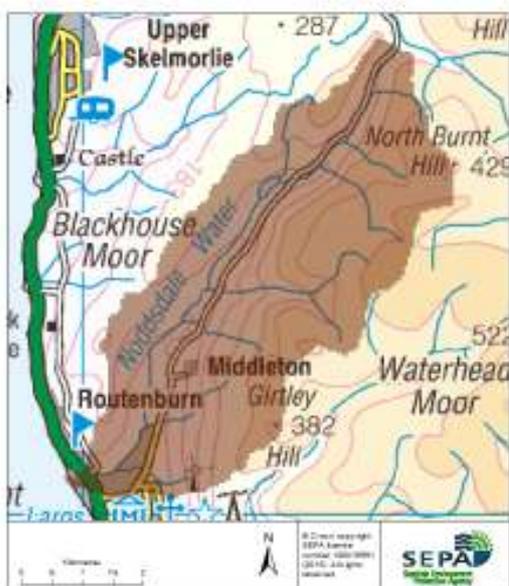


Noddsdale Water (Potentially Vulnerable Area 12/01)

Local Plan District	Local authority	Main catchment
Ayrshire	North Ayrshire Council	Noddsdale Water

Background

This Potentially Vulnerable Area is located in the north of the Ayrshire Local Plan District and is approximately 20km², from North Burnt Hill to the north of Largs Bay (shown below).



There are approximately 30 residential properties at risk of flooding. The Annual Average Damages are approximately £68,000.

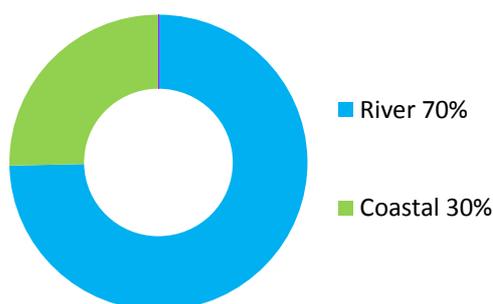


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding in this area comes from several small tributaries of the Noddsdale Water. These small watercourses present a potential impact to residential properties and roads. However, due to the small catchment size, they have not been modelled in the national assessment and are not included within the tables and figures presented below. This flooding source has however been considered within the objectives and actions to manage flooding.

The national assessment attributes river flooding primarily to the Noddsdale Water, with the majority of impacts in the north of Largs. A flood risk assessment for the Noddsdale Water identified areas between Noddleburn Road and the A78 at risk from river flooding, and a local depression downstream of the A78 at risk from high tides and storm surges. The study also identified erosion problems to the banks of the Noddsdale Water within Largs. Green bank protection work was completed at the back of Glen Avenue to reduce further erosion of the public path.

There is potential for a restriction in capacity along the Noddsdale Water at the A78, Greenock Road, which may cause flooding to the road network, there have also been cases of blockages to the bridge connecting Noddleburn Meadow and Noddleburn Road.

On the lower reaches of the Noddsdale Water there is potential for interaction between coastal and river flooding where low lying properties are at risk. North Ayrshire Council has coastal defences which provide both flood and erosion protection. There are revetments, seawalls and embankments in Netherhall, north of the Noddsdale Water.

Surface water mapping indicates a number of localised areas within the north of Largs that may be at risk of flooding. Historical records support this assessment. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 30 to 70.

Residential properties affected by river and coastal flooding experience the highest economic impact at approximately 98% of the damages. Most of the impacts are within Largs with flooding to people and utilities.

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, Noddsdale Water Potentially Vulnerable Area 12/01.

http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_12_01_Full.pdf

Objectives to reduce flooding in the Potentially Vulnerable Area 12/01

Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. The objectives below have been set for Noddsdale Water 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 Noddsdale Water Potentially Vulnerable Area.

Selected 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)
Flood Protection Study					

The 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 12/01

Action (ID):	FLOOD PROTECTION STUDY (120010005)
Objective (ID):	Reduce the risk of river flooding to residential properties in the north east of Largs (12001)
Delivery lead:	North Ayrshire Council
Action Description:	<p>A study was completed in early 2016 which investigated the feasibility of a flood protection scheme focussing on modification of conveyance by upgrading culverts in the Brisbane Glen Road area and property level protection.</p> <p>This study also considered the potential for natural flood management to reduce runoff to the small burns in the area, and other actions to select the most sustainable combination of actions.</p> <p>A number of options with high level cost estimates were identified by the study, and North Ayrshire Council will assess these options in order to determine the outline design work.</p>
Timing and status:	The Feasibility Study completed early in 2016, the design of actions is due for completion in 2016.
Funding:	This study will be funded through North Ayrshire Council's revenue budget provided by Scottish Government.
Coordination:	North Ayrshire Council will coordinate with SEPA, Scottish Water, local residents, landowners and other stakeholders identified through the development of the scheme.
Potential Environmental Impacts:	Flood protection studies will consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. To be in accord with the flood risk management strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the Renfrewshire Heights Special Protection Area. There is the potential for runoff control actions to have an impact on the Renfrewshire Heights Site of Special Scientific Interest. Downstream of this culvert there may be negative impacts on water quality through increased erosion and sedimentation on the Noddsdale Water; however, there is the potential for improvements to fish passage from upgrading of the culverts.

