THE HIGHLAND COUNCIL

Agenda Item	15
Report No	PDI 32/14

PLANNING, DEVELOPMENT AND INFRASTRUCTURE COMMITTEE

20 August 2014

FLOOD RISK MANAGEMENT PLANNING

Report by Director of Development and Infrastructure

Summary

This report presents the progress made to date on the development of the draft Flood Risk Management Strategies for the Highland & Argyll, and Findhorn Nairn and Speyside Local Plan Districts. Members are asked to note progress, and provide approval of Key Stages to allow public consultation of the drafts to take place in December 2014 and March 2015, and more detailed appraisals of the Shortlist of Measures to take place.

This paper helps the Council meet objective 17 within 'Better Infrastructure' in the Programme for The Highland Council 'Working together for the Highlands'.

1. Background

1.1 Fundamental to the flood risk management planning process is effective joint decision-making. The Highland Council is working closely with Scottish Environmental Protection Agency (SEPA), Scottish Water and neighbouring local authorities to ensure that decisions are made in partnership.

1.2 There are five key stages in the development of Flood Risk Management Strategies and Plans, at which approval from the Local Plan District (LPD) Partnership is sought. The LPD Partnership is made up of representatives from SEPA, Scottish Water, The Highland Council, Argyll & Bute Council and Moray Council. Within the Partnership, a Project Management Group (consisting of lead officers responsible for the day to day management of the works) meets regularly to ensure progress of Strategies and Plans. At key stages, the 'Steering Group' meets (consisting of the Project Management Group and Elected Members from each Local Authority) to discuss progress and provide input to the general direction of the works. The Steering Group has delegated powers to agree certain Key Stages of the works.

1.3 These key stages are listed below.

- Catchment Characterisation
- Initial Objective setting
- Long List of Measures
- Short List of Measures
- Appraisal and Prioritisation of Measures

2 Key Stage 1: Catchment Characterisation

The Characterisation Reports provide factual information about each Potentially Vulnerable Area (PVA), as well as coastal reaches and river groups. Each report will include information such as soil type, land use, flood mechanisms, hydrology and an assessment of the financial impacts of flooding. In total for Highland & Argyll LPD there are:

- 1 Local Plan District Overview Reports
- 6 Coastal Characterisation Reports
- 1 Surface Water Characterisation Reports
- 7 River Group Characterisation Reports
- 40 Potentially Vulnerable Area Reports

2.1 Characterisation Reports include factual information compiled by SEPA's consultants and have been developed in partnership with the LPD Project Management Group. To ensure that all Members' local concerns with respect to flooding were captured and included in the Characterisation (when relevant), the Flood Team carried out a programme of Ward briefings and consultations in 2013. All issues raised by Members that fit the criteria of being a 'nationally significant flood risk' were added to the Characterisation.

2.2 Since the Characterisation is a factual summary of risks within each PVA, it was agreed by TECS Committee on the 19 September 2013 that approval of Key Stage 1 should be delegated to the LPD Steering Group (including The Highland Council's Elected Member). **Members are invited to note that this approval was given at LPD Meetings on 3 July and 30 July 2014.**

2.3 <u>Formal Consultation</u>

In line with both Local Authorities, and SEPA's statutory obligations under the Flood Risk Management (Scotland) Act 2009, a formal public consultation on the draft Strategy and Supplemental Part of the Plan, including the 'Characterisations' will begin on the 22 December 2014.

2.4 SEPA has proposed that this be a single coordinated consultation managed by them, but jointly branded, using 'Citizen Space'- an online web-based programme. The benefits of this are that:

- there is a national 'joined up' consultation on the future management of flood risk; and

- there is a one stop shop for the public to view and respond through

2.5 Whilst still in early stages of development, it is anticipated that The Highland Council's web-site would advertise and host an introduction to the consultation with links to Citizen Space, and a hard copy would be made available at Headquarters. **Members are invited to note the timescale for the first consultation on the draft Strategy and Plan is December 2014, and approve in principle the method of consultation.**

3 Key Stage 2: Initial Objective Setting

Objectives are agreed in two stages. Initial Objectives (presented here in Appendix A) have been developed by SEPA in collaboration with THC, and are based on the Characterisation Reports. Initial Objectives are quite broad in nature with their principal aim to focus the future development of Measures that are needed to alleviate flood risk.

3.1 Final Objectives will be generated later following more detailed appraisal on what is practical and feasible in terms of technical solutions and resources.

3.2 Some Objectives are set across the whole Local Plan District. These Objectives are generally based around *avoiding an increase* in flood risk, for example through the appropriate application of land use planning policies and the development control process.

3.3 Most Objectives are set at the scale of the Potentially Vulnerable Area (PVA). Where significant flood risks have been identified in the Characterisation, one or more Initial Objectives may be set to address the specific locations where the flood risk is concentrated.

3.4 In some cases, where subsequent analysis of the PVA has identified that the flood risk is not significant, or can be managed through existing or planned maintenance measures, there will be no specific Objectives required. Where this is the case, the current levels of flood risk are deemed to be accepted and only the Objectives set at the Local Plan District level apply.

3.5 Since the setting of Objectives for the Highland & Argyll LPD and the Findhorn, Nairn & Speyside LPD and each PVA within it, sets out the 'direction of travel' for the Strategy and Plan, it was agreed by TECS Committee on the 19 September 2013 that the approval of the Initial Objectives be referred to TECS Committee. **Following the re-structure of the Council in 2014, Members of the PDI Committee are now invited to approve these draft Initial Objectives. Members are also invited to note that formal public consultation on these draft Initial Objectives will take place in March 2015.**

4 Key Stage 3: Long List Of Measures

In order to achieve the Initial Objectives set for each LPD and PVA, SEPA's consultants developed a generic 'Long-List of Measures' in collaboration with

the LPD Project Management Group.

4.1 Agreeing the Long List of Measures was agreed by TECS Committee on the 19 September 2013 to be a high-level exercise and accordingly it was delegated to the LPD Steering Group.

