

ABERDEENSHIRE COUNCIL

THE FLOOD PREVENTION AND LAND DRAINAGE (SCOTLAND) ACT 1997

SECOND BIENNIAL REPORT

NOVEMBER 1999

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- 3.3.2 SEPA have a responsibility to set in place flood warning schemes. However, they have confirmed that lack of funding prevents progress towards implementing flood warning schemes in Aberdeenshire. The lack of flood warning schemes is seen as being disadvantageous.
- 3.3.3 Gauging station records for all catchments are held by SEPA and will be consulted in conjunction with records from other sources to ascertain the severity of past flooding in each catchment.
- 3.3.4 Inspection of watercourses will be undertaken by catchment working across administrative boundaries as necessary, giving priority to the catchments which appear to have the greatest potential for flood damage.

4. Flood Events in Aberdeenshire between November 1997 and October 1999

4.1 Rainfall Records

- 4.1.1 Monthly rainfall intensity readings from gauging stations in the former North East River Purification Board area are tabulated in Table 1 below for the period 1996 - 1999. The assistance of SEPA North Region's East Division Office is gratefully acknowledged in re-producing these figures. Strictly speaking, they do not cover the whole of the Aberdeenshire Area. They also include some of the Moray Area. However, they will suffice for the purposes of this Biennial Report.

Table 1 : Monthly Rainfall Intensity (mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	69	114	59	63	67	32	66	64	32	139	110	84
1997	27	126	70	35	115	113	84	46	45	35	168	99
1998	83	43	86	146	48	82	132	67	97	142	114	80
1999	85	81	57	83	66	92	54	36	124	83	-	-

- 4.1.2 Seasonal variations are illustrated in Table 2 below by means of overall mean, monthly peaks and highest rolling mean over a two month or three month period derived for the periods January to April, May to August and September to December in each of 1996, 1997, 1998 and 1999. These periods were chosen somewhat arbitrarily to represent seasons in North East Scotland and has no scientific basis. Experience shows that spring is usually very short and often indistinguishable from Summer.

Table 2 : Seasonal Variations in Rainfall Intensity (mm)

Period	1996	1997	1998	1999
January to April :				
Seasonal Mean	76	65	90	77
Monthly Peak	114 (Feb)	126 (Feb)	146 (Apr)	85 (Jan)
Highest Rolling Mean Over 2 Months	92 (Jan-Feb)	98 (Feb-Mar)	116 (Mar-Apr)	83 (Jan-Feb)
Highest Rolling Mean Over 3 Months	81 (Jan-Mar)	79 (Dec-Feb)	93 (Mar-May)	82 (Dec-Feb)
May to August :				
Seasonal Mean	57	90	82	62
Monthly Peak	67 (May)	115 (May)	132 (July)	92 (June)
Highest Rolling Mean Over 2 Months	65 (Jul-Aug)	114 (May-Jun)	107 (Jun-Jul)	79 (May-Jun)
Highest Rolling Mean Over 3 Months	65 (Apr-Jun) & (Jun-Aug)	104 (May-Dec)	99 (Jul-Sep)	80 (Apr-Jun)
September to December :				
Seasonal Mean	91	87	108	103
Monthly Peak	139 (Oct)	168 (Nov)	142 (Oct)	124 (Sep)
Highest Rolling Mean Over 2 Months	125 (Oct-Nov)	134 (Nov-Dec)	128 (Oct-Nov)	-
Highest Rolling Mean Over 3 Months	111 (Oct-Dec)	117 (Nov-Jan)	118 (Sep-Nov)	-

4.1.3 The broad conclusions drawn from this data are as follows:

- (1) total annual rainfall in 1998 was noticeably higher with a high seasonal mean both in winter and summer;
- (2) the year 1998 was preceded by noticeably higher rainfall in summer and autumn of 1997;
- (3) the period summer 1997 to autumn 1998 was noticeably wet.

These conclusions accord with everyday experience and recollection.

4.2 Major Flood Events in Aberdeenshire

There were no major flood events in Aberdeenshire during the period November 1997 to October 1999. During 1998, which as noted in paragraph 4.1.3 was a wet year, most rivers in Aberdeenshire rose to be close to capacity on several occasions. No flood plain mapping has been carried out therefore.

4.3 Local Flood Events in Aberdeenshire

Due to a combination generally of high intensity rainfall over a short period and the inability of the drainage system to cope, several local flood events occurred during the period November 1997 to October 1999 as follows:

4.3.1 Flooding at Hallmoss, St Combs

4.3.1.1 Flooding at Hallmoss, St Combs occurred on 6 January 1998 following a period of heavy rainfall on 5th and 6th January. Run off from adjacent fields caused the Charleston to Bankhead road to be impassable from 6th to 26th January.

4.3.1.2 Inadequate drainage capacity resulted in a considerable depth of standing water on an only access to farm and domestic property. The water was too deep to allow access to the drains and emergency pumps were mobilised to remove the floodwater and to re-establish access.

4.3.2 Flooding at Bronie Burn, Pitmedden

4.3.2.1 Flooding at Bothwell Terrace, Pitmedden occurred as a result of the Bronie Burn bursting its west bank. Flooding occurred in September 1995 and again in April 1998.

4.3.2.2 At this location, the Bronie Burn has a rectangular cross section with a flat hydraulic gradient. The west bank is some 0.5m lower than the east bank. Sediment deposits have become established with weed growth and trees overhang the channel.

4.3.2.3 Local residents report that, during flooding, sewage seeps from the manholes of a combined sewer which runs from the B999, behind the Bowling Green and Tennis Court and then along Bothwell Terrace to the sewage treatment works. An area of

new housing development has recently been connected into this sewer.

4.3.2.4 A new 300 mm diameter surface water drain discharges into Bronie Burn at this location.

4.3.2.5 Following an inspection of the watercourse and an appraisal of plans of the area, both pre and post development, it was concluded that :

- (1) flooding occurred prior to the new 300 mm diameter drain discharge, and, since the amount of discharge is small compared with the flood discharge of Bronie Burn, no attenuation measures need be taken at this time ;
- (2) seepage from the combined sewer occurs because the sewer is surcharged under flood conditions, probably by surface water run off ;
- (3) Bothwell Terrace floods because of the flat hydraulic gradient of the channel and restrictions in the channel.

4.3.2.6 Funding was allocated in the 1999/2000 Flood Prevention budget for clearing out Bronie Burn.

4.3.3 Flooding at Farrochie Burn, Stonehaven

4.3.3.1 Flooding at three domestic properties at Arduthie Gardens, Stonehaven and at the adjacent recreation grounds occurred in September and in October 1998 as a result of the Farrochie Burn bursting its banks after heavy rainfall.

4.3.3.2 The Farrochie Burn has a reasonably regular channel cross section at this location but with a flat hydraulic gradient. For much of its length, it is seriously affected by sediment deposits and weed growth.

4.3.3.3 Following an inspection, it was concluded that the channel capacity had been significantly reduced by sediment and weed growth and required cleaning out.

