

Aberdeen City and Shire Strategic Development Plan

Strategic Flood Risk Assessment

This Strategic Flood Risk Assessment (SFRA) is designed to inform the Aberdeen City and Shire Strategic Development Plan. A SFRA involves the collection, analysis and presentation of existing and readily available flood risk information (from any source) for the area of interest. It constitutes a strategic overview of flood risk, without necessarily meeting the reporting requirements of a detailed Flood Risk Assessment and has been executed as a desk top study. However, in some instances, greater detail may be required (if appropriate) to inform the Strategic Development Plan. Part of a SFRA could be the identification of priority areas for more detailed analysis.

Sources of information on SFRA for the Main Issues Report came from Appendix 1 of the Technical Flood Risk Guidance for Stakeholders which was produced by SEPA. This has now been superseded by new Technical Guidance to support Development Planning which was issued by SEPA in June 2012. Those sources of information considered appropriate to Aberdeen City and Aberdeenshire are briefly set out below.

1. Biennial Flood Reports

These reports specify the measures that Aberdeen City and Aberdeenshire Councils have undertaken to meet their duties under the Flood Prevention (Scotland) Act 1961 as amended by the Flood Prevention and Land Drainage (Scotland) Act 1997. They detail flood prevention measures and strategies for preventing and mitigating flooding, including proposals and expenditure for the future. Flood and road drainage incidents are reported and measures which dealt with them are outlined. Both Councils have produced a 7th Biennial Report which covers the period up to November 2009. Under the Flood Risk (Scotland) Management Act 2009, Biennial Flood Reports will no longer be produced. Instead, Flood Risk Management Strategies will be prepared for 14 local plan districts in Scotland, of which Aberdeen City and Aberdeenshire form one.

2. Flood Prevention Schemes and other studies

Over the last few years there have been a number of studies that have either been carried out or are proposed in Aberdeen.

- Glashieburn, Bridge of Don. This is located on the Glashieburn close to Lochside Drive. Works here are now complete.
- West Cults Farm, Cults. Aberdeen City Council has investigated the need to carry out a Flood Prevention Scheme in this area but decided not to proceed. It is understood that residents have proceeded with their own scheme.
- Fraser Road. This is part of the built up area to the north of Hutcheon Street and flood prevention works were successfully completed there in 2004.
- Hydrological studies were commissioned in 2007 to investigate flooding problems in Northfield, Middlefield, Cummings Park and Logie. This may lead to the development of flood mitigation measures and ways to improve the drainage of the area.

- The 7th Biennial Flood Report proposed the promotion of a scheme to tackle flooding issues on the Den Burn at Jacks Brae in Rosemount.

Aberdeenshire's 7th Biennial Flood Report outlines a number of actions and proposals.

- Flood studies have been carried out at the following locations:
 - Burn of Cauldcotts, Fettercairn
 - Ythan Estuary, Newburgh
 - Tarland Burn, Tarland and Aboyne
 - Johnshaven (coastal flood / erosion assessment)
 - Extreme coastal water levels assessment
 - Coastal landslip studies at Stonehaven and Pennan

Where appropriate, the studies will generate cost benefit analyses which will be used to justify proposals for Flood Protection Schemes and Coast Protection Works.

- Johnshaven Coast Protection Works. Properties and the road at Beach Road, Johnshaven were being threatened by coastal erosion. The erosion, if left unchecked would have led to an increase in flood risk to a number of properties. Following investigations and a public meeting, a 100 metre long rock revetment was installed at a total cost of £101,000. This will provide long term benefits to residents in terms of reduced risk from flooding and erosion.
- Flood Alleviation Works at Whinnyfold, Cruden Bay and Alford. Aberdeenshire Council completed a flood relief scheme at Whinnyfold, Cruden Bay at a cost of £12,000. A number of properties were being flooded on a frequent basis. A flood alleviation scheme, also costing £12,000, was completed to prevent repeated flooding to properties in Alford.
- Landslides. Following major mudslides at Pennan in August 2007, which resulted in the inundation of a number of properties, the Scottish Government agreed in December 2008 to fund £500,000 of a £600,000 scheme to reduce the risk of a repeat occurrence. This scheme is currently being developed and it is anticipated that the works will be implemented during the summer of 2010.

