

PERTH AND KINROSS COUNCIL**Environment Committee****12 November 2014****The Flood Risk Management (Scotland) Act 2009
Short List of Potential Measures to Manage Flood Risk****Report by the Executive Director (Environment)**

The Council's duties with regard to flooding are set out within the Flood Risk Management (Scotland) Act 2009. This report provides a general update on progress towards the publication of the Council's Local Flood Risk Management Plans in 2016. It also seeks the Committee's approval of the proposed short list of potential measures to manage flood risk.

1. BACKGROUND / MAIN ISSUES

- 1.1 The Flood Risk Management (Scotland) Act 2009 (the 2009 Act) has introduced a more modern, coordinated and sustainable approach to flood risk management at both national and local levels.
- 1.2 The 2009 Act sets out a framework designed to reduce flood risk across Scotland over time. Local authorities, SEPA and Scottish Water have duties to work together to produce a national flood risk assessment, flood risk and hazard maps, Flood Risk Management Strategies and Local Flood Risk Management Plans. This process of risk assessment, mapping and planning is to be repeated every six years.
- 1.3 Although those public authorities are expected to take a proactive role in managing and, where achievable, lowering flood risk, the primary responsibility for avoiding or managing flood risk still remains with land and property owners. The 2009 Act does not alter this. Individuals, businesses and communities must, therefore, play a critical role in making themselves more resilient and helping to reduce the impact of flooding.
- 1.4 The 2009 Act places duties on SEPA and responsible authorities to manage flooding in a sustainable manner. The responsible authorities are local authorities, Scottish Water, the National Park Authorities and the Forestry Commissioners. It should be noted that no additional funding accompanied this legislation, therefore any measures which the Council takes will have to be undertaken within existing budgets, and set against other competing priorities for the Council.
- 1.5 SEPA published Scotland's first national flood risk assessment on 22 December 2011. This identified 243 areas across Scotland considered to be at medium to high risk of flooding. These areas are designated as Potentially Vulnerable Areas (PVAs); Perth and Kinross has 19 PVAs (Appendix A). 1 in 22 residential properties and 1 in 13 businesses across Scotland are considered to be at risk of flooding.

- 1.6 SEPA published new flood hazard and flood risk maps on 22 December 2013. These maps show the predicted extent and depth of various forms of flooding and probability levels. They also indicate the potential adverse consequences for each type of flood. These flood maps can be viewed on SEPA's web site. <http://map.sepa.org.uk/floodmap/map.htm>
- 1.7 For the purposes of managing flood risk, Scotland has been divided up into 14 local plan districts (LPDs) as shown in Appendix B. Partnerships have been formed in the LPDs and each has a lead local authority. Perth & Kinross Council is the lead local authority for the Tay LPD and the Council's area also falls into three other LPDs: Forth, Forth Estuary and Tay Estuary & Montrose Basin.
- 1.8 SEPA are in the process of producing a Flood Risk Management Plan (commonly referred to as the 'Strategy') for each LPD and the Lead Local Authority will produce a Local Flood Risk Management Plan.
- 1.9 SEPA has an appraisal process in place to produce the Flood Risk Management Strategies across Scotland. The aim of this process is to set objectives and identify measures for the management of significant flood risks within the PVAs.
- 1.10 The flood risk management (FRM) process and the Council's progress on implementing the 2009 Act was last reported to the Environment Committee on 20 November 2013 (Report No.13/544 refers).
- 1.11 This report detailed the following three key stages to the development and delivery of the FRM Strategies by SEPA and their consultants:-
1. Catchment Characterisation
 2. Objective Setting
 3. Short Listing
- 1.12 The key stages are described in more detail in Appendix C
- 1.13 The 2009 Act requires that draft FRM Strategies and Local FRM Plans be put out for public consultation by 22 December 2014.
- 1.14 In the meantime, the recent progress against each of the three key stages is noted below.