4.2 A workshop was held on 7th and 30th July 2014, where SEPA's consultants and THC's Project Steering Group (including our Elected Member) discussed, reviewed and agreed the Long List of Measures. Those that were obviously not relevant to meet the Initial Objective for the LPD or PVA were discounted. During the same workshop, further assessment of each Measure was carried out to produce a Short List of Measures.

5 Key Stage 4: Short List of Measures

During the LPD Steering Group workshops of 7th and 30th July, the Long-List of Measures was screened to ensure that only Measures that could feasibly achieve the Initial Objectives that have been set for the PVA/ LPD were included. The screening and evaluation exercise assessed the Technical, Financial and Legal feasibility to discount unlikely Measures.

5.1 The Short List of Measures (listed in Appendix B), once accepted, will then be appraised in more detail for costs and benefits (Key Stage 5), resulting in a prioritised list of Measures that may individually or in combination with others, achieve the Objectives for the PVA or LPD. This list will then form the priorities of the Local Flood Risk Management Strategies and Plans which will be implemented in 2016.

5.2 Since agreement to the 'Short List of Measures' for the Highland & Argyll LPD and Findhorn, Nairn & Speyside LPD forms a strategic decision with respect to managing flood risk in the future (with financial implications), it was agreed by TECS Committee on the 19 September 2013 that the approval of Key Stage 4 should be referred to TECS Committee. **Following the re-structure of the Council in 2014, Members of the PDI Committee are now invited to approve the draft 'Short List of Measures'. Members are also invited to note that formal public consultation on the draft 'Short List of Measures' will take place in March 2015.**

6 Key Stage 5: Appraisal And Prioritisation Of Measures

Members are invited to note that the detailed appraisal of the Short List of Measures will take place in 2015, and a report to this Committee will follow.

7 Surface Water Management Planning

7.1 Whilst the Characterisation Reports produced by SEPA include data relating to the surface water (pluvial) flood risk, the Initial Objectives and ultimate strategy for dealing with this source will not be addressed by SEPA. Each Local Authority must produce a Surface Water Management Plan (or a number

thereof) which can feed specific Objectives and Measures into the Flood Risk Management Strategy and Plan.

7.2 Initial Objectives for Surface Water Flooding

The publication of SEPA's new Pluvial Flood Risk Maps in December 2013 helped inform where surface water flooding "Priority Areas" exist. Priority Areas are those areas that should be investigated more thoroughly than others due to the scale of the risk. Detailed investigations will lead to a better understanding of the issues (Characterisation); Initial Objectives will be set which will lead to a set of Measures and an Appraisal. Ultimately, these Measures will be inserted into the Flood Risk Management Plan and central funding may be available for these Measures.

7.3 Priority Areas were proposed by SEPA following national criteria (e.g. where more than 50 properties are at risk, and/or the Annual Average Damages are greater than £55,000).

Initially, the list of Priority Areas suggested by SEPA included:

- Inverness
- Fort William
- Corpach
- Dingwall and Strathpeffer

7.4 Following consultation with The Highland Council, exceptions to these criteria were agreed as the Project Management Group felt that other areas needed to be included for detailed assessment, as pluvial flood risk was either: high profile, frequent, or the interaction between Scottish Water assets, private drainage and watercourses was complex. These areas have been renamed by THC as 'High Priority Areas'.

7.5 The revised agreed list (with Scottish Water and SEPA) includes:

- Inverness
- Fort William
- Corpach
- Dingwall and Strathpeffer
- Halkirk
- Smithton and Culloden
- Newtonmore

7.6 The Highland Council's Project Management Group has proposed to develop a single Highland-wide 'Surface Water Management Plan' (SWMP).

7.7 Within this Plan, townships and villages will be categorised as either High, Medium or Low Priority Areas (see Appendix A for details). High Priority Areas (listed above) will receive a more detailed assessment and specific Objectives and Measures will be developed. For the Medium and Low Priority Areas, generic measures/ improvements will be applied (such as improvements to

gully maintenance, watercourse management or rural runoff). During the first planning cycle, more information will be gathered on the Medium and Low Priority Areas such that subsequent planning cycles can look at these areas in more detail.

7.8 **Members are invited to note the proposed development of a single Highland-wide 'Surface Water Management Plan', and agree the proposed 'High Priority Areas'.**

7.9 Proposed 'Integrated Catchment Study' (ICS)
Surface Water flooding in urban catchments is often very complicated and involves the interaction of a number of sources. Surface Water includes road drainage, overland flows, rural/agricultural runoff, the adopted sewerage system and small watercourses (with catchments less than $3km^2$).

7.10 In order to understand the present and future flood risk from these various sources, digital models are often generated, but these are normally specific to each source and do not take account of how one source may influence the flooding from another.

7.11 An Integrated Catchment Study (ICS) combines all these possible sources into one model and is a very powerful tool for assessing the mechanism of existing flooding and possible solutions. It is also an effective tool used to ensure future development is managed appropriately.

7.12 Scottish Water are currently carrying out an ICS for the following areas:

- Edinburgh
- Aberdeen City
- Tayside
- Ayrshire
- Falkirk

7.13 Each study is managed by Scottish Water (using their procurement framework) with funding and project management steering provided by the Local Authority.

7.14 Scottish Water is currently finalising its investment for the Quality and Standards 4A Regulatory Period (2015-2021). Following a review of existing information and a consultation with Local Authorities, Scottish Water has developed a draft Business Plan which includes the proposal to develop an ICS for Inverness (including Smithton, Culloden, Balloch, Newlands and North Kessock). As THC has agreed that Inverness, Smithton & Culloden are High Priority Areas for Surface Water Management Planning, the proposed ICS will provide the ultimate tool for developing appropriate solutions and managing future development. The model will be jointly owned and accessible to both Scottish Water and THC, but it is likely that Scottish Water would hold and maintain it.

7.15 An initial assessment of the costs to develop an ICS for Inverness are as

follows:

Name of Catchment	L.A.	Total Cost	Est. SW Cost	% of total	Est. L.A. Cost	% of total
Inverness	THC	£1,023,601	£880,601	86%	£143,360	14%

7.16 This initial estimate of the cost was developed by Scottish Water on the assumption that THC held no information on the watercourses, culverts or drainage systems within Inverness. THC holds models for the majority of its watercourses which could be integrated into the ICS and this would likely reduce the contribution.

