## **ABERDEENSHIRE COUNCIL**

THE FLOOD PREVENTION & LAND DRAINAGE (SCOTLAND) ACT 1997

## **FOURTH BIENNIAL REPORT**

**NOVEMBER 2003** 

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## ABERDEENSHIRE COUNCIL

### FOURTH BIENNIAL REPORT - NOVEMBER 2003

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#### 1. Reason for Report

1.1 This report specifies the measures which Aberdeenshire Council consider they require to take to prevent or mitigate flooding on non-agricultural land within Aberdeenshire. This report is published as required by the Flood Prevention & Land Drainage (Scotland) Act 1997.

#### 1.2 This report details:

- (1) all the flood events which have occurred since the publication of the Third Biennial Report:
- (2) all the measures which Aberdeenshire Council have taken to prevent or mitigate flooding since publication of the Third Biennial Report;
- (3) all the further measures which Aberdeenshire Council propose to take to prevent or mitigate flooding.
- 1.3 This report is based on a review of all the information which is available to Aberdeenshire Council at the present time and proposes actions considered necessary arising from that review. It is intended primarily to inform Aberdeenshire Residents.

# 2. Flood Events in Aberdeenshire between November 2001 and October 2003

- 2.1 Local flood events occurred in Aberdeenshire during the period November 2001 to September 2002 as listed below:
  - the B977 Kintore to Hatton of Fintray road became impassable for a short time due to flooding following sudden heavy rain in July 2002;
  - (2) the recently completed works at Carron Springs, Stonehaven were badly affected by scour following sudden heavy rain and a flash flood in July 2002;
  - (3) the housing development at Strabathie, Blackdog was affected by flooding following heavy rain in August 2002.
- 2.2 Major flood events occurred in Aberdeenshire during October and November 2002. These 2 months were preceded by generally wet weather resulting in high ground moisture contents throughout Aberdeenshire. Two periods of intense prolonged rainfall in October and November caused widespread major flooding during which the highest river levels ever recorded were observed on the River Don on two separate occasions, on the River Ugie and on the River Dee. Thereafter, ground moisture contents were so high that even modest rainfall caused rapid and dangerously high river levels. This remained the situation for some months after November. Flooding across the mainly agricultural river flood plains was widespread.
- 2.3 Flooding of the B974 Banchory to Fettercairn Road occurred in October 2002 at Strachan following a serious breach in the flood banks alongside the River Feugh. The road was closed on several occasions subsequently until agreement was eventually reached with the land owners resulting in the breach being repaired.
- 2.4 Serious erosion of the banks of the River Don at Newe, Strathdon occurred suddenly in November 2002 due to prolonged high river levels and high flow velocities. Five domestic properties were in danger of being flooded thereby. Septic tanks were in immediate danger of collapse into the river. Emergency works were carried out by Aberdeenshire Council to restore the river bank.
- 2.5 The extent of flooding on the River Dee and the River Don was photographed by helicopter on 22<sup>nd</sup> November by Aberdeenshire Council. The resulting photographs were later digitised by SEPA and plotted to produce flood plain maps. Various estimates of the statistical return period of this event have been published. Until a definitive figure is agreed, it will

not be possible to predict with confidence the 100 year or 200 year return period flood plain boundary from this mapping.

- 2.6 Throughout the Spring, Summer and Autumn of 2003, the weather in North East Scotland was exceptionally dry and there have been no flood events during that period.
- 2.7 Incidents of flooding reported to Aberdeenshire Council were investigated and assessed. Those incidents considered to come within the scope of the Flood Prevention & Land Drainage (Scotland) Act 1997 are recorded in Table A below. The right hand column in the table headed "Responsibility" is an assessment of where lies the responsibility for whatever action may be deemed appropriate to reduce the likelihood of further flooding.