Action (ID):	STRATEGIC MAPPING AND MODELLING (120820019)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	Scottish Water

Action Description:	Scottish Water will undertake further investigation and modelling in the Largs 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.
Timing and status:	This project will commence in 2018 and will be completed in 2020.
Funding:	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
Coordination:	Scottish Water will work with responsible authorities to incorporate relevant information into these studies and by regularly keeping the responsible authorities informed of their progress. Scottish Water will provide responsible authorities with the outputs of the Section 16 assessment which, where relevant, may be used to inform surface water management plans and SEPA flood hazard and risk maps.

Action (ID):	FLOOD FORECASTING (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:	All
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>North Ayrshire Council, SEPA and Scottish Water collectively work to raise awareness of flood risk and how those affected can be better prepared. Most recently in April/May 2015, as part of the Draft Flood Risk Management Strategy Public Consultation, the Council and SEPA gave residents in 7 towns, including Largs, the opportunity to meet and discuss the Strategy and raise awareness of the SEPA Coastal Flood Warning Scheme. Through the continued development of flood schemes and studies at higher risk locations, officers from the Council's Flood Risk Management Team attend community council events to discuss elements of flood risk management.</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 North Ayrshire Council, SEPA and Scottish Water websites.</p>
Timing and status:	Ongoing
Funding:	North Ayrshire Council's awareness raising activities will continue to be funded from the revenue budget provided by Scottish Government.

Funding:	<p>SEPA's awareness raising activities are funded by Scottish Government through SEPA's grant in aid settlement.</p> <p>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:	<p>North 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.</p>

Action (ID):	MAINTENANCE (120820007)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	North Ayrshire Council, asset / land managers
Action Description:	<p>North 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". 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>North 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. North 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:	Ongoing
Funding:	The maintenance work will be funded through North Ayrshire Council's Revenue Budget provided by Scottish Government.
Coordination:	North Ayrshire Council will work in coordination with all appropriate stakeholders identified through the inspection and maintenance

Coordination:	process. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.
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Action (ID):	EMERGENCY PLANS/RESPONSE (120820014)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	Category 1 and 2 Responders
Action Description:	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 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:	North Ayrshire Council adopted its first and current Local Development Plan (LDP) on 20 May 2014. The plan plays an important part in reducing the vulnerability of existing and future development to flooding. Through Policy PI8: Drainage, SUDS and Flooding and in accordance with the Scottish Government's Scottish Planning Policy, we apply the Flood Risk Framework, or a sequential approach, to guide certain types of development to appropriate locations in terms of flood risk. We have a presumption against new

development in areas of significant flood risk unless the stringent criteria in Policy P18 can be satisfied. Planning applications received by us are individually reviewed and, if flooding is a potential and significant concern, further information is sought by consultation with the applicant, SEPA and/or the Council's Flooding & Structure Design Team and, where appropriate, by submission of a flood risk assessment. Through both Policy P18 and appropriate planning conditions, we also seek to minimise the impact of new developments on flood flow through the use of sustainable urban drainage systems. We are now reviewing the current LDP and moving toward preparation of a replacement plan or LDP2. The key stage in preparing the new plan is the Main Issues Report, anticipated for publication in January 2017. To help us prepare the MIR, we are undertaking a 'Call for Sites' exercise to identify sites within North Ayrshire that may have potential for development. We will apply the Flood Risk Framework to site selection so that development is, as far as reasonably possible, located where the risk of flooding is acceptable, taking account of climate change and the vulnerability of future uses to flood risk. We also will use the strategic flood risk assessment process to inform choices about the location of development and planning policies for flood risk management. SEPA's flood risk plans and approved Flood Risk Management Strategies and Plans will also influence choices. LDP2 will cover a 10 year period, starting from 2019 when the new plan is likely to be adopted.

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.

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.

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 <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 North 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:	North Ayrshire Council's and SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.