural flood management works and a natural flood management study in this PVA. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the ongoing works and any new information about flood risk resulting from the study are fully considered in the existing flood warning system.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

<b>Flood forecasting – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection study to address flood risk and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Surface water plan/study</b>					

Angus Council will prepare Surface Water Management Plans (SWMPs) to cover Brechin. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Angus Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.



<b>Maintenance – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan for Brechin, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk in Brechin. At predetermined trigger levels for the River South Esk flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Brechin (Potentially Vulnerable Area 07/05)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

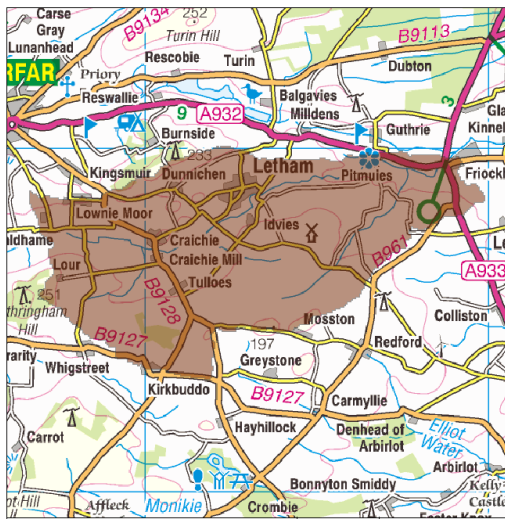
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# Lunan Water (Potentially Vulnerable Area 07/06)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	Lunan Water

## Background

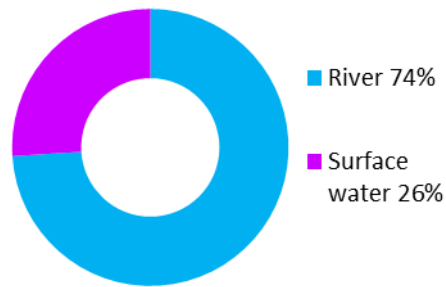
This Potentially Vulnerable Area is 53km<sup>2</sup> and situated in the upper reaches of the Lunan Water catchment (shown below).



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This area includes Letham and the main watercourse is the Vinny Water, a tributary of the Lunan Water. The majority of damages in this area are caused by river flooding with a lower risk of surface water flooding.

There are approximately 20 residential properties at risk of flooding. The Annual Average Damages are approximately £60,000.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

Work carried out since the National Flood Risk Assessment in 2011 has concluded that the risk of flooding in this Potentially Vulnerable Area is now relatively low. The designation of this Potentially Vulnerable Area will be reviewed in the next flood risk management planning cycle.

The main risk of flooding in this area is to Letham from the Vinny Water.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to agricultural land. Within this Potentially Vulnerable Area there is one asset identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Lunan Water (Potentially Vulnerable Area 07/06)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_06\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_06_Full.pdf)

## Objectives to manage flooding in Lunan Water

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. The following objectives have been set for Lunan Water Potentially Vulnerable Area:

- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown below.

## Actions to manage flooding in Lunan Water

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. The actions shaded have been selected as the most appropriate for Lunan Water 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	<b>Awareness raising</b>	Surface water plan/study	<b>Emergency plans/response</b>
Maintain flood protection scheme	<b>Strategic mapping and modelling</b>	<b>Flood forecasting</b>	<b>Self help</b>	<b>Maintenance</b>	<b>Planning Policies</b>

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Flood forecasting					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Lunan Water

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Lunan Water PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.



<b>Strategic mapping and modelling – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

**SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.**

SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km<sup>2</sup> of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water Integrated Catchment Studies will be considered as these projects are completed.

SEPA led surface water mapping improvements are expected to be carried out in 2016 to 2017.

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.

Scottish Water will undertake further investigation and modelling in the Letham sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection study to address flood risk and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

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<b>Maintenance – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Planning policies – Lunan Water (Potentially Vulnerable Area 07/06)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website

<http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

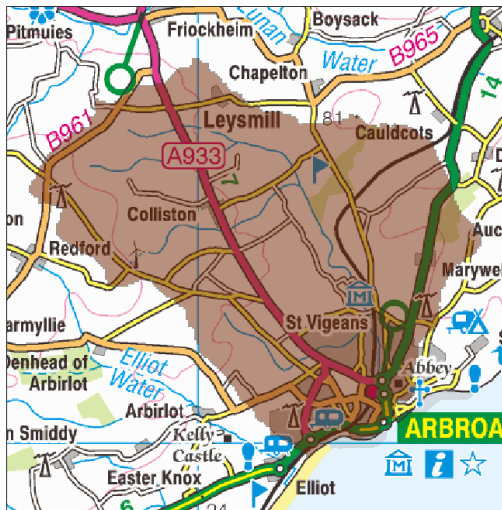
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Arbroath (Potentially Vulnerable Area 07/07)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	Brothock Water

### Background

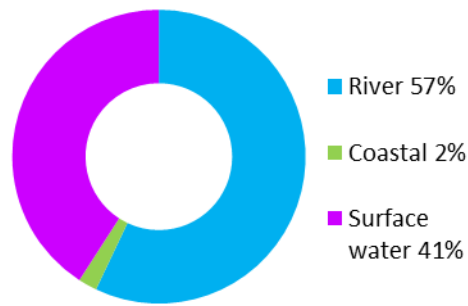
This Potentially Vulnerable Area is 50km<sup>2</sup> and includes the whole Brothock Water catchment. It contains Arbroath and the main watercourses are the Brothock Water and its tributaries including the Magungie Burn, Denside Burn, Coliston Burn and Hercules Den Burn.



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There are approximately 250 residential properties and 140 non-residential properties at risk of flooding. The Annual Average Damages from flooding are approximately £1.6 million.

The main sources of flood damages are river and surface water flooding.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The highest risk of flooding is in Arbroath from the Brothock Water. Arbroath is also notably impacted by surface water flooding.

For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties. The Dundee to Aberdeen railway line is also notably impacted.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Arbroath (Potentially Vulnerable Area 07/07)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_07\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_07_Full.pdf)

## Objectives to manage flooding in Arbroath

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. The following objectives have been set for Arbroath Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties and risk to people in Arbroath caused by flooding from the Brothock Water (objective ID 7016, 7017);
- Reduce economic damages and number of residential properties at risk of surface water flooding in Arbroath, Arbirlot, Auchmithie and Colliston where practical (objective ID 7014); and
- Avoid an overall increase in flood risk (7001) and reduce overall flood risk (objective ID 7054).

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Arbroath

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. The actions shaded have been selected as the most appropriate for Arbroath 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection scheme/works					
Maintain flood protection scheme (existing)			Maintain flood protection scheme (existing and new)		
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS – Scottish Water)					
Awareness raising					
Flood forecasting					
Maintain flood warning					
Self help					
Emergency plans/response					
Maintenance					
Planning Policies					

## Details of actions to manage flooding in Arbroath

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Arbroath PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection scheme/works – Arbroath (Potentially Vulnerable Area 07/07)</b>					
<b>Flood protection scheme/works</b>	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
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Flood protection scheme/works</b>					

The Arbroath Flood Protection Scheme will reduce river flood risk. The scheme is being advanced as a formal flood protection scheme under the Flood Risk Management (Scotland) Act 2009. The proposed scheme will provide a 1 in 200 year standard of protection and is to be delivered by 2018/19 addressing fluvial flood risk from the Brothock Water. It is anticipated that the scheme will be at a cost of £11.4m. The proposed scheme has estimated damages avoided of £16 million and an estimated benefit cost ratio of 1.40.

The scheme includes improvements to existing flood defences and the construction of two upstream flood storage areas; this will attenuate flood waters in areas to the north and north-west of Arbroath reducing peak flows downstream. It is expected that the scheme will remove 530 people at risk of flooding saving an estimated £840,000 in annual average damages.

A reduction in flood risk will have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the flood protection scheme area. In addition there are two utilities, three roads and one railway line which have been identified as potentially benefitting from this action. There may be negative impacts through disturbance to the local community during the construction phase.

The flood protection scheme may have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. Opportunities to improve the condition of the Brothock Water (water body ID 5603), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management. A number of nationally and locally designated sites are present in the study area and could be positively or negatively impacted. These include conservation areas, scheduled monuments, listed buildings and ancient woodlands. The Strategic Environmental Assessment screening decision for the Arbroath Flood Strategy, which included the flood protection scheme as well as coastal protection works, was that there were no significant environmental impacts.

However, local environmental impacts of the construction works will be assessed and managed as the scheme is developed and delivered.

Angus Council will coordinate the flood protection scheme through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the flood protection scheme with related actions (shaded only in table above).

Funding for the Arbroath Flood Protection Scheme will be subject to 80% grant funding by Scottish Government with the remainder from Angus Council capital budgets.

<b>Maintain flood protection scheme – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme (existing)</b>			<b>Maintain flood protection scheme (existing and new)</b>		

The existing Brothock Water Flood Prevention Scheme 1987 provides protection from river flooding. The existing scheme is situated between Arbroath Harbour and St.Vigeans. The scheme comprises a number of features to reduce flood risk in Arbroath. This included the construction of floodwalls, heightening of existing walls, altering the soffit level of two bridges, re-grading and realignment of existing embankments, removing various buildings and structures that span the Brothock Water, installation of concrete screens and waterproofing buildings that span the Brothock Water.

The new Arbroath Flood Protection Scheme, due for completion in 2018/19 will provide a higher level of protection from river flooding. Details of the scheme are shown above in section 'Flood Protection Scheme/Works'.

Angus Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Where required Angus Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc. Maintenance of the Flood Protection Schemes will also be in line with Angus Shoreline Management Plan.

Angus Council will coordinate maintaining flood protection schemes with related actions (shaded only in table above).

Angus Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.



<b>Strategic mapping and modelling – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. A detailed local authority led study has already been undertaken in this area and SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Strategic coastal mapping improvements in this area are dependent on the implementation of local authority led flood protection scheme. Timescales are therefore indicative only and it is estimated that these improvements will be carried out in 2018 to 2019 subject to positive assessment.

However, wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintain flood warning – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Arbroath flood warning area which is part of the Brothock river flood warning scheme.

SEPA will continue to maintain the Arbroath Coastal flood warning area which is part of the Firth of Forth and Tay coastal flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

A flood protection scheme is proposed for Arbroath. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme are fully considered in the existing flood warning system.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

<b>Flood forecasting – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will engage with the community and promote Floodline. This will be achieved through SEPA led education events.

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

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

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection scheme by 2018/19 to address flood risk from the Brothock

Water and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

Angus Council will prepare Surface Water Management Plans (SWMPs) to cover Arbroath, Arbirlot, Auchmithie and Colliston. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Angus Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in Arbroath, Arbirlot, Auchmithie and Colliston. The study has improved knowledge and understanding of surface water flood risk and The study has improved knowledge and understanding of



surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintenance – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Arbroath (Potentially Vulnerable Area 07/07)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan for Arbroath, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

Planning policies - Arbroath (Potentially Vulnerable Area 07/07)					
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	<b>Planning Policies</b>
Delivery of selected action					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and

measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

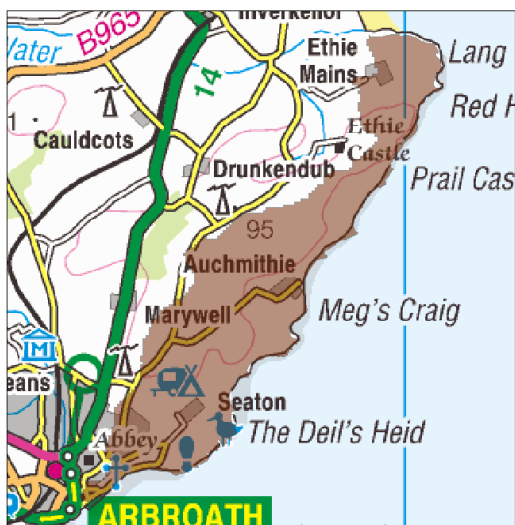
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Coast North of Arbroath (Potentially Vulnerable Area 07/08)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	Kincardine and Angus Coastal

### Background

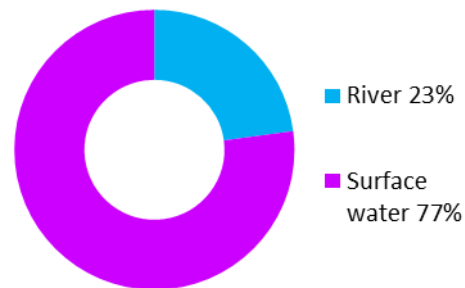
This Potentially Vulnerable Area is 13km<sup>2</sup> and part of the Kincardine and Angus catchment (shown below). It contains small coastal watercourses that flow into the North Sea and includes the town of Arbroath.



