

Dalrymple to Patna (Potentially Vulnerable Area 12/15)

Local Plan District	Local authority	Main catchment
Ayrshire	East Ayrshire Council, South Ayrshire Council	River Doon

Background

This Potentially Vulnerable Area is located to the south east of the Ayrshire Local Plan District is approximately 50km² (shown below). It encompasses an area along the River Doon between the village of Dalrymple and Bogton Loch.



There are approximately 90 residential properties at risk of flooding. The Annual Average Damages are approximately £120,000.

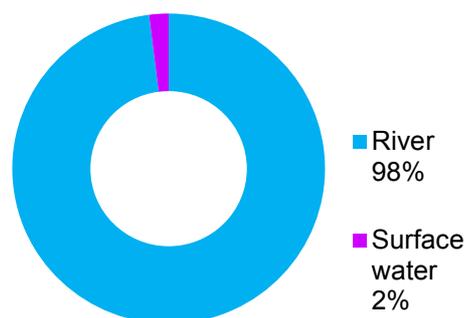


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This area is situated within the River Doon catchment where land use is primarily hill pasture and forestry. The River Doon affects a number of residential and non-residential properties in the villages of Dalrymple, Patna and Waterside. Areas of agricultural land to the south of Waterside are also predicted to be affected by river flooding. Doon Dam on Loch Doon straddles the boundary between Ayrshire and Solway. During most conditions Loch Doon helps to reduce the force of flows however if left open during extreme conditions this dam can contribute to flooding downstream.

Surface water flooding is predicted within the natural floodplain of the River Doon on land used for agricultural purposes. There are fewer than 10 residential properties at risk however, sections of road and rail infrastructure are at risk of surface water flooding (notably the A713).

A now closed opencast mine, Dunstonhill, is situated to the east of Polnessan. There is a potential flood risk relating to water overflowing from this mine should the necessary levels of maintenance and pumping not be provided.

Residential properties affected by river flooding experience the highest economic impact at approximately 75% of the damages.

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

Most of impacts are within Dalrymple and Patna with flooding to people, non-residential properties and roads.

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 Ayrshire, Dalrymple to Patna Potentially Vulnerable Area 12/15.

http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_12_15_Full.pdf

Objectives to reduce flooding in the Potentially Vulnerable Area 12/15

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 objectives below have been set for Dalrymple to Patna Potentially Vulnerable Area:

- Avoid an overall increase in flood risk (ID 12039)
- Reduce overall flood risk (ID 12082)
- Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of flooding actions

Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation.

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

Summary of flooding actions

Flood protection scheme/work	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 management	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)
Dalrymple Flood Protection Study					

The Maintain flood protection scheme, Strategic mapping and modelling, Awareness Raising, Emergency Plans/response, Flood Forecasting, Self help, Maintenance and Planning policies will be delivered continuously throughout the 6 year cycle between 2016 and 2021.

Actions to manage flooding in Potentially Vulnerable Area 12/15

Action (ID):	FLOOD PROTECTION STUDY (120310005)
Objective (ID):	Reduce the risk of flooding from the River Doon and the Primpton Burn, to residential properties in Dalrymple (12031)
Delivery lead:	East Ayrshire Council
Action Description:	A study will investigate the feasibility of a flood protection scheme, including modification of conveyance through a historic bridge and construction of direct defences. The study will also examine the current operating procedure of Loch Doon to increase the level of storage, this will be carried out in coordination with Scottish Power. Other actions may also be considered to select the most sustainable combination of actions.
Timing and status:	2020-2021 flood monitoring to be installed prior to study to allow information gathering
Funding:	This study will be funded through East Ayrshire Council's revenue budget provided by Scottish Government.
Coordination:	The scope of this study was agreed with SEPA/SW, and SEPA are Vetting the report as it is produced.
Potential Environmental Impacts:	Flood protection studies will consider the positive and negative impacts of proposed actions on the ecological quality of the environment. There is the potential for impacts on the Loch Doon and Ness Glen Sites of Special Scientific Interest with the storage action. There is the potential for loss of existing natural terrestrial habitats due to increased water levels; however, there could be an increase in wetland habitats. Incorporation of hydro power dams to the scheme could have negative impacts on fish passage. Downstream of these actions there may be negative impacts on water quality through increased erosion and sedimentation, which has the potential to impact upon Bogton Loch Site of Special Scientific Interest. Implementation of the storage action will have permanent negative impacts on the water body morphology. There is likely to be a loss of habitat and displacement of species in the short term during modification works which are likely to re-establish and return in the medium to long term. However, this is likely to be permanent in the footprint and vicinity of the direct defences. There is the potential for negative impacts on local water quality downstream of works during the construction period. There is the potential for impacts on the protected monuments, properties in care and listed buildings in and around Loch Doon from the storage action. With direct defences there is the potential for impacts on the setting of the Dalrymple Heritage Conservation Area, Dalrymple Bridge listed structure, the Skeldon House garden and designed landscape conservation area and views of the river in the town.

