

ABERDEENSHIRE COUNCIL

THE FLOOD PREVENTION AND LAND DRAINAGE (SCOTLAND) ACT 1997

THIRD BIENNIAL REPORT

NOVEMBER 2001

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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 of non-agricultural land within Aberdeenshire. This report is published as required by the Flood Prevention and Land Drainage (Scotland) Act 1997.
- 1.2 This report details :

- (1) all the flood events which have occurred since publication of the Second Biennial Report;
- (2) all the measures which Aberdeenshire Council have taken to prevent or mitigate flooding since publication of the Second Biennial Report;
- (3) all the measures which Aberdeenshire Council propose to take to prevent or mitigate flooding

1.3 This Third Biennial Report is a follow-up document to the Second Biennial Report published in November 1999 and makes reference to that report.

2. Background

- 2.1 Aberdeenshire Council assumed responsibility for the implementation of the Flood Prevention (Scotland) Act 1961 within Aberdeenshire as from April 1996. The Flood Prevention and Land Drainage (Scotland) Act 1997 imposed duties on Aberdeenshire Council which can be summarised as :
 - 2.1.1 to assess all watercourses from time to time to ascertain whether or not they are likely to cause flooding of non-agricultural land;
 - 2.1.2 to carry out works to reduce the likelihood of flooding of non-agricultural land;
 - 2.1.3 to liaise with adjacent authorities;
 - 2.1.4 to prepare a report specifying all the measures which the Local Authority proposes to take to prevent or mitigate flooding of non-agricultural land;
 - 2.1.5 to publish the said report by 26 November 1997;
 - 2.1.6 to prepare and publish biennial reports thereafter.
- 2.2 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. The philosophy for the assessment of watercourses within Aberdeenshire from which a programme of assessment has been developed is discussed. Interpretative decisions made by Aberdeenshire Council with respect to matters which are left to the Council's discretion are discussed. Consultation which has taken place with regulatory bodies and neighbouring authorities is discussed.

3.	<u>The River Catchments Within Aberdeenshire</u>	
3.1	<u>The River Catchments in Relation to Geographic and Administrative Areas</u>	
3.1.1	The Deveron Catchment : includes the Rivers Deveron, Isla, Bogie and Idoch together with the Forgue and Deskford Burns.	
3.1.2	The Ugie Catchment : includes the North Ugie Water and the South Ugie Water which eventually combine to form the River Ugie.	
3.1.3	The Ythan and Coastal Catchment : includes the River Ythan and the Bigie Burn.	
3.1.4	The Don Catchment : includes the Rivers Don and Urie.	
3.1.5	The Dee Catchment : includes the Rivers Dee, Gironock, Muick, Gairn and Feugh together with the Water of Dye.	
3.1.6	The Kincardine Streams Catchment : includes the Burn of Muchalls, the Cowie Water, the Carron Water and the Bervie Water.	
3.1.7	The North Esk Catchment : includes the River North Esk, the Luther Water, the West Water and the Water of Mark.	
3.2	<u>Land Use</u>	
3.3	<u>Discussion</u>	
3.3.1	There are at the present time no flood warning schemes in operation on any of the catchments within Aberdeenshire. It may perhaps be concluded therefore that there was not perceived to be a serious risk of flooding within Aberdeenshire in the past.	
	Outwith Aberdeenshire's settlements, the land use is mainly farming and forestry. In recent years there has been a significant amount of deforestation within Aberdeenshire which has resulted in localised changes in run-off characteristics.	
	Appendix A.	
	The extent of each catchment is shown in Fig 1. They do not of course bear any relation to the geographic area covered by Aberdeenshire Council, which is shown in Fig 2, or the administrative areas within Aberdeenshire, shown in Fig 3. Fig 4 shows the administrative areas superimposed upon the river catchments. A list of the main watercourses, tributaries and settlements within Aberdeenshire is tabulated in	

The River Catchments Within Aberdeenshire Continued

- 3.3.2 The implementation of the "Floodline" Flood Advisory Service by SEPA is welcomed. Aberdeenshire Council will collaborate with SEPA in the implementation of a formal Flood Warning Scheme for Aberdeenshire river catchments.
- 3.3.3 Gauging station records for all catchments are held by SEPA and will be consulted in conjunction with records from other sources, including anecdotal.
- 3.3.4 Inspection of watercourses has been undertaken 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 1999 and October 2001

4.1 Major Flood Events

There were no major flood events in Aberdeenshire during the period November 1999 to October 2001. No flood plain mapping has been carried out therefore.

4.2 Local Flood Events

Several local flood events have occurred in Aberdeenshire during the period November 1999 to October 2001, as tabulated in Table A below. Three events in particular are worthy of further detail.

FLOOD EVENTS IN ABERDEENSHIRE 1999 - 2001-11-27						
Date	Location	Brief Description	Responsibility	Action Taken in Response	Advice to riparian owners	Drainage Improvement Scheme
Dec 99	Burn of Canny, Inchmarlo	Flooding of Private Dwellings	Riparian	Advice to riparian owners	Drainage Improvement Scheme	Drainage Improvement Scheme
Jan 00	Stewartfield	Flooding of Private Dwellings	Council		Drainage Improvement Scheme	Drainage Improvement Scheme
Feb 00	Mosshead Croft, Alford	Flooding of Private Dwelling	Council	Drainage Improvement Scheme 1999/2000		
Feb 00	Langstrath, Alford	Flooding of Public Highway	Council	Installation of new drains 2000/2001		
Feb 00	Turriff	Flooding of United Football Ground	Council	Clear watercourse of football field 1999/2000		
Feb 00	Strachan, Banchory	Flooding of Public Highway/Agricultural Land	Riparian	Advice to Local Community Council re Grant Aid		
Apr 00	Tarland Burn, Tarland	Flooding of Private Dwellings and Public Road	Council	Flood bank and River Training wall to be constructed 2001/2002		
Apr 00	Station Square, Aboyne	Flooding of Commercial Premises and Public Roads	Council	Flood banks and non-return valves on outfall pipes to be constructed		
Apr 00	Burn of Canny, Inchmarlo	Flooding of Private Dwellings and Public Road	Riparian and Council	Clear channel to increase waterway capacity		

