

Kilwinning (Potentially Vulnerable Area 12/05)

Local Plan District	Local authority	Main catchment
Ayrshire	North Ayrshire Council	River Garnock

Background

This Potentially Vulnerable Area is located to the north of Irvine and includes a large proportion of Kilwinning. It is approximately 30km² (shown below).



The area has a risk of river, surface water and coastal flooding. The majority of damages are caused by river flooding predominately from the River Garnock, River Irvine and the Bannoch Burn.

There are approximately 170 residential properties at risk of flooding. The Annual Average Damages is approximately £400,000.

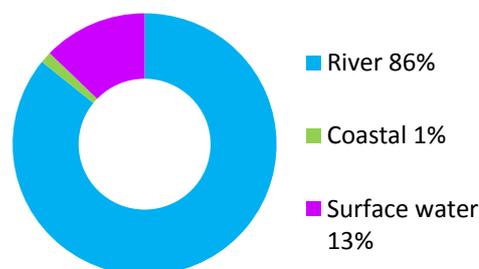


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding from the River Garnock, River Irvine and the Bannoch Burn present risk to residential and non-residential properties within Kilwinning and to the area south of the A78, where the Irvine Golf Club and former industrial area are deemed at risk. There are also transport routes at risk, notably railway lines and the A737 and A78. A flood study for the Bannoch Burn completed in February 2014 identified that the culverted section of the Bannoch Burn is lacking capacity and can contribute to flooding.

Surface water flooding is predicted to impact the residential area of Kilwinning with considerable potential disruption along the A737. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

There is a small risk from coastal flooding over the lower reaches of the River Garnock where there is a tidal influence but no residential or non-residential properties are predicted to be affected.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 170 to 220 and the number of non-residential properties from approximately 50 to 60.

Most of the impacts from are within Kilwinning and Irvine. These include flooding risk to people, non-residential properties, utilities, roads and railways. The A78 is at risk of flooding between Kilwinning and Irvine. Three designated cultural heritage sites are at risk of flooding, and small areas of environmentally designated sites (approximately 1.5km²) are also at risk.

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, Kilwinning Potentially Vulnerable Area 12/05.

http://apps.sepa.org.uk/FRMStrategies/pdf/pva/PVA_12_05_Full.pdf

Objectives to reduce flooding in the Potentially Vulnerable Area 12/05

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

- Reduce the economic damages and risk to people from surface water flooding in Kilwinning, Saltcoats, Ardrossan and Stevenston (ID 12041)
- Reduce the economic damages and risk to people from surface water flooding in Irvine (ID 12042)
- 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 Kilwinning 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)
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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)
New Flood Warning					
Surface Water Management Plan					
Integrated Catchment 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 12/05

Action (ID):	NEW FLOOD WARNING (120820010)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	SEPA
Action Description:	<p>SEPA will continue with the development and implementation of a flood warning scheme on the River Garnock. Detail of communities that will benefit from the warnings will be determined during scheme development.</p> <p>Once implemented SEPA will continue to maintain the 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.</p>
Timing and status:	The River Garnock flood warning scheme will be delivered by December 2016.
Funding:	The maintenance of SEPA's flood warning service is funded by Scottish Government through SEPA's grant in aid settlement. In addition, the Government provide grant funding to enable SEPA to implement new flood warning schemes.
Coordination:	A flood protection study is proposed for Kilwinning. 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.

Action (ID):	FLOOD PROTECTION STUDY (120130005)
Objective (ID):	Reduce the risk of river flooding to residential properties and non-residential properties in Kilwinning (12013)
Delivery lead:	North Ayrshire Council
Action Description:	<p>North Ayrshire Council will investigate flood mitigation options including modification of control structures along the River Garnock. This study should take account of the proposed defences on the River Garnock. It should also consider the potential for runoff control and sediment management within the catchment and the natural flood management study on the River Garnock and tributaries. Other actions may also be considered to select the most sustainable combination of actions.</p> <p>As part of the Stevenston Point integrated catchment study further hydraulic modelling will be undertaken on the Wood Burn. Upgrading of culverts on the Wood Burn will be appraised as part of that detailed study along with sustainable drainage systems.</p>
Timing and status:	The ownership of the Kilwinning Weir needs to be confirmed prior to further work in this section of the River Garnock. Further study is proposed to be started in 2018/19. This may allow for any

	appropriate information from the Stevenston Point ICS to be utilised as this is due to be completed by 2019.
Funding:	This study will be funded through North Ayrshire Council's revenue budget provided by Scottish Government.
Coordination:	<p>Scottish Water will work with North Ayrshire council to ensure that best available knowledge and data is used to inform this study.</p> <p>Opportunities to remove obstruction to fish passage will be explored with SEPA's River Basin management Plan Unit.</p>
Potential Environmental Impacts:	<p>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. This study is proposed for a number of rivers. Part of the River Garnock (water body ID 10379) is identified by river basin management planning to be at less than good status for its physical condition. Future works could improve the condition of the rivers or degrade them.</p> <p>Opportunities to improve the condition of the rivers will be considered by coordinating with river basin management planning. There are no international, national or local level environmental designations that are likely to be significantly impacted by this action. Downstream of these culverts there may be negative impacts on water quality through increased erosion and sedimentation on the River Garnock. There is the potential for improvements to fish passage from upgrading of the culverts and weir removal. Increased flows from removal of this weir may cause increased erosion and sedimentation on the River Garnock. There is likely to be a direct loss of natural and semi-natural habitat and displacement of species 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. However, there is the potential for slight positive impacts on water quality from the implementation of sustainable drainage systems in the area. There is also the potential for negative impacts on the Kilwinning Bridge listed heritage structure.</p>

