

## Girvan (Potentially Vulnerable Area 12/18)

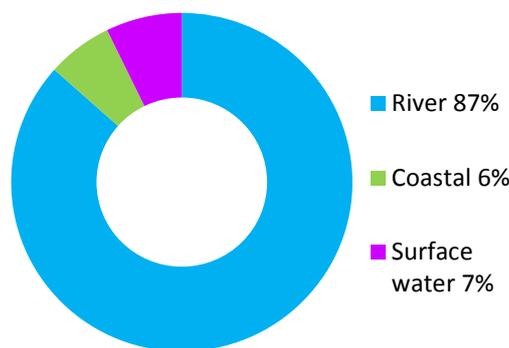
Local Plan District	Local authority	Main catchment
Ayrshire	South Ayrshire Council	Girvan to Lendalfoot coastal

### Background

This Potentially Vulnerable Area is located in the south of the Ayrshire Local Plan District on the west coast between Girvan and Lendalfoot (shown below). It incorporates the towns of Girvan and Pinminnoch and is approximately 20km<sup>2</sup>.



There are approximately 110 residential properties at risk of flooding. The Annual Average Damages are approximately £220,000.



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

### Summary of flooding impacts

River flooding within this area is primarily attributed to the Mill Burn which flows in a north westerly direction through Girvan before joining the Water of Girvan immediately downstream of the A77. This is expected to impact a number of residential and non-residential properties, along with sections of the road and rail network (notably the A77). The Water of Girvan is outwith the Potentially Vulnerable Area boundary to the north but as the larger watercourse, it is likely to contribute to flooding on the lower reaches of the Mill Burn. The Mill Burn primarily flows as an open channel through a largely residential area with culverts beneath a number of roads in the area. The Myoch Burn, which flows in a westerly direction approximately 500m to the south of Girvan, is another source of river flooding which predominately affects agricultural land but also presents a risk to a caravan park.

The only urban areas at risk of surface water flooding are in the vicinity of the Mill Burn in Girvan.

There is limited risk from coastal flooding which is concentrated around the mouth of the Water of Girvan. At this location a number of residential and non-residential properties and sections of road are predicted to experience flooding.

Interaction between the various flooding sources is likely to occur on the lower reaches of watercourses as they enter the sea. High river flows in the Mill Burn and tidal surges have the potential to produce the highest impacts. Other watercourses which are likely to produce a combined effect of river and coastal flooding are the Water of Girvan and Myoch Burn. The Doune Burn and Mill Burn catchment have been studied by South Ayrshire Council to understand the flooding from these watercourses and the tidal effects of the Water of Girvan.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 110 to 130 and the number of non-residential properties from 30 to 40.

Residential properties affected by river flooding experience the highest economic impact at approximately 80% of the damages.

Most of the impacts are within Girvan with flooding to people, non-residential properties, utilities 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, Girvan Potentially Vulnerable Area 12/18.

[http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA\\_12\\_18\\_Full.pdf](http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_12_18_Full.pdf)

## **Objectives to reduce flooding in the Potentially Vulnerable Area 12/18**

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 Girvan 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 Girvan 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)
		Girvan Flood Protection Study			
Shoreline Management Plan					

The Maintain flood warning, 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 12/18

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (121030005)</b>
<b>Objective (ID):</b>	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)
<b>Delivery lead:</b>	South Ayrshire Council
<b>Action Description:</b>	<p>The requirement for a Shoreline Management Plan (SMP) covering the Ayrshire coastline was identified by SEPA through the development of the Ayrshire Regional Flood Risk Management Strategy. The SMP is required to provide guidance to operating authorities and regulatory bodies as to future sustainable flood and coastal erosion risk management, essentially providing an agreed high level approach, intent and framework for management. In addition, the SMP should provide guidance to planners, individuals and organisations with interests in the coast, setting out an understanding of coastal behaviour, the pressures, constraints and opportunities for sustainable use of the coastal zone to facilitate and guide others in developing their own planning.</p> <p>The Ayrshire SMP is being developed in partnership between the operating authorities and those other organisations with key roles in shoreline management. To this end the project is led by a SMP Project Steering Group (PSG), with detailed management being undertaken by the SMP Technical Group (TG). These groups would include members of the following organisations: North Ayrshire Council (involving their engineering and planning departments); South Ayrshire Council (involving their engineering and planning departments); Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH) and Historic Environment Scotland.</p> <p>The Shoreline Management data gathering analysing stage is completed and through this process, information gaps were identified for Arran coast and the South Ayrshire coastline. The study will include coastal process modelling, sediment sampling and lab analysis to develop a robust understanding of the coastal processes along the Arran coast. It will also allow the existing information for the North Ayrshire mainland coast to be updated based on more recent information on sea level rise.</p>
<b>Timing and status:</b>	The Ayrshire Shoreline Management Plan is started in the of 2015 and expected to be developed by mid 2018.
<b>Funding:</b>	This study will be funded through South Ayrshire Council's revenue budget provided by Scottish Government.
<b>Coordination:</b>	The list of statutory bodies and key stakeholders are identified through the scoping stage of the process approved by the Steering Group, led by South Ayrshire Council.
<b>Potential Environmental Impacts:</b>	Flood protection studies will consider the positive and negative impacts of proposed actions on the ecological quality of the environment.