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The area has a risk of river and surface water flooding with the majority of flood impacts caused by surface water.

Approximately 30 residential properties and 10 non-residential properties have a risk of flooding. The Annual Average Damages are approximately £56,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

Work carried out since the National Flood Risk Assessment in 2011 has concluded that the risk of flooding in this Potentially Vulnerable Area is now relatively low. The designation of this Potentially Vulnerable Area will be reviewed in the next flood risk management planning cycle.

The highest risk of flooding is from surface water to Arbroath.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. Within this Potentially Vulnerable Area there is one asset identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Coast North of Arbroath (Potentially Vulnerable Area 07/08)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_08\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_08_Full.pdf)

## Objectives to manage flooding in Coast north of Arbroath

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. The following objectives have been set for coast north of Arbroath Potentially Vulnerable Area:

- Reduce economic damages and number of residential properties at risk of surface water flooding in Arbroath, Arbirlot, Auchmithie and Colliston where practical (objective ID 7014)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Coast north of Arbroath

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. The actions shaded have been selected as the most appropriate for Coast north of Arbroath 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Flood forecasting					
Awareness raising					
Self help					
Surface water/plan study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Arbroath

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Coast north of Arbroath PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.



<b>Strategic mapping and modelling – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.

Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

SEPA will engage with the community and promote Floodline. This will be achieved through SEPA led education events.

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

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection study to address flood risk and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general

information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plans/study – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Surface water plans/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Surface water plans/study</b>					

Angus Council will prepare Surface Water Management Plans (SWMPs) to cover Arbroath, Arbirlot, Auchmithie and Colliston. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Angus Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in Arbroath, Arbirlot, Auchmithie and Colliston. The study will support the surface water management plan process and improve has improved knowledge and understanding of surface water

flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.



<b>Maintenance – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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. Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Coast north of Arbroath (Potentially Vulnerable Area 07/08)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and

measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

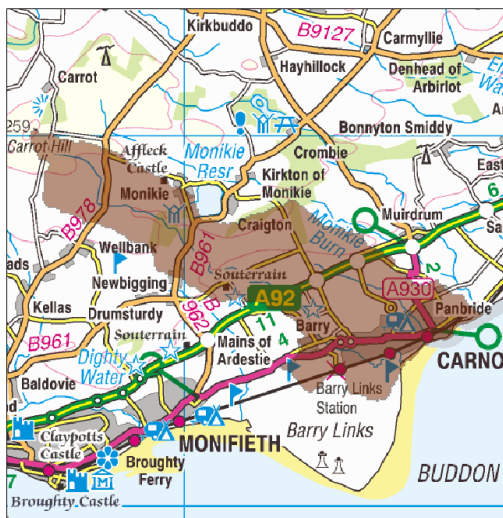
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Carnoustie and Barry (Potentially Vulnerable Area 07/09)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council	Dundee coastal

### Background

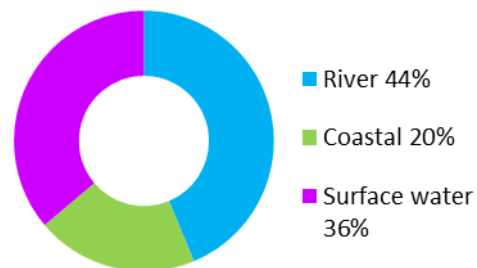
This Potentially Vulnerable Area is 31km<sup>2</sup> and part of the Firth of Tay catchment. It contains the Lochty Burn and Barry Burn and includes the town of Carnoustie.



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The area has a risk of river, coastal and surface water flooding with the majority of damages caused by river flooding.

There are approximately 180 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £470,000.



**Figure 1: Annual Average Damages by flood source**

### Summary of flooding impacts

The highest risk of flooding is in Carnoustie from the Barry Burn and Lochty Burn. Carnoustie also has a risk of surface water flooding. The Dundee to Aberdeen railway line is also notably impacted.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. Within this Potentially Vulnerable Area there are five assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Carnoustie and Barry (Potentially Vulnerable Area 07/09)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_09\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_09_Full.pdf)

### Objectives to manage flooding in Carnoustie and Barry

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. The following objectives have been set for Carnoustie and Barry Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in Carnoustie caused by flooding from the Barry Burn and coastal flooding (objective ID 7022)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Carnoustie, Barry, Panbride and Westhaven where practical (objective ID 7020)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Carnoustie and Barry

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. The actions shaded have been selected as the most appropriate for Carnoustie and Barry 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Maintain flood protection scheme					
Strategic mapping and modelling (Scottish Water)					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS – Scottish Water)					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Carnoustie and Barry

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Carnoustie and Barry PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood Protection Study – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood Protection Study</b>					

Angus Council will undertake a flood protection study for Carnoustie and Barry to be delivered by financial year 2019/20. This will assess a number of options to manage flood risk including flood storage, modification of conveyance, installation/ modification of fluvial control structures, flood defences, sediment management and the viability of property level protection. The potential for natural flood management is also being assessed, including river/ floodplain restoration, sediment management and wave attenuation. The study is recognising that existing flood defences may not operate to the design standard. The study will take a sustainable approach and consider the interaction between actions upstream and downstream and potential effects on coastal processes along the shoreline. This will be in line with Angus Shoreline Management Plan.

The study has the potential to benefit 37 residential properties and 8 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £5.0 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the Barry Burn (water body ID 5953), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The proposed actions will not have an adverse effect on the integrity of the nationally and locally designated sites in the study area (Barry Links Special Area of Conservation, and Firth of Tay and Eden Estuary Special Area of Conservation and Special Protection Area), which could be positively or negatively impacted. These include conservation areas and listed buildings.

Angus Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners, Carnoustie Golf Links etc.



Angus Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintain flood protection scheme – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

The existing Carnoustie (Barry Burn) Flood Prevention Scheme 1979 provides protection from river flooding. The existing scheme is situated between the Railway Bridge and A930 Road Bridge over a 1.4km length. The scheme comprises a number of features to reduce flood risk in Carnoustie. This included the widening and regarding of the Barry Burn over a 1.4km distance, the construction of floodbanks, and the raising of existing banks on both riverbanks, infilling of the existing Waterybutts Ditch and provision of an outfall culvert fitted with flap valve, making watertight the deck of the railway bridge over the Barry Burn and removing existing footbridge and replacing with a new, higher footbridge at the same location.

Angus Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Where required Angus Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc. Maintenance of the Flood Protection Schemes will also be in line with Angus Shoreline Management Plan.

Angus Council will coordinate the maintaining of the flood protection scheme with related actions (shaded only in table above).

Angus Council funding for maintaining flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					

Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will engage with the community and promote Floodline. This will be achieved through SEPA led education events.

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

Angus Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council will use the delivery of a flood protection study to address flood risk and undertake surface water management plan/study by 2019/20 as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council will also disseminate more general

information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:

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

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

Angus Council will prepare Surface Water Management Plans (SWMPs) to cover Carnoustie, Barry, Panbride and Westhaven. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Angus Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority



Areas The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintenance – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Carnoustie and Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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. Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan for Carnoustie and Barry, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Carnoustie &amp; Barry (Potentially Vulnerable Area 07/09)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning policies</b>					

SEPA and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Angus Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore, Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council will develop appropriate planning policies and

measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

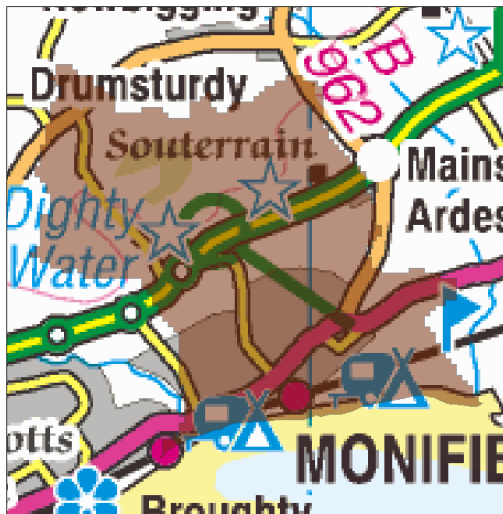
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Monifieth (Potentially Vulnerable Area 07/10)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council	Dundee coastal

### Background

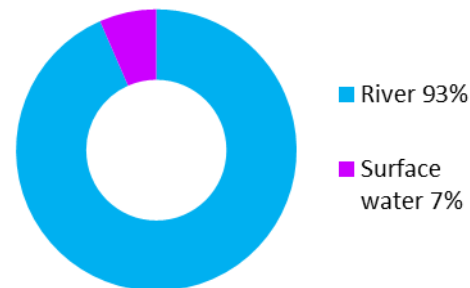
This Potentially Vulnerable Area is 8km<sup>2</sup> and part of the Firth of Tay catchment (shown below). It contains the Monifieth Burn and includes the town of Monifieth.



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The area is at risk from river and surface water flooding with the majority of damages caused by river flooding.

There are approximately 250 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £670,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The highest risk of flooding is in Monifieth from the Monifieth Burn. Monifieth is also notably impacted from surface water flooding.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Monifieth (Potentially Vulnerable Area 07/10)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_10\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_10_Full.pdf)

### Objectives to manage flooding in Monifieth

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. The following objectives have been set for Monifieth Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties and risk to people in Monifieth caused by flooding from the Monifieth Burn (objective ID 7023, 7024)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth where practical (objective ID 7021)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Monifieth

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. The actions shaded have been selected as the most appropriate for Monifieth Potentially Vulnerable Area.

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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Maintain flood protection scheme					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
New flood warning					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS – Scottish Water)					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Monifieth

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Monifieth PVA are shown below. Actions related to (shaded only) the



selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection study – Monifieth (Potentially Vulnerable Area 07/10)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					

Angus Council will undertake a flood protection study for Monifieth to be delivered by financial year 2019/20. This will assess whether flood storage, flood defences and sediment management could reduce flood risk. The study will take a sustainable approach and consider the interaction between actions upstream and downstream and potential effects on coastal processes along the shoreline. This will be in line with Angus Shoreline Management Plan.

The study has the potential to benefit 243 residential properties and 15 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £17 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the study area. The study could also benefit two utilities and one railway line located within the study area.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the Buddon Burn (water body ID 5954), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The proposed actions will not have an adverse effect on the integrity of the nationally and locally designated sites in the study area (Firth of Tay and Eden Estuary Special Area of Conservation and Special Protection Area), which could be positively or negatively impacted. These include listed buildings, Sites of Special Scientific Interest and Ramsar sites.

Angus Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners etc.

Angus Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Angus Council will coordinate the flood protection study with related actions (shaded only in table above).

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintain flood protection scheme – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

The existing Monifieth Flood Protection scheme provides protection from coastal processes. This extends from the mouth of the Dighty Water to Tayview Caravan Park. These measures include targeted sections of rock armour and the construction and replacement of coastal groynes.

