

APPENDIX A

**ROADS AND TRANSPORT
FLOOD PREVENTION POLICY**



ROADS AND TRANSPORT COMMITTEE

FLOOD PREVENTION POLICY

The Council's general policy on Flood Prevention Maintenance and assessment was agreed at the Roads and Transport Services Committee of 11/06/97.

The general policy is as follows:-

1. Assessment

1.1 It is proposed that formal assessments are carried out by a member of staff in Network Management with close involvement of Area staff. These assessments will be prioritised as follows:-

- a Know areas of flooding
- b Urban areas, in order of size of population and possible risk of flooding
- c Rural areas, in order of possible risk of flooding

1.2 The assessments shall be carried out when resources permit. Given the magnitude of the task the requirement to carry out the assessments "from time to time" is likely to lead to the intervals between assessments to be several years. It is also unlikely that all the watercourses that require to be assessed will be completed in less than 3 years.

1.3 SEPA have responsibilities to also carry out formal assessments. Co-operation between the Council and SEPA will be instigated to reduce duplication of effect.

2 Works

2.1 Where the need for work is identified by the assessment process then the works will be carried out in order of priority within available resources. Prioritisation will consider the following:-

- a Where there is risk to life.
- b Where there is risk to property which shall be prioritised in the order of residential premises; commercial premises; residential land; commercial land.
- c Areas of denser population will be given higher priority than single residences.

- 2.2 The prioritisation will take into account the frequency of the risk. Flood frequencies are expressed in terms of statistical return periods which are expressed in terms of 1 in 5 years, 1 in 20 years return periods, etc. These indicate that a 1 in 20 year flood is likely to occur, once during a 20 year period.

However with all statistical analysis the actual occurrence of flooding may be more or less frequent than the prediction. There is also no method of predicting when a 1 in 20 year flood may occur - the lower the return period, the higher the risk of flooding.

- 2.3 The prioritisation will take into account the possible magnitude of the effects of a flood event.
- 2.4 Works will be carried out when resources are available.

3 Formal Flood Prevention Schemes

Where the assessment identifies a potential problem which will not be alleviated solely by works under Section 2 of 'The Flood Prevention (Scotland) Act 1961', but would be alleviated by a formal flood prevention scheme, the feasibility of such a scheme will be investigated with a view to considering such a scheme in the Service capital Expenditure Plan.

4 Review

- 4.1 In consideration that these are new duties imposed on the Council, it is proposed to review this strategy at suitable intervals as necessary.

At the meeting of the Roads and Transport Services Committee on 27/08/97, the minutes of the Roads and Transport Strategy Group of 19/06/97 were agreed which included the following policy:-

- Procure flood prevention works only for residential properties and public roads.
- Allocate capital and revenue funds to flood prevention schemes within the budget constraints imposed on the Service, along with adequate resources to procure schemes within the required timescale, taking into account the Statutory requirements.
- Maintain flood prevention schemes constructed by The Highland Council or the previous authority, but not those constructed by other parties except where failure to do so would threaten property.
- Make discretionary contributions to flood prevention works procured by others as deemed appropriate in order to procure flood prevention works.

- Those parties promoting Flood Prevention schemes be informed of the Council's inability to fund their schemes in view of the restricted availability of capital expenditure and the schemes already programmed in order that alternative funds could be investigated by them.

APPENDIX B

**EXTRACT FROM
THE HIGHLAND COUNCIL STRUCTURE PLAN
NATURAL HAZARDS**

2.19 NATURAL HAZARDS

2.19.1 In creating the infrastructure for Highland communities, it is essential that full regard is taken of the constraints that exist because of natural hazards. This is a fundamental component of sustainable development, because insufficient attention to natural hazards at the outset can require considerable remedial expenditure in the future. There may also be difficulty in reconciling remedial action with the quality of the natural environment. Some natural hazards have increased in prominence as a result of the consequences of global warming. The issue relates strongly to the strategic themes of proactively planning for Highland's natural environment and of providing for quality living environments.