<b>Action (ID):</b>	<b>FLOOD PROTECTION STUDY (120320005)</b>
<b>Objective (ID):</b>	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)
<b>Delivery lead:</b>	South Ayrshire Council
<b>Action Description:</b>	<p>The requirement for a Shoreline Management Plan (SMP) covering the Ayrshire coastline was identified by SEPA through the development of the Ayrshire Regional Flood Risk Management Strategy. The SMP is required to provide guidance to operating authorities and regulatory bodies as to future sustainable flood and coastal erosion risk management, essentially providing an agreed high level approach, intent and framework for management. In addition, the SMP should provide guidance to planners, individuals and organisations with interests in the coast, setting out an understanding of coastal behaviour, the pressures, constraints and opportunities for sustainable use of the coastal zone to facilitate and guide others in developing their own planning.</p> <p>The Ayrshire SMP is being developed in partnership between the operating authorities and those other organisations with key roles in shoreline management. To this end the project is led by a SMP Project Steering Group (PSG), with detailed management being undertaken by the SMP Technical Group (TG). These groups would include members of the following organisations: North Ayrshire Council (involving their engineering and planning departments); South Ayrshire Council (involving their engineering and planning departments); Scottish Environment Protection Agency (SEPA); Scottish Natural Heritage (SNH) and Historic Environment Scotland.</p> <p>The Shoreline Management data gathering analysing stage is completed and through this process, information gaps were identified for Arran coast and the South Ayrshire coastline. The study will include coastal process modelling, sediment sampling and lab analysis to develop a robust understanding of the coastal processes along the Arran coast. It will also allow the existing information for the North Ayrshire mainland coast to be updated based on more recent information on sea level rise.</p>
<b>Timing and status:</b>	The Ayrshire Shoreline Management Plan is started in the of 2015 and expected to be developed by mid 2018.
<b>Funding:</b>	This study will be funded through South Ayrshire Council's revenue budget provided by Scottish Government.
<b>Coordination:</b>	The list of statutory bodies and key stakeholders are identified through the scoping stage of the process approved by the Steering Group, led by South Ayrshire Council.
<b>Potential Environmental Impacts:</b>	Flood protection studies will consider the positive and negative impacts of proposed actions on the ecological quality of the environment. This study is proposed for the Girvan Estuary (water body ID 200014). The physical condition of this estuary is identified by river basin management planning to be at less than good status. Future works could improve the condition of the estuary or degrade it. Opportunities to improve the condition of the estuary should be considered by coordinating with river basin management planning.

<b>Potential Environmental Impacts:</b>	There are no international, national or local level environmental designations that are likely to be impacted by this action. There is likely to be a loss of semi-natural habitats in the footprint of the storage. Downstream of the new structures there may be slight negative impacts on water quality through increased erosion and sedimentation on the Mill Burn. Introduction of a control structure may cause a build up of sediment in the Mill Burn, and potentially increased localised erosion on the Girvan Estuary. There is the potential for introduction of wetland habitats to the storage area, which would provide increased biodiversity to this suburban parkland area. There is likely to be a the loss of habitat and displacement of species in the short term during culvert modification works; however, these are likely to re-establish and return in the medium to long term. There is the potential for short term water quality impacts on the Girvan Estuary during works. There is the potential for impediment to fish passage from the introduction of a control structure. There is the potential for impacts on the local townscape in the area of Victory Park.
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<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (120820016)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	SEPA
<b>Action Description:</b>	SEPA will seek to develop flood mapping in the Ayr to Ardrossan 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. The coastal mapping and modelling process will start in 2016, with early work focussing on methodology development and data collection. Once this stage has been completed a thorough review will be carried out to identify the final mapping improvements that can be made in the area.
<b>Timing and status:</b>	The coastal strategic mapping and modelling will begin in 2016 and will be completed by 2019.
<b>Funding:</b>	SEPA's strategic mapping and modelling activities are funded by Scottish Government through SEPA's grant in aid settlement.
<b>Coordination:</b>	A flood protection study is proposed for Girvan. SEPA will work with the local authority to ensure that new information about flood risk resulting from the proposed flood protection study is considered in SEPA's strategic mapping and modelling developments where appropriate and relevant.

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

<b>Action Description:</b>	Scottish Water will undertake further investigation and modelling in the Girvan 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.
<b>Timing and status:</b>	This project will commence in 2018 and will be completed in 2020.
<b>Funding:</b>	Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers.
<b>Coordination:</b>	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.