Table	A: Major Floo	d Events in Ab	erdeenshire : Oct	ober & Novem	ber 2002
Location	Incident	Details	Watercourse	Catchment	Responsibilty
Whitehills	Domestic Property	Build-up of grou into house throu Tarmac outside open' at the sam	house 'burst	Deveron	Riparian Owners / Roads Authority / Flood Prevention
	Domestic Properties on	agricultural land	ooded. Sand bags	Deveron	Riparian Owners A Flood Prevention Authority
King Edward, Banff	,	Thunderstorm of enter house up to		Deveron	Not determined
Huntly	Caravan Park	L.	Meadow Burn / River Deveron	Deveron	Flood Prevention Authority
Bridge End Collithie, Huntly	Flooding of Domestic Property	Burn backed up due to restricted culvert and flooded 2 adjacent properties through air vents.	Ness Bogie	Deveron	Not determined
Turriff	Flooding of the Haughs	Football ground and changing rooms flooded	Water of Turriff	Deveron	Flood Prevention Authority
Huntly	Flooding of Domestic Property	Old buildings next to River Bogie	River Bogie	Deveron	Not determined
Bleachfield St. Huntly	Flooding of Domestic Property	Floodwater from River Bogey caused flooding to land and house	River Bogie	Deveron	Riparian Owners All Flood Prevention Authority
Gamrie, Banff	Flooding of Domestic Property	Flooding from burn overtopping onto road and into house.	Burn of Draidland	Deveron	Riparian Owners Flood Prevention Authority

Location	Incident	Details	Watercourse	Catchment	Responsibilty
	Flooding of Commercial Property	Burn backed up due to restricted culvert and flooded industrial property.		Ugie	Not determined
Howe of Buchan, A90, Peterhead	Flooding of Domestic Property			Ugie	Roads Authority / Flood Prevention Authority / Scottish Exec
Main St., Cruden Bay	Various Floods	Back Burn overtopped. Deployment of sand-bags prevented flooding of several domestic properties	Back Burn	Ugie	Riparian Owners / Flood Prevention Authority
Peterhead, Flushing Straight	Flooding of Domestic Property	Burn backed up due to restricted culvert running through field and flooded property through air vents.	Drainage	Ugie	Riparian Owners / Roads Authority / Flood Prevention Authority
Milford, Inverugie	Flooding of Domestic Property		from watercourse to road upstream to undersized	Ugie	Riparian Owners / Roads Authority / Flood Prevention Authority
Peterhead	Flooding of Domestic Property	Domestic prope Lendrum Terra surface water fr Trunk Road		Ugie	Flood Prevention Authority / Riparian Owners / Scottish Exec
Rosehearty	Flooding of Murison Drive	Murison drive fl protected from sand-bags	ooded. Properties flooding by	Ugie	Flood Prevention Authority
Peterhead	Flooding of Domestic Property	· · · · · · · · · · · · · · · · · · ·		Ugie	Flood Prevention Authority
Woodhead Road, Methlick	Flooding of Domestic Property	7 properties flooded by River Ythan		Ythan & Coastal	Flood Prevention Authority
Lady Leys, Oldmeldrum	Flooding of Domestic Property	Overtopping of local burn and run-off from road caused flooding of two domestic properties.		Ythan & Coastal	Riparian Owners / Flood Prevention Authority
Auchterless	Flooding of Domestic Property	Flooding from blocked culvert in private land - Balqholly.		Ythan & Coastal	Riparian Owners / Flood Prevention Authority
Strathdon	Flooding of telephone exchange	Run-off from fie Exchange, Gle	eld flooding BT nkindie	Don	Riparian Owners / Flood Prevention Authority