4.3.3.4 This work was carried out in 1999.

4.3.4 Flooding at 48 Main Street, Longside

4.3.4.1 Flooding occurred at No 48 Main Street, Longside on 13th and 14th November 1998 which seriously affected the house and garden of No 48 and threatened to flood several adjacent properties. An unnamed watercourse, generally in open ditch but piped in places, drains surface water into a watercourse known as "the Cobble Stank" which drains directly into the River Ugie. This watercourse system has a history of flooding going back to 1986 but with nothing like the consequences of the flooding which occurred in November 1998.

4.3.4.2 Immediate action was taken by Aberdeenshire Council to erect sandbag barriers as protection to No 48 against further flood damage. This protection had to be limited however to avoid the risk of consequential flooding at other properties.

4.3.4.3 Following investigation of the watercourse system and archive records, it was concluded that :

- (1) the ditch downstream of Main Street had been piped by various private parties in the past who could no longer be held accountable ;
- (2) much of this piping was undersized or poorly constructed resulting in blockages with no practical access points for clearing out ;
- (3) the most cost effective solution was to replace the pipe downstream of Main Street with a larger pipe with manhole provision.

4.3.4.4 Installation of this replacement pipe was undertaken early in 1999.

4.3.5 Flooding at Main Street Car Park, Cruden Bay

4.3.5.1 Flooding of the public car park in Main Street, Cruden Bay occurred in December 1998 when the Old Water Moo Burn burst it's banks and flooded across low lying ground. The domestic properties at Nos 36 and 38 Main Street were affected (but not damaged) by flood water.

4.3.5.2 Immediate action was taken by Aberdeenshire Council to open up the surface water drainage manhole in the car park which rapidly reduced the flood water level.

4.3.5.3 Following investigation of the watercourse, it was concluded that :

- (1) sediment in the burn does not appear to be the main cause of flooding. The soft nature of the surrounding soil would mitigate against any effort to clean out the burn by quickly silting up again. This would appear to be its natural state ;
- (2) overhanging vegetation constricts the flow and traps debris and should be controlled ;
- (3) the private bridge downstream of the previous flooding has insufficient clearance beneath it and must constrict the flow under spate conditions. Further assessment work would be required to quantify the effect ;
- (4) the south bank upstream of this private bridge would benefit from being raised;
- (5) the surface water drainage system in Main Street Car Park would benefit from being improved provided always that it discharged into the Water of Cruden.

4.3.5.4 An improvement to the drainage system in Main Street Car Park was carried out under road maintenance.

4.3.6 Flooding at Crooked Lane, Turriff

4.3.6.1 Flooding occurred at No 6 Crooked Lane, Turriff on 22 July 1999 which seriously affected the house following a short but very intense thunderstorm.

4.3.6.2 Following investigation, it was confirmed that the gullies in Crooked Lane had been cleared out earlier in the year and were not choked. It was concluded that the sewer had surcharged as a result of the intensity of rainfall during the storm giving rise to local flooding.

4.3.6.3 Discussion with NOSWA revealed that they have no plans to upgrade the drainage system in Turriff. Further consideration and discussion will be necessary with NOSWA to resolve this problem.

4.3.7 Flooding at Bonneyton Road, Pitmedden

4.3.7.1 Flooding of domestic property occurred at Bonnybrook, Bonneyton Road, Pitmedden in April 1998 as a result of an adjacent burn bursting its banks. Flooding of the house was avoided by dismantling a section of boundary wall to release flood water. This burn outfalls into the Bronie Burn.

4.3.7.2 The burn was in spate again on 20 September 1999 and was within 75mm of bursting its banks at Bonnybrook once again.

4.3.7.3 The burn is reasonably consistent in channel cross section and alignment at this location and runs underneath Bonneyton Road through a stone culvert. Bonneyton Road is a private road.

4.3.7.4 Following inspection, it was concluded that the stone culvert was of adequate capacity and the owner of Bonnybrook, who is a riparian owner, was advised to build a small flood bank along the burn within his ground.

4.3.8 Flooding at Windhill Street, Stuartfield

4.3.8.1 Flooding of domestic property in the low lying section of Windhill Street, Stuartfield has occurred on 2 occasions (1992 and 1996) resulting in the call out of emergency services to deal with flood water.

4.3.8.2 The flooding is caused by a water course, which is piped where it crosses Windhill Street, being unable to cope with the run-off from agricultural land and public road upstream of the village.

4.3.8.3 Following the flooding in 1996, the culvert was cleared of some debris, but the volume of water during periods of heavy rain is such that further improvements to the drainage system will be required to prevent further flooding of properties in the area.

4.3.8.4 Investigations are underway to determine what measures can be taken to resolve the problem.

4.3.9 Flooding at Various Other Locations

Flooding at many other locations has occurred from time to time and is considered to be road maintenance matter and therefore not reported in this Biennial Report.

4.4 Proposals With Respect to Flood Events

To summarise :

4.4.1 Flood plain mapping will be commissioned following major flood events.

4.4.2 Proposals for Works of Maintenance are detailed in 4.3.2 and 4.3.5.

5. Flood Prevention Schemes and Works of Maintenance Inherited by Aberdeenshire Council

5.1 The Grampian Regional Council (Fettercairn) Flood Prevention Scheme

5.1.1 This scheme was promoted and constructed under the Flood Prevention (Scotland) Act 1961 following flooding events in 1979 and 1981 and the emergency operations carried out after the 1981 flooding event.

5.1.2 The scheme consisted of the construction of stone filled gabions to protect the banks and invert of the Cauldcots Burn, the underpinning or reconstruction of garden walls on the north bank of the Cauldcots Burn and the construction of wooden board embankment protection on its south bank, all within the village of Fettercairn.

5.1.3 Because of its history of flooding, the Cauldcots Burn was given a high priority for inspection and assessment.

5.1.4 In its present condition, the Cauldcotts Burn has been assessed as having a low likelihood of flooding.

5.2 Flood Prevention Works on the River Dee, Invermuick

5.2.1 A rock armour revetment was installed in 1961 on the River Dee at Invermuick, near Ballater, by Aberdeen County Council to protect the B976 road and the Bridge of Muick. It is not known whether a Flood Prevention Scheme was promoted to facilitate the works or not. The works have therefore been considered to be Works of Maintenance inherited by Aberdeenshire Council.

5.2.2 A 1997 inspection confirmed the need for maintenance work at the downstream end of the revetment to restore localised bank erosion and maintain its stability. This work was carried out in the 1997/98 financial year.

5.3 Discussion

No other Works of Maintenance have been identified since publication of the First Biennial Report.

5.4 Proposals with Respect to Inherited Flood Prevention Schemes and Works of Maintenance

To summarise, Cauldcots Burn, Fettercairn and the river bank on the River Dee at Invermuick will be re-assessed in 1999/2000 following a two yearly cycle as stated in the First Biennial Report (paragraph 7.1.4 refers).