Flooding

2.19.2 Combinations of high rainfall, snow melt, high tides and "storm surges" can lead to serious flood occurrences at lower-lying, near-coastal locations. Localised flooding can occur after periods of very heavy rainfall, abetted perhaps by river defence works upstream or the limited capacity of culverts and drainage infrastructure. Recent years have seen flood incidents on, for example, the Rivers Spey, Ness and Kerry. Given the geography of Highland and its land use pattern, The Council believes flooding to be a localised issue, and so the over-riding strategic approach is included within Strategic Policy G2.

2.19.3 Flood consultation areas will be indicated in Local Plans. One source of information can be 1:50,000 scale flood frequency maps prepared for the Scottish Environment Protection Agency, based on current hydrological datasets. Within such areas, development should be assessed for its compatibility with the flood risk in terms, for example, of its permanency of occupation, associated flood alleviation measures, and consequences for downstream flows/flow back-up.

Proposal NH1 Flood consultation areas

Local Plans will identify areas with a perceptible risk of flooding. Within these areas, all development proposals will be assessed for their compatibility with the flood risk and with the flow character of the watercourse.

2.19.4 The Council has statutory responsibilities in respect of flood protection for non-agricultural land. Flood Appraisal Groups have been set up elsewhere in Scotland where flooding is a major issue and a co-ordinated integrated approach is essential. Whilst the problem is not so acute and concentrated in Highland, the anticipated scale of future development in the Inverness area lends The Council to believe that such a Group for this area may be prudent.



INFRASTRUCTURE

Policy Links

- GENERAL STRATEGIC POLICIES
- INTEGRATED RURAL DEVELOPMENT

COMMUNITY

- HOUSING
- RETAILING
- SERVICES AND FACILITIES
- SPORT AND RECREATION

ECONOMY

- BUSINESS AND INDUSTRY
- TOURISM
- AGRICULTURE AND CROFTING
- FISHERIES AND AQUACULTURE
- FORESTRY
- MINERALS AND PEAT
- ENERGY PRODUCTION

ENVIRONMENT

- NATURE CONSERVATION
- LANDSCAPE
- BUILT AND CULTURAL HERITAGE

INFRASTRUCTURE

- TRANSPORT & COMMUNICATIONS
- WASTE
- UTILITIES
- NATURAL HAZARDS



Proposal NH2 Flood Appraisal Group

The Council will establish a Flood Appraisal Group, in partnership with key agencies, to provide a co-ordinated approach to flood management and inform Local Plans. This will focus initially within the Inverness area.

2.19.5 Flooding will be one issue covered within Integrated Catchment Management Plans. The Council will support the production and implementation of these strategies (see Policy RD1). In view of the impending designation of the Rivers Spey and Kerry as Special Areas of Conservation under the EU Habitats Directive, the catchments of these rivers should be a priority for integrated strategies. The Council would expect central funding to be made available to facilitate this.

Policy NH3 Integrated Catchment Management Plans

The Council will support the production of Integrated Catchment Management Plans, to include flood management. In view of the prospect of securing EU assistance for preparation, past flood events and the implications of Natura 2000 designation, The Council will support early work on the Rivers Spey and Kerry.

Coastal erosion

2.19.6 The future threat of rising sea levels has increased concern generally regarding coastal erosion where shorelines are low-lying and formed of soft material. There is much uncertainty over this issue, partly in view of the counter-acting force of isostatic rising of land for Scotland as a whole. Broad advice in Government guidance is that natural processes should be allowed to proceed, since eroded materials may form natural offshore defence mechanisms in the longer term. Coastal defence works may, however, be necessary where the economic and social consequences of inundation would be unacceptable.

2.19.7 On a strategic basis, the shoreline of the Inner Moray Firth area around the Beaully, Cromarty and Dornoch Firths has tentatively been identified as at risk from sea level rising (Natural Environment Research Council Report, 1989). Strategic Policy G2, therefore, allows for consideration of resisting developments in coastal zones where the implications in respect of coastal erosion would be unacceptable. This may be either because of future hazard to the development itself, or because development would inhibit the natural opportunity for landward materials to migrate offshore for natural defence purposes.