7.17 **Members are invited to agree in principle to Scottish Water developing an Integrated Catchment Study for Inverness. A 'Letter of Intent' will be forwarded to THC to show its commitment towards the study and a contract outlining the costs and method of payment would follow in due course.**

8 Implications

8.1 Resource

Approval for THC to provide a funding contribution to Scottish Water to develop an Integrated Catchment Study for Inverness would require a commitment to fund an initial estimate of £143,360. This figure would be refined (up or down) as the study progresses and the level and quality of information became known. This funding would not be required until 2015/16, and details of which will be brought to a future committee.

8.2 The current approved Capital Programme (June 2013) has allocated £1M for 2016/17 and 2017/18 for 'Potentially Vulnerable Area Mitigation', and £2M over the same period for 'Major Flood Schemes'. These funds will be allocated to the prioritised list of Measures which result from the Flood Risk Management Plans.

8.3 Scottish Government is currently reviewing how funding for major flood schemes will be allocated from 2016 onwards, and there will be opportunities to seek additional funding for major schemes that meet their criteria.

8.4 Equalities, Climate Change/Carbon Clever, Risk, Rural and Gaelic

The development of these Strategies and Plans to manage flood risk will be implemented in 2016 for the following 6-year period. The flood mapping and subsequent objectives take account of climate change and the measures will provide flood alleviation against the increasing flood risk due to climate change.

8.5 In many PVAs, Natural Flood Management Measures have been proposed, such as riparian planting, cross slope planting and woodland planting. These measures (if implemented) would contribute to the Council's Carbon Clever

aspirations.

8.6 PVA's are located throughout the Highlands and the proposed measures will help provide better protection and infrastructure to communities in rural location.

8.7 There are no Gaelic implications arising as a direct result of this report.

Recommendations

Members are invited to:

- note that approval to the 'Characterisations' was given at LPD Meetings on 3 July, and 30 July 2014;
- note the timescale for the first public consultation on the draft Strategy and Plan being December 2014, and approve in principle the method of consultation;
- approve The Highland Council's Initial Objectives and note that formal public consultation on the Initial Objectives will take place in March 2015;
- approve the 'Short List of Measures' and note that formal public consultation on the Short List of Measures will take place in March 2015;
- note that the detailed appraisal of the Short List of Measures will take place in 2015, and a report to this Committee will follow;
- note the proposed development of a single Highland-wide 'Surface Water Management Plan', and agree the proposed 'High Priority Areas'; and
- agree in principle to Scottish Water developing an Integrated Catchment Study for Inverness.

Designation: Principal Engineer, Development and Infrastructure Services

Date: 28 July 2014

Author: Matt Smith

Background Papers: Report to TECS Committee – 13 September 2013

Appendix A
DRAFT Initial Objectives

HIGHLAND & ARGYLLLOCAL PLAN DISTRICT
DRAFT INITIAL OBJECTIVES

Local Plan District Level (these apply to all PVAs)

Initial Objective	Indicator
Avoid an overall increase in flood risk in the local plan district	From an estimate of 7,513* residential properties
	From an estimate of 3,761* non-residential properties

Note: this objective is specifically targeted at land use planning and development control and encourages future development to be located in areas which are not at risk of flooding.

Initial Objective	Indicator
Reduce overall flood risk in the local plan district from all flood sources	From an estimate of 16,529* people

Note: this objective is specifically targeted at maintenance and non-structural measures (such as availability and uptake of flood alerts and warnings, raising awareness of flood risk and the potential impacts of flooding, property level resilience and emergency planning.

*These figures relate to the number of properties/ people within PVAs in the LPD.

Thurso (PVA 01/01)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of river and coastal flooding.	From an estimated total Annual Average Damages for residential properties of £32,000

Note: it is likely that coastal flood risk is under-estimated as there are complex interactions between fluvial and coastal sources.

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	15 road locations
	5 rail locations on the 'Inverness to Thurso' railway line.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities

in the Highlands. Following an initial assessment, Thurso was identified as being a Medium priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Wick Airport (PVA 01/02)
River and Coastal Flood Risk – Initial Objectives
Accept current level of risk.
LPD level objectives still apply.
Further investigation into coastal flood risk, in particular the effect of wind and wave action, may result in coastal objectives for this PVA in subsequent planning cycles.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Wick was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Wick – Burn of Newton (PVA 01/03)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from the Burn of Newton.	From an estimated total Annual Average Damages for residential properties of £170,000

Note: The Highland Council believe the divergence of flows between the Burn of Newton and Mill Lade to be modelled incorrectly which may mean that the flood extents within the Burn of Newton are under-estimated.

Initial Objective	Indicator
Reduce the number of people at risk of flooding from the Burn of Newton.	From an estimate of 70 people

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	6 road locations including A99 and other B roads.
	1 rail location on the 'Thurso to Wick' railway line

Initial Objective	Indicator
Reduce the number of utilities at risk of river flooding	1 electricity substation

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Wick was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed

assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Wick – Coastal (PVA 01/04)
River and Coastal Flood Risk – Initial Objectives

The Highland Council believes the divergence of flows between the Burn of Newton and Mill Lade to be modelled incorrectly which may mean that the flood extents within the Mill Lade are over-estimated.

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of flooding from the Mill Lade.	From an estimated total Annual Average Damages for residential properties of £162,000
	From an estimated total Annual Average Damages for non-residential properties of £192,000

Initial Objective	Indicator
Reduce the number of people at risk of flooding from the Mill Lade	From an estimate of 68 people

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from the Mill Lade	1 electricity substation

Further investigation into coastal flood risk, in particular the effect of wind and wave action, may result in coastal objectives for this PVA in subsequent planning cycles.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Wick was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Lochinver (PVA 01/05)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce the number of community facilities at risk of flooding from Loch Culag.	2 schools

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Lochinver was identified as being

a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Golspie (PVA 01/06)
River and Coastal Flood Risk – Initial Objectives

Note: The flood extents shown for the Golspie Burn are deemed to be overestimated.