6. **Known Flooding Problems**

6.1 **Flooding Problems Identified Prior to the First Biennial Report**

6.1.1 **In and Around Inverurie**

6.1.1.1 A study has been jointly commissioned by NOSWA and Aberdeenshire Council to consider in detail the interaction between the Strathburn Culvert and the combined surface water/foul sewer under storm conditions. It is anticipated that the study when completed will result in firm proposals to alleviate the localised flooding which has occurred in and around Inverurie Town Centre.

6.1.1.2 The River Don and the River Urie have been inspected and a preliminary assessment has been made. However, the interaction of one river in spate with the other cannot easily be quantified and funding has been allocated in the provisional budget for 2000/01 to allow a study to be commissioned.

6.1.1.3 Other watercourses in and around Inverurie do not appear to cause flooding problems and will be further assessed at a later stage.

6.1.2 **Other Towns**

6.1.2.1 Localised flood problems in Huntly, Turriff, Ellon, Kintore and Ballater were reported. Initial enquiries elicited little or no factual information. Further detailed investigation is required to determine the nature and extent of the problem. This further investigation will be given a high priority.

6.1.3 **The Carron Water, Stonehaven**

6.1.3.1 A feasibility study to identify the best option for additional controls on the Carron Water in Stonehaven did not identify any particularly suitable locations for a weir. However, a study carried out by H R Wallingford for Aberdeenshire Council concluded that a rock armour training wall at the mouth of the River Carron should be able to prevent shingle movement from blocking the river outlet.

6.1.3.2 A training wall was constructed at the mouth of the River Carron in February and March 1999 as coast protection works. At the same time, the timber footbridge at this location was raised.

6.1.3.3 Experience since then through two modest storms and one flood event on the River Carron is that the beach now appears to have been stabilised at the Carron mouth and that the River Carron was able to discharge into Stonehaven Bay without backing up.

6.1.4 Undersized Drainage Systems Affecting Domestic Properties

The following locations were identified prior to publication of the First Biennial Report as domestic properties having been flooded in the past, apparently as a result of inadequate surface water pipe and ditch drainage systems. The drainage systems and adjacent watercourses have been assessed to determine the nature and extent of works required to prevent or mitigate flooding as follows :

6.1.4.1 St Andrews Drive, Fraserburgh

The effectiveness of the road drainage has been compromised by settlement of a utility track. This is considered to be a road maintenance matter.

6.1.4.2 High Shore, Macduff

The open pipe outlets to the road drainage allow sea water to surge back up the pipes under storm conditions to flood the adjacent area. This is considered to be a road maintenance or coast protection matter.

6.1.4.3 Bridge Street, Banff

The road drainage outlets are unable to cope with the volume of sea water which occasionally overtops the seawall causing flooding of the adjacent area. This is considered to be a road maintenance or coast protection problem.

6.1.4.4 Millburn, St Combs

Uneven road channels and inadequate road drainage cause minor flooding in Millburn Avenue. This is considered to be a road maintenance problem.

6.1.4.5 Parkhill, Kemnay

Funding has been allocated in the provisional Flood Prevention budget for 2000/01 for the installation of additional drainage following maintenance work on the existing drainage system.

6.1.4.6 Balmedie

Various minor works carried out under road maintenance appear to have removed the problem. This location will be monitored.

6.1.4.7 The Glebe, Kirkton of Skene

Recent clearing of the watercourse adjacent to the Glebe appears to have reduced the likelihood of flooding at this location although there is a tendency for garden refuse to accumulate. This location will be monitored.

6.1.4.8 Glenbervie Road, Drumlithie

The road drainage has been improved by the installation of extra gullies under road maintenance.

6.1.4.9 Silverbank Gardens, Banchory

The discharge capacity of open ditch drainage adjacent to Silverbank Gardens is inadequate to cope with surface water run off from the nearby woods. Recent development in this area appears to have removed this problem.

6.1.4.10 Keithmuir Gardens, Drumoak

Funding has been allocated in the provisional Flood Prevention budget for 2000/01 for the installation of additional drainage along the boundary of the Recreation Ground.

6.1.4.11 Kinnairdy Terrace, Torphins

The drainage system at the entrance to the cemetery adjacent to Kinnairdy Terrace is inadequate to cope with heavy rain and occasionally floods usually affecting the cemetery only. In extreme conditions, the gardens of two adjoining domestic properties have been flooded. This is considered to be a Grounds Maintenance matter.

6.1.4.12 Shore Street, Fraserburgh

Surcharge of the public sewer on Shore Street, Fraserburgh caused flooding of properties on two occasions during 1999. Remedial work in the form of additional road gullies connected to a storm water overflow was carried out.

6.2 Flooding Problems Identified Since the First Biennial Report

6.2.1 Flooding Problems Identified by Flood Events

Flooding problems which have been identified as a result of flood events are as noted in paragraphs 4.3.1 to 4.3.7.

6.2.2 Flooding Problems Identified by Assessment

Inspection and subsequent assessment of the likelihood of flooding has resulted in flooding problems having been identified at the following locations.

6.2.2.1 Bridge of Mondynes, Bervie Water

One span of the Old Bridge of Mondynes and one cell of the new twin box culvert at Mondynes are blocked by gravel deposited by the Bervie Water. Under normal flow conditions, the waterway area of one span or cell is adequate. It was considered that the blockage of the second span or cell would increase the likelihood of flooding and proposals were put forward to clear the gravel out of the river bed. However, further investigation revealed that a similar operation had been carried out some years earlier for bridge maintenance, apparently to little effect. The proposed works have been put on hold meantime whilst the condition of the river is monitored to ascertain whether or not the situation is stable.

6.2.2.2 Bridge of Kair, Bervie Water

Sediment deposits upstream and downstream of the bridge abutments and pier cutwaters had become established with weed growth. It was considered that these deposits reduced the waterway cross section sufficiently to increase the likelihood of flooding. These deposits have been cleared out.

6.2.2.3 Burnside Bridge, Fettercairn

Sediment deposits established with weed growth have been similarly treated at Burnside Bridge, near Fettercairn.

6.2.2.4 Bridge of Canny and Inchmarlo Bridge, Burn of Canny

Sediment deposits established with weed growth have been similarly treated at Bridge of Canny and Inchmarlo Bridge.

6.2.2.5 Glassel Burn, West Brathens

Self seeded trees had become established along both banks of the Glassel Burn near West Brathens, Banchory and sediment deposits formed around these trees had become established with weed growth. It was considered that the resulting reduction in waterway cross section increased the likelihood of flooding. The C4K road runs alongside this burn for a distance of some 500 metres and is regularly impassable due to flood water. It is proposed to clear out the sediment deposits and to selectively remove the trees. This work will be carried out in two phases in 1999/00 and 2000/01 to suit the various interests concerned.

6.2.2.6 Mill of Uras Cottages

The disused mill lade for the former Mill of Uras drains surface water in the vicinity of Mill of Uras and runs, for part of its length in a stone culvert which discharges into the Catterline Burn. As a result of flooding at No 2 Mill of Uras Cottages, the mill lade was investigated and found to be blocked, apparently as a result of collapse over a considerable length. It is proposed to replace this blocked stone culvert with a

new piped drainage system. This work will be carried out in 1999/00.