Concerns have existed for a number of years about the stability of the Bervie Braes, Stonehaven. The Braes are privately owned but a public road runs across the slope and approximately 65 houses are located at its base, many of them Council owned. As a result of heavy rainfall on 1 November 2009 a localised area of road edge and embankment failed causing material to be washed down towards the harbour, affecting private properties. Options for stabilising the wider slope had already been examined and a request made to the Scottish Government for assistance to fund a major remediation project.

Over the last two years localised landslides have also occurred at Newtonhill, Banff, Boddam and Cruden Bay. With the exception of Banff, the slips have all occurred on private land. In each case the cause has been a combination of water run off or seepage from above acting on overly steep coastal slopes. The Council has provided limited technical advice on each occasion. As a general rule, it will only undertake remedial action if it owns the land, if its assets are affected or where it has in some way contributed to the problem.

In addition the following proposals are outlined;

- Further flood studies will be undertaken at Stonehaven (Carron), Huntly (Meadow Burn / Deveron), Portsoy (Soy Burn), Marykirk (in conjunction with restoration funding from SEPA).
- Flood Protection Schemes are proposed on the Cauldcotts Burn at Fettercairn, and the Tarland Burn at Aboyne and Tarland. It is likely that flood alleviation schemes will also be drawn up in Huntly and Stonehaven subject to the outcome of the flood studies.
- Flood Alleviation Works at Boddam, Peterhead - the problem caused by surface water coming off the Trunk Road at Boddam and flooding domestic property has advanced to the stage where agreement from Scottish Water has been obtained recently to undertake the necessary connections to the surface water sewer of the former RAF Buchan site, and the adjacent Army Cadets' property.
- Coast Protection Works at Scotstown, Banff will be progressed to strengthen and repair damage to the existing seawall.

3. British Hydrological Society

This website contains a historical chronology of British hydrological events largely taken from documentary evidence. A number of flood events are noted from the 18th century to the present, mainly concerning flood damage along the Rivers Deveron, Don, Dee and Ythan. A search facility is available here <http://www.dundee.ac.uk/geography/cbhe/>

4. Flood Events

Flood and drainage problems are highlighted in the Biennial Flood Reports. In addition two flood events on the Rivers Don and Dee have been mapped on Aberdeen City Council's Geographic Information System. These took place in September 1995 and November 2002 and are generally confined to the River Dee and Don valley floors.

5. SEPA Flood Maps

SEPA's Flood Maps are available on their website and show areas of land which are at risk of river and coastal flooding. They formed an important part of both Council's assessment of development options and of the SEA of sites in the Local Development Plans. Any potential flood risk is identified in these assessments. Both Council's Geographic Information Systems hold this data. Map 1 show the high level flood risk areas of the Rivers Dee, Don, Ythan and Ugie catchements. Map 2 shows a more detailed representation of the 1:200 flood risk area for both pluvial (river) and coastal flooding. SEPA's Flood Maps can be viewed online here;

http://www.sepa.org.uk/flooding/flood_extent_maps/view_the_map.aspx

6. Aberdeen Beach Recharge

To protect the revetment and area around Aberdeen beach from continued erosion and failure, a programme of beach recharge took place in July and August 2006. This programme protected property and infrastructure and provided an enhanced beach for recreational use. To ensure the stability of the new beach and to protect the area from further erosion, rock t-head extensions to the present timber groynes were constructed to keep the sand in place. Computer modelling of the coastline,

experience gained from elsewhere, and an economic analysis of the cost of the options, indicated that this was the best option for protecting the beach.

7. Future Issues

The City Council gave a response to the Rural Affairs and Environment Committee of the Scottish Parliament on an inquiry into Flooding and Flood Management which focussed on climate change issues. A full response can be found on the internet at <http://www.scottish.parliament.uk/S3/committees/rae/inquiries/flooding/AberdeenCityCouncil.htm>

8. National Flood Risk Assessment

The National Flood Risk Assessment is the first step of the new risk-based approach to managing the impacts of flooding, introduced by the [Flood Risk Management \(Scotland\) Act 2009](#). It represents a significant milestone in our understanding of flood risk by bringing together the latest information on the sources and impacts of flooding across Scotland.

