16.4	**Take a holistic and integrated approach when developing flood management plans for the Dee catchment.**	**AC / ACC** / SEPA / SNH / DDSFB / SW / FCS / Land Owners / Land managers / Community Councils / Riparian Owners / NESFLAG
16.4.1	Establish a robust and inclusive participatory process to flood management planning: - Involve local communities with all agencies and stakeholders. - Encourage all agencies and stakeholders to sign a local partnership agreement to collaborate.	**AC / ACC**/ SEPA / SNH / DDSFB / SW / FCS / Land Owners / Land managers / Community Councils / Riparian Owners / NESFLAG
16.5	**Implement flood alleviation schemes for the Dee catchment.**	**AC / ACC** / DDSFB / **SNH** / SEPA / NESFLAG / **Land managers / CNPA / Land owners / Riparian owners**
16.5.1	Ensure flood alleviation schemes are planned, co-ordinated and carried out on a catchment scale basis, in order to achieve multi-purpose benefits.	**AC / ACC** / DDSFB / SNH / SEPA / NESFLAG / Land managers / Land owners / Riparian owners
16.5.2	Implement schemes to create upstream flood plain storage to reduce the intensity of peak flows.	**AC / ACC**
16.5.3	Programme schemes on a 3-5 year basis.	**AC / ACC**
16.5.4	Encourage catchment-wide use of 'Working Around Water'.	**AC**
16.5.5	Before construction, assess impacts upon the SAC qualifiers and on upstream and downstream areas to ensure that proposed works are appropriate.	**AC / ACC / SNH / CNPA**
16.5.6	Use, and promote the use of, appropriate engineering techniques.	**AC / ACC / Landowners / Land managers / Riparian owners**
16.5.7	Collect post flood event data (flood heights, trash lines etc) to evaluate the effect of schemes. Ensure this information is shared with all partners.	**AC / ACC** / NESFLAG
16.6	**Identify and consider grant-aided removal of existing schemes where they demonstrate little benefit and are detrimental to environmental quality (in order to allow more effective use of the natural flood plain).**	**SEPA / SGRPID** / DDSFB / AC / ACC / Private Owners
16.6.1	Identify detrimental systems and assess actual benefit.	**SEPA**
16.6.2	Seek SE and other funding to facilitate removal.	**SEPA**
16.7	**Establish a Flood Warning Scheme for the River Dee.**	**SEPA** / AC / ACC
16.7.1	Implement the proposed formal flood warning scheme.	**SEPA** / AC / ACC
16.7.2	Extend river gauge network to include additional tributaries.	**SEPA** / AC / ACC

Acronyms are listed in the centre of this Action Card

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flood alleviation

16 WATER RESOURCES

OBJECTIVE 16. Co-ordinate flood alleviation schemes in the catchment. Seek to prevent new flooding problems.

BACKGROUND

Demand for building land has resulted in extensive development on flood plains in the Dee catchment. Flood risk was not a material planning issue until 1995 but the risk of fluvial flooding in some of these areas is now considered to be unacceptably high. In recent years flooding has occurred more frequently in the Dee catchment, particularly in Aboyne and Tarland where many domestic and commercial properties have been damaged.

This increase in the frequency of floods is partly due to changes to the catchment's drainage patterns. A number of societal and industrial factors have contributed to these changes:

- More intense agricultural activity, increased field size, land drainage improvement and watercourse canalisation have increased the rate of surface water run-off.
- Modern housing and industrial development have increased the amount of water that is used and, consequently, the amount of water to be drained.
- The spread of urban development, with its associated hard surfaces, has altered natural land drainage, speeding up the rate at which water runs away.
- Development on flood plains has reduced the capacity of natural flood plain storage, exacerbating flooding problems further downstream.

As a consequence more water drains from the Dee catchment than in the past, and it does so more quickly, resulting in higher and more frequent peak flows. It is predicted that future climate change scenarios will further increase the risk of fluvial flooding in the catchment.