Golspie is known to suffer from wave action/overtopping which is not reflected on the flood maps. The extent of potential inundation and damages may therefore be greater than currently known.

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of coastal flooding.	From an estimated total Annual Average Damages for residential properties of £72,000
	From an estimated total Annual Average Damages for non-residential properties of £31,000

Initial Objective	Indicator
Reduce the number of people at risk of coastal flooding	From an estimate of 42 people

Initial Objective	Indicator
Reduce the number of community facilities at risk of coastal flooding	1 nursing home

Initial Objective	Indicator
Reduce the number of utilities at risk of river flooding	1 electricity substation

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal and river flooding.	5 road including the A9 locations
	5 rail locations on the 'Inverness to Wick' railway line at high risk

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Golspie was identified as being a Medium priority area for assessment. Only High priority areas will receive a detailed

assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Dornoch (PVA 01/07)
River and Coastal Flood Risk – Initial Objectives

Note: it is likely that the impact of flooding from the Dornoch Burn is under-estimated, as it has not taken account of numerous culverts and utility obstructions through the village. Therefore annual average damages may be higher.

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of flooding from the Dornoch Burn.	From an estimated total Annual Average Damages for residential properties of £14,000
	From an estimated total Annual Average Damages for non-residential properties of £14,000

Initial Objective	Indicator
Reduce the number of people at risk of flooding from the Dornoch Burn	From an estimate of 7 people

Initial Objective	Indicator
Reduce disruption to transport at high risk of flooding from the Dornoch Burn.	2 road locations including the A9 and A949.

The Highland Council will develop a “Surface Water Management Plan” to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Dornoch was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Tarbat Ness (PVA 01/08)
River and Coastal Flood Risk – Initial Objectives

Note: Coastal communities in this PVA are known to suffer from wave action/overtopping which is not reflected on the flood maps. The extent of potential inundation and damages may therefore be greater than currently known.

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of coastal flooding.	From an estimated total Annual Average Damages for residential properties of £91,000

Initial Objective	Indicator
Reduce the number of people at risk of coastal flooding	From an estimate of 90 people

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment communities within Tarbat Ness were identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Invergordon (PVA 01/09)
River and Coastal Flood Risk – Initial Objectives
Accept current level of risk from river and coastal sources.
LPD level objectives still apply.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Invergordon was identified as being a Medium priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Alness (PVA 01/10)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of river flooding.	From an estimated total Annual Average Damages for residential properties of £43,000
	From an estimated total Annual Average Damages for non-residential properties of £31,000

Initial Objective	Indicator
Reduce the number of people at risk of river flooding	From an estimate of 97 people

Initial Objective	Indicator
Reduce the number of community facilities at risk of flooding from the Alness River.	1 nursing home
	1 school
	1 Emergency Service

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from Alness River.	3 electricity substations
	1 mineral/fuel extraction site

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	19 road locations
	4 rail locations on the 'Inverness to Wick' railway line.

The Highland Council will develop a "Surface Water Management Plan" to develop strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment communities were Alness was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Uig – Isle of Skye (PVA 01/11)
River and Coastal Flood Risk – Initial Objectives
Accept current level of risk from river and coastal flooding.
LPD level objectives still apply.

Note: Non-residential damages relate to the harbour which is maintained by The Highland Council.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Uig was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Loch Maree (PVA 01/12)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal and river flooding.	15 road locations on the A832
	1 rail location

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Poolewe was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Kinlochewe (PVA 01/13)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from the A'Ghairbhe river.	From an estimated total Annual Average Damages for residential properties of £32,000

Note: The properties adjacent to the PVA that are at risk of flooding will also be included in the assessment of options as necessary.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Kinlochewe was identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Dingwall and Strathpeffer (PVA 01/14)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of flooding from the River Peffery in Dingwall and Blairninich.	From an estimated total Annual Average Damages for residential properties of £84,000
	From an estimated total Annual Average Damages for non-residential properties of £49,000

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of coastal flooding in Dingwall.	From an estimated total Annual Average Damages for residential properties of £3,000
	From an estimated total Annual Average Damages for non-residential properties of £36,000

Initial Objective	Indicator
Reduce the number of people at risk of coastal and river flooding	From an estimate of 205 people

Initial Objective	Indicator
Reduce the number of community facilities at risk	3 schools

of flooding from the River Peffery and the coast	1 health centre

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from the River Peffery.	3 electricity substations

Initial Objective	Indicator
Reduce disruption to transport at high risk of flooding from the coast and River Peffery.	11 road locations including the A834
	9 rail locations including the 'Dingwall to Kyle of Lochalsh' line

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. **Following an initial assessment the communities of Dingwall and Strathpeffer were identified as being a High priority area for assessment.** High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Surface Water Management Priority Area - Initial Objectives

Initial Objective	Indicator
Reduce economic damages from surface water flooding.	From an estimated total Annual Average Damages of £203,000

Initial Objective	Indicator
Reduce the number of residential properties at risk of surface water flooding.	From an estimate of 57 residential properties

Contin and Garve (PVA 01/15)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from the Black Water.	From an estimated total Annual Average Damages for residential properties of £31,000

Initial Objective	Indicator
Reduce the number of people at risk of flooding from the Black Water.	From an estimate of 35 people

Initial Objective	Indicator
Reduce the number of community facilities at risk of flooding in Garve from the Black Water	1 school

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	10 road locations including the A835
	3 rail locations on the 'Dingwall to Kyle of Lochalsh' railway line

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment the communities of Contin and Garve were identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Conon Bridge and Muir of Ord (PVA 01/16)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of river flooding.	From an estimated total Annual Average Damages for residential properties of £79,000
	From an estimated total Annual Average Damages for non-residential properties of £143,000

Note: THC believe there is a high level of uncertainty in this PVA regarding the flood extents for Muir of Ord.

Initial Objective	Indicator
Reduce the number of people at risk of river flooding	From an estimate of 57 people

Initial Objective	Indicator
Reduce the number of utilities at risk of river flooding	2 electricity sub-stations

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	11 road locations
	2 rail locations

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment the communities of Conon Bridge and Muir of Ord were identified as being a Low priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Nairn West and Ardersier (PVA 01/17)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from the Alton Burn.	From an estimated total Annual Average Damages for residential properties of £34,000

Note: The Highland Council have concerns with the flood extents for the Alton Burn are under-estimated.