FLOOD EVENTS IN ABERDEENSHIRE 1999 - 2001-11-27						
Date	Location	Brief Description	Responsibility	Action Taken in Response		
				Remedial work sought from Developer	Advice offered to Riparian Owner	Increased Drainage Capacity 2001/02
Apr 00	Water of Cruden, Cruden Bay	Flooding of Private Dwellings at Morrison Place	Riparian			
May 00	Boghead Cotts, Mintlaw	Flooding of Private Dwellings	Riparian			
Jul 00	Tullynestle, Alford	Flooding of Private Dwelling, Cottage	Council			
Aug 00	Modley Burn, Ellon	Collapsed training wall causing flooding	Council	Training wall repaired		
Aug 00	Inverboynadie, Banff	Flooding of Proposed Development Land	Council	Recommend Refusal of Planning Application		
Sep 00	Alder Drive, Portlethen	Flooding of Private Dwellings	Council	Clear Channel of Burn 2000/01		
Sep 00	Whitestone, Strachan	Flooding of Fish Farm	Council	Repairs to existing flood bank proposed		
Sep 00	Glen Road, Lumphannan	Flooding of Public Highway	Riparian	Owner of substandard bridge offered advice		
Oct 00	Ariel Villa, Tarland	Flooding of Private Dwelling	Council	Flood bank and River Training wall to be constructed 2001/02		
Oct 00	Boyne Mill, Portsoy	Flooding of Private Dwelling	Riparian	Owner advised to repair flood banks		
Oct 00	Maymill, Lumphannan	Flooding of Private Dwelling	Council	Clear watercourse downstream 2000/01		
Oct 00	Farburn Terrace, Lumphannan	Flooding of Private Dwelling	Riparian	Owner offered advice to rectify problem		
Oct 00	Davidson Crescent, Alford	Flooding of Private Dwelling from Adjacent Development	Riparian	Developer contacted and carrying out remedial works		
Nov 00	Hatton Burn, Mintlaw	Flooding of Private Dwelling	Riparian	Owner offered advice to rectify problem		
Nov 00	Back Burn, Cruden Bay	Flooding of Private Dwelling	Riparian	Blockage in Back Burn cleared by land owner		
Dec 00	Low Road, Aboyne	Tarland Burn flooding public road	Council	Training wall constructed 2001/02		

FLOOD EVENTS IN ABERDEENSHIRE 1999 - 2001-11-27
TABLE A CONTINUED

Date	Location	Brief Description	Responsibility	Action Taken in Response
Dec 00	Craigour Avenue, Torphins	Flooding of Private Dwelling	Riparian	Collapsed training wall repaired
Jan 01	Valehead, Crawton	Flooding of Private Dwelling	Council	Flood banks repaired and non-return valve installed at outfall
Jan 01	Whimnyfold, Cruden Bay	Flooding of Private Dwellings due to Removal of Flood Bank	Riparian	Enforcement Notice served on Farmer to re-instate floodbank
Sep 01	Mill of Boyne, Portsoy	Flooding of Private Dwelling (Old Water Mill)	Riparian	Owner offered Advice to rectify problem
Oct 01	Lintmill Cottage, Portsoy	Flooding of Private Dwelling	Council	Under Review
Oct 01	Loch of Soy, Portsoy	Flooding of Private Dwellings	Council	Clear/Repair Sluice Gate and Overflow

4.2.1 Tarland Burn, Tarland

The Tarland Burn burst its banks within Tarland affecting domestic property and local roads during the prolonged period of rainfall between 24th to 26th April 2000. This section of Tarland Burn suffers from localised problems which can be summarised as :

- (1) lack of tree maintenance along the banks of the watercourse ;
- (2) seven low foot bridges over the burn off Burnside Road, six of which are in private ownership;
- (3) one low public road bridge carrying Mill Road;
- (4) established silt deposits on the inside of the bend in the burn at Bridge Street Bridge;
- (5) substantial gravel deposits in the bed of the burn

4.2.2 Station Square, Aboyne

The Tarland Burn burst it's banks just downstream of the old North Deeside Road Bridge during the prolonged period of rainfall between 24th to 26th April 2000. The Low Road was flooded and flood water backed up into Station Square affecting domestic and commercial properties. This was the second time in approximately 15 years that Station Square has been flooded in this way. The Tarland Burn downstream of the North Deeside Road Bridge suffers from localised problems which can be summarised as :

Flood Events in Aberdeenshire between November 1999 and October 2001

Continued

- (1) lack of tree maintenance along the banks of the watercourse and within the watercourse;
- (2) privately owned low bridges over the burn;
- (3) pipes slung underneath the low bridges;
- (4) fences across the burn;
- (5) loss of flood plain storage

4.2.3

Burn of Canny, Inchmarlo

The Burn of Canny burst it's banks upstream of the recent housing development at Bridge of Canny, Inchmarlo, some 4km west of Banchory, during the 24th to 26th April 2000. The burn burst it's banks in two places, immediately upstream of the housing development causing flood water to run over the back gardens and further upstream at a cattle watering point causing flood water to run over the adjacent fields and into the front gardens, thereby surrounding the houses. The flood water rose up to the air bricks just below flood level. This was the eighth or ninth time in approximately 12 years that this development has been flooded in this way, though not all as severely as on this last occasion. The most recent previous occasion was on Christmas Day 1999, less than six months ago. The Burn of Canny floods regularly just upstream of the North Deeside Road Bridge affecting both the housing development west of Bridge of Canny, adjacent farmland and the North Deeside Road. The frequency of flooding appears to have increased in recent years. There are localised problems which can be summarised as :

- (1) lack of tree maintenance along the banks of the watercourse;
- (2) a privately owned low bridge over the burn;
- (3) narrowing of the river channel;
- (4) low banks at cattle water points

It should be noted also that the housing development was constructed on a flood plain with the approval of the former Planning Authority.