Catchment Characterisation

- 1.15 It is important that the likelihood and potential impact of flooding is commonly understood by the organisations involved in coordinating the reduction of flood risk within the PVAs. To achieve this, SEPA has been working with local authorities and others to define the existing levels of flood risk. This information has been summarised in characterisation reports as follows:

- Local Plan District Reports (four for the Tay, Forth, Forth Estuary and Tay Estuary and Montrose Basin)
- Fluvial Flooding Reports (based on five river catchments – Tay, Earn, Firth of Tay, Stirling Group and Firth of Forth)
- Pluvial Flooding Reports (four Local Plan Districts as noted above)
- Coastal Flooding Reports (two for the Inner Tay and Tay Estuary)
- Potentially Vulnerable Area Reports (19 in total)

1.16 Copies of the characterisation reports have been placed in the Councillors' Lounge and are also available via the undernoted links.

www.pkc.gov.uk/frmsa

<http://www.pkc.gov.uk/CHttpHandler.ashx?id=28288>

1.17 They describe the location of each Local Plan District, the physical characteristics including the major rivers and coastal areas as well as the administrative boundaries. Information on historical floods, existing flood management activities, the potential for natural flood management and the sensitivity of catchments and coastal areas to climate change is also included. The reports identify the flooding hazards and the risk they present to certain receptors such as infrastructure, human health, community facilities and residential properties. The economic impacts have been calculated where practical and assessed for varying scales of flood events.

1.18 In summary, the characterisation reports define the flood risk problem in PVAs and provide the evidence base against which future actions to reduce risk can be assessed and compared.

1.19 The risk of surface water flooding has been described in the pluvial flooding reports. This type of flooding will be managed separately from the FRM process in some areas through integrated catchment studies and surface water management plans. Although surface water flooding in all PVAs will be given some consideration in the Local FRM Plans, SEPA, Scottish Water and Council officers have agreed the following surface water priority areas within Perth & Kinross:-

- Perth
- Invergowrie
- Milnathort
- Scone
- Blairgowrie

1.20 Invergowrie is covered by the Dundee Integrated Catchment Study, which covers the sewer catchment area to the west of Dundee, including some of the Invergowrie area. Discussions are currently on-going with Scottish Water to allow the Council to participate in this study.

1.21 As a result of revised flood hazard data recently developed by SEPA, there have been some further changes to the PVAs identified as part of the national flood risk assessment in 2011:-

- PVA references 08/01(Blair Atholl), 08/02 (Kinloch Rannoch), 08/09 (Tyndrum/Crianlarich) and 08/15 (Forteviot) in the Tay LPD and PVA reference 09/02 (Braco) in the Forth LPD are now considered to be below the threshold set for being at medium risk of flooding and are effectively no longer PVAs. No specific objectives will be set, or measures identified, for these areas although a general objective will be set so as to avoid an overall increase in flood risk.
- Blackford, in the Forth LPD, has been identified as a new candidate PVA. SEPA have still to produce the characterisation report for this area.

1.22 Some issues have been noted over the river flood maps produced by SEPA in the PVAs covering Perth, Almondbank, Coupar Angus and Bankfoot. SEPA have, therefore, been engaged in a process of re-assessing the more critical of these areas, while others will be reviewed at a later date. In the meantime, the following has been agreed:

- Perth and Almondbank - SEPA is re-assessing the flood map in this area with the intention of updating it in time for the December 2014 public consultation. The catchment characterisation, initial objectives, and short listing of measures will also be finalised by this date.
- Coupar Angus – SEPA has agreed to update the flood map with more detailed flood risk data held by the Council. This will be updated in time for the publication of final FRM strategies in December 2015.
- Bankfoot – SEPA will not be able to update the flood map with the more detailed flood risk data held by the Council in time for the publication of the final FRM Strategies in 2015. However, SEPA will be reviewing the flood map in Bankfoot as a priority thereafter. In the meantime, this will not affect the objectives for reducing flood risk in Bankfoot or the proposed short list of measures. However there is no specific budget at this stage for implementing measures at Bankfoot.

1.23 In accordance with the agreed approval levels (see Item 1.12), the latest versions of the characterisation reports have been reviewed and signed off by technical officer members of each of the LPD Partnerships. As noted above, the reports for Perth and Almondbank will be agreed by December 2014.

1.24 In general, all parties are satisfied that the reports provide a good representation of the flooding issues throughout the area. The other local authorities within LPD Partnerships will be making separate arrangements for the approval of the characterisation reports within their council areas.