Angus Council will maintain the existing Flood Protection Scheme ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Where required Angus Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc. Maintenance of the Flood Protection Schemes will also be in line with Angus Shoreline Management Plan.

Angus Council will coordinate maintaining the flood protection scheme with related actions (shaded only in table above).

Angus Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

**Strategic mapping and modelling – Monifieth (Potentially Vulnerable Area 07/10)**

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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies

**Delivery of selected action**

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					

**SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.**

SEPA will seek to develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.

Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019. 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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>New flood warning – Monifieth (Potentially Vulnerable Area 07/10)</b>					
Flood protection scheme/works	Natural flood management works	<b>New flood warning</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>New flood warning</b>					

The area under consideration includes properties in Monifieth affected by flooding from the Monifieth Burn.

Further feasibility assessment is required to assess the delivery potential of a new flood warning scheme in this location. Status and timing will be confirmed once the feasibility assessment has been completed. A local authority flood protection study has been proposed for this area which can inform the scoping exercise once the study has been completed.

A fluvial flood protection study is proposed for Monifieth. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in developing the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Flood forecasting – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council, Dundee City Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council, Dundee City Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

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

Angus Council and Dundee City Council each have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Angus Council and Dundee City Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Dundee City Council will work with communities



through LCCP's to raise awareness and promote self help (i.e. flood warning and property level protection). Dundee City Council will also review the Flood Emergency Plan annually and work with any community flood action groups. Angus Council will also develop emergency plans/response and work with any community flood action groups. Angus Council and Dundee City Council will use the delivery of the flood protection study for the Dighty Water to address flood risk and undertake surface water management plan/study by 2019/20 working with SEPA and Scottish Water as opportunities to raise awareness.

A new flood warning scheme is under consideration for properties in Monifeith. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities. SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Angus Council and Dundee City Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council and Dundee City Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Angus Council and Dundee City Council will each assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions.) This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Angus Council and Dundee City Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives will be prepared. Dundee City Council will co-ordinate the preparation of a surface water management plan in partnership with Angus Council, Scottish Water and SEPA. This will include agreeing the most sustainable actions to manage surface water determined from the Integrated Catchment Study and co-ordinating the implementation of the actions. The Surface Water Management Plan will be developed in 2017 and the actions identified considered for implementation following this as part of the flood risk management planning process.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Dundee City Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council will coordinate surface water plan/study with related actions (shaded only in table above).

Dundee City Council and Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority Areas). The study has improved knowledge and understanding of surface water flood risk

and The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintenance – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Angus Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Monifieth (Potentially Vulnerable Area 07/10)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Angus Council has developed and operate an emergency flood plan for Monifieth, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Angus Council will conduct assessments at known hotspots and prepare resources as required. Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

Planning policies – Monifieth (Potentially Vulnerable Area 07/10)					
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	<b>Planning policies</b>
Delivery of selected action					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning policies</b>					

SEPA, Angus Council and Dundee City Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Angus Council and Dundee City Council are each local planning authorities and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore Angus Council and Dundee City Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Angus Council and Dundee City Council adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Angus Council and Dundee City Council will develop appropriate planning policies and measures to reduce flood risk through the Local

Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Angus Council and Dundee City Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

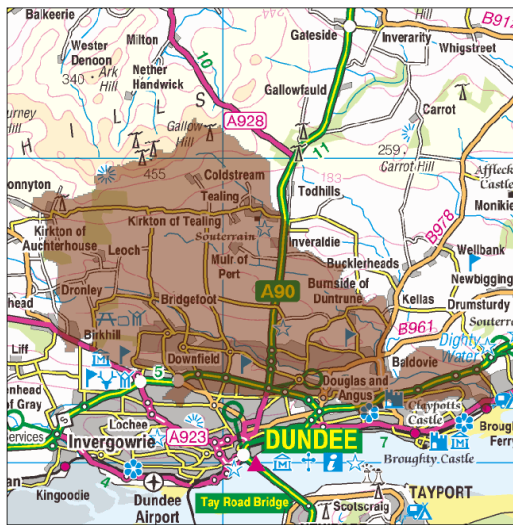


## Downfield and Dundee (Potentially Vulnerable Area 07/11)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council	Dighty Water

### Background

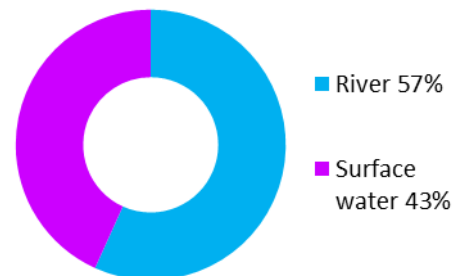
This Potentially Vulnerable Area is 73km<sup>2</sup> and part of the Firth of Tay catchment (shown below). It is situated in the lower reaches of the Dighty Water and includes the city of Dundee.



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This Potentially Vulnerable Area has a risk of river and surface water flooding.

There are approximately 190 residential properties and 80 non-residential properties at risk of flooding. The Annual Average Damages are approximately £580,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The highest risk of flooding is in Dundee from the Dighty Water. Dundee is also notably impacted by surface water flooding.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. Within this Potentially Vulnerable Area there are two assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Dundee and Downfield (Potentially Vulnerable Area 07/11)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_11\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_11_Full.pdf)

### Objectives to manage flooding in Downfield and Dundee

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. The following objectives have been set for Downfield and Dundee Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties and risk to people in Dundee caused by flooding from the Dighty Water and Fithie Burn (objective ID 7027, 7028)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth where practical (objective ID 7021)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Downfield and Dundee

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. The actions shaded have been selected as the most appropriate for Downfield and Dundee 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

The delivery of selected actions by year over the six-year plan cycle is summarised below

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Flood forecasting					
Community flood action groups					
Awareness raising					
Self help					
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Downfield & Dundee

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Downfield & Dundee PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection study – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection study</b>					

Angus Council and Dundee City Council will undertake a flood protection study of the Downfield and Dundee to be delivered by financial year 2019/20. This will assess whether flood defences, sediment management and natural flood management could reduce flood risk. Natural flood management options that will be considered include river / floodplain restoration and sediment management. The study will also investigate the viability of property level protection. The study will take a sustainable approach and consider the interaction between actions upstream and downstream and potential effects on coastal processes along the shoreline. The study requirements will be coordinated with the surface water management plan/study and integrated catchment study for this area.

The study has the potential to benefit 534 residential properties and 138 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £5.8 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. The study could also benefit three utilities and two roads located within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the Dighty Water, Fithie Burn and Dronley Burn (water body IDs 6001, 6004 and 6007), which are located within the study area and the physical condition of these rivers are identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The study will consider conservation areas, listed buildings and local nature reserves present in the area, which could be positively or negatively impacted.

Angus Council and Dundee City Council, coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners etc.

Angus Council and Dundee City Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

**SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.**

SEPA will seek to develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.

Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.



<b>Community flood action groups – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	<b>Community flood action groups</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Community flood action groups</b>					

Dundee City Council and Angus Council will coordinate community flood action groups with related actions (shaded only in table above).

Dundee City Council and Angus Council will work with existing flood action groups to set out arrangements to reduce flood risk, improve preparedness and increase resilience against flooding. Dundee City Council and Angus Council are engaging with Dighty Flood Action Group and Strathmartine Community Council Flood Group respectively. Angus Council and Dundee City Council will co-ordinate these works with each other, Scottish Water and emergency services when required. Completion of the Integrated Catchment Study may identify further collaboration opportunities

Dundee City Council and Angus Council will continue to co-ordinate with existing community flood action groups throughout the next 6 years on a priority needs basis where resources allow.

Dundee City Council and Angus Council funding for community flood action groups will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Awareness raising – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Dundee City Council, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Dundee City Council, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Dundee City Council and Angus Council each have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Dundee City Council and Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Dundee City Council will work with communities through LCCP's to raise awareness and promote self help (i.e. flood warning and property level protection). Dundee City Council will also review the Flood Emergency Plan annually and work with any community flood action groups. Angus Council will also develop emergency plans/response and work with any community flood action groups. Dundee City

Council and Angus Council will use the delivery of the flood protection study for the Dighty Water to address flood risk and undertake surface water management plan/study by 2019/20 working with SEPA and Scottish Water as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Dundee City Council and Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council and Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Dundee City Council and Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Dundee City Council and Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives will be prepared. Dundee City Council will co-ordinate the preparation of a surface water management plan in partnership with Angus Council, Scottish Water and SEPA. This will include agreeing the most sustainable actions to manage surface water determined from the Integrated Catchment Study and co-ordinating the implementation of the actions. The Surface Water Management Plan will be developed in 2017 and the actions identified considered for implementation following this as part of the flood risk management planning process.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Dundee City Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council will coordinate surface water plan/study with related actions (shaded only in table above).

Dundee City Council and Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority Areas). The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Maintenance – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Dundee City Council, Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Dundee City Council and Angus Council each have a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Dundee City Council and Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary Dundee City Council and Angus Council will each prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Dundee City Council and Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Dundee City Council and Angus Council will coordinate emergency plan/response with related actions (shaded only in table above).

Dundee City Council and Angus Council have each developed and operate emergency flood plans, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the emergency plan is to set out arrangements to deal effectively with flood risk.

In response to weather warnings received from SEPA, Dundee City Council and Angus Council will conduct assessments at known flooding hotspots and prepare resources as required. Dundee City Council and Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dundee City Council's emergency plan is reviewed and updated annually. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search "emergency plan".

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Dundee City Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and



will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Downfield and Dundee (Potentially Vulnerable Area 07/11)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning policies</b>					

SEPA, Dundee City Council and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Dundee City Council and Angus Council are local planning authorities and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore Dundee City Council and Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Dundee City Council and Angus Council adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Dundee City Council and Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council and Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Invergowrie (Potentially Vulnerable Area 07/12)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council, Perth and Kinross Council	Invergowrie Burn

### Background

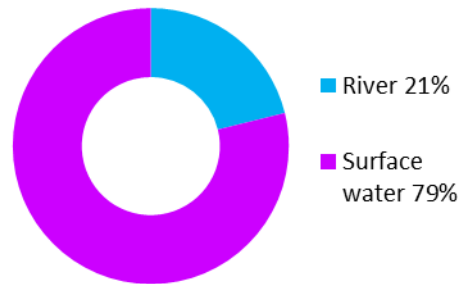
This Potentially Vulnerable Area is 37km<sup>2</sup> and part of the Forth of Tay catchment (shown below). It contains the Invergowrie Burn and includes the town of Invergowrie as well as the west of Dundee City.



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The area has a risk of river and surface water flooding with the majority of damages caused by surface water flooding.

There are approximately 240 residential properties and 60 non-residential properties at risk of flooding. The Annual Average Damages are approximately £740,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The greatest risk of flooding in this area is from surface water to Invergowrie. There is also notable risk of river flooding in Invergowrie and Dundee from the Invergowrie Burn.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads, notably the A90.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Invergowrie (Potentially Vulnerable Area 07/12)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_12\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_12_Full.pdf)

## Objectives to manage flooding in Invergowrie

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. The following objectives have been set for Invergowrie Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in Invergowrie and Dundee caused by flooding from the Invergowrie Burn (objective ID 7031)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth where practical (objective ID 7021)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Invergowrie

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. The actions shaded have been selected as the most appropriate for Invergowrie 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Natural flood management study					
Strategic mapping and modelling (Scottish Water)					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Invergowrie

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Invergowrie PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Natural flood management study – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Natural flood management study</b>	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
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Natural flood management study</b>					

Dundee City Council, Perth & Kinross Council and Angus Council will undertake a natural flood management study to assess whether river / floodplain restoration and sediment management could help reduce flood risk. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream economically, socially and environmentally.

Opportunities to improve the condition of the Invergowrie Burn (water body ID 6405), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. Listed buildings are also present in the study area, which could be positively or negatively impacted, will also be considered.