4.3

Proposals With Respect to Flood Events

4.3.1

Flood plain mapping will be commissioned following major flood events.

4.3.2

Proposals for Works of Maintenance in response to flood events not already carried out are listed in 8.1.2.

Flood Prevention Schemes and Works of Maintenance Inherited by Aberdeenshire Council

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 Inspection in 2001 identified minor localised silting which will be left meantime.

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

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 Aberdeenshire 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 Inspection in 2000 showed the revetment to be in good condition.

Discussion

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

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 2003.

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 The first two phases of a scheme to improve the Strathburn Culvert in the centre of Inverurie have been completed. A third phase is in hand and requires a Flood Prevention Scheme Order which has recently been published. This project is being managed by NOSWA and part funded by Aberdeenshire Council. Once the third phase has been completed, the likelihood of flooding of the town centre will be very low.

6.1.1.2 The Middelmuir Road area of Inverurie has been subjected to local flooding of the Strathburn Culvert and associated piped drainage. Works of maintenance to reduce the likelihood of flooding will be proposed and included in the rolling programme.

6.1.1.3 The proposed study of the confluence of the River Don and River Urie has been deferred meantime to allow other higher priority flood responsive works to be included in the rolling programme. It will be commissioned when funds permit.

6.1.2 Other Towns

6.1.2.1 Localised flood problems in Huntly, Turrit, Ellon, Kintore and Ballater were reported although little factual information was available. Network layout plans of the sewer systems in these towns have been obtained from NOSWA. The positions of all road gulleys and manholes have been surveyed on the ground for comparison with the sewer system records. The manhole positions observed confirm the sewer system records. An assessment of the adequacy of gully provision and of the sewer network will be undertaken in collaboration with NOSWA and as resources permit.

6.1.3 The Carron Water, Stonehaven

6.1.3.1 The training wall constructed at the mouth of the River Carron in February/March 1999 was extended in 2000/2001 as part of a project to extend and improve the coastal footpath around Stonehaven Bay.

6.1.3.2 Beach regeneration on the seaward side of the training wall has continued and the river channel at the Carron mouth appears to have stabilised. Experience through several storms and spate flows is that the Carron Water has been able to discharge into Stonehaven Bay without backing up.

6.1.3.3 Flooding along Carron Terrace, Cameron Street and Arbuthnott Street which was an occasional even has not occurred since the training wall was constructed.

Known Flooding Problems Continued

6.1.4 Undersized Drainage Systems Affecting Domestic Properties

The following locations were identified previously 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 Parkhill, Kemnay

The drainage system in this area has been improved and will be monitored to assess the effectiveness of the improvements. Further works may be proposed if necessary and when funding permits.

6.1.4.2 Balmedie

The minor works carried out have been monitored for their effectiveness and it is now considered that the area affected has a low likelihood of flooding.

6.1.4.3 The Glebe, Kirkton of Skene

The works carried out have been monitored for their effectiveness and, provided that garden refuse and other blocking material is not allowed to accumulate, the area is considered to have a low likelihood of flooding.

6.1.4.4 Keithmuir Gardens, Drumoak

The inclusion of more urgent works in response to flood events within the annual programme of works has delayed the intended drainage improvements along the boundary of the Recreational Ground. This work will be carried out when funding permits.

6.2 Flooding Problems Identified Since the Second Biennial Report

6.2.1 Flooding Problems Identified by Flood Events

6.2.2.1 In response to flood events, problems were identified and works of maintenance to reduce the likelihood of flooding were carried out at locations shown in Table B below.

WORKS OF MAINTENANCE TO REDUCE THE LIKELIHOOD OF FLOODING			
TABLE B			
Location	Brief Description of Works	Cost	Year
Hallmoss, St Combs	Emergency pumping	£5,000	1997/98
Main Street, Longside	Temporary sand bag defences	£5,000	1998/99
Windmill Street, Stuartfield	Install piped drainage	£7,000	1998/99
Greystone Road, Alford	Install piped drainage	£21,000	1998/99
Bronie Burn, Pitmedden	Clear out river channel	£12,000	1999/00
Farrochie Burn, Stonehaven	Clear out river channel	£20,000	1999/00
Main Street, Longside	Install piped drainage	£8,000	1999/00
Lang Stracht, Alford	Install piped drainage	£19,000	1999/00
Golf Terrace, Inch	Install piped drainage	£9,000	1999/00
Woodmill, Craigievar	Install piped drainage	£20,000	1999/00
A947, Turiff	Install piped drainage	£10,000	2000/01
Tarland Burn, Tarland	Construct flood defence walls and regularise channel width	£65,000	2000/01
Tarland Burn, Tarland	Construct training wall and ripples and regularise channel width	£15,000	2001/02
Tarland Burn, Aboyne	Construct flood defence walls	£26,000	2001/02
Bridge of Canny, Inchmarlo	Clear river channel and construct ripples	£5,000	2001/02

6.2.1.2 Further works in response to flood events are under consideration for Tarland Burn, Tarland and Burn of Canny at Inchmarlo and Glassel.

6.2 Flooding Problems Identified by Assessment

6.2.1 In response to inspection and subsequent assessment of the likelihood of flooding which had identified flooding problems, works of maintenance to reduce the likelihood of flooding were carried out at locations shown in Table C below.