Objective Setting

- 1.25 Agreeing objectives will help develop a common vision for flood risk management. Under the 2009 Act, Scottish Ministers, SEPA and responsible authorities have a general duty to work together using their flood risk related functions to help achieve the objectives set out in the FRM Strategies. Setting objectives is an important step towards identifying what measures should be taken to reduce the likelihood and impact of flooding.
- 1.26 SEPA has set objectives for the management of flood risk within the PVAs across Scotland in consultation with the responsible authorities.
- 1.27 The objectives are being developed in two stages. The first stage has involved setting initial objectives for consultation based on SEPA's national flood maps and the detailed knowledge and information provided by local authorities and Scottish Water, as summarised in the characterisation reports. These initial objectives are quite broad in nature with their purpose being to help identify the appropriate actions to manage flooding. After consultation, with the benefit of more detailed information on what is practical and feasible in terms of technical solutions and resources, the second stage will involve refining the initial objectives to provide specific final objectives to manage flooding
- 1.28 Initial objectives have been set to address the risk of river, surface water and coastal flooding.
- 1.29 Some initial objectives have been set across the whole LPD although most have been set at the scale of the PVA. Where significant flood risks have been identified within a PVA, one or more initial objectives may have been set to address the specific locations where the flood risk is concentrated.
- 1.30 The FRM Strategy objectives are set around the principles of Avoid, Reduce, and Accept & Maintain. Definitions are provided in Table 1.

Table 1: Definition of Objectives – Avoid, Reduce and Accept & Maintain

Objective	Definition	Where
AVOID	Action is needed to avoid flood risks increasing in future. Use existing or new land-use planning actions to avoid new risks from development and to limit the impacts of climate change.	Applies to all PVAs and LPDs.
REDUCE	The current or future level of flood risks are significant AND new action is required. This may involve new actions or the enhancement of existing actions. Flood risks in these areas may still increase after new action is taken as a result of climate change.	Applies to PVAs where flood risk is significant and new action is needed.

Objective	Definition	Where
ACCEPT & MAINTAIN	Significant flood risks are being managed appropriately. This will require ongoing maintenance of watercourses and existing flood risk management actions (e.g. flood defences and flood warning). Flood risks in these areas may increase as a result of climate change.	Applies to PVAs where flood risks are being managed appropriately and no new action is needed.

- 1.31 A general objective has been set for each LPD in order to avoid an overall increase in flood risk. The intention is to manage this through the appropriate application of land use planning policies and the development control process of planning authorities.
- 1.32 The majority of objectives have been set to reduce the overall flood risk within the PVAs and new measures will have to be identified to meet these.
- 1.33 In addition, objectives have been set to accept the overall flood risk and this will generally apply in areas where there are already flood defences. Activities such as improved flood warning, awareness-raising with the public and general maintenance of watercourses/flood protection schemes can also be included.
- 1.34 Initial objectives have been developed for all PVAs although they may still require minor revision following further appraisal work and statutory consultation.
- 1.35 The initial objectives have been considered and approved by the LPD Partnership Steering Groups.
- 1.36 In accordance with the agreed approval levels (see Item 1.12) the initial objectives were approved by the Environment Service Senior Management Team on 2 October 2014.
- 1.37 The partner local authorities will be making separate arrangements for the approval of objectives within their council areas.

2. PROPOSALS

Short List of Measures

- 2.1 Now that the objectives to manage the identified flood risk in the PVAs have been agreed, a proposed short list of possible measures to meet those objectives has also been produced.
- 2.2 This was developed from a long list of possible measures which includes the full range of structural and non-structural measures as shown in Appendix D. This long list was developed by SEPA.

- 2.3 It is important that a range of measures to reduce flood risk are considered in the appraisal process. This includes measures which are likely to be common to all PVAs but will also include measures specific to individual PVAs such as those to tackle a particular source of flooding. It is important that existing measures to manage flood risk are included in the long list, so that the benefit of continued investment in them can be considered.
- 2.4 The long list included measures designed to inform land use planning decisions, the use of land management, selection and design of engineered options, awareness raising, flood forecasting and warning, individual property level measures and links with emergency planning.
- 2.5 The selection of measures to be included on the short-list has been based on the understanding of catchments, urban areas and coastlines developed as part of the earlier characterisation exercise. A screening exercise refined the long list to ensure the most sustainable combination of measures was selected to manage the identified flood risk.
- 2.6 The measures were screened on the basis of the methodology developed by SEPA, which indicated that engineering judgement should be applied to the technical, legal and economic feasibility of the measures.
- 2.7 SEPA's screening methodology states that if there is any doubt as to any of the screening criteria, then individual measures should remain on the short-list. For some measures, additional screening information has been included in the table in Appendix D.
- 2.8 Details of the proposed short list of measures for the four LPDs that Perth & Kinross Council is involved in are included in Appendix E.
- 2.9 It should be noted that it will not possible to carry out all of the identified measures to reduce flood risk within the resources available to the Council at this time. Any measures will be undertaken in order of priority taking into account the likely risk of flooding and available funding. Further to section 1.4 above, no additional funding has been received in relation to these duties, and on that basis any measures that the Council can undertake will be limited.