From the National Flood Risk Assessment we have found that one in 22 of all residential properties and one in 13 of all non-residential properties are at risk of flooding from rivers, the sea or heavy rainfall in urban areas. The outcomes of the National Flood Risk Assessment will help us to target actions for flood risk management in those areas where we can have the greatest impact.

SEPA is now building on the National Flood Risk Assessment by producing the '*Flood Risk Management Planning in Scotland: Arrangements for 2012 -2016*' document which provides further explanation of how and when Flood Risk Management Strategies and Local Flood Risk Management Plans will be produced. This publication, which has been jointly produced by SEPA and the Scottish Government outlines the new approach to flood risk management which will help us to co-ordinate the involvement of local partnerships and advisory groups by defining sustainable policies and actions for Flood Risk Management.

SEPA has published the following documents to accompany the National Flood Risk Assessment:

- [The National Flood Risk Assessment](#) (📄 774Kb): This document provides further detail on the National Flood Risk Assessment and how its outcomes support Flood Risk Management Planning.
- [Flood Risk Management Strategies and Local Flood Risk Management Plans](#) (📄 463Kb): Provides detail on the content and production of Flood Risk Management Strategies and Local Flood Risk Management Plans.
- [Flood Risk Management Planning in Scotland: Arrangements for 2012 -2016](#) (📄 1.29Mb): This document provides further detail of how and when Flood Risk Management Strategies and Local Flood Risk Management plans will be produced.

Information on the main sources of flooding in Aberdeenshire and Aberdeen City and the associated impacts identified through the National Flood Risk Assessment are identified. It also provides a summary of Potentially Vulnerable Areas within the area and how they are spread between the local authorities. These are shown in Map 3. More detailed information on the sources and impacts of floods, including past events and catchment characteristics will be developed as part of the Flood Risk Management Strategies for each area. For instance the National Flood Risk

Assessment Risk Grid shows a more detailed gradation of flood risk based on 1km squares. This can indicate potential issues at a strategic level, and is shown in Map 4.

The North East Local Plan area covers all of Aberdeenshire and Aberdeen City including part of the Cairngorms National Park. It has a total area of 6,780km². The National Flood Risk Assessment identified approximately 4,800 residential properties and 880 non-residential properties as at risk of flooding in this area. This equates to approximately 1 in 45 of all residential properties and 1 in 21 of all non-residential properties located within the area. The Weighted Annual Average Damages for properties and agricultural land at risk of flooding is estimated at £57.5million.

