

# Appendix B

## Problem areas

This Appendix lists by area those locations regarded as problem sites.

### Skye

- Broadford
  - Waterloo Road - flooding at high tides
- Dornie
  - flooding at high tides
- Elgol
  - head of Loch Slapin - road floods at high tide
- Glenelg
  - Moyle - river floods road
- Kyle
  - railway sleepers collapsing on covered watercourse
- Portree
  - Balmoral Road - piped watercourse causing problems
  - Somerled Square - surcharge flows from manholes
- Raasay
  - formal flood protection scheme required
- Sconser area
  - culverts block with gravel

### Ross & Cromarty

- Avoch
  - restricted waterway area combined with tide causing problems
- Conon Bridge
  - School Road - run-off from field floods road
- Eel Burn
- Dingwall
  - Police Station area - impermeable ground holding water
  - Burns Crescent - river floods adjoining properties
  - Craig Road - tidal problem
  - Ferry Road
  - Bridge End / Luncarty Road to Peters Bridge
- Fortrose
  - Watergate - surcharging of pipe network
  - St Andrews Walk - tidal problem
- Kildary
  - Tarbert Cottages
- Muir of Ord
  - Chapelton Place
  - Road up from new housing at distillery causing problem
- Munlochy
  - Burn Place - grating regularly blocks causing problem
- Strathpeffer
  - station yard
  - main culvert in village not big enough
  - Kinellan Drive - ponding at inlet
- Tain
  - Aldie Burn - flooding garden

Rosemount - new development upstream causing problems  
Strathconon  
road floods near Scatwell, Little Scatwell, and on back road to Achility  
Moy and Orrin Bridges

Caithness

Lybster  
problems on northern road associated with new properties  
Thurso  
flooding at high tides in river mouth  
Wick  
Hospital Road  
flooding at high tides in river mouth

Sutherland

Strath Oykel  
A837 road floods at high tide  
Bonar Bridge  
road floods at high tide  
Dornoch  
Fleuchary - flooding caused by inadequate ditches to burn outlet  
Strath Fleet - agricultural land floods as far as Rogart

Inverness

Ardersier  
Beauly  
Drumnadrochit  
River Coiltie  
River Enrick  
Fort Augustus  
Inverness  
Altnaskiach Burn  
Cavell Gardens  
Clachnaharry Village - flooding at high tides  
Diriebught Burn  
Douglas Row  
Drumdevan Road  
Falcon Avenue  
Huntly Street  
Inshes Burn  
Loch Ard Burn  
Lochardil Burn  
Millburn  
Ness Walk  
Ness Islands  
Smithton  
Surcharging of culverts  
Tomich

The Rivers Beauly / Ness / Affric / Glass / Nairn / Findhorn also have locations where flooding occurs on a regular basis.

Nairn

Auldearn  
Auldearn Burn floods adjoining properties  
Cawdor  
Littlemill  
Nairn

Balmakeith Park Housing Scheme - burn floods adjoining road and properties

Badenoch

The Spey floods throughout its length, but causes especial problems at Aviemore and Kingussie. At Aviemore there is periodic inundation of properties on Dalfaber Road. There are also problems with the drainage system serving the Aviemore Centre. At Kingussie in addition to the problems associated with the Spey affecting the Council yard, waterway restrictions on the Gynack Burn particularly at the railway bridge, give rise to serious problems for the nearby school and the railway track itself.

Lochaber

Acharacle

flooding at Moss and Dorlin subject of consultant's study

Ballachulish

tidal problems,

Caol

Problems when high tide combines with flood flows in River Lochy. Flooding of adjacent roads and properties.

Fort William

swimming pool and leisure centre, Plantation and Achintore all require frequent bed maintenance of hill burns

Bank Street - culvert failing

Glencoe

tidal problems

insufficient capacity in existing drainage system creates surcharges

Glen Nevis

road flooded when river is high

Inverlochy

tidal problems

Kinlochleven

Frequent bed maintenance required to prevent blockages and subsequent flooding

Foyers Road

Mallaig

minor problems

Being exposed to the west Lochaber also experiences problems when wind acting over long fetches creates high amplitude waves which overtop coastal roads in some locations.