2.19.8 Detailed work in respect of Nairn and Burghead to the Souters Gap has already been carried out with the preparation of Shoreline Management Plans. Continued monitoring of the situation is recommended to determine appropriate action. The Moray Firth Partnership and the Cromarty Firth Liaison Group provide vehicles for discussion on appropriate measures.

Policy NH4 Coastal erosion

The Council will work with the Moray Firth Partnership and the Cromarty Firth Liaison Group to ensure that coastal management along the Inner Moray Firth is sustainable bearing in mind climate change, particularly the increased incidence of storm damage.

Land instability

2.19.9 Development proposals on steeply sloping land not only face the possible risk of future slope failure, but also the costs of relevant servicing (particularly roads) tends to be high. For these reasons, as a general rule of thumb, land of more than 1 in 7 gradient is not regarded as appropriate for development. Development proposals on ground steeper than this should be accompanied by engineering reports.

Proposal NH5 Land instability

Local Plans will identify land slopes of greater than 1 in 7 gradient within settlement areas, within which Strategic Policy G2 will apply.

Radon gas

2.19.10 Radon is a radioactive gas which occurs naturally in low-concentration uranium within general rocks and soils. Some level of radon is found everywhere, but in certain areas it is released in greater volumes. Inside homes and other buildings the gas can accumulate and become a health risk. The Government advises that when recorded levels exceed 200 becquerels per cubic metre of air, the exposure to the gas should be reduced.

2.19.11 While this level can be exceeded in any building wherever located, householder measurements to date have indicated that a particular concentration occurs in South East Sutherland and South East Caithness. These areas have been designated as a "Radon Affected Area", where radon measurements are particularly recommended. Existing and new buildings can reduce internal exposure to the gas by the installation of an extractor sump or enhanced methods of ventilation.

Policy NH6 Radon gas

Local Plans should identify designated Radon Affected Areas. Within these areas, proposed occupied buildings should incorporate provision for reduction of exposure to the gas.

APPENDIX C

**WATERCOURSE REFERENCE SCHEDULES &
ASSESSMENT CHECK CHART
EXAMPLES**

WATERCOURSE REFERENCE SCHEDULE

(To be reviewed and updated as required)

AREA: INVERNESS

Reference No.	Watercourse	Location	Origin Ref.	Grid	Outfall Ref.	Grid	Priority	Comments	Date File Opened
I/1	River Ness	Weirs at Dochfour to Moray Firth	2612 8395		2660 8470		3	Known flooding at Ness Bank. High river levels and high tides known to cause flooding at Douglas Row.	Ongoing
I/2	Holm Burn	Loch Ashie to River Ness	2638 8359		2644 8422		2	Propping of Holm Bridge on the B862 has been modified and is now less susceptible to flooding.	July 2001 Photographs only
I/3	Lochardil Burn	Balmore of Leys to Lodge Road, Inverness	2668 8406		2679 8432		1	Flooding of 5 houses several times in last four years, Drumdevan Road.	May 2001 Photographs only
I/4	Slackbuie	Lower Slackbuie to 11 Green Drive, Inverness	2672 8421		2669 8428		1	2 houses flooded opposite Green Drive.	July 2001 Photographs only
I/5	Ault na skiah	East of Leys castle to River Ness	2687 8412		2665 8441		1	Known flooding of 12 Lodge Road.	July 2001 Photographs only
I/6	Druid Burn	Druid Temple to 20 Heather Road, Inverness	2688 8421		2680 8437		1	Flooding of Sir Walter Scott Drive/Old Edinburgh roundabout due to culvert blockages.	July 2001 Photographs only
I/7	Mill Burn West	Parks to rear of 28 Grebe Avenue, Inverness	2690 8426		2680 8436		1	Known flooding to several houses once in last 6 years.	July 2001 Photographs only
I/8	Mill Burn	Milton of Leys to Moray Firth	2698 8418		2684 8459		1	Houses at end of Diriebuight Road flooded several times over the years.	July 2001 Photographs only
I/9	Dell Burn	Inshes Smallholdings to A9	2695 8434		2688 8454		3	Major realignment at A9/Raigmore in 2003 after September 2002 heavy flooding	Ongoing: 2005 to 2009 Photographs, Observations, Reports