Action (ID):	STRATEGIC MAPPING AND MODELLING (120820016)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	SEPA
Action Description:	SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 1,300km ² of improved surface water data is currently available within this Local Plan District.
Timing and status:	The surface water strategic mapping and modelling will begin in 2016 and will be completed by the end of the year.
Funding:	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination:	SEPA's strategic mapping activities will be co-ordinated with the activities of other responsible authorities as required.

Action (ID):	MAINTAIN FLOOD PROTECTION SCHEME (120310017)
Objective (ID):	Reduce the risk of flooding from the River Doon and the Primpton Burn, to residential properties in Dalrymple (12031)
Delivery lead:	East Ayrshire Council
Action Description:	<p>An existing overflow channel on the Primpton Burn reduces the flood risk from the watercourse. The Council should investigate the current benefit which is offered by the scheme. This channel will be maintained, and will continue to manage flooding according to the design standard at the time of construction. Levels of flood risk are likely to increase over time as a consequence of climate change.</p> <p>The Primpton Burn is particularly prone to high water levels in the River Doon. East Ayrshire Council/ACCT have held meetings with Scottish Power to liaison on the operating protocols of the Doon Dam. Scottish Power have agreed to release more water earlier to mitigate against the need to open the gates only in an emergency. This earlier release is intended to lessen the impact during heavy rainfall events. This section of the Doon is an area that has been identified for a future study (2016-2021) to establish any further works required here.</p>
Timing and status:	Ongoing
Funding:	The maintenance of flood protection scheme will be funded through East Ayrshire Council's Revenue Budget provided by Scottish Government.
Coordination:	East Ayrshire Council will work in coordination with all appropriate stakeholders identified through the inspection and maintenance process, including Scottish Water with regards to the operation of the Doon Dam.

Action (ID):	FLOOD FORECASTING (120820009)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	SEPA
Action Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.
Timing and status:	Ongoing
Funding:	SEPA's flood forecasting service is funded through Scottish Government's grant in aid allocation. The Met Office receives funding from the UK Government.
Coordination:	SEPA / Met Office joint initiative. Hydrological information is provided by SEPA and meteorological information is provided by the Met Office. SEPA uses the information to predict the likelihood and timing of river, coastal and surface water flooding.

Action (ID):	SELF HELP (120820011)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	—
Action Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage. The Councils, SEPA and Scottish Water will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared. Further detail can be found in the Councils and Scottish Flood Forum websites.
Timing and status:	Ongoing
Funding:	Individual property owners have a responsibility to prevent flooding to their properties, therefore there is no fund allocated to this task in the Council's budget.
Coordination:	The Councils, SEPA and Scottish Water will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Action (ID):	AWARENESS RAISING (120820013)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	Responsible authorities
Action Description:	<p>East Ayrshire Council, South Ayrshire Council, SEPA and Scottish Water collectively work to raise awareness of flood risk and how those affected can be better prepared.</p> <p>Across Scotland, SEPA will create and share communication and education resources with other responsible authorities. These resources will include awareness campaigns, media and marketing activity and promotion of SEPA's flood forecasting and warning services (Floodline).</p> <p>Scottish Water will provide targeted flooding communications for Scottish Water specific activities and raise awareness by producing and supplying targeted information to the public on large capital projects and detailed local studies.</p> <p>Further Information is provided on East Ayrshire Council, South Ayrshire Council, SEPA, Scottish Water and Ayrshire Road Alliance websites.</p>
Timing and status:	Ongoing
Funding:	<p>East Ayrshire and South Ayrshire Council's awareness raising activities will continue to be funded from the revenue budget provided by Scottish Government.</p> <p>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 their capital or operational expenditure.</p>
Coordination:	East Ayrshire Council, South Ayrshire Council, SEPA and Scottish Water will continue to engage with responsible authorities and all other stakeholders, including community groups and the public to raise awareness of flood risk and how those affected can be better prepared.