Initial Objective	Indicator
Reduce the number of people at risk of coastal flooding in Ardersier.	From an estimate of 44 people

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from the Alton Burn.	1 electricity sub-station

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal flooding and the Alton Burn.	6 road locations including the A96 and B9039
	4 rail locations on the Inverness to Aberdeen railway line.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment the communities of Nairn and Ardersier were identified as being a Medium and Low priority areas for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Nairn (PVA 01/18)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of flooding from the	From an estimated total Annual Average Damages for coastal flooding of £171,000

coast and the River Nairn.	From an estimated total Annual Average Damages for river flooding of £110,000

Initial Objective	Indicator
Reduce the number of people at risk of river and coastal flooding	From an estimate of 246 people at risk of coastal flooding.
	From an estimate of 495 people at risk of river flooding.

Initial Objective	Indicator
Reduce the number of utilities at risk of river and coastal flooding	1 electricity sub-station at risk of river flooding
	1 electricity sub-station at risk of coastal flooding

Initial Objective	Indicator
Reduce disruption to transport at high risk from river and coastal flooding.	2 road locations at risk from coastal flooding
	1 road location at risk from river flooding

The Highland Council will develop a "Surface Water Management Plan" to develop strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Nairn was identified as being a Medium priority area for assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Inverness Airport (PVA 01/19)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	9 road locations
	2 rail locations on the 'Inverness to Aberdeen' railway line
	0.004km^{2}of airport runway

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Inverness Airport was identified as

being a Low priority area for detailed assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Smithton and Culloden (PVA 01/20)
River and Coastal Flood Risk – Initial Objectives

Note: The Highland Council have carried out detailed appraisal of flood risk in Smithton and Culloden and are promoting measures to alleviate surface water flood risk.

The catchment sizes of the watercourses within Smithton and Culloden means that these will be assessed through a Surface Water Management Plan. Therefore no objectives to river or coastal flood risk apply.
LPD level objectives still apply.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. **Following an initial assessment the communities of Smithton and Culloden were identified as being a High priority area for assessment.** High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Surface Water Management Priority Area - Initial Objectives

Initial Objective	**Indicator**
Reduce economic damages from surface water flooding.	From an estimated total Annual Average Damages of £42,000*

Initial Objective	**Indicator**
Reduce the number of residential properties at risk of surface water flooding.	From an estimate of 60 residential properties*

*These figures only relate to the Smithton Burn and Culloden Burn West. Greater AAD may be present following detailed modelling of the other watercourses.

Inverness and the Great Glen (PVA 01/21)
River and Coastal Flood Risk – Initial Objectives

Inverness benefits from two Flood Alleviation schemes the River Ness Flood Alleviation scheme (Tidal Section) and the South West Inverness Flood Relief Channel.

The River Ness Flood Alleviation Scheme (Tidal Section), currently under construction will be completed in Spring 2015 prior to publication of the Flood Risk Management Strategy in December 2015.

Initial Objective	Indicator
Accept that flood risk to	An estimated 788 residential

residential and non-residential properties in the north of Inverness due to flooding from the River Ness, downstream of Ness Bridge, and the Moray Firth will be managed appropriately.	properties and 196 non-residential properties will be protected to a 1 in 100 year standard of protection (including an allowance for climate change)

Current and future flood risk in this part of Inverness from the combined coastal and river flood risk requires ongoing operation and maintenance of the River Ness Flood Alleviation Scheme (Tidal Section).

The South West Inverness Flood Relief Channel, completed in 2013, provides protection to properties from various rivers, in the south west of Inverness, to the 1 in 100 year standard of protection (including an allowance for climate change)

Initial Objective	Indicator
Avoid increasing flood risk to properties in the south west of Inverness from various rivers.[1]	An estimated 600 residential properties will be protected to a 1 in 100 year standard of protection (including an allowance for climate change)

1 The Lochardil Burn, Ault na Skiah, Culduthel Channel, Slackbuie Channel and Slackbuie Spring are diverted into the South West Inverness Flood Relief Channel and are alleviated from flooding below the 1 in 100 year return period.

Avoiding an increase in flood risk in this part of Inverness requires ongoing operation and maintenance of the South West Inverness Flood Relief Channel.

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties in Inverness at risk of coastal flooding from the Moray Firth	From an estimated total Annual Average Damages for residential properties of £1.4 million[2]
	From an estimated total Annual Average Damages for non-residential properties of £5.0 million[2]

Initial Objective	**Indicator**
Reduce economic damages to residential and non-residential properties at risk of river flooding.	From an estimated total Annual Average Damages for residential properties of £1.7 million[3]
	From an estimated total Annual Average Damages for non-residential

	properties of £1.0 million[3]

Initial Objective	Indicator
Reduce the number of people at risk of flooding in Inverness from the Moray Firth.	From an estimate of 2295 people[2]

Initial Objective	Indicator
Reduce the number of people at risk of river flooding	From an estimate of 5262 people[3]

Initial Objective	Indicator
Reduce the number of community facilities at risk of flooding from the Moray Firth.	2 nursing homes

Initial Objective	Indicator
Reduce the number of community facilities at risk of river flooding	2 nursing homes
	4 schools
	2 emergency services

2 These figures do not take account of those residential and non-residential properties protected by the River Ness Flood Alleviation Scheme (Tidal Section) and the numbers will be reduced in the future when the benefits of the schemes are reflected in the flood hazard maps.

3 These figures are considered to be an over estimate and do not take into account of the benefits provided by the River Ness Flood Alleviation Scheme (Tidal Section) and the South West Inverness Flood Relief Channel which reduces the amount of damages to parts of Inverness from the River Ness, Lochardil Burn and Ault na Skiah.