Natural flood management actions can reduce flood risk for high likelihood events to fifty-two residential and non-residential properties. These actions can restore and enhance natural environments and create opportunities for recreation and tourism. A reduction in flood risk would also have a positive benefit to the health and wellbeing of the community.

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate the natural flood management study through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate the natural flood management study with related actions (shaded only in table above).

Dundee City Council, Perth & Kinross Council and Angus Council funding for natural flood management studies will be shared with other as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					

Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.



<b>Flood forecasting – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Angus Council, Dundee City Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Angus Council, Dundee City Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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.

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

Dundee City Council, Perth & Kinross and Angus Council each have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Dundee City Council and Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Dundee City Council will work with communities through LCCP's to raise awareness and promote self help (i.e. flood warning and property level protection). Dundee City Council will also review the Flood Emergency Plan annually and work with any community flood action groups. Angus Council will also develop emergency plans/response and work with any community flood action groups. Dundee City Council, Perth & Kinross and Angus Council will use the delivery of the natural flood

management study for Invergowrie to address flood risk and undertake surface water management plan/study by 2019/20 working with SEPA and Scottish Water as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Dundee City Council, Perth & Kinross and Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council, Perth & Kinross and Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Dundee City Council, Perth & Kinross Council and Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Dundee City Council, Perth & Kinross Council and Angus Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives will be prepared. Dundee City Council will co-ordinate the preparation of a surface water management plan in partnership with Perth & Kinross Council, Angus Council, Scottish Water and SEPA. This will include agreeing the most sustainable actions to manage surface water determined from the Integrated Catchment Study and co-ordinating the implementation of the actions. The Surface Water Management Plan will be developed in 2017 and the actions identified considered for implementation following this as part of the flood risk management planning process.

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate surface water plan/study with related actions (shaded only in table above).

Dundee City Council, Perth & Kinross Council and Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth. The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintenance – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Dundee City Council, Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Dundee City Council, Perth & Kinross Council and Angus Council have a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Dundee City Council, Perth & Kinross Council and Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Dundee City Council, Perth & Kinross Council and Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Dundee City Council, Perth & Kinross Council and Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate emergency plan/response with related actions (shaded only in table above).

Dundee City Council, Perth & Kinross Council and Angus Council have each developed and operate emergency flood plans, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the emergency plan is to set out arrangements to deal effectively with flood risk.

In response to weather warnings received from SEPA, Dundee City Council, Perth & Kinross Council and Angus Council will conduct assessments at known flooding hotspots and prepare resources as required. Dundee City Council, Perth & Kinross Council and Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dundee City Council's emergency plan is reviewed and updated annually. Perth & Kinross Council's review and update their emergency plan biennially. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search "emergency plan".

Dundee City Council, Perth & Kinross Council and Angus Council will coordinate emergency plan/response with related actions (shaded only in table above).



Dundee City Council, Perth & Kinross Council and Angus Council have each developed and operate emergency flood plans, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the emergency plan is to set out arrangements to deal effectively with flood risk.

In response to weather warnings received from SEPA, Dundee City Council and Angus Council will conduct assessments at known flooding hotspots and prepare resources as required. Dundee City Council and Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Dundee City Council, Perth & Kinross Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Invergowrie (Potentially Vulnerable Area 07/12)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning policies</b>					

SEPA, Dundee City Council, Perth & Kinross Council and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Dundee City Council, Perth & Kinross Council and Angus Council are local planning authorities and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore Dundee City Council, Perth & Kinross Council and Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Dundee City Council, Perth & Kinross Council and Angus Council adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Dundee City

Council and Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

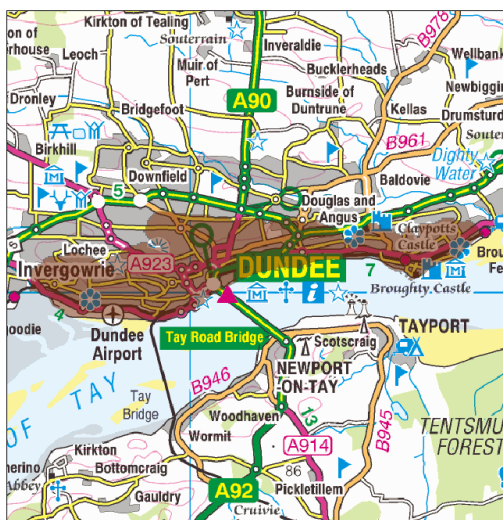
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council, Perth & Kinross Council and Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council	Dundee coastal

## Background

This Potentially Vulnerable Area is 21km<sup>2</sup> (shown below). It contains small coastal watercourses that flow into the Firth of Tay and includes Dundee and Broughty Ferry.



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The area has a risk of coastal and surface water flooding with the majority of damages caused by coastal flooding.

There are approximately 1,300 residential properties and 460 non-residential properties at risk of flooding. The Annual Average Damages are approximately £4.3 million.

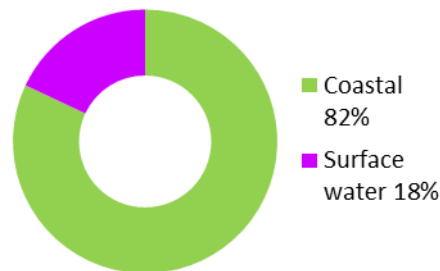


Figure 1: Annual Average Damages by flood source

## Summary of flooding impacts

The highest risk of flooding is in Dundee and Broughty Ferry from coastal and surface water flooding.

For this Potentially Vulnerable Area the highest damages are to roads and non-residential properties followed by damages to residential properties. Other parts of the transport network (Dundee airport and railway routes) are also notably impacted. Within this Potentially Vulnerable Area there are 12 assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_13\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_13_Full.pdf)

## Objectives to manage flooding in Dundee and Broughty Ferry

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. The following objectives have been set for Dundee and Broughty Ferry Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in Dundee caused by coastal flooding (objective ID 7034)
- Reduce economic damages to residential and non-residential properties and risk to people in Broughty Ferry caused by coastal flooding (objective ID 7035, 7036)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth where practical (objective ID 7021)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Dundee and Broughty Ferry

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. The actions shaded have been selected as the most appropriate for Dundee and Broughty Ferry 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	Flood protection scheme (Broughty Ferry)				
Flood protection scheme (Dundee)					
	Maintain flood protection scheme (Dundee)		Maintain flood protection scheme (Dundee & Broughty Ferry)		
	Strategic mapping and modelling (Scottish Water)				
	Strategic mapping and modelling (SEPA)				
	Maintain flood warning				
	Flood forecasting				
	Awareness raising				
	Self help				
	Surface water plan/study (Dundee City and Angus Council)				
	Surface water plan/study (ICS – Scottish water)				
	Maintenance				
	Emergency plans/response				
	Planning Policies				

## Details of actions to manage flooding in Dundee and Broughty Ferry

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Dundee and Broughty Ferry PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection scheme/works – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
<b>Flood protection scheme/works</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	<b>Flood protection scheme (Broughty Ferry)</b>				
<b>Flood protection scheme (Dundee)</b>					

Dundee City Council will prepare a flood protection scheme for Broughty Ferry to protect properties at risk of coastal flooding from a 1 in 200 year event. The scheme is due to be delivered by 2018/19 at an estimated cost of £10million. The scheme includes improvement of the existing coastal defences from Grassy Beach to the Esplanade and is estimated to remove the risk of coastal flooding for 450 properties.

A reduction in flood risk will have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the flood protection scheme area. There may be negative impacts through disturbance to the local community during the construction phase.

The flood protection scheme may have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. Dundee City Council will seek to ensure that the works will not have an adverse effect on the integrity of the Firth of Tay and Eden Estuary Special Area of Conservation and Special Protection Area. In addition, a number of nationally and locally designated sites are also present in the study area and could be positively or negatively impacted. These include conservation areas, scheduled monuments, listed buildings and designated bathing waters.

Dundee City Council will address the environmental implications of the Broughty Ferry scheme and any measures which may be required to address these. Dundee City Council will co-ordinate the implementation of this scheme with the relevant statutory bodies.

Dundee City Council will prepare a flood protection scheme for Dundee City to protect properties at risk of coastal flooding from a 1 in 200 year event. The scheme is due to be delivered in 2016/17 at an estimated cost of £6million. The scheme includes improvement of the existing coastal defences from City Quay to Riverside Airport and is estimated to remove



the risk of coastal flooding for 200 properties and also the Waterfront Development currently under construction.

A reduction in flood risk will have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the flood protection scheme area. In addition there are two emergency services and one railway station which have been identified as potentially benefitting from this action. There may be negative impacts through disturbance to the local community during the construction phase.

The flood protection scheme may have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. Dundee City Council will seek to ensure that the works will not have an adverse effect on the integrity of the Firth of Tay and Eden Estuary Special Area of Conservation and Special Protection Area. In addition, a number of nationally and locally designated sites are also present in the study area and could be positively or negatively impacted. These include listed buildings, local nature reserves and Sites of Special Scientific Interest.

Dundee City Council will co-ordinate the implementation of the Dundee scheme with the relevant statutory bodies.

Dundee City Council will coordinate both flood protection schemes with Scottish Water due to Hatton Rising Main and other assets.

Dundee City Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council will coordinate these works with related actions (shaded only in table above).

Funding for the Flood Protection Schemes will be subject to 80% grant funding by Scottish Government with the remainder from Dundee City Council capital budgets.

**Maintain flood protection scheme – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)**

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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies

**Delivery of selected action**

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	<b>Maintain flood protection scheme (Dundee)</b>	<b>Maintain flood protection scheme (Dundee &amp; Broughty Ferry)</b>			

The new Flood Protection Schemes for Dundee and Broughty Ferry, due for completion in 2016/17 and 2018/19 respectively will provide a higher level of protection from coastal flooding. Details of the scheme are shown above in section ‘Flood Protection Scheme/Works’.

Dundee City Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Dundee City Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct coastal inspections annually.

Where required Dundee City Council will co-ordinate required maintenance works with the Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH); Marine Scotland; The Crown Estate, Network Rail, landowners etc.

Dundee City Council will coordinate maintaining flood protection schemes with related actions (shaded only in table above).

Dundee City Council funding for maintain flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

### Strategic mapping and modelling – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)

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

### Delivery of selected action

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. A detailed local authority led study has already been undertaken in this area and SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Strategic mapping improvements in this area are dependent on the implementation of local authority led flood protection schemes (Dundee and Broughty Ferry). Timescales are therefore indicative only and it is estimated that these improvements will be carried out in 2018 to 2019 subject to positive assessment.

However, wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress.

Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintain flood warning – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Broughty Ferry, Dundee Central and Riverside West flood warning areas which are part of the Firth of Forth and Tay coastal flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

Flood protection schemes are proposed for Dundee and Broughty Ferry. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection schemes are fully considered in the existing flood warning system.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.

<b>Flood forecasting – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Dundee City Council, Angus Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Dundee City Council, Angus Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will engage with the community and promote Floodline. This will be achieved through community safety partnership events.

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

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

Dundee City Council and Angus Council each have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Dundee City Council and Angus Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Angus Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Dundee City Council will work with communities through LCCP's to raise awareness and promote self help (i.e. flood warning and property

level protection). Dundee City Council will also review the Flood Emergency Plan annually and work with any community flood action groups. Angus Council will also develop emergency plans/response and work with any community flood action groups. Dundee City Council will use the delivery of the flood protection schemes for Dundee and Broughty Ferry to address flood risk. Dundee City Council and Angus Council will undertake surface water management plan/study by 2019/20 working with SEPA and Scottish Water as opportunities to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Dundee City Council and Angus Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council and Angus Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Self help – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Dundee City Council and Angus Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Dundee City Council and Angus Council’s activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study (Dundee City and Angus Council)					
Surface water plan/study (ICS - Scottish Water)					

A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives will be prepared. Dundee City Council will co-ordinate the preparation of a surface water management plan in partnership with Angus Council, Scottish Water and SEPA. This will include agreeing the most sustainable actions to manage surface water determined from the Integrated Catchment Study and co-ordinating the implementation of the actions. The Surface Water Management Plan will be developed in 2017 and the actions identified considered for implementation following this as part of the flood risk management planning process.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Dundee City Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Dundee City Council will coordinate surface water plan/study with related actions (shaded only in table above).