6.2.2.7 Whitestone Bridge, Water of Feugh

The Water of Feugh rises rapidly following heavy rainfall and regularly floods around Whitestone Bridge, near Strachan, affecting mainly farmland. The C17M road is often impassable as a result. It is considered that the likelihood of flooding is increased by local deficiencies in the river floodbanks and field drainage outfall. It is proposed to improve the floodbanks around the bridge, protect the road from floodwater run off from the fields and, at the same time, fit non return valves to the road drainage outlets. This work will be carried out in 1999/00.

6.2.2.8 Lower Deeside Holiday Park, River Dee, Maryculter

As a result of flooding of the Caravan Park at Maryculter in the past, the surface water drainage system in this vicinity was inspected. The owners of the Park have carried out works in the past to raise flood banks around the site. However, the area is still prone to flooding as a result of floodwater backing up the open ditch drainage system when the River Dee is in spate. It is proposed to improve the drainage system and extend the flood bank defences. This work will be carried out in 1999/00.

6.2.2.9 Bairds Park, Cowie Water, Stonehaven

As a result of the sheet pile training wall along the south bank of the Cowie Water opposite Bairds Park, Stonehaven, the river channel has progressively become narrower with time at a bend in the river. Flooding of Bairds Park has occurred in the past when the Cowie Water burst its banks just upstream of this bend. It is considered that this reduction in channel width increases the likelihood of flooding. It is proposed to remove the fluvial deposits on the north bank so as to re-establish the channel width. Consideration was also given to opening up the former mill lade arch just to the north of Bridge of Cowie to provide additional waterway area at the bridge for span conditions. However, the environmental impact of the associated works proved to be unacceptable locally. This work will be carried out in 1999/00.

6.2.2.10 Green Bridge Weir Spillway, Carron Water, Stonehaven

A weir, just downstream of the Green Bridge, Stonehaven was almost certainly constructed on the Carron Water for industrial purposes. Gabion baskets and mattresses were installed some years ago at the base of the weir spillway. They have been damaged, possibly as a result of the effects of the bend in the river at this point during spate conditions, and are in need of substantial repairs. No records exist to confirm the present ownership of the weir. It is considered that the weir spillway in its present condition increases the likelihood of flooding and proposals will be brought forward for repair and improvement of the spillway. Funding for this work has been allocated in the provisional budget for 2000/01.

6.2.3 Flooding Problems Identified Through Road Maintenance

Minor Works of Maintenance have been carried out or are due to be carried out which were originally identified as Roads Maintenance but later reclassified as Flood Prevention. Such works have been carried out at Charleston, St Combs and will be carried out at Lang Stracht, Alford. This work will be carried out in 1999/00.

6.3 Disposal of Surplus Domestic Apparatus and Garden Refuse

During the course of watercourse inspection, a tendency has been observed in some areas where housing is adjacent to small watercourses for surplus domestic apparatus and garden refuse to be deposited in the watercourse. This is not a problem in large rivers nor generally in watercourses which are managed for fishery purposes. There is an obvious link between large items (which cannot be carried away by the flow) deposited by human activity which then trap water borne debris which in turn traps silt which eventually forms a solid bank restricting the channel cross section.

In part, this is a natural process. It happens elsewhere, particularly on wooded upper reaches of catchments. However, where such effects occur entirely by nature, flooding is generally of little consequence. Since alternative methods of disposal of surplus domestic apparatus and garden refuse are provided by Aberdeenshire Council, a low priority will be attached to locations where the repeated clearance of watercourses so affected is necessary.

6.4 Proposals With Respect to Known Flooding Problems

To summarise :

- 6.4.1 Firm proposals for works to alleviate flooding in Inverurie Town Centre will be made.
- 6.4.2 A study of the confluence of the River Don and River Urie will be commissioned.
- 6.4.3 A detailed investigation of watercourses in and around Huntly, Turriff, Ellon, Kintore and Ballater will be carried out.
- 6.4.4 Proposals for Works of Maintenance are detailed in 6.1.4.5, 6.1.4.10, 6.2.2.5, 6.2.2.6, 6.2.2.7, 6.2.2.8, 6.2.2.9 and 6.2.2.10.

7. Action Taken Since November 1997 by Aberdeenshire Council Under the Flood Prevention and Land Drainage (Scotland) Act 1997

7.1 Management Action

7.1.1 The initial action detailed in the First Biennial Report (paras 6.1, 6.2.1, 6.2.2, 6.2.3, 6.2.4 and 6.3 refer) are discussed below.

7.1.2 Determination of responsibilities for carrying out the obligations of Aberdeenshire Council arising from the Flood Prevention and Land Drainage (Scotland) Act 1997 remains as detailed in the First Biennial Report (para 6.1 refers) with the exception that the Director is now the Director of Transportation, Roads and Property.

7.1.3 Discussion with Regulatory and Advisory Bodies and with neighbouring Authorities has continued as necessary on an informal basis. Contact with Angling Associations has been established in order to progress Works of Maintenance with their agreement and co-operation.

7.1.4 It is understood that NPPG7 encourages Planning Authorities to establish Flood Appraisal Groups. Informal discussions have taken place with the Aberdeenshire Council's Planning and Development Service with a view to establishing a Flood Appraisal Group for Aberdeenshire.

7.2 Assessment of Watercourses

Staff have been allocated to the task of systematic inspection and subsequent assessment of watercourses. The progress made to date is discussed below. The initial considerations of basic criteria and priorities within the First Biennial Report (paras 7.1.1, 7.1.2, 7.1.3 and 7.1.4 refer) are discussed in the light of experience to date.

7.2.1 Progress with Assessment of Watercourses

7.2.1.1 To summarise, the overall progress to date is estimated to be 45% complete. It should be noted however, that this estimated progress relates to the first inspection and subsequent assessment of the likelihood of flooding. Those locations or features which are assessed as being to some degree likely to flood will have to be subject to regular inspection. Such inspections are outwith the scope of this review of progress.

7.2.1.2 The Rivers Dee and Don have by virtue of their size been inspected by means of aerial photography.

7.2.1.3 Data collected by Inspectors was initially stored as paper records. As the work has progressed, data has been input to Fujitsu Palmtop Computers using Penmap Software and down loaded into a PC linked to Smallworld GIS to facilitate

assessment.

- 7.2.1.4 At the time of the First Biennial Report, it was considered that the tributaries to main river channels were likely to be more problematic than the main channels (para 7.6.2 refers). This has proved to be the case so far.

7.2.2 Prioritise Between Catchments

- 7.2.2.1 It was proposed to prioritise between catchments so as to concentrate on those which have the greatest potential for flood damage to non agricultural land. In fact, because the staff employed on watercourse inspection were based in the South Division of Aberdeenshire and because close supervision was anticipated initially, for logistical and management reasons therefore, the catchments closer to Stonehaven were inspected and assessed first. Thus, the Kincardine catchment was inspected and assessed first followed by the North Esk catchment.