**WORKS OF MAINTENANCE TO REDUCE THE LIKELIHOOD OF FLOODING
FOLLOWING INSPECTION AND ASSESSMENT
TABLE C**

Location	Brief Description of Works	Cost	Year
Bridge of Kair, Bervie Water	Clear our river channel	£5,000	1998/99
Burnside Bridge, Fettercairn	Clear out river channel	£5,000	1998/99
Carron Water, Stonehaven	Raise low footbridge	£7,000	1998/99
Bridge of Canny, Inchmarlo	Clear out river channel	£6,000	1999/00
Bridge of Inchmarlo, Inchmarlo	Clear our river channel	£6,000	1999/00
Glassel Burn, West Brathens	Stabilise banks and regularise channel width	£32,000	1999/00
Mill of Uras, Stonehaven	Install piped drainage	£17,000	1999/00
White Stone Bridge, Strachan	Improvements to flood banks	£4,000	1999/00
Greendams Culvert, Strachan	Install larger culvert	£28,000	1999/00
Maryculter Holiday Park	Extend flood bank defences	£30,000	1999/00
Bairds Park, Stonehaven	Improve flood banks and regularise channel width	£35,000	1999/00
Charleston, St Combs	Install piped drainage	£6,000	1999/00
Glassel Burn, West Brathens	Construct weir	£20,000	2000/01
Carron Water, Stonehaven	Extend river training wall	£27,000	2000/01

6.2.2 Further works in response to inspection and assessment will be carried out to a rolling programme.

6.2.3 Bridge of Mondynes, Bervie Water

The condition of the river with respect to gravel deposits adjacent to the Old Bridge of Mondynes and the new twin box culvert appears to be stable. It will continue to be monitored and will be assessed by a Geomorphologist (paragraph 6.2.2.1 of the Second Biennial Report refers).

6.2.4 Glassel Burn, West Brathens

In addition to the works to stabilise the banks and regularise the channel width of the Glassel Burn, a rock boulder weir was constructed just downstream of West Brathens Bridge in order to further control river water levels alongside the C4K road. The cascades within the weir are of the order of 300mm to 450mm in height and replicate natural features elsewhere in Aberdeenshire rivers. Although not entirely to the liking of certain of the Fishing Interests, flooding of the C4K road which runs alongside the burn at this location has not occurred since (paragraph 6.2.2.5 of the Second Biennial Report refers).

Flooding Problems Identified by Assessment Continued

6.2.5 Green Bridge Weir Spillway, Carron Water, Stonehaven

Design work for a scheme to improve the Green Bridge Weir Spillway and the confluence of the Carron Water and the Glaslaw Burn is in hand. Funding has been allocated in the 2001/2002 budget with a view to construction commencing early in 2002 (paragraph 6.2.2.10 of the Second Biennial Report refers).

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 Lang Stracht, Alford, Golf Terrace, Inch and Woodmill, Craigievar.

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 A study of the confluence of the River Don and River Urie will be commissioned.

6.4.2 A detailed investigation of the drainage systems in Huntly, Turfiff, Ellon, Kintore and Ballater will be concluded.

6.4.3 Proposals for Works of Maintenance are detailed in 6.1.1.2, 6.1.4.1, 6.1.4.4, 6.2.1.2 and 6.2.2.4.

Action Taken Since November 1999 by Aberdeenshire Council Under the Flood Prevention and Land Drainage (Scotland) Act 1997

7.1 Management Action

7.1.1 Determination of Responsibilities within Aberdeenshire Council

The Director of Transportation and Infrastructure is responsible for carrying out the obligations of Aberdeenshire Council arising from the Flood Prevention and Land Drainage (Scotland) Act 1997. These duties are delegated to the Head of Roads and thence to the Structures Manager.

7.1.2 Discussion with Regulatory Bodies

7.1.2.1 A formal North East Scotland Flood Appraisal Group has been established under the chairmanship of the Aberdeenshire Planning and Development Service. Aberdeen City Council Planning Department, NOSWA, SEPA, the Association of British Insurers and the Aberdeenshire Transportation and Infrastructure Service are represented in the Flood Appraisal Group. Other agencies are co-opted to Group meetings on an ad-hoc basis as appropriate. This Group is seen as the forum for discussion and resolution of all issues relating to the impact of development on flooding and vice versa.

7.1.2.2 In addition to discussion within the Flood Appraisal Group, a much closer working relationship with Development Control Officers within the Council has been established. This is seen as mutually advantageous and will be further developed.

7.1.2.3 Regular liaison meetings have been established with Fishing Interests in north Aberdeenshire (the Don, Ythan, Ugie and Deveron catchments) and with those in south Aberdeenshire (the Dee and Kincardine Coastal catchments). These meetings are seen as mutually advantageous.

7.1.2.4 Discussions with officers of neighbouring authorities have taken place and will continue through occasional informal meetings to exchange information and promote best practice.

7.2 Assessment of Watercourses

Staff have been allocated to the task of systematic inspection and subsequent assessment of watercourses. In order to take advantage of their intimate local knowledge, the same staff have also been engaged from time to time in the design of works of maintenance. Progress made with assessment is discussed below. Priorities and timescales for assessment are discussed below.

7.2.1 Progress with Assessment of Watercourses

To summarise, the overall progress to date is estimated as being 55% complete. It should be noted 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.

7.2.2 Prioritise Between Catchments

As outlined in the Second Biennial Report (paragraph 7.2.2.1 refers), for logistical and management reasons, the catchments closer to Stonehaven were inspected and assessed first. Thereafter, catchments have been and will continue to be assessed broadly on the basis of the perceived potential for flood damage.