Dundee City Council and Angus Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority Areas). The study has improved knowledge and understanding of surface water flood risk and The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).

The study will 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.

This project is being funded by Scottish Water in partnership with Angus Council, Dundee City Council and Perth & Kinross Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintenance – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Dundee City Council, Angus Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Dundee City Council and Angus Council have a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Dundee City Council, Perth & Kinross Council and Angus Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Dundee City Council, Perth & Kinross Council and Angus Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Dundee City Council and Angus Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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. Angus Council will coordinate emergency plans/response with related actions (shaded only in table above).

Dundee City Council and Angus Council will coordinate emergency plan/response with related actions (shaded only in table above).

Dundee City Council and Angus Council have each developed and operate emergency flood plans, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the emergency plan is to set out arrangements to deal effectively with flood risk.

In response to weather warnings received from SEPA, Dundee City Council and Angus Council will conduct assessments at known flooding hotspots and prepare resources as required. Dundee City Council and Angus Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Dundee City Council’s emergency plan is reviewed and updated annually. Angus Council Resilience Team review and update the Emergency Plan biennially and can be found via the Angus Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Dundee City Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget

allocations over the six years of the Plan, 2016-2022. SEPA's emergency plans/response are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning policies</b>					

SEPA, Dundee City Council and Angus Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Dundee City Council and Angus Council are local planning authorities and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TayPlan Strategic Development Planning Authority (SDPA). Furthermore Dundee City Council and Angus Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. Local Development Plans.

Dundee City Council and Angus Council adopt proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Dundee City Council and Angus Council will develop appropriate planning policies and measures to reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Dundee City Council and Angus Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

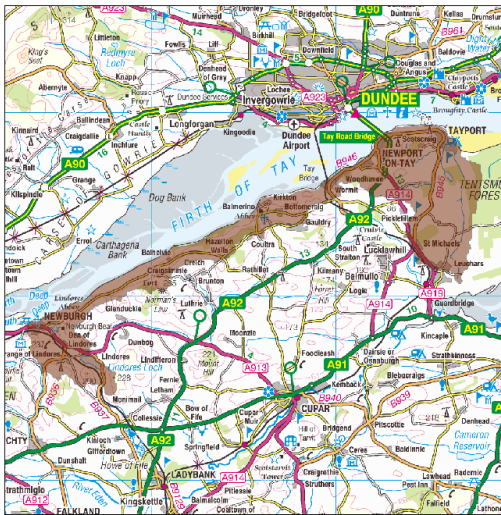


# Tayport and Newburgh (Potentially Vulnerable Area 07/14)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council	North Fife coastal

## Background

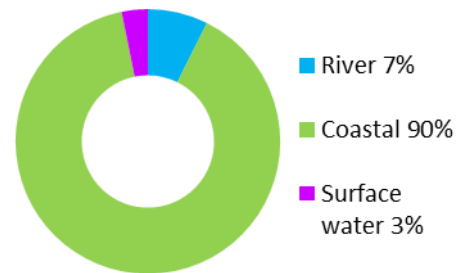
This Potentially Vulnerable Area is 65km<sup>2</sup>. It contains small coastal watercourses that flow into the Firth of Tay and includes the towns of Newburgh, Leuchars, Newport-on-Tay and Tayport.



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The area has a risk of river, coastal and surface water flooding with the majority of damages caused by coastal flooding.

There are approximately 140 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages from flooding are approximately £540,000.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

The highest risk of flooding is in Newburgh from river and coastal flooding and in Tayport from coastal flooding.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. Two railway routes are also notably impacted. Within this Potentially Vulnerable Area there are six assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Tayport and Newburgh (Potentially Vulnerable Area 07/14)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_14\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_14_Full.pdf)

## Objectives to manage flooding in Tayport and Newburgh

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. The following objectives have been set for Tayport and Newburgh Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in Newburgh caused by coastal flooding (objective ID 7037)
- Reduce economic damages to residential and non-residential properties in Tayport caused by coastal flooding (objective ID 7038)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Tayport and Newburgh

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. The actions shaded have been selected as the most appropriate for Tayport and Newburgh 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Maintain flood warning					
Flood forecasting					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Tayport and Newburgh

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Tayport and Newburgh PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection study – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection study</b>					

A flood protection study has been progressed for Tayport to assess whether flood defences and natural flood management could reduce flood risk. The Tayport Coastal Study was completed in December 2015. Fife Council will assess the outcomes and a further study will be completed from 2016-2018. This will be in line with Fife Shoreline Management Plan.

Further consultation with Planning service on progression of outcomes highlighted within the Study completed in Dec 2015.

A further flood protection study recommended for Newburgh will assess whether flood defences and natural flood management could reduce flood risk. Natural flood management options will be considered, including wave attenuation. The study will also investigate the viability of property level protection. The study will take a sustainable approach and consider the interaction between actions and potential effects on coastal processes along the shoreline. This will be in line with Fife Shoreline Management Plan.

The study has the potential to benefit 117 residential properties and 12 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £12 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. The study could also benefit three utilities within the study area.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to enhance and restore the environment will be considered by coordinating with river basin management planning. The proposed actions will not have an adverse effect on the integrity of the nationally and locally designated sites in the study area (Firth of Tay and Eden Estuary Special Area of Conservation and Special Protection Area), which could be positively or negatively impacted. These include conservation areas, Sites of Special Scientific Interest and Ramsar sites.

Fife Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners etc.

Fife Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km<sup>2</sup> of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water Integrated Catchment Studies will be considered as these projects are completed.

SEPA will seek to develop flood mapping in the St Andrews area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Strategic mapping improvements in this area are dependent on the implementation of local authority led flood protection study (Tayport). Timescales are therefore indicative only and it is estimated that these improvements will be carried out in 2018 to 2019 subject to positive assessment.

However, wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019. Surface water mapping improvements expected to be undertaken 2016-2017

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.

Scottish Water will undertake further investigation and modelling in the Guardbridge (2016-2020), Newport Wormit (2016-2019) and Newburgh (2016-2019) sewer catchments to

improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Maintain flood warning – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Newburgh, Newport on Tay and Tayport flood warning areas which are part of the Firth of Forth and Tay coastal flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

Flood protection studies are proposed for Newburgh and Tayport. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection studies is considered in the existing flood warning system.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.



<b>Flood forecasting – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

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, SEPA led education events and promoting community resilience groups where possible with Fife Council.

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop emergency plans/response. We will build and develop the outcomes detailed in the Shoreline Management Plan (2011). We will maintain bodies of water as required within the

council's schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups. Fife Council will use the delivery of a flood protection study to address flood risk by 2019/20 as an opportunity to raise awareness.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022 Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Tayport and Newburgh (Potentially Vulnerable Area 07/14)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for Tayport and Newburgh, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

Planning policies – Tayport and Newburgh (Potentially Vulnerable Area 07/14)					
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	<b>Planning Policies</b>
Delivery of selected action					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to



reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

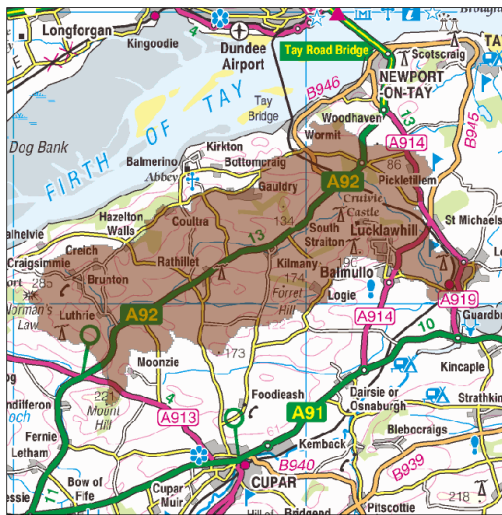
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Lucklawhill (Potentially Vulnerable Area 07/15)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council	North Fife coastal

### Background

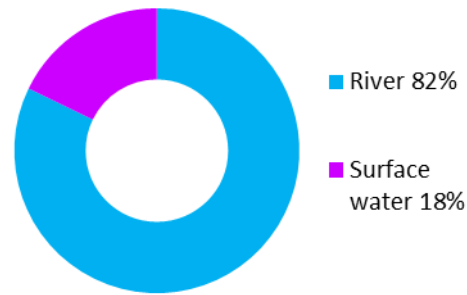
This Potentially Vulnerable Area is 63km<sup>2</sup> and part of the Firth of Tay catchment group. It contains the Motray Water and includes the towns of Leuchars and Lucklawhill.



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The main sources of flooding are from river and surface water, with the majority of damages caused by river flooding.

There are approximately 20 residential properties and 10 non-residential properties at risk of flooding. The Annual Average Damages from flooding are approximately £130,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

Work carried out since the National Flood Risk Assessment in 2011 has concluded that the risk of flooding in this Potentially Vulnerable Area is now relatively low. The designation of this Potentially Vulnerable Area will be reviewed in the next flood risk management planning cycle.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties. Within this Potentially Vulnerable Area there is one asset identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Lucklawhill (Potentially Vulnerable Area 07/15)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_15\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_15_Full.pdf)

## Objectives to manage flooding in Lucklawhill

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. The following objectives have been set for Lucklawhill Potentially Vulnerable Area:

- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Lucklawhill

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. The actions shaded have been selected as the most appropriate for Lucklawhill 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	<b>Awareness raising</b>	Surface water plan/study	<b>Emergency plans/response</b>
Maintain flood protection scheme	<b>Strategic mapping and modelling</b>	<b>Flood forecasting</b>	<b>Self help</b>	<b>Maintenance</b>	<b>Planning Policies</b>

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
Flood forecasting					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Lucklawhill

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Lucklawhill PVA are shown overleaf. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown.

<b>Strategic mapping and modelling – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the St Andrews area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Guardbridge (2016-2020) and Newport Wormit (2016-2019) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>Flood forecasting – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	<b>Self help</b>	<b>Maintenance</b>	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups where possible.

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop emergency plans/response. We will build and develop the outcomes detailed in the Shoreline Management Plan (2011). We will maintain bodies of water as required within the council's schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Self help – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for Tayport and Newburgh, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Lucklawhill (Potentially Vulnerable Area 07/15)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to

reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

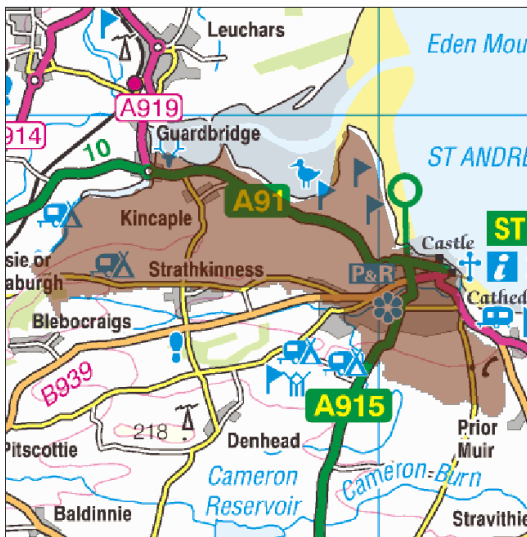
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council	North Fife coastal

## Background

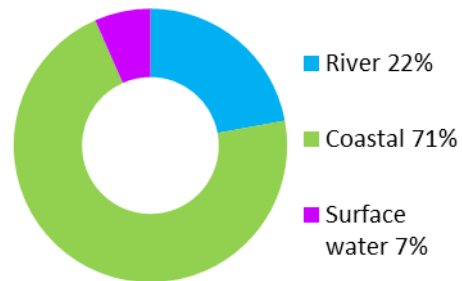
This Potentially Vulnerable Area is 23km<sup>2</sup> (shown below). It is situated on the south side of the River Eden and the Eden Estuary and also contains the lower reaches of the Kinness Burn. It includes the urban areas of Guardbridge and St Andrews.