Location	Incident	Details	Watercourse	Catchment	Responsibilty
Old Rayne		Run-off from field causing flooding D to garden and solum.		Don	Riparian Owners / Flood Prevention Authority
Monymusk		Power isolated to house by Fire Do Brigade		Don	Not determined
Sauchen	Flooding of Domestic Property	Garage Area, N	o further details	Don	Not Determined
Glenwood, Midmar	Flooding of Domestic Property	Flooding of Don further details	nestic Property. No	Don	Not determined
Keithhall Road Inverurie	Flood barrier damaged	Flood barrier on the Don breached flooding domestic property.	River Don	Don	Flood Prevention Authority
Kingsfield Road, Kintore	Various Floods			Don	Flood Prevention Authority / Riparian Owners
Alford	Flooding of Heritage Centre	Knowehead Burn overtopped behind Frazer Place and flooded Mart Road Heritage Centre.	Knowehead Burn	Don	Flood Prevention Authority / Scottish Water
Insch	Flooding of nursing home.	Drumdarroch nursing home flooded and residents evacuated. Sandbags supplied. Domestic property on Commerce Street flooded.	Valentine Burn	Don	Riparian Owners / Flood Prevention Authority
Inverurie	Flooding of Commercial Property	Strath Burn overtopped and flooded plumbers yard and buildings.	Strath Burn	Don	Flood Prevention Authority
Green Meadows, Sauchen	Flooding of Domestic Property	Garage flooded. Burn backing up at culvert inlet.	Drainage system outfalling to Ton Burn	Don	Not determined
Blackburn	Flooding of Public Road	Flooding from road at rear of MTM.		Don	Roads Authority / Flood Prevention Authority

Location	Incident	Details	Watercourse	Catchment	Responsibilty
Aboyne	Station Square/Low Road	Tarland Burn overtopped and flooded commercial & domestic properties.(1 family evacuated)	Tarland Burn	Dee	Flood Prevention Authority
Maryculter, Aberdeen	Commercial Property	Overtopping of Crynoch Burn and run-off from local fields and roads caused flooding to staff accomodation and cellar of Old Mill Inn	Crynoch Burn	Dee	Riparian Owners / Flood Prevention Authority
Tarland	Flooding of Burnside Road	Tarland Burn overtopped and flooded domestic properties.	Tarland Burn	Dee	Flood Prevention Authority
Brathens	Flooding of public road	Combination of overtopping Burn of Canny and surface water runoff from adjacent fields closed public road.	Water of Canny	Dee	Riparian Owners in Flood Prevention Authority
Dess, Lumphanan	Flooding of Public Road/Failure of flood banks	Over topping of Dess Burn scoured out public road and burst flood banks. Resultant flooding has covered an area of approximately 221 hectares	Dess Burn	Dee	Roads Authority / Flood prevention Authority
Keithmuir Gardens, Drumoak	Flooding of Domestic Property	Run off from a flooded garder		Dee	Riparian Owners Flood Prevention Authority
Sunnyside Drive, Drumoak	Flooding of Domestic Property		adjacent land / ng childrens play ens.	Dee	Riparian Owners Flood Prevention Authority

Location	Incident	Details	Watercourse	Catchment	Responsibilty
MaryCulter, Aberdeen	Flooding of Caravan Park	Overtopping of Crynoch Burn and Run-off from local fields and roads caused widespread flooding of MaryCulter Caravan Park to a depth of over 2 metres. Over 70 static caravans and service buildings flooded.	Crynoch Burn	Dee	Riparian Owners / Flood Prevention Authority
inchferry, Maryculter, Aberdeen	Flooding of Domestic Property	Floodwater from River Dee caused flooding to land around lnchferry. Road blocked for several days with no access for Emergency Vehicles		Dee	Riparian Owners / Flood Prevention Authority
Stonehaven	Flooding of public road	River Carron over topped banks and closed Low- wood road. Pedestrian bridge closed. Dwellings protected by sand-bags	Carron Water	Kincardine Streams	Flood Prevention Authority

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Location	Incident	Details	Watercourse	Catchment	Responsibilty
Burnside Road, Fettercairn	Flooding of Domestic Property	Overtopping of Cauldcots Burn caused flooding to property. Water diverted by sandbags	Burn of Cauldcots	North Esk	Roads Authority / Flood Prevention Authority
Fettercairn	Flooding of Village square	Arrachie Burn overtopped and flooded commercial & domestic properties.(4 families evacuated)	Arrachie Burn	North Esk	Riparian Owners / Flood Prevention Authority
Marykirk	Flooding of Domestic Property	Mary Mill Burn overtopped. Two domestic properties protected from flooding by sand-bags	Marymill Burn	North Esk	Riparian Owners / Flood Prevention Authority

3. Action Taken by Aberdeenshire Council under the Flood Prevention & Land Drainage (Scotland) Act 1997 since November 2001

#### 3.1 Assessment of Watercourses

The systematic inspection and assessment of watercourses has continued. In summary, the overall progress to date with the first inspection and assessment is approximately 70 % complete. Main river channels and principal tributaries are now 100% complete. Locations and features which were assessed as being to some degree likely to flood have been subject to regular follow-up inspection since.