Conclusions

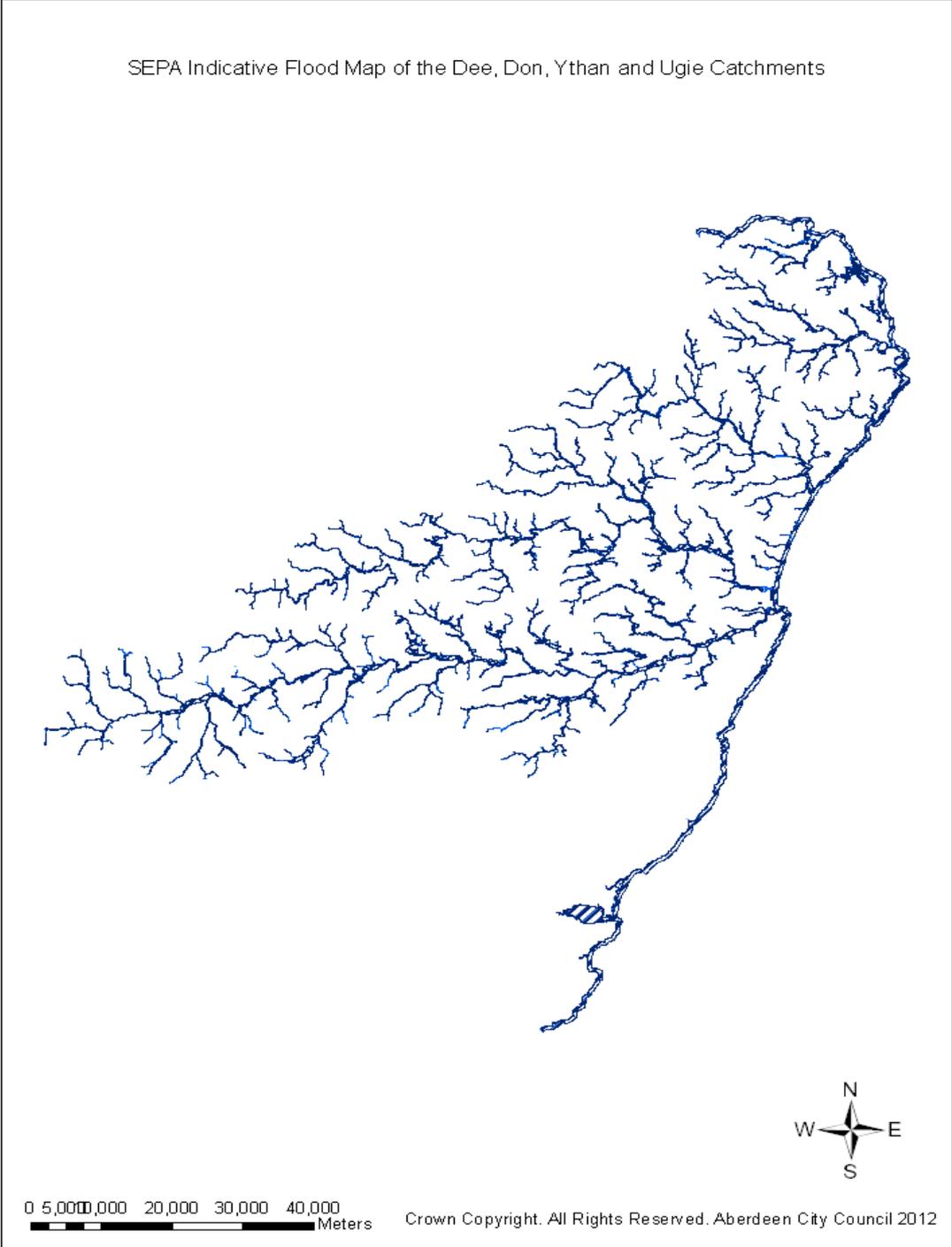
Clearly, some parts of the Strategic Development Plan Area are affected by flooding from a number of sources (fluvial, coastal, groundwater and surface water). The largest potential source of flood risk in Aberdeen and Aberdeenshire is from rivers, closely followed by surface water flooding.

Most growth in the Strategic Development Plan is directed towards the Strategic Growth Areas and at a strategic level, the maps below show that particular attention needs to be given to areas around Huntly, Inverurie-Kintore, Ellon, Aberdeen and Stonehaven. Within the Local Growth and Diversification Areas, the maps highlight risks at Banff and Macduff, Fraserburgh, Peterhead, Turriff and Mintlaw.

The Strategic Development Plan recognises the risks of flooding that already exist but that climate change is likely to increase these risks. The plan notes that avoiding flood risk is an important means of adapting to climate change and that taking account of flood risk is vital when local development plans identify sites for development.