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This Potentially Vulnerable Area has a risk of river, coastal and surface water flooding with the majority of damages caused by coastal flooding.

There are approximately 80 residential properties and 40 non-residential properties at risk of flooding. The Annual Average Damages are approximately £670,000.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

The highest risk of flooding is in St Andrews from the Kinness Burn and surface water flooding. Roads are notably impacted with A91 road showing the highest damages.

For this Potentially Vulnerable Area the highest damages are to roads, residential properties and non-residential properties. Within this Potentially Vulnerable Area there are two assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in

the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_16\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_16_Full.pdf)

## **Objectives to manage flooding in St Andrews to Guardbridge**

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. The following objectives have been set for St Andrews to Guardbridge Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in St Andrews caused by flooding from the Kinness Burn (objective ID 7046)
- Reduce economic damages and number of residential properties at risk from surface water flooding in St Andrews where practical (objective ID 7040)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf



## Actions to manage flooding in St Andrews to Guardbridge

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. The actions shaded have been selected as the most appropriate for St Andrews to Guardbridge 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection scheme/works					
Flood protection study					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
	New flood warning				
Maintain flood warning					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in St Andrews to Guardbridge

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the St Andrews to Guardbridge PVA are shown below. Actions related to

(shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

**Flood protection scheme/works – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)**

<b>Flood protection scheme/works</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection scheme/works</b>					

Fife Council will deliver a flood protection scheme for the Kinness Burn in St Andrews. The scheme requires detailed study and design. Part of this proposed flood protection scheme is located in Potentially Vulnerable Area 07/17. The benefits and impacts have been assessed for the whole scheme. Fife Council will prepare a further study, which is required to be completed to update the original. Once completed, this will inform the final scheme.

Scheme design will be prepared 2018-2020 (following a study and option appraisal from 2016-2018). The scheme will be constructed in 2021-2022.

A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. There may be negative impacts through disturbance to the local community during the construction phase.

The flood protection scheme may have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. Opportunities to improve the condition of the Kinness Burn (water body ID 6107), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management. A number of nationally and locally designated sites are present in the study area and could be positively or negatively impacted, which will be assessed and managed as the scheme is developed and delivered.

Fife Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Fife Council will coordinate these works with related actions (shaded only in table above).

Funding for the Flood Protection Schemes will be subject to 80% grant funding by Scottish Government with the remainder from Fife Council capital budgets.

<b>Flood protection study – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					

Fife Council will prepare a flood protection study for St Andrews to assess whether a combination of structural actions could reduce flood risk from the Kinness Burn from 2016-2018. The study will look at installation / modification of fluvial control structures, flood defences and natural flood management. Natural flood management options will be considered include runoff control, river / floodplain restoration and sediment management. The study will also investigate the viability of property level protection. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream. It will build on previous studies carried out in 2007 and 2011. Part of this proposed flood protection study is located in Potentially Vulnerable Area 07/17. The benefits and impacts have been assessed for the whole study.

The study has the potential to benefit 127 residential properties and 6 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £6.1 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the study area. The study could also benefit two utilities within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the Kinness Burn (water body ID 6107), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The study will consider conservation areas, designated bathing waters and listed buildings, which could be positively or negatively impacted.

Fife Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners etc.

Fife Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

### Strategic mapping and modelling – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)

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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies

### Delivery of selected action

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to develop flood mapping in the St Andrews area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Where this work coincides with local authority studies, SEPA will work collaboratively to ensure consistent modelling approaches are applied.

Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.

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.

Scottish Water will undertake further investigation and modelling in the Guardbridge (2016-2020) and St Andrews (2017-2020) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>New flood warning – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
Flood protection scheme/works	Natural flood management works	<b>New flood warning</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>New flood warning</b>					

The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include St Andrews which is affected by flooding from the Kinness Burn. Further feasibility assessment will be required to assess delivery potential and the final detail of communities for which warnings can be provided will be determined during the scoping process.

Hydrometry developments are to begin in autumn 2018. The new flood warning service is to be launched in autumn 2021.

A flood protection study and scheme are both proposed for the Kinness Burn in St Andrews. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme and new information about flood risk resulting from the proposed flood protection study are fully considered in the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Maintain flood warning – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Maintain flood warning</b>	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood warning</b>					

SEPA will continue to maintain the Guardbridge and St Andrews flood warning areas which are part of the Firth of Forth and Tay coastal flood warning scheme.

When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.



<b>Flood forecasting – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups where possible.

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

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

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek

opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop emergency plans/response. We will build and develop the outcomes detailed in the Shoreline Management Plan (2011). We will maintain bodies of water as required within the council's schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups. Fife Council will use the delivery of a flood protection study to address flood risk by 2018/19 as an opportunity to raise awareness.

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

A new flood warning scheme is under consideration for properties affected by flooding in Fife and Perth and Kinross and is likely to include St Andrews. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study					

Fife Council will prepare Surface Water Management Plans (SWMPs) to cover St Andrews and Guardbridge. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Fife Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Fife Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Fife Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Fife Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

Maintenance – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)					
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	<b>Maintenance</b>	Planning Policies
Delivery of selected action					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. **Scottish Water funding is subject to its charging for core business activities, which is approved by its regulators and customers.**

<b>Emergency plans/response – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for St Andrews and Guardbridge, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Planning policies – St Andrews to Guardbridge (Potentially Vulnerable Area 07/16)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to

reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

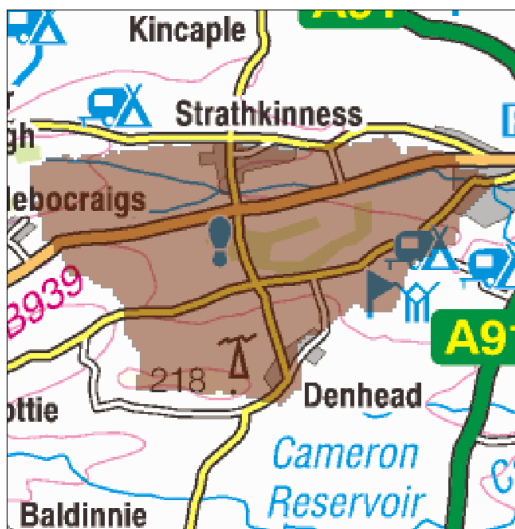
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council	North Fife coastal

### Background

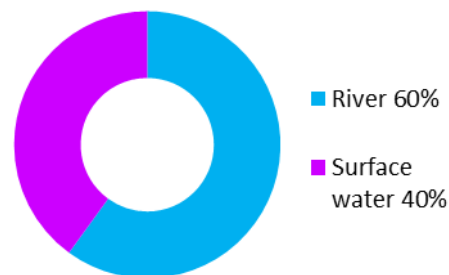
This Potentially Vulnerable Area is 13km<sup>2</sup>. It is situated in the upper reaches of the Kinness Burn and includes St Andrews and Strathkinness.



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The area has a risk of river and surface water flooding. The majority of damages are caused by river flooding.

There are approximately 40 residential properties at risk of flooding. The Annual Average Damages from flooding are approximately £94,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

The highest risk of flooding is in St Andrews from the Kinness Burn. St Andrews is also notably impacted by surface water flooding.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads. Within this Potentially Vulnerable Area there are three assets identified as being at risk of flooding.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_17\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_17_Full.pdf)

## **Objectives to manage flooding in St Andrews (Denhead and Strathkinness)**

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. The following objectives have been set for St Andrews (Denhead and Strathkinness) Potentially Vulnerable Area:

- Reduce economic damages to residential and non-residential properties in St Andrews caused by flooding from the Kinness Burn (objective ID 7046)
- Reduce economic damages and number of residential properties at risk from surface water flooding in St Andrews where practical (objective ID 7040)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in St Andrews (Denhead and Strathkinness)

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. The actions shaded have been selected as the most appropriate for St Andrews (Denhead and Strathkinness) 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection scheme/works					
Flood protection study					
	Strategic mapping and modelling (Scottish Water)				
	New flood warning				
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in St Andrews (Denhead and Strathkinness)

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the St Andrews (Denhead and Strathkinness) PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

### Flood protection scheme/works – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)

<b>Flood protection scheme/works</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection scheme/works</b>					

Fife Council will deliver a flood protection scheme for the Kinness Burn in St Andrews. The scheme requires detailed study and design. Part of this proposed flood protection scheme is located in Potentially Vulnerable Area 07/16. The benefits and impacts have been assessed for the whole scheme. Fife Council will prepare a further study, which is required to be completed to update the original. Once completed, this will inform the final scheme.

Scheme design will be prepared 2018-2020 (following a study and option appraisal from 2016-2018). The scheme will be constructed in 2021-2022.

A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. There may be negative impacts through disturbance to the local community during the construction phase.

The flood protection scheme may have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. Opportunities to improve the condition of the Kinness Burn (water body ID 6107), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management. A number of nationally and locally designated sites are present in the study area and could be positively or negatively impacted, which will be assessed and managed as the scheme is developed and delivered.

Fife Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Fife Council will coordinate these works with related actions (shaded only in table above).

Funding for the Flood Protection Schemes will be subject to 80% grant funding by Scottish Government with the remainder from Fife Council capital budgets.

<b>Flood protection study – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection study</b>					

Fife Council will prepare a flood protection study for St Andrews to assess whether a combination of structural actions could reduce flood risk from the Kinness Burn from 2016-2018. The study will look at installation / modification of fluvial control structures, flood defences and natural flood management. Natural flood management options will be considered include runoff control, river / floodplain restoration and sediment management. The study will also investigate the viability of property level protection. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream. It will build on previous studies carried out in 2007 and 2011. Part of this proposed flood protection study is located in Potentially Vulnerable Area 07/16. The benefits and impacts have been assessed for the whole study.

The study has the potential to benefit 144 residential properties and 18 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £19 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the study area. The study could also benefit two utilities and two roads within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the River Eden, Foodieash Burn, Fernie Burn, Kettle Burn, Laprig Burn, Glassart Burn and Ballingall Burn (water body IDs 6200, 6205, 6206, 6209, 6211, 6212 and 6213), which are located within the study area and the physical condition of these rivers is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The study will consider conservation areas and listed buildings, which could be positively or negatively impacted.

Fife Council will coordinate the study with Scottish Water, Marine Scotland, The Crown Estate, SEPA and Landowners etc.

Fife Council will coordinate these works through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.



<b>Strategic mapping and modelling – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	<b>Strategic mapping and modelling (Scottish Water)</b>				

Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

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.

Scottish Water will undertake further investigation and modelling in the St Andrews (2017-2020) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

**New flood warning – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)**

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

**Delivery of selected action**

Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	<b>New flood warning</b>				

The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include St Andrews which is affected by flooding from the Kinness Burn. Further feasibility assessment will be required to assess delivery potential and the final detail of communities for which warnings can be provided will be determined during the scoping process.

Hydrometry developments are to begin in autumn 2018. The new flood warning service is to be launched in autumn 2021.

A flood protection study and scheme are both proposed for the Kinness Burn in St Andrews. SEPA will work with the local authority to ensure that changes to hydrology and flood risk as a result of the proposed flood protection scheme and new information about flood risk resulting from the proposed flood protection study are fully considered in the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Flood forecasting – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups where possible.