7.2.3 Prioritise Between Individual Lengths of Watercourse

Individual lengths of watercourses which experienced local flood events during the period November 1999 to October 2001 were given the highest priority over other Flood Prevention work underway at the time. Assessments were undertaken immediately and followed as soon as practicable with positive action to resolve the problem, where appropriate. This practice will be continued so that priorities between individual lengths of watercourse will be 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

The timescale set out in the Second Biennial Report is still seen as realistic (paragraph 7.2.4.2 refers). Main river channels and principal tributaries should have been assessed by the end of 2002; the remaining watercourses should have been assessed within a further six year period.

7.2.5 Frequency of Assessment

The frequency of assessment proposed in the First Biennial Report is still seen as realistic and will be maintained (paragraph 7.1.4 refers).

- 7.2.6 Scope of Assessment
- The services of a Consultant Geomorphologist will be employed from time to time where appropriate to enhance the scope of the assessment.
- 7.3 Works of Maintenance in Response to Flood Events
- As noted in paragraph 6.2.1.1 Works of Maintenance to reduce the likelihood of flooding have been carried out in response to flood events at various locations.
- 7.4 Works of Maintenance Following Assessment
- As noted in paragraph 6.2.2.1 Works of Maintenance to reduce the likelihood of flooding have been carried out at various locations which had been assessed as being to some degree likely to flood.
- 7.5 Priorities for Works of Maintenance
- A simple method of assigning priority to all proposed Works of Maintenance was devised as a means of compiling an annual rolling programme of works within the available budget. Individual schemes are assessed according to the criteria shown below and ranked by point score. The annual programme can be reviewed at any time so that more urgent works in response to flood events can be brought forward into the programme to reflect the priority point score. The point scores are weighted towards actual flood events rather than perceived high risk problems and to social impact. Refer to Table D.

PRIORITIES FOR FLOOD PREVENTION WORKS	
TABLE D	
Schemes to be assessed and ranked by point score according to the following criteria :	
Criteria	Point Score
Perceived Problem	5
One Previous Occurrence	10
> 1 Previous Occurrence	20
Affects Minor Road Network	5
Affects Principal Road Network or Bus Route	8
Affects up to 10 Commercial Properties	10
Affects > 10 Commercial Properties	15
Affects School Buildings or Other Public Buildings	20
Affects up to 10 Domestic Properties	15
Affects > 10 Domestic Properties	20
Lone Occupant Affected	5
Young Children Affected	10
Old People Affected	15
Disabled or Sick People Affected	18
Emergency Access Affected	20
Essential / Desirable	
Schemes to be rated either essential or desirable. All essential schemes to be programmed before any desirable schemes. Criteria for a scheme to be considered essential are one of the following :	
• Occupied Property Affected	
• Emergency Access Significantly Affected	
• Unstable Conditions	

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) Whitestone, Strachan
- (2) Burn of Canny, Inchmarlo
- (3) Burn of Canny, Glasel
- (4) Middlemuir Road Area, Inverurie
- (5) Parkhill, Kemnay
- (6) Keithmuir Gardens, Drumoak
- (7) Green Bridge Weir Spillway, Stonehaven

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

8.2 Flood Prevention Schemes

The improvements to the Tarland Burn in Tarland and Aboyne referred to in 6.2.1 are immediate responses to a flood event to provide the best degree of protection against further flood events. In order to provide a more long term solution by way of reducing the severity of future flood events, the feasibility of creating flood plain storage at various locations within the Tarland Burn catchment will be investigated. If the flood plain storage which can be achieved is sufficient to have a significant effect on future flood events, a formal Flood Prevention Scheme will be proposed.

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 7.2.6.

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. Data and advice will be made available through the North East Scotland Flood Appraisal Group.
- 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. Aberdeenshire Council have interpreted assessment of watercourses 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.

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 it's 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 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.

10.4 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 borrowing consents to fund schemes ;
- (4) involve the private sector in contributions towards Flood Prevention Schemes or Works of Maintenance.

11.

Contact Point

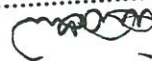
All enquiries arising from this report should be forwarded to the Head of Roads, Carlton House, Arduthie Road, Stonehaven, AB39 2DP. Informal enquiries should be made to Malcolm Taberner, Structures Manager, telephone 01569 768474.

12.

Conclusion

This is the Third 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 and Infrastructure
Aberdeenshire Council