ISSUES

- Development on floodplains puts property at direct risk of flooding while reducing the storage capacity of the flood plain – thus increasing the risk of flooding elsewhere in the catchment
- Modern building construction, soft furnishings and sophisticated electrical equipment make property less resistant to flood damage.
- The Association of British Insurers no longer provides blanket insurance cover against flood risk. This means that many property owners in the catchment may not be able to get insurance cover against flood damage or may face high insurance premiums.
- The location of flood alleviation works is of the utmost importance; the most effective solution to a problem will not always be located at the site of the problem.
- Inappropriate engineering solutions can exacerbate flooding problems or cause them to be moved further downstream.
- Climate change models predict that flood events will become heavier and more frequent in the future. The design of flood prevention works must therefore be based not only on historical information but also take future predictions into account.
- Flood warning for the River Dee is provided by SEPA via 'Floodline', a dial in service available to everybody. At present, this service is based on generalised data from elsewhere in Scotland and is therefore not as accurate as it could be.

EXISTING / RECENT INITIATIVES

Development

- Aberdeenshire and Aberdeen City Local Plan policies prevent new development on active flood plains, except where it is essential.
- Drainage Impact Assessments (DIAs) are required for planning consent. A full DIA is required, except for:
  - Householder applications.
  - Developments of less than ten new dwelling houses, unless the development may affect a sensitive area.
  - Non-householder extensions under 100 m^2.
  - Changes of use not involving new buildings or hardsurfacing.
  - Where the submission forms part of a

WHO IS INVOLVED?

Aberdeenshire Council
Aberdeen City Council
Cairngorms National Park Authority
Community Councils
Dee District Salmon Fishery Board
Developers
Forestry Commission Scotland
Home Owners
Landowners
Land managers
North East Scotland Flood Liaison & Advice Group
Private Owners
Riparian Owners
Scottish Environment Protection Agency
Scottish Government Rural Payments & Inspections Directorate
Scottish Natural Heritage (SNH)
Scottish Water

Further copies can be downloaded at www.theriverdee.org. For further information contact the Dee Catchment Officer c/o The Macaulay Institute, Craigiebuckler, Aberdeen AB15 8QH Telephone: 01224 498200 email: info@theriverdee.org

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larger development for which a DIA has already been accepted and where the best available drainage options are expected to be demonstrated.

- New development proposals are required to include Susatinable Drainage Schemes (SuDS) to attenuate the discharge to watercourses.
- Regular maintenance of watercourses is carried out where appropriate to improve the efficiency of flow.

Flood risk

- Aberdeenshire Council (AC) and Aberdeen City Council (ACC) undertake flood studies to predict the likely flood outline.
- Aerial photographs are taken by Local Authorities during or just after flood events and trash line surveys are carried out after flood events to identify the places where watercourses overtop and to verify flood outline predictions.
- AC, ACC and the Scottish environment Protection Agency (SEPA) require developers to undertake Flood Risk Assessments where appropriate.
- North East Scotland Flood Liason and Advice Group (NESFLAG) - a partnership of the organisations who share responsibility for flooding issues in the North East – meets to share knowledge and understanding of flooding issues, to ensure a co-ordinated approach to the prevention of flooding and to share information and experience from a wide range of disciplines.

Flood alleviation

- AC's first flood alleviation demonstration site in the catchment is at the Mill of Gellan (Tarland).
- A flood prevention scheme is being developed for the Tarland catchment. The scheme will include the recreation of flood plain storage.
- The Controlled Activities regulations (CAR) will guide construction planning for flood alleviation schemes.

Flood warning

- The existing gauge network on the main river has been supplemented recently by additional gauges on the main tributaries to provide local warning for flood prone communities within the catchment.
- The gauging station network will allow downstream monitoring following the implementation of alleviation measures and could also help to reveal further opportunities to attenuate flood flows outwith urbanised or other sensitive areas.
- A formal flood warning scheme is being developed on the River Dee. Using the existing SEPA river gauges, several hours warning of rising river levels for communities further downstream will be provided thereby. The scheme will be implemented by SEPA in conjunction with AC and ACC.

ACTIONS REQUIRED

- Ensure Local Plans identify Flood Sensitive areas.
- Ensure planning policy and guidance are comprehensive and robust with respect to flooding issues; the avoidance principle of SPP7 should be promoted at all times.
- Use SuDS in order to reduce flood risk.
- Ensure a holistic and integrated approach to flood management planning in the catchment.
- Implement flood alleviation schemes.
- Assess the need for existing flood defence schemes and consider their removal.
- Implement the proposed Flood Warning scheme for the Dee catchment.