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

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

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek

opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop emergency plans/response. We will build and develop the outcomes detailed in the Shoreline Management Plan (2011). We will maintain bodies of water as required within the council's schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups. Fife Council will use the delivery of a flood protection study to address flood risk by 2018/19 as an opportunity to raise awareness.

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

A new flood warning scheme is under consideration for properties affected by flooding in Fife and Perth and Kinross and is likely to include St Andrews. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study					

Fife Council will prepare Surface Water Management Plans (SWMPs) to cover St Andrews. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Fife Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Fife Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Fife Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Fife Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Emergency plans/response – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for St Andrews, Denhead and Strathkinness, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – St Andrews (Denhead and Strathkinness) (Potentially Vulnerable Area 07/17)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to

reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

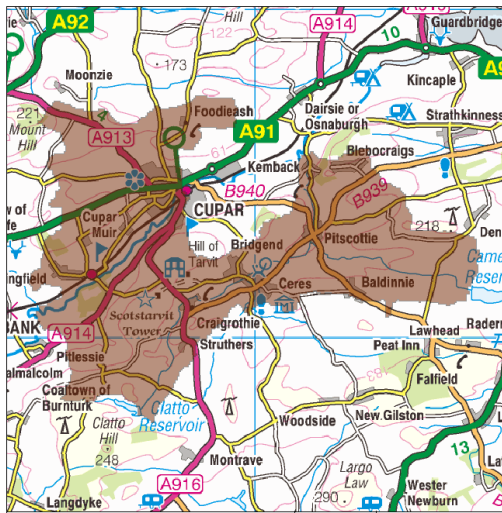
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

## Cupar (Potentially Vulnerable Area 07/18)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council	River Eden

### Background

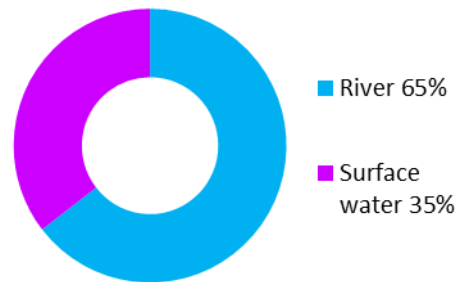
This Potentially Vulnerable Area is 63km<sup>2</sup> (shown below). It is situated in the lower reaches of the River Eden catchment and includes the town of Cupar.



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The area has a risk of river and surface water flooding with the majority of damages caused by river flooding.

There are approximately 260 residential properties and 80 non-residential properties at risk of flooding. The Annual Average Damages are approximately £1.3 million.



**Figure 1: Annual Average Damages by flood source**

### Summary of flooding impacts

The highest risk of flooding is in Cupar from the River Eden and Lady Burn. Cupar is also notably impacted by surface water flooding.

For this Potentially Vulnerable Area the highest damages are to non-residential properties followed by damages to residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Cupar (Potentially Vulnerable Area 07/18)':

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_18\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_18_Full.pdf)

## Objectives to manage flooding in Cupar

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. The following objectives have been set for Cupar Potentially Vulnerable Area:

- Reduce economic damages to residential and number of residential properties at risk of surface water flooding in Cupar caused by flooding from the River Eden and Lady Burn. Reduce risk to people from river flooding in Cults ad Cupar (objective ID 7049, 7051)
- Reduce economic damages to residential and non-residential properties in the Cupar Potentially Vulnerable Area caused by river flooding (objective ID 7050)
- Reduce economic damages and number of residential properties at risk of surface water flooding in Cupar and Springfield where practical (objective ID 7047)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Cupar

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. The actions shaded have been selected as the most appropriate for Cupar Potentially Vulnerable Area.

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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
New flood warning					
Flood forecasting					
Awareness raising					
Self help					
Surface water plan/study					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Cupar

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Cupar PVA are shown below. Actions related to (shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection study – Cupar (Potentially Vulnerable Area 07/18)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					

Fife Council will prepare a flood protection study for Kemback and Pitscottie from 2016-2018 to assess whether flood defences and sediment management could reduce river flood risk. The study will also investigate the viability of property level protection and property relocation. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream.

The study has the potential to benefit 45 residential properties and 18 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £5 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to enhance and restore the environment will be considered by coordinating with river basin management planning.

Fife Council will prepare a flood protection study for Cupar and Cults Mill from 2016-2018 to assess whether flood storage, flood defences and natural flood management could reduce flood risk from the River Eden and Lady Burn from. Natural flood management options will be considered include river / floodplain restoration and sediment management. The study will also investigate the viability of property level protection and property relocation. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream.

The study has the potential to benefit 144 residential properties and 18 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £19 million. The study will consider economic, social and environmental impacts.



Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the study area. The study could also benefit two utilities and two roads within the study area. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the River Eden, Foodieash Burn, Fernie Burn, Kettle Burn, Laprig Burn, Glassart Burn and Ballingall Burn (water body IDs 6200, 6205, 6206, 6209, 6211, 6212 and 6213), which are located within the study area and the physical condition of these rivers is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The study will consider conservation areas and listed buildings, which could be positively or negatively impacted.

Fife Council will coordinate the studies with Scottish Water, SEPA and Landowners etc.

Fife Council will coordinate these studies through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintain flood protection scheme – Cupar (Potentially Vulnerable Area 07/18)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

Fife Council will continue to maintain the existing flood defences along the Blebo Burn, Ceres Burn, Craigrothie Burn, Latch Burn and an unnamed watercourse (old lade). These defences provide protection against flooding in Pitscottie and Ceres.

Fife Council will continue to maintain the Millfield of Cupar Flood Protection Scheme. The scheme aims to manage surface water runoff and has a design standard of protection of 1 in 100 years.

Fife Council will maintain the existing Flood Protection Scheme ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Fife Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Fife Council will coordinate maintaining flood protection scheme with related actions (shaded only in table above).

Fife Council funding for maintenance of flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling– Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km<sup>2</sup> of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water Integrated Catchment Studies will be considered as these projects are completed.

SEPA led surface water mapping improvements are expected to be undertaken in 2016 to 2017.

Further improvements may be made as a result of a surface water management study and the timings of these improvements are dependent on the local authority study

A surface water management plan is proposed for the Cupar and Springfield area. SEPA will work with the responsible authorities to ensure that new information about flood risk resulting from the proposed surface water management plan is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.

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.

Scottish Water will undertake further investigation and modelling in the Ceres (2018-2020), Cupar (2016-2018), Springfield (2018-2020) and St Andrews (2017-2020) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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

SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>New flood warning – Cupar (Potentially Vulnerable Area 07/18)</b>					
Flood protection scheme/works	Natural flood management works	<b>New flood warning</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
	<b>New flood warning</b>				

The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include Cupar. Further feasibility assessment will be required to assess delivery potential and the final detail of communities for which warnings can be provided will be determined during the scoping process.

Hydrometry developments are to begin in autumn 2018. The new flood warning service is to be launched in autumn 2021.

A fluvial flood protection study is proposed for Cupar/ Cults Mill. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in developing the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Flood forecasting – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Awareness raising – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups where possible.

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

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop

emergency plans/response. We will maintain bodies of water as required within the council's schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups. Fife Council will use the delivery of a flood protection study to address flood risk by 2018/19 as an opportunity to raise awareness.

A new flood warning scheme is under consideration for properties affected by flooding in Fife and Perth and Kinross and is likely to include Cupar. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at:  
<https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Self help – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Surface water plan/study – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Surface water plan/study</b>	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Surface water plan/study					

Fife Council will prepare Surface Water Management Plans (SWMPs) to cover Ceres, Cupar, Springfield and Strathmiglo. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Fife Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.

Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Fife Council will coordinate the surface water plan/study through the Local Planning District (LPD) partnership and or separate agreements.

Fife Council will coordinate the surface water plan/study with related actions (shaded only in table above).

Fife Council funding for surface water management will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Emergency plans/response – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for Cupar, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Cupar (Potentially Vulnerable Area 07/18)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to

reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

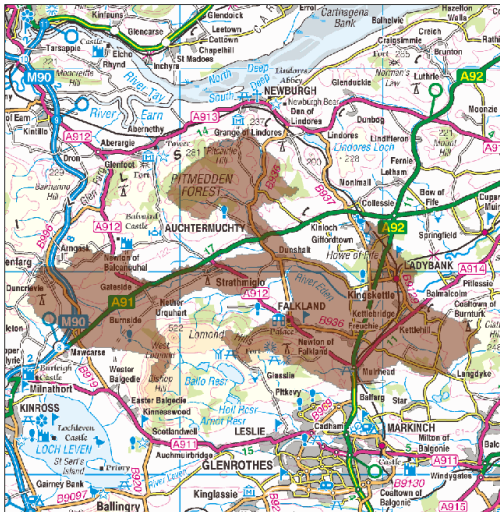
SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

# Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)

Local Plan District	Local authority	Main catchment
Tay Estuary and Montrose Basin	Fife Council, Perth and Kinross Council	River Eden

## Background

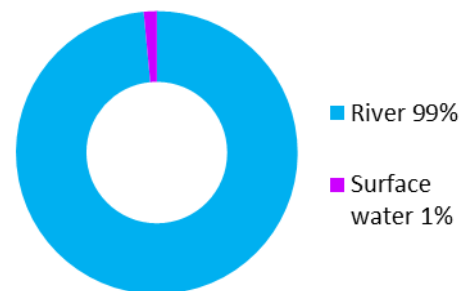
This Potentially Vulnerable Area is 101km<sup>2</sup> (shown below). It is situated in the upper reaches of the River Eden catchment and includes Auchtermuchty.



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This Potentially Vulnerable Area has a risk of river and surface water flooding with the majority of damages caused by river flooding.

There are approximately 170 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £610,000.



**Figure 1:** Annual Average Damages by flood source

## Summary of flooding impacts

The highest risk of flooding is in Auchtermuchty from the Auchtermuchty Burn. The risk of flooding is dispersed across this area and may also impact Strathmiglo, Kettlebridge and Falkland.

For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to non-residential properties.

Further details of the risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is available in the Flood Risk Management Strategy for Tay Estuary and Montrose Basin, 'Auchtermuchty



and Pleasance (Potentially Vulnerable Area 07/19)’:  
[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_07\\_19\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_07_19_Full.pdf)

## **Objectives to manage flooding in Auchtermuchty and Pleasance**

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. The following objectives have been set for Auchtermuchty and Pleasance Potentially Vulnerable Area:

- Reduce economic damages to residential and number of residential properties in Auchtermuchty caused by flooding from the Auchtermuchty Burn (objective ID 7052)
- Reduce economic damages to residential and non-residential properties in the Auchtermuchty and Pleasance Potentially Vulnerable Area caused by river flooding (objective ID 7053)
- Avoid an overall increase in flood risk (objective ID 7001) and reduce overall flood risk (objective ID 7054)

Actions to manage flood risk and deliver the objectives are shown overleaf.

## Actions to manage flooding in Auchtermuchty and Pleasance

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. The actions shaded have been selected as the most appropriate for Auchtermuchty and Pleasance 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

The delivery of selected actions by year over the six-year plan cycle is summarised below.

Delivery of selected actions					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
Flood protection study					
Maintain flood protection scheme					
Natural flood management study					
Strategic mapping and modelling (Scottish Water)					
Strategic mapping and modelling (SEPA)					
	New flood warning				
Flood forecasting					
Community flood action groups					
Awareness raising					
Self help					
Maintenance					
Emergency plans/response					
Planning Policies					

## Details of actions to manage flooding in Auchtermuchty and Pleasance

Detailed descriptions of the delivery arrangements for each selected action (shaded/bold in the table) in the Auchtermuchty and Pleasance PVA are shown below. Actions related to

(shaded only) the selected action are also shown to demonstrate the requirements for coordination. The timetable for the delivery of the selected action is also shown overleaf.