#### 3.2 Discussion with Regulatory Bodies

- 3.2.1 The North East Flood Appraisal Group is now well established as the forum for discussion and resolution of issues relating to the impact of development on flooding and vice versa. A first "Focus Group Meeting" was held in January 2003 which was well attended by a wide cross section from the community, developers, universities, central government, government agencies and local government. A project to develop an integrated GIS based system to share flood related information is underway. A dedicated web-site is currently under development, to be hosted by Aberdeenshire Council.
- 3.2.2 In addition to discussion within the Flood Appraisal Group, a much closer working relationship has been developed between Development Control Officers and the Flood Prevention Team within the Council and Officers of SEPA and Scottish Water, to mutual advantage.
- 3.2.3 Regular liaison meetings have been established with the fishing control bodies in Aberdeenshire.
- 3.2.4 Discussion with Officers of neighbouring councils will continue through occasional meetings to exchange information and share best practice.
- 3.2.5 The River Dee catchment has been designated as a cSAC (Candidate Special Area of Conservation) and, in order to minimise the work required in carrying out appropriate impact assessments for all engineering works which may affect watercourses within the catchment, Aberdeenshire Council has commissioned a generic Ecological Impact Assessment and Code of Good Practice in consultation with SNH, SEPA and the Salmon Fishery Boards. This document is at final draft stage and under trial.

#### 3.3 Flood Warning & River Gauging

- 3.3.1 Good progress has been made toward establishing a formal flood warning scheme in Aberdeenshire, based on the existing river level gauging stations which SEPA maintain. A feasibility study showed the warning scheme to be viable for the River Dee and the River Don. A proposal to implement a scheme has been submitted to the SEPA Board.
- 3.3.2 The existing SEPA gauges are located on the main river channels and some principal tributaries. They have been supplemented by four telemetric river level gauges, four telemetric rainfall gauges and 20 stage-boards on ungauged tributaries where flooding has occurred and affected property in the past. These supplementary gauges will provide earlier warning of flooding to communities with a significant flooding risk and have been funded by Aberdeenshire Council.

#### 3.4 The COSLA Flood Task Group

Aberdeenshire Council assisted in producing the COSLA (Convention of Scottish Local Authorities) Flood Task Group Report by facilitating and leading 1 of the 3 working groups involved. The report was accepted by COSLA and published in March 2003. It is a comprehensive review of legislation, funding arrangements and practice concerning flood prevention in Scotland and makes many recommendations for improvement.

#### 3.5 The Aberdeenshire Flood Action Network

Following the extensive flood events of October and November 2002, there has been an increasing acceptance amongst the community that the first responsibility for flood protection lies with the property owners themselves. In response, Aberdeenshire Council has developed a proposal to establish local community groups willing to act to protect their community during flood events. This so called "Flood Action Network" will be modelled on the well established and familiar Neighbourhood Watch schemes. Although still in its infancy, it is anticipated that all communities who have been affected by flooding in the past will join in the network. By doing so, much more effective protection against flooding will be realised.

#### 3.6 The Dee Catchment Management Plan

Many of the opportunities to develop flood alleviation measures on river systems also provide opportunities for improving natural habitat, water quality and bio-diversity, and vice versa. Aberdeenshire Council readily accept the need to work in partnership with agencies such as SEPA, SNH, Scottish

Water and the Salmon Fishery Boards and with land owners in order to progress flood alleviation schemes. Aberdeenshire Council are therefore assisting in the production of a Catchment Management Plan for the River Dee by leading 1 of the 3 working groups involved. It is anticipated that the holistic approach taken to catchment management will facilitate future schemes to, for example, create areas of flood plain storage and remove heavily canalised sections, both of which will reduce the peak flood discharge downstream, thereby reducing flood risk.