Public Consultation

- 2.10 The 2009 Act requires that the draft FRM Strategies and the corresponding supplementary parts of Local FRM Plans be put to public consultation by 22 December 2014. SEPA and the lead local authorities are required to coordinate their consultation arrangements during the production of these documents.
- 2.11 SEPA and the responsible authorities have been working closely in partnership over the last two years to develop the FRM Strategies and Local FRM Plans. This process is running behind programme. As a result, some revised consultation arrangements have been proposed.

- 2.12 The consultation will now be delivered through a phased approach. Phase 1 and Phase 2 will commence on 22 December 2014 and 2 March 2015 respectively, with the consultation closing on 2 June 2015. Key elements of the documents to be consulted on are:
- Phase 1 - Characterisation reports;
 - Phase 2 - Initial objectives;
Short list of measures identified to reduce flood risk; and
Implementation arrangements.
- 2.13 The Phase 1 consultation materials are required to be finalised by 31 October 2014 to allow the consultation to commence on 22 December 2014. The Phase 2 consultation materials must be finalised by 12 January 2015 to allow the consultation to commence on 2 March 2015.
- 2.14 The consultation will be a web based exercise and will be carried out jointly with SEPA and the other responsible authorities.
- 2.15 Further details of the consultation will be provided to the next Environment Committee meeting in January 2015, by which time the consultation process will have started.
- 2.16 The final FRM Strategies must be published by 22 December 2015 and the Local FRM Plans by 22 June 2016. Both will take account of the views expressed through the public consultation.

The Next Steps

- 2.17 A detailed economic appraisal will be carried out on the proposed short list of measures to determine the final proposals for the FRM Strategies and to inform the prioritisation of measures in line with agencies' available resources.
- 2.18 The final stage in the appraisal process for the FRM Strategies will involve updating, refining and finalising the initial objectives. The information generated through the detailed appraisal of the short list of measures, together with the prioritisation of those measures will be used to provide specific final objectives to manage flooding. Information on how effective the preferred measures are at managing the identified flood risk, together with the high-level timetable for implementation, will be included in the final specific objectives.
- 2.19 Once a measure has been selected, the decisions around implementation will be based on a number of factors, including; availability of funding, capacity within delivery bodies and third parties to develop measures, coordination and agreements between partners, statutory processes and permissions, review timescales for other plans (e.g. local development plans), design or other preparatory time required.

- 2.20 The output of this process will include a summary timetable for implementation. The FRM Strategies will indicate which 6 year cycle the measure is likely to be taken forward within. The Local FRM Plans will then set out a more detailed timetable for implementation and funding arrangements within each 6 year cycle.

Approval of the Local Flood Risk Management Plans

- 2.21 The initial three key stages of the development of the FRM Strategies and Local FRM plans is described at Item 1.11 and Appendix C of this report. The next key stages in the process are as follows.

4. Public Consultation (Phase 1)
5. Detailed Appraisal of the Short List of Measures
6. Public Consultation (Phase 2)
7. Council Response to Public Consultation
8. Finalise Local FRM Plans

- 2.22 The first phase of the public consultation will only include the characterisation reports, which have already been agreed by officers.

- 2.23 The current phase of SEPA appraisal work includes the flood map updates and making subsequent changes to the characterisation reports, initial objectives and the short list of measures. SEPA have also commenced work on the detailed appraisal of the short list of measures.

- 2.24 It is proposed that the draft Local FRM Plans are prepared by 12 January 2015 in time for the second phase of the public consultation from 2 March to 2 June 2015. The draft Local FRM Plans will be prepared by officers along with other members of the LPD Partnerships.

- 2.25 The second phase of the public consultation will present the Council with an opportunity to comment on the draft FRM Strategies and Local FRM Plans, as well as the public and wider stakeholders.

- 2.26 It is not yet clear how the Scottish Government will allocate funding to the measures identified in the plans. Clearly the issue of funding support from central government will continue to have a significant bearing on when the Council will be able to deliver measures to reduce flood risk in the future.

3. CONCLUSION AND RECOMMENDATIONS

- 3.1 This report provides an update on progress towards the publication of SEPA's Flood Risk Management Plans in December 2015 and the Council's Local Flood Risk Management Plans in June 2016.
- 3.2 The report also notes that the characterisation reports and initial objectives have been agreed, and seeks the Committee's approval of the proposed short list of measures.