# Appendix C

## Data to be Recorded

In order to keep a realistic yet simple overview of flood related matters within the extensive Council area large amounts of information will need to be collected, collated, and referenced. A certain amount of information has already been collected and is stored within a geo-coded database to aid retrieval and analysis. The types of information thought to be required relate to :-

### Catchments

Catchments dictate water quantities and are required to enable flow predictions. Need to be determined.

### Coastal protection schemes

The location and extent of all coastal protection schemes likely to influence flooding need to be recorded.

### Constraints

Many incidents occur due to restrictions in available waterway area primarily at culvert and pipe intakes. Details of all constraints to flow need to be recorded and their capacity determined. These may be under Council, other public body, or private control.

### Developments

Ongoing completion of developments changes catchment characteristics, and therefore the situation requires predictive research into agreed final layouts, particularly when proposed developments are significant in size, to ensure flow regimes are better rather than worse than existing. Existing, new, and proposed developments will need to be recorded.

### Incidents

The Council is obliged to record all flooding incidents and report on these in the biannual reports but they are clearly pertinent to decisions on programming work and need to be recorded.

### Land ownership

The Flood Prevention and Land Drainage (Scotland) Act 1997 does not empower Council with rights of access to undertake surveys or assessments. Access arrangements will need to be agreed with adjoining landowners and ownership therefore needs to be recorded.

### Land use

Land use patterns require to be established in order to realistically estimate run-off characteristics. Land use changes rapidly and it needs to be monitored.

### Photographic records

Photographs both terrestrial and aerial, and possibly those based on satellite imagery are an important aid to visualisation of past events or current situations and need to be suitably archived.

### Pipe networks

The location, sizing and condition of pipe networks in urban areas is particularly important and adequate records need to be created and stored.

#### Prevention schemes

The location and extent of those flood prevention schemes already constructed together with those works undertaken by other parties need to be recorded.

#### Watercourses

In open areas the location of watercourses is readily seen, but where these have been enclosed, more likely in urban areas with piped and culverted systems, then locations will need to be mapped and recorded.

Bank levels for those watercourses with known flood problems will require detailed survey work.

#### Weather

The Council are discussing the possibility of using Meteorological Office records to determine the significance of storm events. Provision of suitable weather forecasts giving severe weather warnings for especially sensitive areas is also being considered. The information provided will be recorded.

## Bibliography

- A82 Transport Centre to the Kennels Physical Model Study  
Report EX 2256  
HR Wallingford for Scottish Development Department  
Oct 1991
- A Guide to Surface Water Best Management Practices  
SEPA  
May 1996
- Coast Protection Act 1949  
HMSO
- Culloden Storm Water Strategy  
A96 Developments  
Inshes Burn Storm Water Disposal Options Study  
Mott MacDonald for HRC Department of Water and Sewerage  
Apr 1995 - Aug 1996
- Flooding in Badenoch and Strathspey Final Report  
R H Cuthbertson for HRC Department of Water and Sewerage  
Nov 1990
- Flood Prevention (Scotland) Act 1961  
HMSO
- Flood Prevention and Land Drainage (Scotland) Act 1997  
HMSO
- Fort William Flood Study  
Dec 1990  
Mott MacDonald for HRC Department of Water and Sewerage
- NPPG 7 National Planning Policy Guideline  
Planning and Flooding  
Scottish Office Environment Department  
1995
- Fort William Study  
Review of 1992 Flood  
Mott MacDonald for HRC Department of Water and Sewerage  
Sep 1992
- Local Government and Housing Act 1989  
HMSO
- Reservoirs Act 1975  
HMSO
- Southern Inverness Water Basin Management Study  
Mott MacDonald for HRC Department of Water and Sewerage  
Sep 1990

## Glossary

FPO	- Flood Prevention Order
HC	- Highland Council
HMSO	- Her Majesty's Stationery Office
HRC	- Highland Regional Council
NID	- Notice of Intention to Develop
NOSWA	- North of Scotland Water Authority
NPPG	- National Planning Policy Guideline
SCOTS	- Society of Chief Officers of Transportation in Scotland
SEPA	- Scottish Environmental Protection Agency
SNH	- Scottish Natural Heritage
SOAEFD	- Scottish Office Agriculture Environment and Fisheries Department
SODD	- Scottish Office Development Department