<b>Flood protection study – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
<b>Flood protection study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood protection study</b>					

Fife Council will prepare the study a flood protection study for Auchtermuchty from 2017-2019 to assess whether flood storage and natural flood management could further reduce flood risk from the Auchtermuchty Burn. The study will supplement previous studies carried out by Fife Council and consider the existing flood protection works. Natural flood management options that will be considered include river / floodplain restoration and sediment management. The study will also investigate property relocation and the viability of property level protection. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream.

The study has the potential to benefit 44 residential properties and 13 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £4.7 million. The study will consider economic, social and environmental impacts.

Social impacts will depend on the outcome of the study and recommended actions. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.

The study will consider the positive and negative impacts of proposed actions on the ecological quality of the environment and on designated sites. Opportunities to improve the condition of the Glassart Burn (water body ID 6212), which is located within the study area and the physical condition of this river is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. The study will consider conservation areas and listed buildings, which could be positively or negatively impacted.

Fife Council will coordinate the study with Scottish Water, SEPA and Landowners etc.

Fife Council will coordinate this study through the Local Planning District (LPD) partnership and or separate agreements.

Funding for flood protection study will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintain flood protection scheme – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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
<b>Maintain flood protection scheme</b>	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintain flood protection scheme</b>					

Fife Council will continue to maintain the existing Auchtermuchty Flood Protection Scheme. The scheme consists mainly of flood walls and a low earth embankment. The scheme has a design standard of protection of 1 in 50 years.

Fife Council will continue to maintain the existing Dunshalt Village Flood Protection Scheme.

Fife Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Fife Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.

Fife Council will coordinate maintaining flood protection scheme with related actions (shaded only in table above).

Fife Council funding for maintenance flood protection schemes will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Natural flood management study – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Natural flood management study</b>	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
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Natural flood management study</b>					

A natural flood management study has been recommended for Dunshalt, Freuchie Mill and Kingskettle to assess whether river / floodplain restoration and sediment management could help reduce flood risk. Fife Council will prepare the study from 2017-2019. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream. Fife Council will coordinate the natural flood management study through the Local Planning District (LPD) partnership and or separate agreements. The economic, social and environmental impacts of the natural flood management actions will be considered in the study.

Opportunities to improve the condition of the River Eden, Fernie Burn, Kettle Burn, Laprig Burn, Glassart Burn and Ballingall Burn (water body IDs 6200, 6206, 6209, 6211, 6212 and 6213), which are located within the study area and the physical condition of these rivers is identified by SEPA to be at less than good status, will be considered by coordinating with river basin management planning. Listed buildings are also present in the study area, which could be positively or negatively impacted, will also be considered.

Natural flood management actions can reduce flood risk for high likelihood events to 60 residential and non-residential properties. These actions can restore and enhance natural environments and create opportunities for recreation and tourism. A reduction in flood risk would also have a positive benefit to the health and wellbeing of the community.

Fife Council will coordinate the study with SEPA landowners and Flood Action Groups as well as general public and interested parties

Fife Council will coordinate the natural flood management study with related actions (shaded only in table above).

Fife Council funding for natural flood management studies will be shared with other as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Strategic mapping and modelling– Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Strategic mapping and modelling</b>	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Strategic mapping and modelling (Scottish Water)</b>					
<b>Strategic mapping and modelling (SEPA)</b>					

SEPA and Scottish Water will coordinate their strategic mapping and modelling activities with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,100km<sup>2</sup> of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water integrated catchment studies will be considered as these projects are completed.

SEPA led surface water mapping improvements are expected to be undertaken in 2016 to 2017.

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

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. Scottish Water will undertake further investigation and modelling in the Bowhouse (2016-2019), Springfield (2018-2020) and Strathmiglo (2018-2020) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.

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



SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.

<b>New flood warning– Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
Flood protection scheme/works	Natural flood management works	<b>New flood warning</b>	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
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
	<b>New flood warning</b>				

The area under consideration includes properties affected by flooding in Fife and Perth and Kinross and is likely to include Auchtermuchty. Further feasibility assessment will be required to assess delivery potential and the final detail of communities for which warnings can be provided will be determined during the scoping process.

Hydrometry developments are to begin in autumn 2018. The new flood warning service is to be launched in autumn 2021.

A fluvial flood protection study is proposed for Auchtermuchty. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in developing the new flood warning system.

SEPA will coordinate new flood warning with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, Scottish Government provides grant funding to enable SEPA to implement new flood warning schemes.

<b>Flood forecasting – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Flood forecasting</b>	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Flood forecasting</b>					

SEPA will coordinate flood forecasting with related actions (shaded only in table above) through the Local Planning District (LPD) partnership and or separate agreements.

The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding. 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.

SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.

<b>Community flood action groups – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
Flood protection scheme/works	Natural flood management works	New flood warning	<b>Community flood action groups</b>	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
<b>Delivery of selected action</b>					
<b>Year 1 (2016/17)</b>	<b>Year 2 (2017/18)</b>	<b>Year 3 (2018/19)</b>	<b>Year 4 (2019/20)</b>	<b>Year 5 (2020/21)</b>	<b>Year 6 (2021/22)</b>
<b>Community flood action groups</b>					

Fife Council will coordinate community flood action groups with related actions (shaded only in table above).

Fife Council will work with existing community flood action groups to set out arrangements to reduce flood risk, improve preparedness and increase resilience against flooding. Fife Council is engaging with Falkland Flood Action Group, Freuchie Flood Action Group and the Kettle and District Flood Resilience Group operate in this area and aim to increase community resilience to flooding. Glenfarg Community Council also operates in this area and have prepared a community resilience plan to help prepare for and respond to emergencies.

Fife Council will continue to co-ordinate with existing community flood action groups throughout the next 6 years on a priority needs basis where resources allow.

Fife Council funding for community flood action groups will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Awareness raising – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Awareness raising</b>	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Awareness raising</b>					

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, Fife Council and Scottish Water will coordinate awareness raising through the Local Planning District (LPD) partnership and or separate agreements.

SEPA, Fife Council and Scottish Water will coordinate awareness raising with related actions (shaded only in table above).

From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with Fife Council and community resilience groups where possible.

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

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

Fife Council have a duty to raise public awareness of flood risk under the Flood Risk Management (Scotland) Act 2009. Over the six-year planning cycle, Fife Council will seek opportunities to raise awareness of flood risk and actions that prepare individuals, homes and businesses to reduce the overall impact of flooding.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the flood warning system. We will work with community flood action groups to develop emergency plans/response. We will maintain bodies of water as required within the council's

schedule of clearance and repair. Sharing good practice, providing information on property level protection and developing and reviewing emergency plans.

Fife Council will work with local communities to raise awareness and assist SEPA in relation to the new flood warning system. Fife Council will also develop emergency plans/response and work with any community flood action groups. Fife Council will use the delivery of a flood protection study to address flood risk by 2019/20 as an opportunity to raise awareness.

A new flood warning scheme is under consideration for properties affected by flooding in Fife and Perth and Kinross and is likely to include Auchtermuchty. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.

SEPA's awareness raising activities will be co-ordinated with the activities of other responsible authorities as required. Fife Council will also disseminate more general information to raise awareness via social media streams relating to flooding i.e. road closures, transport disruptions and weather forecasts.

Scottish Water will support SEPA and responsible authorities with their awareness raising activities as required and provide targeted flooding communications for Scottish Water specific activities. Scottish Water will raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies. More general information and flooding guidance will be available on the website at: <https://www.scottishwater.co.uk/you-and-your-home/your-home/flooding-information>.

SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council's funding will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Self help – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Self help</b>	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Self help</b>					

Everyone is responsible for protecting themselves and their property from flooding.

Fife Council will assist, support and educate, as appropriate, property and business owners to protect themselves and their property from flooding, which is their responsibility. 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.

Self help actions will be co-ordinated with SEPA and other responsible authorities and other actions, as shaded above, and in particular with ‘awareness raising’, ‘community flood action groups’ and ‘emergency plans/response’ actions. This is to be through the Local Planning District (LPD) Partnership.

Funding for self help will largely be by the individual property and business owner, although Fife Council activities to assist, support and educate those to self help will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022.

<b>Maintenance – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Maintenance</b>	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Maintenance</b>					

Fife Council and Scottish Water will coordinate their maintenance activities with related actions (shaded only in table above).

Fife Council has a duty to assess bodies of water and conduct clearance and repair works which would substantially reduce flood risk. Fife Council will coordinate with landowners and other responsible authorities where a risk has been identified and carry out works necessary. Fife Council will prepare a schedule of clearance and repair as required by the Flood Risk Management (Scotland) Act 2009 and make this available for public inspection. Each schedule will include the name of water body, location, description of works, justification for works, target for completion and the date of the next assessment.

Scottish Water will undertake risk based inspection, maintenance and repair on the public sewer network. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.

Fife Council funding for maintenance will be shared with others as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. **S** Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.



<b>Emergency plans/response – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Emergency plans/response</b>
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning Policies
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Emergency plans/response</b>					

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.

Fife Council will coordinate emergency plans/response with related actions (shaded only in table above).

Fife Council has developed and operates an emergency flood plan for Auchtermuchty and Pleasance, which is coordinated through the responders identified under the Civil Contingencies Act 2004. The aim of the plan is to set out arrangements to deal effectively with flood risk. At predetermined trigger levels flood alerts and warnings will be issued through Floodline and Fife Council will conduct assessments at known hotspots and prepare resources as required. Fife Council will also co-ordinate measures in conjunction with partner agencies (emergency services, SEPA, Scottish Water etc).

The emergency response process is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. Fife Council Resilience Team review and update the Emergency Plan biennially and can be found via the Fife Council website, search “emergency plan”.

Scottish Water are a Category 2 responder under the Civil Contingencies Act 2004 and will support regional and local resilience partnerships as required.

Fife Council and Angus Council funding for emergency plans/response will be shared with other organisations, emergency services and responders, as appropriate and will be subject to Scottish Government’s block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. SEPA’s emergency plans/response are funded by Scottish Government through SEPA’s grant in aid settlement. Scottish Water is funded by customer

charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

<b>Planning policies – Auchtermuchty and Pleasance (Potentially Vulnerable Area 07/19)</b>					
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	<b>Planning Policies</b>
<b>Delivery of selected action</b>					
Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)	Year 4 (2019/20)	Year 5 (2020/21)	Year 6 (2021/22)
<b>Planning Policies</b>					

SEPA and Fife Council will coordinate land use planning policies with related actions (shaded only in table above).

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.

SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA website <http://www.sepa.org.uk/environment/land/planning/>

Fife Council is a local planning authority and will work with regional planning authorities to incorporate national policy on flood risk management i.e. TAYplan and SESplan strategic development plans. Furthermore, Fife Council will work directly with their planners to ensure that appropriate policies and measures are put in place to reduce flood risk i.e. FIFEplan, Fife Local Development Plan.

Fife Council adopts proactive strategies to mitigate and adapt to climate change, taking full account of flood risk. Fife Council will develop appropriate planning policies and measures to

reduce flood risk through the Local Development Plan, masterplans, site planning briefs and other appropriate measures as required.

Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.

SEPA's land use planning policy activities are funded by Scottish Government through SEPA's grant in aid settlement. Fife Council funding for land use planning policies will be shared as appropriate and will be subject to Scottish Government's block grant and capital support, and budget allocations over the six years of the Plan, 2016-2022. Scottish Water is funded by customer charges as set by our economic regulator, all business activities required under this action by Scottish Water are accounted for in our Capital Maintenance expenditure.

“\* The Act requires Scottish Government to have regard to the Strategy and Local Flood Risk Management Plan when allocating funding to SEPA and responsible authorities. The delivery of the actions in the first flood risk management plan cycle from 2016-2022, as detailed in the Local Flood Risk Management Plan, is therefore subject to revenue and capital funding allocations from Scottish Government to SEPA and responsible authorities; and to revenue and capital budget setting by councils and other responsible authorities over the period 2016-2022.”