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding in Inverness from the Moray Firth.	20 electricity sub-stations
	1 gas production and distribution site

Initial Objective	Indicator
Reduce the number of utilities at risk of river flooding	34 electricity sub-stations
	1 oil distribution site
	1 telecommunications site
	1 telephone exchange
	1 gas production and distribution site

Initial Objective	Indicator
Reduce disruption to transport at high risk from flooding in Inverness from the Moray Firth.	12 road locations
	2 rail locations

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	76 road locations including the A82 and A831
	5 rail locations

Surface Water Management Priority Area - Initial Objectives

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. **Following an initial assessment, Inverness was identified as being a High priority area for assessment.** Other communities in this PVA were identified as being Low priority areas. High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Initial Objective	Indicator
Reduce economic damages from surface water flooding.	From an estimated total Annual Average Damages of £545,000

Initial Objective	Indicator
Reduce the number of residential properties at risk of surface water flooding.	From an estimate of 377 residential properties

Lochailort (PVA 01/22)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce the number of utilities at high risk of flooding from the River Ailort	1 telephone exchange

Initial Objective	Indicator

Reduce disruption to transport at high risk from river flooding.	5 road locations including the A830
	4 rail locations on the 'Fort William to Mallaig' railway line.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Lochailort was identified as being a Low priority area for assessment. Only high priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Corpach (PVA 01/23)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal flooding.	3 road locations on the A830.
	5 rail locations on the 'Fort William to Mallaig' railway line

Initial Objective	Indicator
Reduce disruption to transport at high risk from river flooding.	4 road locations on the A830

The Highland Council will develop a "Surface Water Management Plan" to develop strategies to better manage surface water flooding within all communities in the Highlands. **Following initial assessment Corpach was identified as being a High area for assessment.** High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Note: The Surface Water Management Plan area for Corpach may extend into PVA 01/24

Caol and Inverlochy(PVA 01/24)
River and Coastal Flood Risk – Initial Objectives

Note: The Highland Council have undertaken detailed appraisal of flood risk from Loch Linnhe and are developing a formal flood scheme for Caol.

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from Loch Linnhe	From an estimated total Annual Average Damages for residential properties of £159,000

Initial Objective	Indicator

Reduce the number of people at risk of flooding from Loch Linnhe.	From an estimate of 301 people

Initial Objective	Indicator
Reduce the number of community facilities at low risk of flooding from Loch Linnhe.	1 nursing home
	1 school
	1 emergency service

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from Loch Linnhe.	3 electricity sub-stations

Initial Objective	Indicator
Reduce disruption to transport at high risk from flooding from Loch Linnhe.	3 road locations including the B8006
	1 rail location on the Fort William to Mallaig railway line

The Highland Council will develop a “Surface Water Management Plan” to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Caol was identified as being a Low priority area for assessment. Only high priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle. However part of the Surface Water Management Plan area for Fort William may extend into Inverlochy which is in this PVA

Fort William (PVA 01/25)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential properties at risk of flooding from the River Nevis.	From an estimated total Annual Average Damages for residential properties of £31,000

Initial Objective	Indicator
Reduce economic damages to non-residential properties at risk of flooding from Loch Linnhe.	From an estimated total Annual Average Damages for residential properties of £110,000

Initial Objective	Indicator
Reduce the number of people at risk of flooding from Loch Linnhe and the	From an estimate of 130 people

River Nevis	

Initial Objective	Indicator
Reduce the number of community facilities at low risk of flooding from Loch Linnhe.	1 school
Reduce the number of community facilities at risk from the River Nevis	1 fire station

Initial Objective	Indicator
Reduce the number of utilities at risk of flooding from Loch Linnhe.	1 electricity sub-station

Initial Objective	Indicator
Reduce disruption to transport at high risk from flooding from Loch Linnhe the River Nevis.	13 road locations
	1 rail location

Surface Water Management Priority Area - Initial Objectives

The Highland Council will develop a "Surface Water Management Plan" to develop strategies to better manage surface water flooding within all communities in the Highlands. **Following initial assessment, Fort William was identified as being a High priority area for assessment.** High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Note: Part of the Surface Water Management Plan area for Fort William may extent into Inverlochy which is in PVA 01/24

Initial Objective	Indicator
Reduce economic damages from surface water flooding.	From an estimated total Annual Average Damages of £321,000

Initial Objective	Indicator
Reduce the number of residential properties at risk of surface water flooding.	From an estimate of 24 residential properties

Sunart and Moidart (PVA 01/26)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal and river flooding.	28 road locations including the A828 and B8007

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, the communities in Sunart and Moidart were identified as being a Low priority area for assessment. Only high priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

South Ballachulish (PVA 01/27)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce the number of utilities at risk of coastal and river flooding	2 electricity sub-stations

Initial Objective	Indicator
Reduce disruption to transport at high risk from coastal and river flooding.	18 road locations including the A828 and A82

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial, assessment Ballachulish was identified as being a Low priority area for assessment. Only high priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Ballachulish and Glencoe (PVA 01/28)
River and Coastal Flood Risk – Initial Objectives

Initial Objective	Indicator
Reduce economic damages to residential and non-residential properties at risk of flooding from River Laroch.	From an estimated total Annual Average Damages for residential properties of £37,000
	From an estimated total Annual Average Damages for non-residential properties of £58,000

Initial Objective	Indicator
Reduce the number of people at risk of flooding from River Laroch and Loch Leven.	From an estimate of 97 people

Initial Objective	Indicator
Reduce the number of community facilities at risk of flooding from Loch Leven.	1 school

Initial Objective	Indicator
Reduce disruption to transport at high risk from flooding from Loch Leven.	5 road locations

The Highland Council will develop a “Surface Water Management Plan” to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Ballachulish and Glencoe were identified as being a Low priority area for assessment. Only high priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

FINDHORN, NAIRN & SPEYSIDE LOCAL PLAN DISTRICT
INITIAL OBJECTIVES

Local Plan District Level – applies to all PVAs

Initial Objective	Indicator
Avoid an overall increase in flood risk in the local plan district	From an estimate of 3787* residential properties
	From an estimate of 933* non-residential properties

Note this initial objective is specifically targeted at land use planning and development control and encourages future development to be located in areas which are not at risk of flooding.