#### 3.7 Works of Maintenance by Aberdeenshire Council

- 3.7.1 Works of Maintenance have been carried out in many locations where to do so would significantly reduce the likelihood of flooding. The demand for such works inevitably exceeds the available funding. A simple system of assessing schemes by a point score method was devised some 3 years ago to establish relative priorities. This system takes account of flood frequency and social factors. It has been reviewed recently and is considered reasonable and workable.
- 3.7.2 Whenever possible, "soft engineering" methods have been utilised in Works of Maintenance. Hydraulic and climatic conditions often control the methods which may be adopted. However, Aberdeenshire Council proceeds generally on the basis of a presumption for soft engineering methods unless conditions dictate otherwise.
- 3.7.3 Works of Maintenance have been carried out at the locations listed in Table B below.

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Table B : Works of	Maintenance : November 2001 to	October 200	3
Location	Brief Description	Cost	Year
Tarland Burn, Tarland	Training wall & anti-silt riffles	£17k	2002
Parkhill, Kemnay	Improved drainage system	£14k	2002
Carron Water, Stonehaven	New spillway & flood channel	£48k	2002
Tullynessie School	Improved drainage system	£15k	2002
Tarland Burn, Aboyne	Training wall & non-return	£23k	2002
	valves on drain outlets		
Middlemuir Road, Inverurie	Improvements to river channel	£4k	2002
Bervie Water, Inverbervie	Flood bank and training wall	£26k	2002
Howe of Afforsk,	Improved drainage system	£3k	2002
Gardenstown			
Glaslaw Burn, Stonehaven	Improvements to river channel	£1k	2002
Fearder Burn, Inver	Improvements to river channel	£1k	2002
Carron Water, Stonehaven	Remedial work to storm damage	£28k	2003
Keithhall Road, Inverurie	Reinstate breached flood bank	£15k	2003

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#### 3.8 Flood Studies

It is often necessary to carry out a flood study in order to obtain a comprehensive understanding where the mechanism of flooding is complex. Several consultants have been commissioned from time to time for specific studies. The hydraulic models generated have been used to quantify the flood risk and to test possible solutions in order to identify the optimum solution. Flood studies have been carried out at the following locations:

- (1) The River Don / River Urie Confluence, Inverurie
- (2) The Tarland Catchment Flood Alleviation
- (3) Fettercairn Flood Alleviation
- (4) Alford Drainage System
- (5) Reidhaven Street Flood Alleviation, Whitehills, Banff
- (6) Kingsfield Road Flood Alleviation, Kintore
- (7) The River Dee, Maryculter Bridge to Victoria Bridge (jointly with Aberdeen City Council)

Where appropriate, the studies will generate cost benefit analyses which will be used to justify proposals for Flood Prevention Schemes (see para 4.4 below).

# 4. Further Action Proposed by Aberdeenshire Council under the Flood Prevention & Land Drainage (Scotland) Act 1997 and the Flood Prevention Act 1961

#### 4.1 Further Works of Maintenance

It is recognised that regular maintenance can contribute significantly to the prevention or mitigation of flooding. Aberdeenshire Council therefore propose to carry out further Works of Maintenance under the Flood Prevention & land Drainage (Scotland) Act 1997 to reduce the likelihood of flooding where a significant risk has been assessed. Such works will range in size from clearing debris which blocks the watercourse to engineering works to provide flood protection or to improve hydraulic efficiency.

#### 4.2 Flood Studies

Aberdeenshire Council propose to commission flood studies whenever necessary to better understand the mechanism of flooding.

#### 4.3 Inspection and Assessment of Watercourses

Inspection and assessment of watercourses will continue as required by the Flood Prevention & Land Drainage (Scotland) Act 1997.