MHT/LB/S/1/175
30 November 2001

APPENDIX A

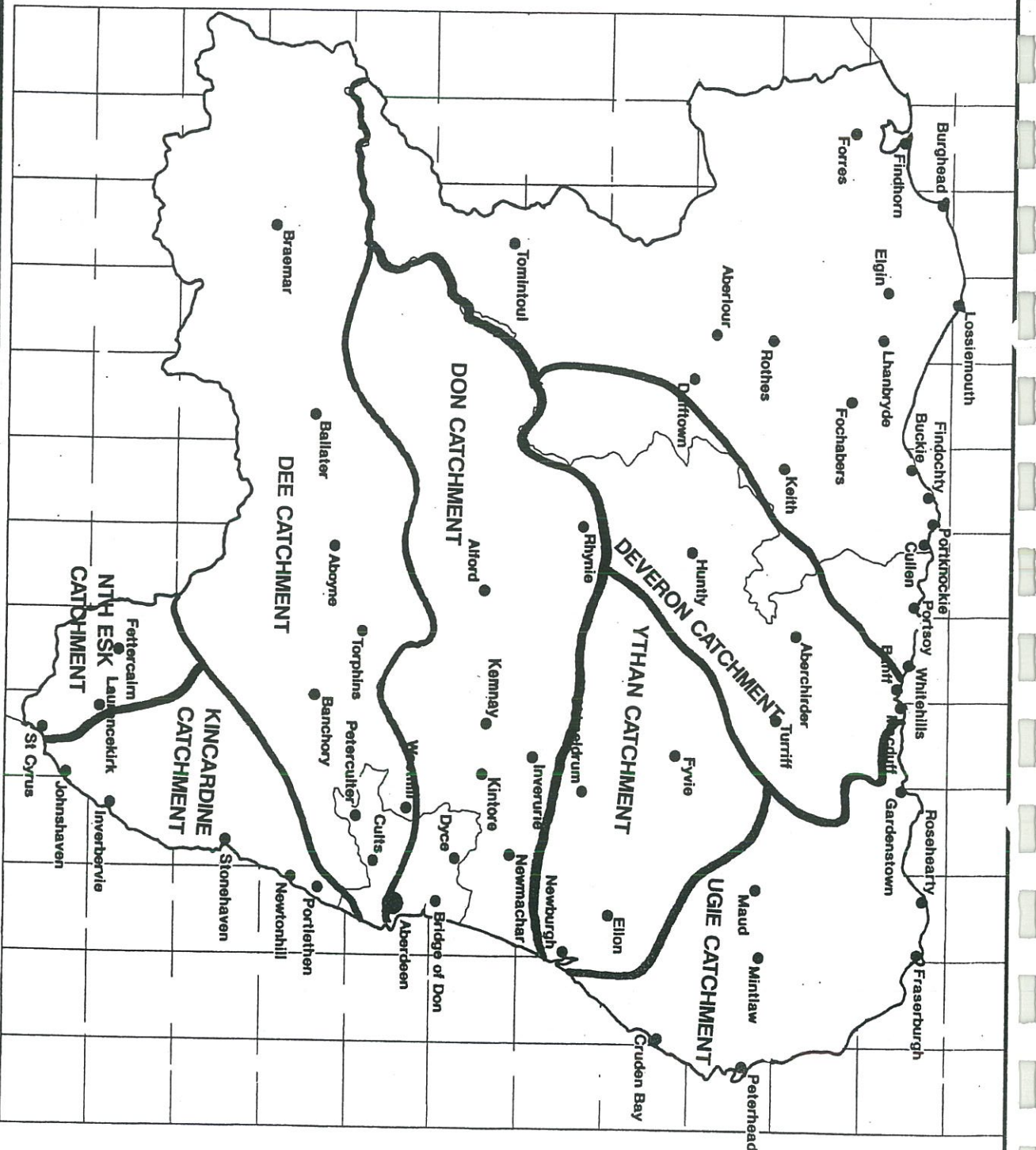
CATCHMENT AREAS WITH MAIN WATERCOURSES, PRINCIPAL
TRIBUTARIES AND SETTLEMENTS

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

Catchment	Watercourse	Settlement (or district)
		Fyvie
		Woodhead
		Methlick
		Ellon
		Waterton
		Kirkton of Logie Buchan
		Newburgh
	Tifty Burn	Tifty
	Fordoun Burn	Rothienorman
	Little Water	(Burnno)
	Black Burn	(Bellmuir, Gowanwell)
	Ebrie Burn	(Blackhill of Fortie)
	Yowie Burn	Milton of Ardliehen
	Bronie Burn	Littlemill of Esslemont
		Pitmedden
	Burn of Forvie	Udny Green
	Tarty Burn	(Forvie)
	Foveran Burn	Tipperty
	River Don	Newburgh
Don		Strathdon
		Bellabeg
		Forbes Town
		Waterside
		Glenkindie
		Towie
		Kildrummy
		Bridge of Alford
		Montgartie
		Alford
		Keig
		Pittchie
		Monymusk
		Kemnay
		Burnhervie
		Port Elphinstone
		Inverurie
		Kintore
		Hatton of Fintray
		Cothall
		(Dumandhu)
	Burn of Loinberry	Loinberry
	Cock Burn	Cock Bridge
	Delavine Burn	(Delavine)
	Burn of Tornahaisish	(Tornahaisish)

Catchment	Watercourse	Settlement (or district)
		Conrie Water (Culforth)
		Ernan Water (Glen Ernan)
		Water of Carvie (Birkford)
		Water of Nocht (Glen Nocht)
		Deskry Water (Deskry)
		Water of Buchat (Glen Buchat)
		Kindie Burn (Pitcandlich)
		Socach Burn/Long Burn (Culforth)
		Leochel Burn
		Suie Burn
		Montgarrie
		Tullynessle
		Ton Burn (Dalriach)
		River Urie
		Inverurie
		Drumries
		Inveramsay
		Pitcaple
		Whiteford
		Mill of Carden
		Old Rayne
		Pitmachie
Dee	River Dee	Braemar
		Balnaut
		Easter Balmoral
		Bridge of Muick
		Ballater
		Dinnit
		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)
		Feardar Burn (Inver)
		Gelder Burn
		Gimnock Burn
		River Gairn (Glen Gairn)
		River Muick (Glen Muick)