Action (ID):	MAINTENANCE (120820007)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	Local authorities, asset / land managers

Action Description:	<p>East Ayrshire Council in accordance with Section 18 of the Flood Risk Management (Scotland) Act 2009 undertake assessment of water bodies to determine whether works of clearance and repair would substantially reduce the risk of flooding. This information is used to produce a schedule of works which is available for the public to inspect.</p> <p>High risk locations such as those with screens and some smaller culverts are inspected on a scheduled basis. The majority of inspections tend to be undertaken in the winter months when flows are higher, and leaves and other waterborne debris can be an issue. Works of clearance are carried out during these inspections which are not specifically "scheduled".</p> <p>The main water bodies, and other water bodies, within urban areas are subject to an annual visual inspection and any works identified are scheduled in accordance with Section 59 of the Act.</p> <p>East Ayrshire Council reviews the locations at which visual inspections are undertaken based on changing circumstances. For example a new flooding issue or concern raised by a member of the public at a location will lead to officers undertaking further inspection works at that location. East Ayrshire Council also works with riparian landowners to ensure that, within the constraints of the legal obligations, they manage their responsibilities in a manner which reduces flood risk.</p> <p>Scottish Water undertake risk based inspection, maintenance and repair on the public sewer network.</p>
Timing and status:	<p>Ongoing</p>
Funding:	<p>The maintenance work will be funded through South Ayrshire Council's Revenue Budget provided by Scottish Government.</p>
Coordination:	<p>East Ayrshire Council will work in coordination with all appropriate stakeholders identified through the inspection and maintenance process. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.</p>

Action (ID):	EMERGENCY PLANS/RESPONSE (120820014)
Objective (ID):	<p>Reduce overall flood risk (12082)</p>
Delivery lead:	<p>Category 1 and 2 Responders</p>
Action Description:	<p>The Civil Contingencies Team ensures that the Council will be able to respond speedily and effectively in a major emergency. North, South and East Ayrshire teams are a shared service team known as the Ayrshire Civil Contingencies Team. If disaster strikes, or if emergencies develop in Ayrshire, communities will look to the Council for support and advice. The Ayrshire Civil Contingencies Team ensures that the Council will be able to respond speedily and effectively in a major emergency in accordance with the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005. Our responsibilities include preparing</p>

	comprehensive and robust contingency plans and procedures irrespective of the nature of the emergency. The main aim is to preserve life and property. Every emergency plan also sets out to: Mitigate the harmful effects of the emergency on the environment; bring about a swift return to normal life in the communities and environment affected; and encourage all agencies and organisations to prepare for their role.
Timing and status:	Ongoing
Funding:	Funding is allocated to category 1 and 2 responders by the Scottish Government for dealing with emergency response and in extreme cases may reimburse responders after an extreme event.
Coordination:	Category 1 and 2 responders will coordinate in the development of the Emergency Response Plan and actions during a flood event. When civil contingencies come into force Police Scotland co-ordinate category 1 and 2 responders in severe flood events.

Action (ID):	PLANNING POLICIES (120390001)
Objective (ID):	Reduce overall flood risk (12082) Avoid an overall increase in flood risk (12039)
Delivery lead:	Planning authority
Action Description:	<p>The current East Ayrshire Council Local Plan (LP) was adopted in 26th October 2010 and will be replaced in November 2016 (by the Local Development Plan) and run for a further 5 years.</p> <p>Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, 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 SEPA's Strategy.</p> <p>SEPA has a statutory role in relation to the provision of flood risk advice to planning authorities. This role is expressed in Section 72 of the FRM Act, 2009. SEPA also has a duty to co-operate with planning authorities in the preparation of development plans. When consulted in relation to planning applications for development or site allocations in development plans, and where the planning authority considers there may be a risk of flooding, SEPA will provide advice. The advice provided by SEPA will be with respect to the risk of flooding and on the basis of the relevant information it holds which is suitable for planning purposes. It will also be in line with the principles and duties set out in the FRM Act. Further information about how SEPA engage in the planning system, including guidance on flood risk and planning is available on SEPA's website</p>

	http://www.sepa.org.uk/environment/land/planning/.
Timing and status:	Ongoing
Funding:	The development and review of the Council's Planning Policies and Guidance notes will be funded through East Ayrshire Council's revenue budget provided by Scottish Government. SEPA's land use planning activities are funded by Scottish Government through SEPA's grant in aid settlement.
Coordination:	East Ayrshire Council's and SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.