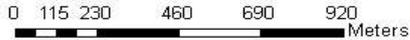
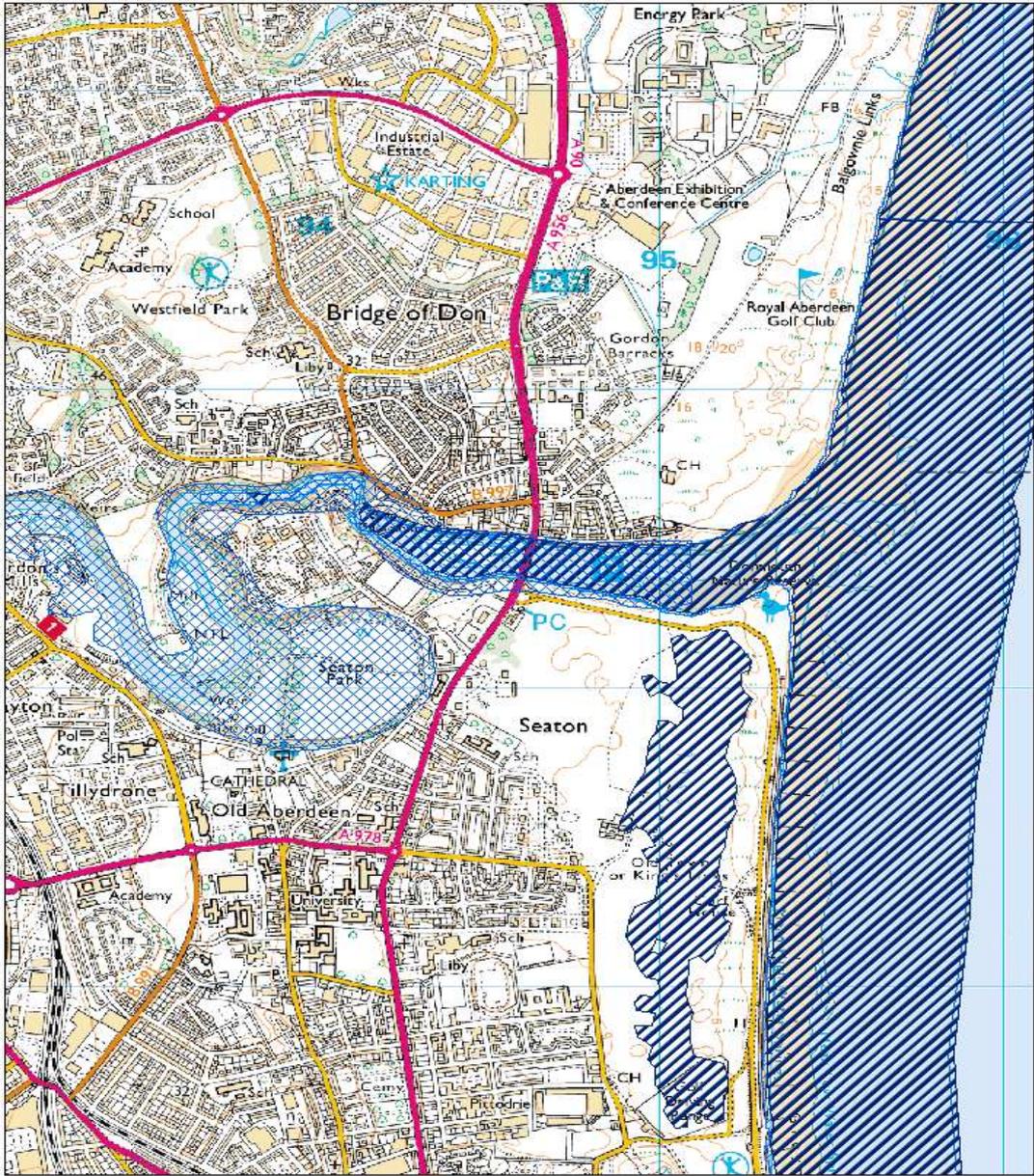
Flood risk will be avoided and managed in line with the Scottish Planning Policy risk framework and through local development plan policies and detailed allocations. In doing so, local development plans should avoid development on land which is at unacceptable risk of coastal or river flooding (as defined by the 'Indicative River and Coastal Flood Map for Scotland' or through detailed flood risk assessment), except in exceptional circumstances. This is one of the targets of the Strategic Development Plan. In doing so it should be recognised that this SFRA has considered flood risk across the region at a strategic level and should not be used to assess individual sites. More detailed assessments of specific areas and allocations will be undertaken at an early stage to inform next round of local development plans.

Map 1: SEPA Indicative Flood Map



Map 2: Detailed example of 1 in 200 year flood risk area map

SEPA Indicative 1:200 Fluvial and Coastal Flood Map of Donmouth



Crown Copyright. All Rights Reserved. Aberdeen City Council 2012

Map 3: Potentially Vulnerable Areas



©2012 Scottish Environment Protection Agency. Some features of this map are based on digital spatial data licensed from the Centre for Ecology and Hydrology, © CEH. Includes material based upon Ordnance Survey mapping with permission of H.M. Stationery Office, © Crown Copyright. Licence number 100016991.

For further information see the following link;

<http://map.sepa.org.uk/nfra/map.htm>

MAP 4: National Flood Risk Area Risk Grid



Key – Flood Risk



©2012 Scottish Environment Protection Agency. Some features of this map are based on digital spatial data licensed from the Centre for Ecology and Hydrology, © CEH. Includes material based upon Ordnance Survey mapping with permission of H.M. Stationery Office, © Crown Copyright. Licence number 100016991.

For further information see the following link;

<http://map.sepa.org.uk/nfra/map.htm>