- 7.2.2.2 All other catchments have in part been inspected and assessed following on from the Kincardine Streams and North Esk catchments, broadly speaking on the basis of the perceived potential for flood damage.

- 7.2.2.3 It is proposed to continue to concentrate resources for those catchments which remain to be assessed on those which have the greatest potential for flood damage to non-agricultural land.

7.2.3 Prioritise Between Individual Lengths of Watercourse

- 7.2.3.1 The First Biennial Report proposed priorities for the assessment of individual lengths of watercourse which have generally been followed (para 7.1.2 refers). Experience since then shows that previous knowledge of lengths of watercourse susceptible to flooding did not exist. Previous knowledge was limited to lengths of watercourse where flooding had actually occurred. In future, the distinction between subject to flooding and susceptible to flooding will be dropped.

- 7.2.3.2 The four local flood events which occurred in the period November 1997 to October 1999 were given the highest priority over other Flood Prevention work underway at the time. Assessments were undertaken immediately and were followed very quickly with positive action to resolve the problem, where appropriate.

- 7.2.3.3 It is proposed in future to prioritise between individual lengths of watercourse on the following basis :

- (1) any length of watercourse identified as having been subject to flooding will be given the highest priority ;
- (2) confluences in main channels will be assessed before main channels, before tributaries, before local burns or drains. Surface water pipes or ditches draining roads, dwellings, schools, commercial or industrial premises will

generally be given the lowest priority ;

- (3) main river channels and tributaries of all catchments will be assessed before the assessment of local burns or drains, surface water pipes or ditches is commenced.

7.2.4 Appropriate Timescale

7.2.4.1 The First Biennial Report proposed the assessment of all main river channels and tributaries within two years (para 7.1.3 refers). In fact, this timescale has not been achieved for the following reasons :

- (1) the staff designated to undertake the inspection and assessment of watercourses have also undertaken the design and supervision of Works of Maintenance, which was not envisaged at the time of publication of the First Biennial Report ;
- (2) the two year timescale proposed can now be seen to be unrealistic.

7.2.4.2 It is proposed therefore to have carried out assessment of the remaining main river channels and tributaries within three years and thereafter to assess the remainder within a further six year period.

7.2.5 Frequency of Assessment

7.2.5.1 The First Biennial Report proposed a frequency of assessment which is still seen as reasonable and will be maintained (para 7.1.4 refers).

7.3 Works of Maintenance in Response to Flood Events

As noted in paragraphs 4.3.1 to 4.3.8, Works of Maintenance have been carried out in response to flood events at the following locations :

- (1) Hallmoss, St Combs
- (2) Farrochie Burn, Stonehaven
- (3) Main Street, Longside
- (4) Main Street Car Park, Cruden Bay

7.4 Works of Maintenance Following Assessment

As noted in paragraphs 6.1.3, 6.2.2.2 to 6.2.2.4 and 6.2.3, Works of Maintenance have been carried out following assessment of the likelihood of flooding at the following locations :

- (1) The mouth of the Carron Water, Stonehaven
- (2) Bridge of Kair
- (3) Burnside Bridge, Fettercairn
- (4) Bridge of Canny
- (5) Inchmarlo Bridge
- (6) Charleston, St Combs

8. Action Proposed by Aberdeenshire Council Under the Flood Prevention and Land Drainage (Scotland) Act 1997

8.1 Works of Maintenance

8.1.1 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 and Land Drainage (Scotland) Act 1997 to reduce the likelihood of flooding where a significant flooding risk has been or will be assessed.

8.1.2 Works of Maintenance will be proposed at :

- (1) Parkhill, Kemnay
- (2) Keithmuir Gardens, Drumoak
- (3) Glassel Burn, Banchory (Phase 2)
- (4) Green Bridge Weir and Spillway, Stonehaven
- (5) Bronie Burn, Pitmedden (Phase 2)
- (6) Windhill Street, Stuartfield

8.1.3 Other Works of Maintenance will be proposed from time to time as necessary.

8.2 Flood Prevention Schemes

The B974 Banchory to Fettercairn Road is prone to flooding just south of Strachan Bridge. The road has flooded here to the extent that it has been impassable on several occasions in the last few years. Considerable inconvenience is caused due to the length of diversion which becomes necessary. A breach in the flood bank of the River Feugh occurred some time ago which was not repaired by the riparian land owner until recently. However, in places, this flood bank is susceptible to damage by flood conditions as a result of rabbit activity. Further breaches could occur in the future. At the last flood event, considerable damage was sustained by the road. Consideration will therefore be given to raising the road and protecting its embankment from flood water damage. It is unlikely that such a scheme can be progressed in the foreseeable future. Should the riparian landowners wish to propose a Flood Prevention Scheme under the Land Drainage (Scotland) Act 1958 with a view to strengthening the flood banks, Aberdeenshire Council will support them and will provide appropriate professional advice.

8.3 Inspection and Assessment of Watercourses

- 8.3.1 Inspection and assessment of watercourses in Aberdeenshire will continue as outlined in the preceding paragraphs 7.2.1 to 7.2.5.

8.4 Liaison with Neighbouring Authorities

8.4.1 Boundaries Coincident with Watercourses

Flood Prevention Schemes or Works of Maintenance on watercourses which form boundaries between Aberdeenshire and a neighbouring authority will be jointly promoted and subject to a sharing agreement.

8.4.2 Development Proposals

The need to be aware of significant development proposals in an upstream neighbouring authority and to advise a downstream neighbouring authority of significant development proposals is recognised. The need for watercourse assessment data to be made available to those involved in the planning process is recognised. No formal arrangements for consultation between authorities exists at this time. The lack of a requirement within the planning process for consultation to this effect is seen as disadvantageous. Greater effort will therefore be made to develop contacts through the Aberdeenshire Planning and Development Service and with colleagues in neighbouring authorities in order to disseminate information.

8.5 Public Awareness

- 8.5.1 Increased public awareness of the impact which their disposal of surplus domestic apparatus and garden refuse into small burns has on the likelihood of flooding is seen as advantageous.
- 8.5.2 Increased public awareness of the knowledge which Aberdeenshire Council could share in respect of the likelihood of flooding would be of benefit to members of the public. Indeed, the Council would benefit from sharing the knowledge of flooding which members of the public have at their disposal. This two way information share is seen as advantageous.
- 8.5.3 Consideration will therefore be given to raising public awareness of flooding issues by means of a suitably designed information pamphlet. In this context, it should be noted that Aberdeenshire Council have produced pamphlets of this nature in the past, for example, for winter maintenance, winter driving and cycling strategy.

8.6 Proposals With Respect to Action Under the 1997 Act

To summarise :

- 8.6.1 Proposals for Works of Maintenance are detailed in 8.1.2.
- 8.6.2 Proposals for Flood Prevention Schemes are detailed in 8.2.
- 8.6.3 Proposals for inspection and assessment of watercourses are detailed in 8.3.1.
- 8.6.4 Proposals for liaison with neighbouring authorities are detailed in 8.4.1 and 8.4.2.
- 8.6.5 Proposals for raising public awareness of flooding issues are detailed in 8.5.3.