#### 4.4 Flood Prevention Schemes under the 1961 Act

The serious localised flooding of the Tarland Burn in April 2000 and the more severe flooding in October and November 2002 require works which are well beyond the scope of Works of Maintenance. Authorisation will be sought for Flood Prevention Schemes under the Flood Prevention Act 1961 for such works. Grant assistance is available from the Scottish Executive, currently for up to 50% of the estimated cost of the works. The remaining cost will have to be funded by Aberdeenshire Council. Preliminary discussions have been held with the Scottish Executive and a detailed bid for funding is being prepared. Once agreed, authorisation for the various schemes under the 1961 Act will be sought.

# 4.5 Flood Prevention Works on the B974 Banchory to Fetercairn Road at Strachan

The flood banks alongside the River Feugh at Strachan are constructed generally of local sands and gravels and are riddled with rabbit holes. They were breached in October 2002 when the River Feugh was in spate. (Para 2.3 refers). Further collapse in the future is only a matter of time. The disruption to

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commercial and social activity is high because of the length of the diversion route necessary when the road is flooded and because the road has to be closed without notice. To avoid a recurrence, Aberdeenshire Council propose to carry out works to raise the road level and install flood relief structures underneath the road. Unfortunately, this work does not qualify as a Flood Prevention Scheme under the 1961 Act because housing is not affected when flooding occurs. The works will therefore be funded entirely by the Council.

#### 4.6 Liaison with Neighbouring Authorities

The need to ensure that neighbouring authorities are aware of significant development proposals is recognised. The North East Scotland Flood Appraisal Group serves to allow data and advice to be shared. Flood studies, Works of Maintenance and Flood Prevention Schemes are being and will continue to be jointly promoted.

#### 4.7 Public Awareness

- 4.7.1 Increased awareness of flood records held by different agencies would be of benefit. The North East Scotland Flood Appraisal Group web site and the integrated information sharing system currently under development will greatly assist awareness of and facilitate access to flood records. (Para 3.2.1 refers).
- 4.7.2 The severe weather of Autumn 2002 did much to raise public awareness of flooding. However, there is still much to be done to ensure that members of the public are fully aware of all the issues relating to flooding and its causes.

#### 5. Funding

- 5.1 The funding allocated to Flood Prevention in Aberdeenshire Council's Revenue Budget has allowed reasonable progress to be made in the inspection and assessment of watercourses and for some Works of Maintenance to be carried out. An increased allocation was made available in 2001/2002 to develop a formal flood warning scheme and in 2002/2003. However, it is clear that the need for further Works of Maintenance will be identified as the assessment of watercourses continues. It is also clear that, by its very nature, maintenance work is in some cases repetitive. It is evident therefore that the current level of funding must be at least maintained, at least for the next 5 to 10 years.
- 5.2 The financial consequences of flood damage have traditionally been met by property insurance. The Association of British Insurers have made it clear that they will not continue to provide blanket cover against flooding as a matter of course. Insurance premiums can be expected to increase significantly for flood-prone property and may in some cases be refused. It would appear that they take into account the degree to which councils are pro-active in flood prevention when assessing insurance risk. It is to the benefit of Aberdeenshire residents therefore to maintain a reasonable level of funding for flood prevention.
- 5.3 Where appropriate, Aberdeenshire Council will seek to recover reasonable costs from parties who have responsibility and whose inactivity may have required the Council to carry out works to prevent flooding of nonagricultural land.

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#### 6. Contact Point

Formal enquiries arising from this report should be addressed to Ken Morrison, Head of Roads, Cape House, 21 Seafield Street, Banff, AB45 1ED or e-mail <ken.morrison@aberdeenshire.gov.uk> or via the Councils web site.

Informal enquiries should be made to Malcolm Taberner, Structures Manager, tel. 01569 768474 or e-mail <malcolm.taberner@aberdeenshire.gov.uk> or via the Councils web site.

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Signed.	
lain Gabriel B.Sc, C.Eng, MICE, MIHT Director of Transportation & Infrastructure Aberdeenshire Council	
	MHT/S/1/175 26 <sup>th</sup> November, 2003