3.3 The Committee is asked to:

- (i) Note the general progress on the flood risk management planning process set out by the 2009 Act.
- (ii) Note that the majority of the characterisation reports have been agreed by Council officers.
- (iii) Note that the characterisation reports and initial objective setting for Perth and Almondbank will be agreed by December 2014.
- (iv) Note the agreed surface water management priority areas for Perth, Invergowrie, Milnathort, Scone and Blairgowrie.
- (v) Note the recent changes to the findings of the national flood risk assessment and the characterisation of flood risk in certain PVAs.
- (vi) Approve the proposed short list of measures (Appendix E).
- (vii) Note that the proposed short list of measures for Perth and Almondbank will be submitted to the Environment Committee in January 2015.
- (viii) Note the proposed initial arrangements for the forthcoming phased public consultation in December 2014 and March 2015. Further details will be provided to the next Environment Committee in January 2015.

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1. IMPLICATIONS, ASSESSMENTS, CONSULTATION AND COMMUNICATION

Strategic Implications	Yes / None
Community Plan / Single Outcome Agreement	Yes
Corporate Plan	Yes
Resource Implications	
Financial	Yes
Workforce	Yes
Asset Management (land, property, IST)	None
Assessments	
Equality Impact Assessment	Yes
Strategic Environmental Assessment	Yes
Sustainability (community, economic, environmental)	Yes
Legal and Governance	Yes
Risk	None
Consultation	
Internal	Yes
External	Yes
Communication	
Communications Plan	Yes

1. Strategic Implications

Community Plan / Single Outcome Agreement

- 1.1 The proposals relate to the delivery of the Perth and Kinross Community Plan/Single Outcome Agreement by reducing flood risk to our residential and business communities in a sustainable manner.

Corporate Plan

- 1.2 The Council's Corporate Plan 2013 – 2018 lays out five outcome focussed strategic objectives which provide clear strategic direction, inform decisions at a corporate and service level and shape resources allocation. They are as follows:
- (i) Giving every child the best start in life;
 - (ii) Developing educated, responsible and informed citizens;
 - (iii) Promoting a prosperous, inclusive and sustainable economy;
 - (iv) Supporting people to lead independent, healthy and active lives and;
 - (v) Creating a safe and sustainable place for future generations.
- 1.3 This report contributes to objectives (ii), (iii), (iv) and (v).

2. Resource Implications

Financial

- 2.1 It should be noted that the potential measures included on the short list will not be implemented at this time. The potential measures will be subject to further assessment and will not be finalised until the Council's Local FRM Plan is published in June 2016. Hence there are no immediate resource implications arising directly from the recommendations in this report.
- 2.2 However the flood risk management planning process will have future financial implications. The Local FRM Plans will include an implementation part which will indicate who will be responsible for the proposed measures to reduce flood risk, as well as how they will be programmed and funded by the responsible authorities over the six year cycle.
- 2.3 It is not yet clear how the Scottish Government will allocate funding to the measures identified in the plans. Clearly the issue of funding support from central government will continue to have a significant bearing on when the Council will be able to deliver measures to reduce flood risk in the future.
- 2.4 In the meantime, the final measures set out in the Council's future Local FRM Plans will have to be prioritised and will only be implemented as available resources allow.

Workforce

- 2.5 There are no workforce implications arising directly from the recommendations in this report.

Asset Management (land, property, IT)

- 2.6 The proposals in this report have no asset management implications.

3. Assessments

Equality Impact Assessment

- 3.1 Under the Equality Act 2010, the Council is required to eliminate discrimination, advance equality of opportunity, and foster good relations between equality groups. Carrying out Equality Impact Assessments for plans and policies allows the Council to demonstrate that it is meeting these duties.
- 3.2 The function, policy, procedure or strategy presented in this report was considered under the Corporate Equalities Impact Assessment process (EqIA) with the following outcome.
- 3.3 Following an assessment using the Integrated Appraisal Toolkit, it has been determined that the proposal is assessed as **relevant** with the following positive outcomes expected following implementation:

- This proposal has the same impact for all equality groups as the proposed flood risk management measures will reduce the risk of flooding to residents and businesses with consequent benefits for all (a safer environment, avoidance of economic flood damages, improved health & wellbeing, etc).
- The effects and aftermath of flooding could have a greater impact on mobility impaired, sight impaired or blind people, learning disabled people, children, the elderly and infirm, pregnant women or nursing mothers in relation to adverse psychological, physical and health impacts. The various measures to reduce flood risk described in the report will reduce or remove these impacts.