Reference No.	Watercourse	Location	Origin Ref.	Grid	Outfall Ref.	Grid	Priority	Comments	Date File Opened
I/10	Scretan Burn	Woodlands Place to Cradlehall Farm Drive	27035	84387	26984	84475	3	Ongoing inspection and maintenance	2004: Last inspected July '09 *
I/11	Muckovie Burn	Culloden Road at Cradlehall Park to Caulfield Road North	27072	84429	27043	84492	3	Ongoing inspection and maintenance	2004: Last inspected July '09 *
I/12	Tower Burn	Culloden Road at the Tower to Cranmore Drive , Smithton	27148	84423	27082	84542	3	Ongoing inspection and maintenance - upgraded in 2007/2008	2004: Last inspected July '09 *
I/13	Smithton Burn	Woodside of Culloden to Keppoch Road	27213	84441	27144	84598	3	Ongoing inspection and maintenance/upgrade	2004: Last inspected July '09 *
I/14	Culloden Burn North	Keppoch Road to Milton of Culloden Smallholdings	27165	84655	27116	84687	3	Ongoing inspection and maintenance	2004: Last inspected July '09 *
I/15	Culloden Burn West	Culloden Wood to Keppoch Road	27218	84563	27165	84653	3	Ongoing inspection and maintenance	2004: Last inspected July '09 *
I/16	Culloden Burn South	Culloden Wood to Keppoch Road	27271	84596	27166	84654	3	Ongoing inspection and maintenance - part upgraded in 2004	2004: Last inspected July '09 *
I/17	Culloden Burn East	Moraypark Gardens to Keppoch Road	27266	84611	27180	84665	3	Ongoing inspection and maintenance	2004: Last inspected July '09 *
I/18	Fiddler's Burn	Torris Road to Barn Church Road, Balloch	27336	84673	27294	84729	3	Ongoing inspection and maintenance - upgraded in 2004	2004: Last inspected July '09 *

***Photographs/observations**

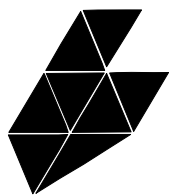
ROUTINE FLOOD ASSESSMENT CHECK CHART

Watercourse Ref	Watercourse	Assessment Requirement	YEAR: 2001												
			JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
C1	Dunbeath Water Portormin Rd	Biennial													
C2A	Wick River Safeway Car Park	Annual													
C2B	Wick River Distillery Lade	Annual													
C3	Castletown East (Unknown)	Biennial													
C4	Castletown West (Unknown)	Biennial													
C5A	Thurso River (Thurso)	Annual													
C5B	Thurso River (Gerston)	Biennial													
C5C	Thurso River (Braul)	Biennial													
Key: Assessment due and date:				Assessment complete											
Assessment due and date:				Assessment Complete											

Note:All assessment records shall be filed in the appropriate Watercourse Reference File.

APPENDIX D

ASSESSMENT EXAMPLE



**The
Highland
Council**
Comhairle na
Gaidhealtachd

SERVING The Highland Community

WATERCOURSE ASSESSMENT RECORD

Watercourse:	Wick River
Watercourse Ref:	C2B Pulteney Distillery Lade
Section under assessment:	
From:	3195,9677
To:	3202, 9682
Date:	5 October 2001
Assessment Officer:	I Moncrieff
Reason for Assessment:	Annual inspection
Observations: (Note this to include comment on all:- a Structures/culverts b Debris/Location/Nature c Vegetation Growth)	<p>The lade appears heavily overgrown with vegetation. The stilling pond upstream is overgrown and the outfall sluice gate has collapsed. However, the burn does flow past the remains of the gate freely.</p> <p>The culvert beneath Roxburgh Road is approx. running 50% full after heavy rain (although heavy it wasn't considered to be the annual rain fall event).</p> <p>Screen at the distillery is free of debris.</p>
Recommendations:	Lade should be monitored closely. Any works will need permission of distillery as they abstract water.