9. **Interpretation of the Flood Prevention and Land Drainage (Scotland) Act 1997
by Aberdeenshire Council**

- 9.1 The phrase "assess all watercourses" is no more clearly defined than when the 1997 Act was drafted. The interpretation outlined by Aberdeenshire Council in the First Biennial Report is modified slightly in the light of experience as follows. Assessment of watercourses is seen as the inspection of the watercourse (but not a systematic survey measuring profile, channel cross section etc) to understand the physical characteristics of the catchment and to identify and record problem areas such as degrading banks, low banks, blockages, potential for blocking, sources of potential blocking material or restrictive structures etc followed by the survey of these critical features once identified, the collection and storage of data leading to an appraisal of the flooding risk and the need for action. This is a working guide rather than a rigorous definition.
- 9.2 The degree of local concern about flooding and it's likely impact is not such as to require a radically different approach to that set out in the First Biennial Report (paras 8.2 and 7.1 refer). The timescales and regime of inspection and assessment now proposed in paragraph 7.2.2 to 7.2.5 have been determined in the light of experience over the last two years.
- 9.3 The interpretation of the term "non-agricultural land" set out in the First Biennial Report (para 8.3 refers) is still considered to be appropriate.

10. **Funding**

- 10.1 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. In the current economic climate, it is unlikely that the level of funding provided by the Revenue Budget can be significantly increased in future years. However, it is clear that the need for further Works of Maintenance will be identified as the assessment of watercourses continues. Also, by its very nature, maintenance work is in many cases repetitive. It is evident therefore that this level of funding must at least be maintained, at least for the next 5 to 10 years.
- 10.2 The financial consequences of flood damage have traditionally been met by property insurance. The 1997 Act placed obligations on Aberdeenshire Council to maintain watercourses "in a due state of efficiency". In time, litigation can be expected to become more common place and it cannot be presumed that the insurance industry will continue to provide cover against flooding as a matter of course. It may therefore become necessary in future years to allow contingency sums for property damage claims.
- 10.3 The Flood Prevention Scheme for Inverurie Town Centre referred to in paragraph 6.1.1.1 will be the subject of a Flood Prevention Order promoted by Aberdeenshire Council under the 1961 Act. The Council's Revenue Budget allocation is insufficient to meet the needs of such a scheme. Other demands on the Council's Capital Plan are such that there is little likelihood of funding from that source. An application for special funding will be pursued.
- 10.4 Where appropriate, Aberdeenshire Council will seek to recover reasonable costs from responsible parties whose inactivity may have given rise to works necessary for the prevention of flooding of non-agricultural land.
- 10.5 To assist with the financing of future works, as and where appropriate, Aberdeenshire Council will :
- (1) promote Flood Prevention Orders under the 1961 Act ;
 - (2) apply for Grant Assistance towards the construction of future schemes ;
 - (3) request additional capital borrowing consents to fund schemes ;
 - (4) involve the private sector in contributions towards Flood Prevention Schemes or Works of Maintenance.

11. **Contact Point**

All enquiries arising from this report should be forwarded to the Head of Transportation and Roads - South, Carlton House, Arduathie Road, Stonehaven, AB39 2DP. Informal enquiries should be made to Malcolm Taberner, Structures and Design Manager, telephone 01569 768474.

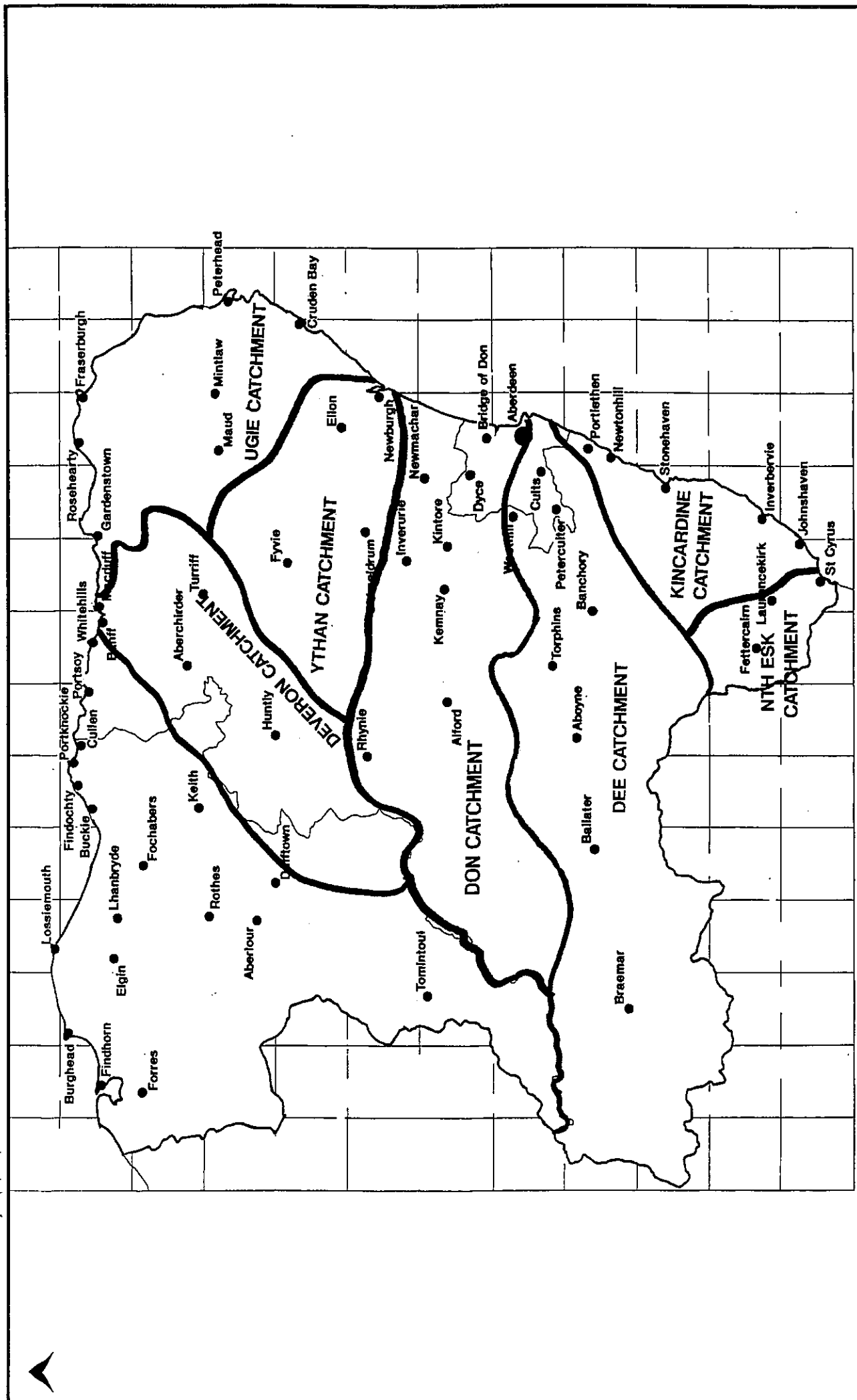
12. **Conclusion**

This is the Second Biennial Report by Aberdeenshire Council under the Flood Prevention and Land Drainage (Scotland) Act 1997.