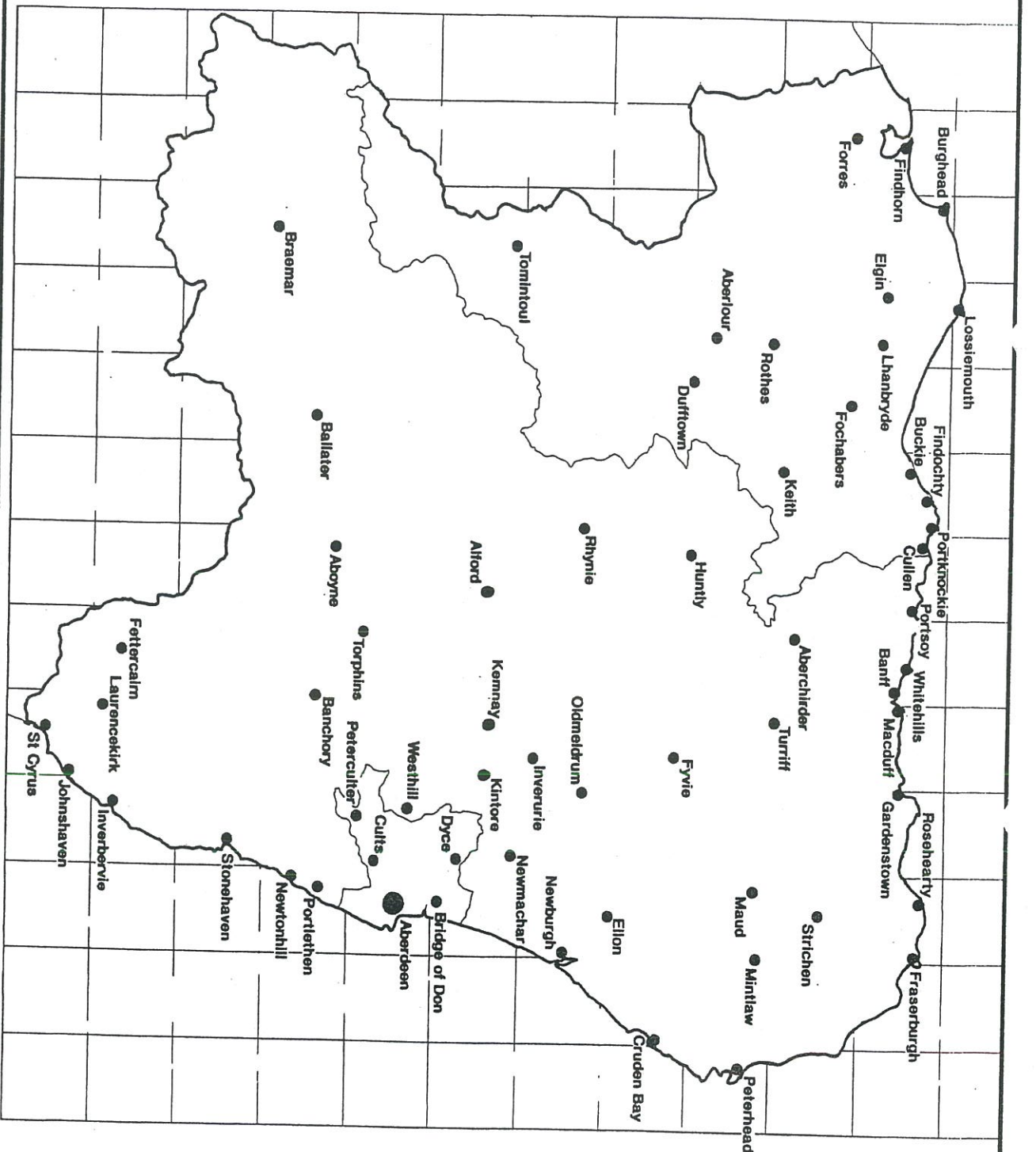
Catchment	Watercourse	Settlement (or district)
	Tullich Burn	Milton of Tullich
	Pollagach Burn	(Dinnel)
	Water of Tanar	(Glen Tanar)
	Burn of Canny	Bridge of Canny
	Water of Feugh	(Feughside)
	Bo Burn	Strachan
	Burn of Sheeoch	Kirkton of Durris
Kincardine Streams	Bervie Water	Glenbervie
	Drumlithie	Inverbervie
	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
	Cowton Burn	Stonehaven
	Carron Water	Kirkton of Fetteresso
	Burn of Muchalls	Stonehaven
	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)



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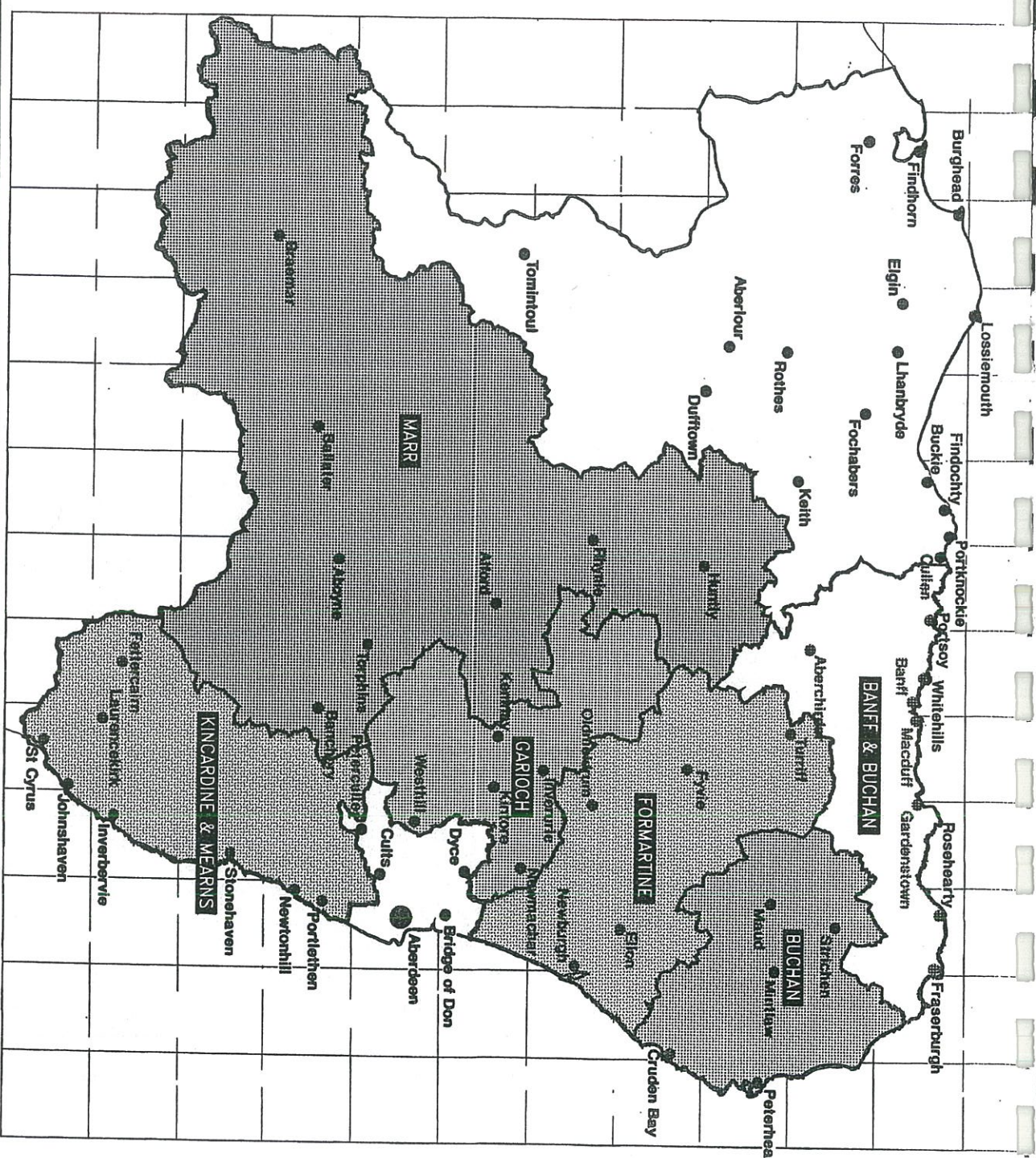
FIG. 1 : EXTENT OF RIVER CATCHMENTS