Initial Objective	Indicator
Reduce overall flood risk in the local plan district	From an estimate of 8331* people

Note this initial objective is specifically target at non-structural measures such as availability and uptake of flood warnings, raising awareness of flood risk and the potential impacts of flooding, emergency plans and property level resilience.

*These figures relate to the number of properties/ people within PVAs in the LPD.

05/08 Nairn East and Auldearn

Objective	Indicator
Reduce economic damages to residential properties due to flooding from the River Nairn and Auldearn Burn	From an estimated Annual Average Damages for Residential Properties of £139,000

Objective	Indicator
Reduce the risk to people due to flooding from The River Nairn and Auldearn Burn.	From an estimate of 143 people

Objective	Indicator
Reduce the risk to utilities from river flooding	2 electricity sub-stations

Objective	Indicator
Reduce disruption to transport due to flooding from the River Nairn	1 location on the Inverness to Aberdeen railway line
	29 road locations including the A939

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Nairn was identified as being a Medium priority area for detailed assessment and Auldearn identified as being a Low priority area. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

05/10 Carrbridge

Initial Objective	Indicator
Avoid increasing flood risk to environmentally designated sites at risk from river flooding.	River Spey SAC – 0.3km^2

Existing levels of flood risk are deemed to be accepted. Measures that apply across the Local Plan District will be used to avoid increasing risk and to manage the existing risks.

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Carrbridge was identified as being a Low priority area for detailed assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

05/11 Aviemore and Boat of Garten

Objective	Indicator
Reduce economic damages to residential properties in Aviemore, due to flooding from the River Spey and Aviemore Burn	From an estimated Annual Average Damages for Residential Properties of £32,000

Objective	Indicator
Reduce the risk to utilities due to flooding from the River Spey.	1 electricity sub-station

Objective	Indicator
Reduce disruption to transport due to river flooding	12 road locations
	7 railway locations on the Perth to Inverness railway line

Initial Objective	Indicator
Avoid increasing flood risk to environmentally designated sites at risk from river flooding.	River Spey SSSI – 1.82km^2 River Spey SAC – 1.84km^2

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment the communities of Aviemore and Boat of Garten were identified as being a Medium priority. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle

05/12 Kingussie

Objective	Indicator
Reduce economic damages to residential and non-residential properties due to flooding from the River Gynack and River Spey.	From an estimated Annual Average Damages for Residential Properties of £39,000
	From an estimated Annual Average Damages for Non-Residential Properties of £27,000

Objective	Indicator
Reduce the risk to utilities due to flooding from the River Spey	2 electricity sub-stations

Objective	Indicator
Reduce disruption to transport due to flooding from the River Spey and River Gynack.	9 road locations including the A86
	11 railway locations on the Perth to Inverness railway line.

Initial Objective	Indicator
Avoid increasing flood risk to environmentally designated sites at risk from river flooding.	River Spey SAC – 2.46km^2

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Kingussie was identified as being a Low priority area for detailed assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

05/13 Newtonmore

Objective	Indicator
Reduce disruption to transport due to flooding from the River Spey	3 road locations including the B9150
	4 railway locations on the Perth to Inverness railway line

The Highland Council will develop a "Surface Water Management Plan" to help implement strategies to better manage surface water flooding within all communities in the Highlands. **Following an initial assessment, Newtonmore was identified as being a High priority area for detailed assessment.** Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Initial Objective	**Indicator**
Reduce economic damages from surface water flooding	From an estimated Annual Average Damages £29,700

Initial Objective	**Indicator**
Reduce number of residential properties at risk from surface water flooding	From an estimate of 16 residential properties

Initial Objective	**Indicator**
Avoid increasing flood risk to environmentally designated sites at risk from river flooding.	River Spey SSSI – 0.04km^2 River Spey SAC – 0.44km^2

05/14 Dalwhinnie

Objective	**Indicator**
Reduce economic damages to residential and non-residential properties due to river flooding	From an estimated Annual Average Damages for Residential Properties of £71,000
	From an estimated Annual Average Damages for Non-Residential Properties of £80,000

Objective	**Indicator**
Reduce the risk to people due to river flooding	From an estimate of 53 people

Objective	**Indicator**
Reduce disruption to transport due to flooding from River Truim	9 road locations
	5 railway locations on the Perth to Inverness railway line

Initial Objective	**Indicator**
Avoid increasing flood risk to environmentally designated sites at risk from river flooding.	River Spey SAC – 0.28km^2

The Highland Council will develop a “Surface Water Management Plan” to help implement strategies to better manage surface water flooding within all communities in the Highlands. Following an initial assessment, Dalwhinnie was identified as being a Low priority area for detailed assessment. Only High priority areas will receive a detailed assessment, which will result in specific objectives for managing surface water flooding this planning cycle.

Appendix B
DRAFT Short List of Measures

PVA 01/01- Thurso

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
	Breakwaters
	Gates and tidal barriers
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration (e.g. re-meandering)
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline

Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
Control structures	Weir (addition or removal)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/02 - Wick Airport

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

PVA 01/03 - Wick: Burn of Newton

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration (e.g. re-meandering)

Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
Control structures	Sluice gate/penstock/flap valve (addition or removal)
	Weir (addition or removal)
	Trash screens (addition or removal)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/04 - Wick: Coastal

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
	Realign channel

Control structures	Sluice gate/penstock/flap valve (addition or removal)
	Weir (addition or removal)
	Trash screens (addition or removal)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/05 - Lochinver

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/06 - Golspie

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Wave attenuation	Beach recharge schemes
Coastal	Revetments
	Artificial reefs and detached breakwaters
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Land Management including; soil and bare earth improvements
	Creation/restoration of wetlands & ponds
	Upland drain blocking
Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/07 - Dornoch

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration (e.g. re-meandering)
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage offline
Conveyance	Culvert (addition or removal)
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)
Control structures	Trash screens (addition or removal)
Direct defences	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/08 - Tarbat Ness

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
	Artificial reefs and detached breakwaters
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

PVA 01/09 - Invergordon

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No protect actions

PVA 01/10 - Alness

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Placed large woody debris and boulders
Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Realign channel
Control structures	Trash screens (addition or removal)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/11 - Uig Isle of Skye