Signed 

Iain Gabriel B.Sc, C.Eng. MICE, MIHT
Director of Transportation, Roads and Property
Aberdeenshire Council

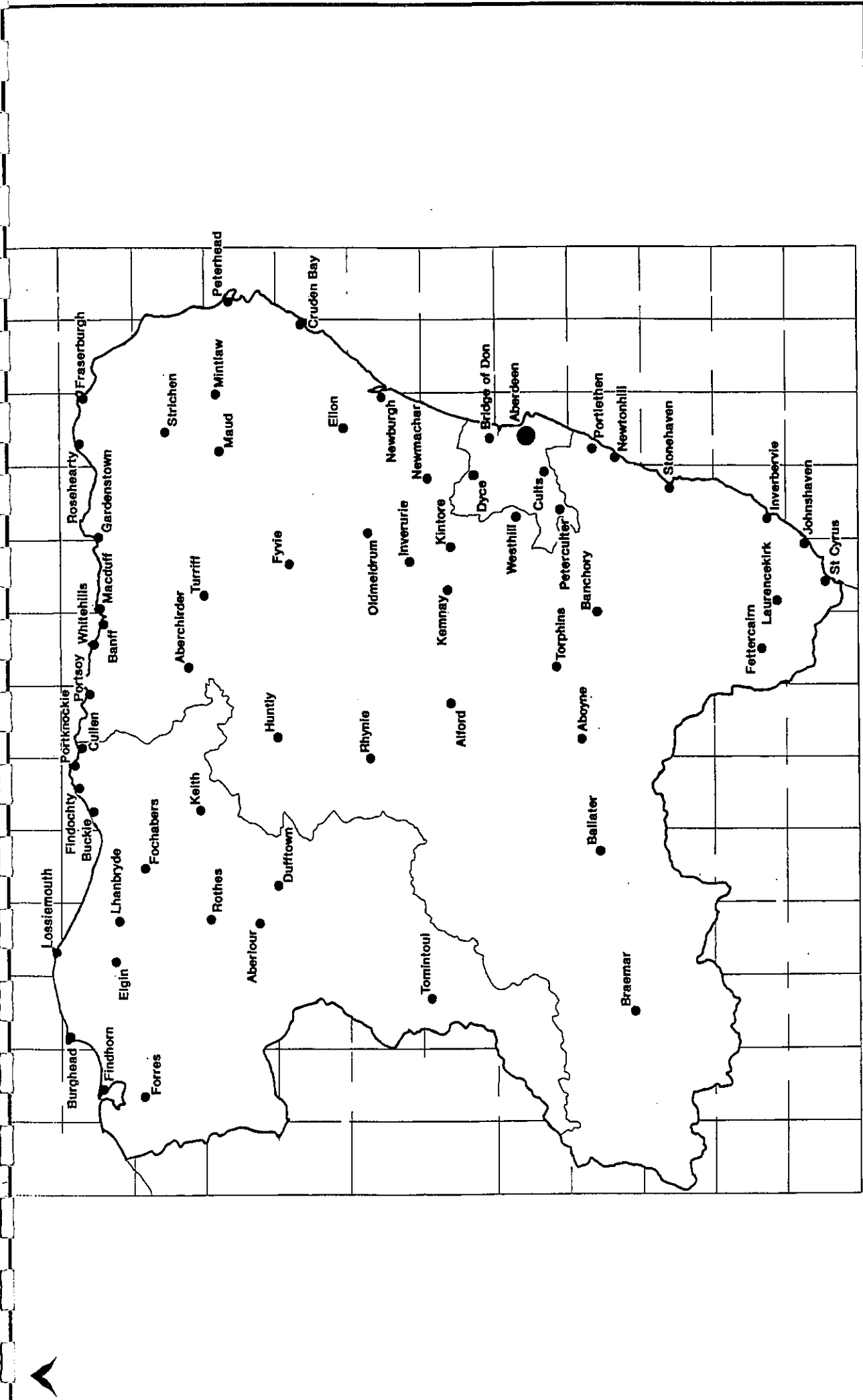
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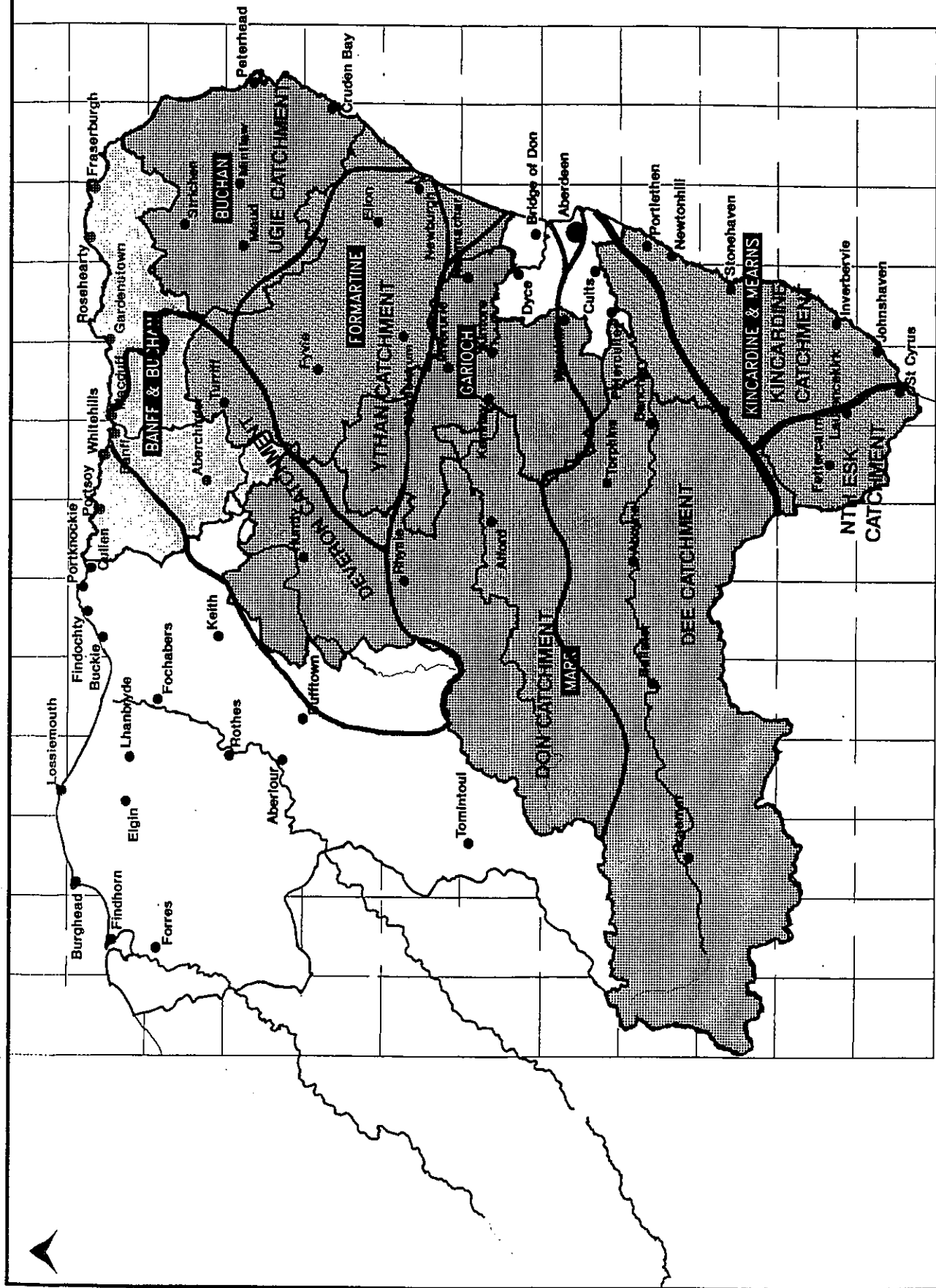
ABERDEENSHIRE COUNCIL
 TRANSPORTATION AND ROADS