<b>Action (ID):</b>	<b>MAINTAIN FLOOD PROTECTION SCHEME (120320017)</b>
<b>Objective (ID):</b>	Reduce the risk of river and coastal flooding to residential properties and non-residential properties in Girvan (12032)
<b>Delivery lead:</b>	South Ayrshire Council
<b>Action Description:</b>	There are a number of sections of coastal defences in Girvan which provide some protection to the area. These defences will be maintained, and will continue to manage flooding according to the design standard at the time of construction. An annual inspection is carried out on all coastal protection structures in South Ayrshire with maintenance works carried out on a priority basis within available resources. Additional inspections are carried out in response to external defect reports or following severe storm events. If the defences remain the same, levels of flood risk are likely to increase over time as a consequence of climate change.
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	The maintenance of flood protection scheme will be funded through South Ayrshire Council's Revenue Budget provided by Scottish Government.
<b>Coordination:</b>	South Ayrshire Council will work in coordination with all appropriate stakeholders identified through the inspection and maintenance process.

<b>Action (ID):</b>	<b>MAINTAIN FLOOD WARNING (120820030)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	SEPA

<b>Action Description:</b>	SEPA will continue to maintain the Girvan Esplanade flood warning area which is part of the Firth of Clyde coastal flood warning scheme. When flood events occur in an area with a flood warning service, SEPA will seek to verify and validate the warning service. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement.
<b>Coordination:</b>	A flood protection study is proposed for Girvan. SEPA will work with the local authority to ensure that any new information about flood risk resulting from the proposed flood protection study is considered in the existing flood warning system.

<b>Action (ID):</b>	<b>FLOOD FORECASTING (120820009)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	SEPA
<b>Action Description:</b>	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.
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	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>Coordination:</b>	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.

<b>Action (ID):</b>	<b>SELF HELP (120820011)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	—
<b>Action Description:</b>	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.
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	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.
<b>Coordination:</b>	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.

<b>Action (ID):</b>	<b>AWARENESS RAISING (120820013)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	Responsible authorities
<b>Action Description:</b>	<p>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 South Ayrshire Council, SEPA, Scottish Water and Ayrshire Road Alliance websites.</p>
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	<p>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>

<b>Coordination:</b>	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.
<b>Action (ID):</b>	<b>MAINTENANCE (120820007)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	South Ayrshire Council, asset / land managers
<b>Action Description:</b>	<p>South 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>Furthermore, South Ayrshire Council inspects the coastal defences in this area on an annual basis and undertakes additional inspections as and when required. There is an annual prioritised maintenance programme for coastal defences in the South Ayrshire Council area. South 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. South 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>
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	The maintenance work will be funded through South Ayrshire Council's Revenue Budget provided by Scottish Government.
<b>Coordination:</b>	South 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.

<b>Action (ID):</b>	<b>EMERGENCY PLANS/RESPONSE (120820014)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082)
<b>Delivery lead:</b>	Category 1 and 2 Responders
<b>Action Description:</b>	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.
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	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.
<b>Coordination:</b>	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.

<b>Action (ID):</b>	<b>PLANNING POLICIES (120390001)</b>
<b>Objective (ID):</b>	Reduce overall flood risk (12082) Avoid an overall increase in flood risk (12039)
<b>Delivery lead:</b>	Planning authority
<b>Action Description:</b>	The current South Ayrshire Local Development Plan (LDP) was adopted on 23 September 2014. It sets out how the Council envisages South Ayrshire will be developed over the 10 year period from its adoption. It will be replaced in 2019, though the town centre and retail policies element of the Plan are likely to be replaced in 2016/17. A Land Assessment Framework was used to assess the merits of submitted development sites for inclusion in the LDP. This Framework comprised a range of environmental criteria, including flood risk. The LDP contains a specific policy on flooding and development, which identifies a flood risk framework against which development proposals will be assessed. The policy indicates that

	<p>development should avoid areas likely to be affected by flooding or increasing the likelihood of flooding elsewhere. It also requires impermeable surfaces to be minimised in all new developments, which must include Sustainable Urban Drainage Systems. Individual planning applications are assessed against the LDP, including LDP policy: flooding and development, and other material considerations, such as SPP. If flood risk is perceived as a possible concern, further information, such as a flood risk assessment, may be sought from the applicant. In addition, the Council maintains an interactive mapping facility, which identifies environmental constraints, including coastal and fluvial flooding. At an individual scale all planning applications received by the Council are reviewed on a variety of criteria and if flooding may be a concern the further information is sought.</p> <p>Scottish Water is a statutory consultee within the planning legislation and is required to comment on all outline or full planning applications which are referred by a local authority.</p> <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 <a href="http://www.sepa.org.uk/environment/land/planning/">http://www.sepa.org.uk/environment/land/planning/</a>.</p>
<b>Timing and status:</b>	Ongoing
<b>Funding:</b>	The development and review of the Council's Planning Policies and Guidance notes will be funded through South 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.
<b>Coordination:</b>	South Ayrshire Council's and SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.