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or non-residential properties at risk) plus:

No Protect actions

PVA 01/12 - Poolewe

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or non-residential properties at risk) plus:

Direct defences	Wall
	Adaptable wall (can be added to)

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Placed large woody debris and boulders
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps

	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
Conveyance	Relief/diversion channel/bypass tunnel/culvert
	Culvert (addition or removal)
	Bridges (raising, removal or repositioning)
Control structures	Trash screens (addition or removal)

PVA 01/13 - Kinlochewe

Inland PVA – No Coastal Actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Placed large woody debris and boulders
Sediment Management	Bank restoration (e.g. riparian planting, bank restoration)
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Bridges (raising, removal or repositioning)
Control structures	Sluice gate/penstock/flap valve (addition or removal)
Direct defences	Embankment

	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/14 - Dingwall & Strathpeffer

Coastal Actions – all applicable Avoid and Prepare actions plus:

Coastal	Gates and tidal barriers
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Floodplain reconnection
	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders

	Reach restoration (e.g. re-meandering)
	Creation of washlands (offline storage)
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
	Realign channel
	Culvert (addition or removal)
	Bridges (raising, removal or repositioning)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/15 - Contin & Garve

Inland PVA - No Coastal Actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
	Realign channel
	Bridges (raising, removal or repositioning)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/16 - Conon Bridge & Muir of Ord

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions plus:

River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration (e.g. re-meandering)
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
	Culvert (addition or removal)
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)
Control structures	Sluice gate/penstock/flap valve (addition or removal)
Direct defences	Embankment
	Wall

	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/17 - Nairn West & Ardersier

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Wave attenuation	Shingle re-profiling
Coastal	Revetments
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration (e.g. re-meandering)
Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline
Conveyance	Culvert (addition or removal)
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)

Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/18 - Nairn Central

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River/floodplain restoration	Floodplain reconnection
	Floodplain woodland
	Creation of riparian woodland
	Creation of washlands (offline storage)
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage

	channel
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/19 - Inverness Airport

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or non-residential properties at risk) plus:

No Protect actions

PVA 01/20 - Smithton & Culloden

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes, or properties or utilities at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or non-residential properties at risk) plus:

No Protect actions

PVA 01/21 - Inverness & Great Glen

Coastal Actions – all applicable Avoid and Prepare actions plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Relief/diversion channel/bypass tunnel/culvert
	Bridges (raising, removal or repositioning)
Control structures	Sluice gate/penstock/flap valve (addition or removal)
	Trash screens (addition or removal)

Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/22 - Lochailort

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

No Protect actions

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
Sediment Management	Bank restoration (e.g. riparian planting, green bank restoration)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)

PVA 01/23 - Corpach

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes or properties at risk) plus:

Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)

PVA 01/24 - Caol & Inverlochy

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No actions

PVA 01/25 - Fort William

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
Direct defences	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking

	Gully woodland planting
River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 01/26 - Sunart & Moidart

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

	Acti
Wave attenuation	Shingle re-profiling
	Coastal vegetated shingle restoration
Coastal	Revetments
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Runoff	Woodland planting (conifer, native, broadleaf)
	Land Management including; soil and bare earth improvements
	Cross slope woodlands (shelter belts)
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Placed large woody debris and boulders
Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage online
Conveyance	Culvert (addition or removal)
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)
Control structures	Trash screens (addition or removal)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)

PVA 01/27 - South Ballachulish

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Action Category	Action
Coastal	Revetments

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

No Protect actions

PVA 01/28 - Ballachulish & Glencoe

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Coastal	Revetments
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Action Category	Action
Runoff	Land Management including; soil and bare earth improvements
	Creation/restoration of wetlands & ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Creation of washlands (offline storage)

Sediment Management	Managing channel instabilities (sediment transport)
	Sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Storage	Flood storage offline
Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
	Culvert (addition or removal)
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)
Direct defences	Embankment
	Wall
	Adaptable wall (can be added to)
	Demountable/temporary defence

PVA 05/08 – Nairn East & Auldearn

Coastal Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Category	Action
River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
	Reach restoration
Sediment Management	Bank restoration

Storage	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification
	Relief/diversion channel/bypass tunnel
	Realign channel
	Culvert
	Removal of hydraulic constrictions
	Bridges (raising, removal or repositioning)
Direct Defences	Embankment
	Wall/Adaptable wall
	Demountable/temporary wall

PVA 05/10 – Carrbridge

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

PVA 05/11 – Aviemore & Boat of Garten

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Category	Action
Runoff	Creation/restoration of wetlands and ponds
River/floodplain restoration	Floodplain reconnection
	Floodplain woodland

	Creation of riparian woodland
	Reach restoration
	Creation of washlands
Sediment Management	Bank restoration
Direct Defences	Embankment
	Wall/Adaptable wall

PVA 05/12 – Kingussie

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Category	Action
Runoff	Land management including soil and bare earth improvements
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Floodplain woodland
	Creation of riparian woodland
	Placed large woody debris and boulders
Sediment Management	Managing channel instabilities
	Sediment Traps
	Bank restoration
Storage	Flood storage online
Conveyance	Bridges (raising, removal or repositioning)
Direct Defences	Wall/Adaptable wall
	Demountable/temporary defence

PVA 05/13 – Newtonmore

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Category	Action
Runoff	Land management including soil and bare earth improvements
	Creation/restoration of wetlands and ponds
	Upland drain blocking
	Gully woodland planting
River/floodplain restoration	Floodplain reconnection
	Floodplain woodland
	Creation of riparian woodland
Sediment Management	Bank restoration

PVA 05/14 – Dalwhinnie

River Actions – all applicable Avoid and Prepare actions (no existing flood schemes) plus:

Category	Action
Runoff	Woodland planting
	Land management including soil and bare earth improvements
	Cross slope woodlands/ (shelter belts)
	Creation/restoration of wetlands and ponds
	Upland drain blocking
	Gully woodland planting
Sediment Management	Managing channel instabilities
	Sediment Traps
	Bank restoration

Conveyance	Increased conveyance through channel modification - deepening/widening/two-stage channel
Direct Defences	Embankment
	Wall/Adaptable wall