LEGISLATION

See Action Pack Annex for information sources

- Local Authorities are responsible for applying the Flood Prevention and Land Drainage Act (Scotland) 1997 throughout their areas. The Act applies only to non-agricultural ground.
- Flood Prevention Act 1961
- Water Environment and Water Services Act (2003)
- Town and County Planning (Scotland) Act 1997
- Scottish Planning Policy 7: Planning And Flooding
- Scottish Planning Policy 3: Planning for Housing
- EU Floods Directive

GUIDELINES AND INFORMATION

See Action Pack Annex for information sources

- DIA Guidance for Developers & Regulators
- SEPA website: information about flood issues and live flood warning information)
- SEPA flood line: 0845 988 1188.
- AC website: locally relevant flood information.
- Environment Agency website: information on flood risk.
- Reports to the Scottish Government:
  - Natural Flood Storage and Extreme Flood Events, 2005, Environment Research Group Report 2005/01
  - Scoping study into the cost of flooding using the August 2004 event as a case study. Environment Research Group Report 2005/02
- Planning our way out of flood disasters – flood management and river basin planning (WWF)
- Planning Advice Note 69: 'Planning and Building Standards Advice on Flooding'.
- Works to Watercourses and their Banks (Flooding Issues) Guidelines (AC)
- Living With Rivers ICE (2000)
- SEPA Policy 41: 'Development at risk of flooding - Advice and Consultation' www.sepa.org.uk/pdf/policies/41.pdf
- Working Around Water (AC/Angus Council)
- Indicative River and Coastal flooding map -www.sepa.org.uk/flooding/mapping/

BENEFITS TO PROTECTED SPECIES

The following specially protected species will benefit from the Actions:

- Freshwater pearl mussel *Margaritifera margaritifera*

REF.	ACTIONS	PARTNERS (lead partners in bold)
16.1	**Identify flood sensitive areas in Local Plans.**	**AC / ACC / CNPA / SEPA**
16.1.1	Encourage organisations to share flood data.	**AC / ACC / CNPA** / SEPA
16.1.2	Develop comprehensive flood event maps and photographic records.	**AC / ACC / CNPA** / SEPA
16.1.3	Establish return periods for mapped flood events.	**SEPA**
16.1.4	Encourage wider publication of flood risk maps.	**SEPA**
16.2	**Ensure robust and comprehensive planning policy and guidance with respect to flooding, reflecting national policy.**	**AC / ACC** / SEPA / FCS / SGRPID / **CNPA** / Developers
16.2.1	Ensure regular review of planning policy and guidance in response to climate change *(requires national guidance based on records and research).*	**AC / ACC** / SEPA
16.2.2	Develop comprehensive database of Flood Risk Assessments.	**AC / ACC / CNPA**
16.2.3	Ensure that site allocations for Development Plans are appraised for flood risk before adoption.	
16.2.4	Ensure through the application of planning control that only essential development takes place on the fluvial flood plain; the avoidance principle of SPP7 should be promoted at all times.	**AC / ACC** / SEPA
16.2.5	Ensure that essential developments are subject to detailed Flood Risk Assessments to assess their impact and that designs are consistent with local and national guidance, making provision for compensatory flood storage and do not lead to demands for flood prevention schemes.	**AC / ACC** / SEPA / Developers
16.2.6	Develop planning policy to encourage the use of flood resistant materials for housing where appropriate.	**AC / ACC / CNPA**
16.2.7	Increase public awareness of flooding issues in order to deter demand for inappropriate development.	**AC / ACC / CNPA** / SEPA
16.3	**Use SuDS in order to limit the effects of flooding.**	**AC / ACC / SEPA** / SW / Land managers / DDSFB / Community Councils / Home owners / Private owners
16.3.1	For new development require use of SuDS for 1) improved quality of discharge, 2) reduced impact on habitats and species and 3) attenuation of drainage flow rates to reduce spate flows in the receiving water courses.	**AC / ACC** / SEPA / SW
16.3.2	Publicise examples of SuDS best practice for controlling run off from land e.g. include occasional features in 'SEPA View'.	**SEPA** / AC / ACC
16.3.3	Raise public awareness of the importance of maintaining SuDS to function as intended (undertake a programme of talks to Community Councils etc, produce and circulate explanatory pamphlets, place articles in local media, encourage local industry to contribute funding).	**AC / ACC** / SEPA / SW / Land managers / DDSFB / Community Councils
16.3.4	Ensure legal agreements are made for long term maintenance.	**AC / ACC**

RELATED ACTION CARDS

4. Road and access track drainage
5. Surface water drainage
15. Effects of land management on river flow
19. Effects of changes in land use
20. Lowland wetlands
21. Upland wetlands
22. Flood plains