Action (ID):	SURFACE WATER PLAN/STUDY (120410018)
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Kilwinning, Saltcoats, Ardrossan and Stevenston (12041)
Delivery lead:	North Ayrshire Council
Action Description:	<p>North Ayrshire Council will develop a surface water management plan or plans to cover Irvine which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.</p> <p>Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and outputs of the Stevenston Point integrated catchment study and Section 16 modelling, to assist with the surface water management planning process.</p>

Timing and status:	A surface water management plan for these areas will be developed between 2016 and 2021.
Funding:	This study will be funded through North Ayrshire Council's revenue budget provided by Scottish Government.
Coordination:	North Ayrshire Council will co-ordinate the preparation of a surface water management plan in partnership with other responsible authorities. Scottish Water will work with local authorities and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Action (ID):	SURFACE WATER PLAN/STUDY (120410019)
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Kilwinning, Saltcoats, Ardrossan and Stevenston (12041)
Delivery lead:	Scottish Water in partnership with North Ayrshire Council
Action Description:	An integrated catchment study covering the Stevenston Point catchment will be carried out to support the surface water management planning process in Kilwinning, Saltcoats, Ardrossan and Stevenston . The study will improve knowledge and understanding of the interactions between the above ground and below ground drainage network e.g. with the sewer network, watercourses and the sea. To date, all timescale, agreements and funding between Scottish Water and the Local Authorities will take the studies through the Scoping and Modelling phases which culminates in defining the flooding issues in the catchment. It is expected that the integrated catchment study partnerships will remain and anticipated that the Optioneering phase will be initiated directly after the preceding phases.
Timing and status:	Scoping for the Stevenston Point integrated catchment study began in 2016 and the report of the modelling phase will be completed by 2019.
Funding:	This project is being funded by Scottish Water in partnership with North Ayrshire Council. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers. North Ayrshire Council is funding this project from their revenue budget provided by Scottish Government.
Coordination:	Scottish Water will work collaboratively with project partners throughout the studies. Scottish Water will provide project partners with the outputs of the integrated catchment study which, where relevant, may be used to inform surface water management plans.

Action (ID):	SURFACE WATER PLAN/STUDY (120420018)
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Irvine (12042)
Delivery lead:	North Ayrshire Council

Action Description:	<p>North Ayrshire Council will develop a surface water management plan or plans to cover Irvine which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.</p> <p>Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and outputs of the Meadowhead integrated catchment study and Section 16 modelling, to assist with the surface water management planning process.</p>
Timing and status:	A surface water management plan for these areas will be developed between 2016 and 2021.
Funding:	This study will be funded through North Ayrshire Council's revenue budget provided by Scottish Government.
Coordination:	North Ayrshire Council will co-ordinate the preparation of a surface water management plan in partnership with other responsible authorities. Scottish Water will work with local authorities and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.

Action (ID):	SURFACE WATER PLAN/STUDY (120420019)
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Irvine (12042)
Delivery lead:	Scottish Water in partnership North Ayrshire Council
Action Description:	An integrated catchment study covering the Meadowhead catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in Kilmarnock, Greenholm, Irvine, Prestwick and Ayr. 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).
Timing and status:	Characterisation of flood risk from the Integrated Catchment Study was completed in 2015. 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).
Funding:	The Integrated Catchment Study is being funded by Scottish Water in partnership with North, East and South Ayrshire Councils. Scottish Water funding is committed in its capital programme through Q&S 4a (2015-2021) which is approved by its regulators and customers. The Councils are funding both the Integrated Catchment project and the Surface Water Management Plan from their revenue budget.
Coordination:	Scottish Water will work collaboratively with project partners throughout the studies. Scottish Water will provide project partners with the outputs of the integrated catchment study which, where relevant, may be used to inform surface water management plans.

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 Meadowhead and Stevenston Point 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.
Timing and status:	This project will commence in 2016 and will be completed in 2019.
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:	—
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 Kilwinning, the opportunity to meet and discuss the Strategy.</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). To support the delivery of the new SEPA flood warning scheme on the River Garnock, 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.</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:	<p>North 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:	<p>A new flood warning scheme is under development for River Garnock. To support the delivery of the new SEPA flood warning scheme, SEPA will carry out communications and engagement activities.</p> <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:	Local authorities, 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</p>

	<p>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 process. Scottish Water will keep responsible authorities informed of large scale capital maintenance work to identify opportunities for co-ordination.

Action (ID):	EMERGENCY PLANS/RESPONSE (120820014)
Objective (ID):	Reduce overall flood risk (12082)
Delivery lead:	Category 1 and 2 Responders
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 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.</p>
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:	<p>Category 1 and 2 responders will coordinate in the development of the Emergency Response Plan and actions during a flood event.</p> <p>When civil contingencies come into force Police Scotland co-ordinate category 1 and 2 responders in severe flood events.</p>

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>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 PI8 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 PI8 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.</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 http://www.sepa.org.uk/environment/land/planning/.</p>
<p>Timing and status:</p>	<p>Ongoing</p>
<p>Funding:</p>	<p>The development and review of three 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.</p>
<p>Coordination:</p>	<p>North Ayrshire Council's and SEPA's land use planning activities will be co-ordinated with the activities of other responsible authorities as required.</p>