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FIG. 2 : GEOGRAPHIC AREA COVERED BY ABERDEENSHIRE COUNCIL



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ABERDEENSHIRE COUNCIL
 TRANSPORTATION AND ROADS

Printed on 05/11/1997

APPENDIX A

CATCHMENT AREAS WITH MAIN WATERCOURSES, PRINCIPAL TRIBUTARIES AND SETTLEMENTS

Catchment	Watercourse	Settlement (or district)
Deveron	River Deveron	Haugh of Glass
		Blairmore
		Huntly
		Milltown of Rothiemay
		Inverkeithny
		Turriff
		Banff
		Macduff
		(Longhill)
		Huntly
	Glenburn/Collonach Burn	Bridgend
	River Bogie	Gartly
		Rhynie
	Water of Bogie	Nethermills
	River Isla	Inverkeithny
		Forgue
	Burn of Fergie	Turriff
Ugie	Burn of Turriff	Cuminestown
	Idoch Water	Newton of Mountblair
		Mill of Brydock
	Rosy Burn	Invergie
		Peterhead
	Burn of Brydock	Strichen
		Fetterangus
	North Ugie Water	Hythie
		Cuttyhill
	South Ugie Water	New Deer
		Maud
		Old Deer
		Stuartfield
		Mintlaw
		Longside
	Water of Fedderate	Bonnykelly
		Oldwhat
Ythan and Coastal	Burn of Ludquharn	Longside
		Ythanwells

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Catchment	Watercourse	Settlement (or district)
Ythan and Coastal continued		Logie Newton
		Kirkton of Auchterless
		Mains of Towie
		Inverythan
		Fyvie
		Woodhead
		Methlick
		Ellon
		Waterton
		Kirkton of Logie Buchan
		Newburgh
	Tifty Burn	Tifty
	Fordoun Burn	Rothienorman
	Little Water	(Burneno)
	Black Burn	(Bellmuir, Gowanwell)
	Ebrie Burn	(Blackhill of Fortrie)
	Yowlie Burn	Mirton of Ardlethen
	Bronie Burn	Littlemill of Esslemont
		Pitmedden
		Udny Green
Don	Burn of Forvie	(Forvie)
	Tarty Burn	Tipperty
	Foveran Burn	Newburgh
	River Don	Strathdon
		Bellabeg
		Forbes Town
		Waterside
		Glenkindie
		Towie
		Kildrummy
		Bridge of Alford
		Montgarrie
		Alford
		Keig
		Pitfichie
		Monymusk
		Kemnay
		Burnhervie
		Port Elphinstone
		Inverurie
		Kintore
		Hatton of Fintray
		Cothall

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Catchment	Watercourse	Settlement (or district)
Don continued	Allt Tuileach	(Dunandhu)
	Burn of Loinherry	Loinherry
	Cock Burn	Cock Bridge
	Delavine Burn	(Delavine)
	Burn of Tornashaish	(Tornashaish)
	Conrie Water	(Culford)
	Ernan Water	(Glen Ernan)
	Water of Carvie	(Birkford)
	Water of Nochty	(Glen Nochty)
	Deskry Water	(Deskry)
	Water of Buchat	(Glen Buchat)
	Kindie Burn	(Pitcandlich)
	Socach Burn/Long Burn	(Culford)
	Leochel Burn	Muir of Fowlis
	Suie Burn	Montgarrie
		Tullynessle
	Ton Burn	(Dalriach)
	River Urie	Inverurie
		Drimmies
		Inveramsay
		Pitcaple
		Whiteford
		Mill of Carden
		Old Rayne
		Pitmachie
Dee	River Dee	Braemar
		Balnaut
		Easter Balmoral
		Bridge of Muick
		Ballater
		Dinnet
		Aboyne
		Kincardine O'Neil
		Banchory
		Crathes
	Geldie Burn	(Geldie)
	Bynack Burn	(Bynack)
	Derry Burn	(Glen Derry)
	Lui Water	(Glen Lui)
	Ey Burn	(Inverey)
	Corriemulzie Burn	(Linn of Corriemulzie)
	Quoich Water	(Glen Quoich)
	Clunie Water	Braemar
	Callater Burn	(Glen Callater)

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Catchment	Watercourse	Settlement (or district)
Dee continued	Feardar Burn	(Inver)
	Gelder Burn	Invergelder
	Girnock Burn	Littlemill
	River Gairn	(Glen Gairn)
	River Muick	(Glen Muick)
	Tullich Burn	Milton of Tullich
	Pollagach Burn	(Dinnet)
	Water of Tanar	(Glen Tanar)
	Burn of Canny	Bridge of Canny
	Water of Feugh	(Feughside)
		Strachan
	Bo Burn	(Crathes)
	Burn of Sheeoch	Kirkton of Durris
	Bervie Water	Glenbervie
Kincardine Streams		Drumlithie
		Inverbervie
	West Burn of Builg	Drumtochy Forest
	Burn of Luchray	Drumtochy Forest
	East Burn of Builg	Drumtochy Forest
	Maxie Burn	Drumtochy Forest
	Forthie Water	(Candy)
	Cowie Water	Rickarton
		Stonehaven
	Cowton Burn	(Cowton)
	Carron Water	Kirkton of Fetteresso
		Stonehaven
	Burn of Muchalls	Bridge of Muchalls
		Muchalls
North Esk	River North Esk	Northwater Bridge
		Marykirk
	Luther Water	(Howe of the Mearns)
	Dowie Burn	(Howe of the Mearns)
	Cauldcots Burn	Fettercairn
	Black Burn	(Howe of the Mearns)
	Devilly Burn	(Howe of the Mearns)
	Ducat Water	(Howe of the Mearns)
	Burn of Balmakelly	(Howe of the Mearns)