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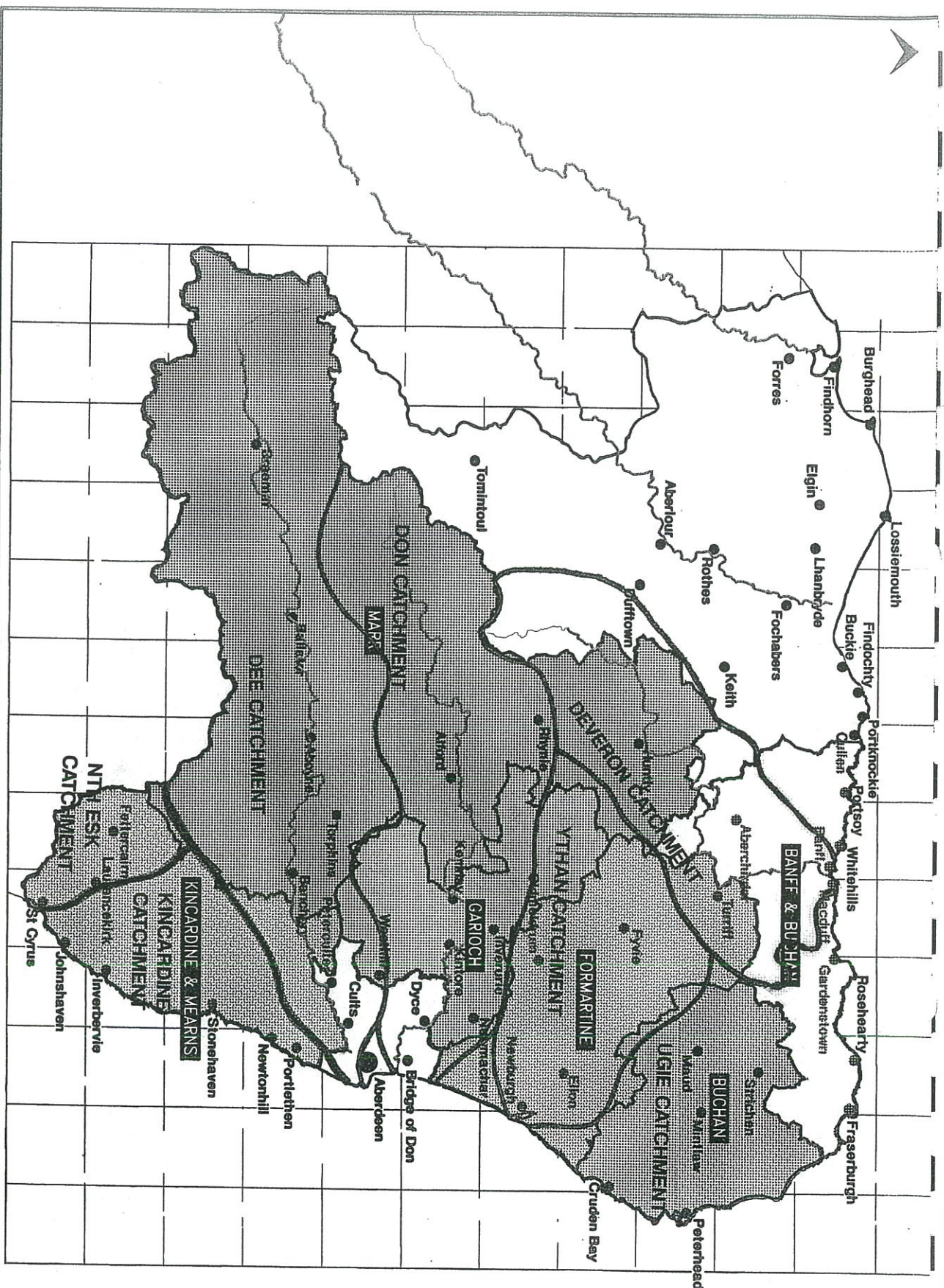
ABERDEENSHIRE COUNCIL
 TRANSPORTATION AND ROADS



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FIG. 3 : ADMINISTRATIVE AREAS WITHIN ABERDEENSHIRE



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