Strategic Environmental Assessment

- 3.4 The Environmental Assessment (Scotland) Act 2005 places a duty on the Council to identify and assess the environmental consequences of its proposals.
- 3.5 There are likely to be significant environmental effects associated with the Tay Local FRM Plan and the other three Local FRM Plans that the Council will contribute to. As a consequence an environmental assessment is necessary. SEPA have commenced an environmental assessment for their FRM Strategies and their scoping report has already been completed. Following a review of this assessment, it has been confirmed that this will cover the Local FRM Plans and that no further assessment is likely to be required at this time. A screening decision will be sought by a member of the Tay Estuary and Montrose Basin LPD Partnership to confirm this. This position will also be kept under review as the Local FRM Plans are developed.

Sustainability

- 3.6 Under the provisions of the Local Government in Scotland Act 2003 the Council has to discharge its duties in a way which contributes to the achievement of sustainable development. Under the Climate Change (Scotland) Act 2009 the Council also has a duty relating to climate change and, in exercising its functions must act:
- in the way best calculated to delivery of the Act's emissions reduction targets;
 - in the way best calculated to deliver any statutory adaptation programmes; and
 - in a way that it considers most sustainable.
- 3.7 Following an assessment using the Integrated Appraisal Toolkit, it has been determined that the proposal is likely to contribute **positively** to the following corporate sustainable development principles:
- (i) Climate Change:-

- Efficient use of resources now and in the future in the built environment and service provision (e.g. energy efficiency, land, water resources, flood defence, waste minimisation) (Principle 2)
- Mitigation and adaptation to manage the impact of climate change & reduce the production of greenhouse gases (Principle 3)

Justification:

Implementation of measures is aimed at mitigating effects of increased flood risk brought about by climate change.

(ii) Community:-

- A sense of civic values, responsibility and pride (Principle 20)
- Creating a sense of place (e.g. a place with a positive 'feeling' for people, and local distinctiveness) (Principle 22)

Justification:

The proposed measures are intended to reduce the flood risk to communities and will be subject to public consultation.

(iii) Equality & Diversity:-

Refer to Item 3.3. (above).

3.8 Following an assessment using the Integrated Appraisal Toolkit, it has been determined that the proposal is likely to contribute **negatively** to the following corporate sustainable development principles:

(i) Consumption & Production:-

- Efficient use of resources now and in the future in the built environment and service provision (e.g. energy efficiency, land, water resources, flood defence, waste minimisation) (Principle 2)
- Mitigation and adaptation to manage the impact of climate change & reduce the production of greenhouse gases (Principle 3)

Justification:

The implementation of measures, e.g. new flood defences, may require short term increase in energy consumption during construction.

Mitigation:

The efficient use of resources is to be considered on an individual project basis.

3.9 However Under the 2009 Act, the Council has a duty to manage flood risk in a sustainable way and to act in the best way calculated to contribute to the achievement of sustainable development. The measures that will be identified in the Council's future Local FRM Plans will comply with this requirements.

Legal and Governance

- 3.10 The Head of Legal Services and the Head of Democratic Services have been consulted on this report.
- 3.11 The legal basis for the proposals set out in this report is the Flood Risk Management (Scotland) Act 2009.

Risk

- 3.12 The risks associated with any measures to manage flooding will be identified and managed through individual projects.

4. Consultation

Internal

- 4.1 The Head of Legal Services, the Head of Democratic Services and the Head of Finance have been consulted in the preparation of this report.

External

- 4.2 Consultation will be carried out with relevant external stakeholders on any individual proposals.
- 4.3 The flood risk management measures proposed in this report have been developed and agreed in principle at Local Plan District Partnership meetings by SEPA, Scottish Water and the relevant local authorities.

5. Communication

- 5.1 The key outputs described in this report will be subject to a phased public consultation between December 2014 and June 2015. This will be a joint web based consultation using the Citizen Space platform. Further details will be submitted to the next Environment Committee.
- 5.2 Communication with relevant external stakeholders will take place on any individual measures proposed to reduce flood risk in the future.

2. BACKGROUND PAPERS

The following background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (and not containing confidential or exempt information) were relied on to a material extent in preparing the above report;

PKC – Environment Committee – 27 January 2010, Flood Risk Management (Scotland) Act 2009 (Report No. 10/51)

PKC – Environment Committee – 20 November 2013, Progress Report, Flood Risk Management (Scotland) Act 2009

3. APPENDICES

Appendix A – Map of Potentially Vulnerable Areas

Appendix B – Map of Local Plan Districts

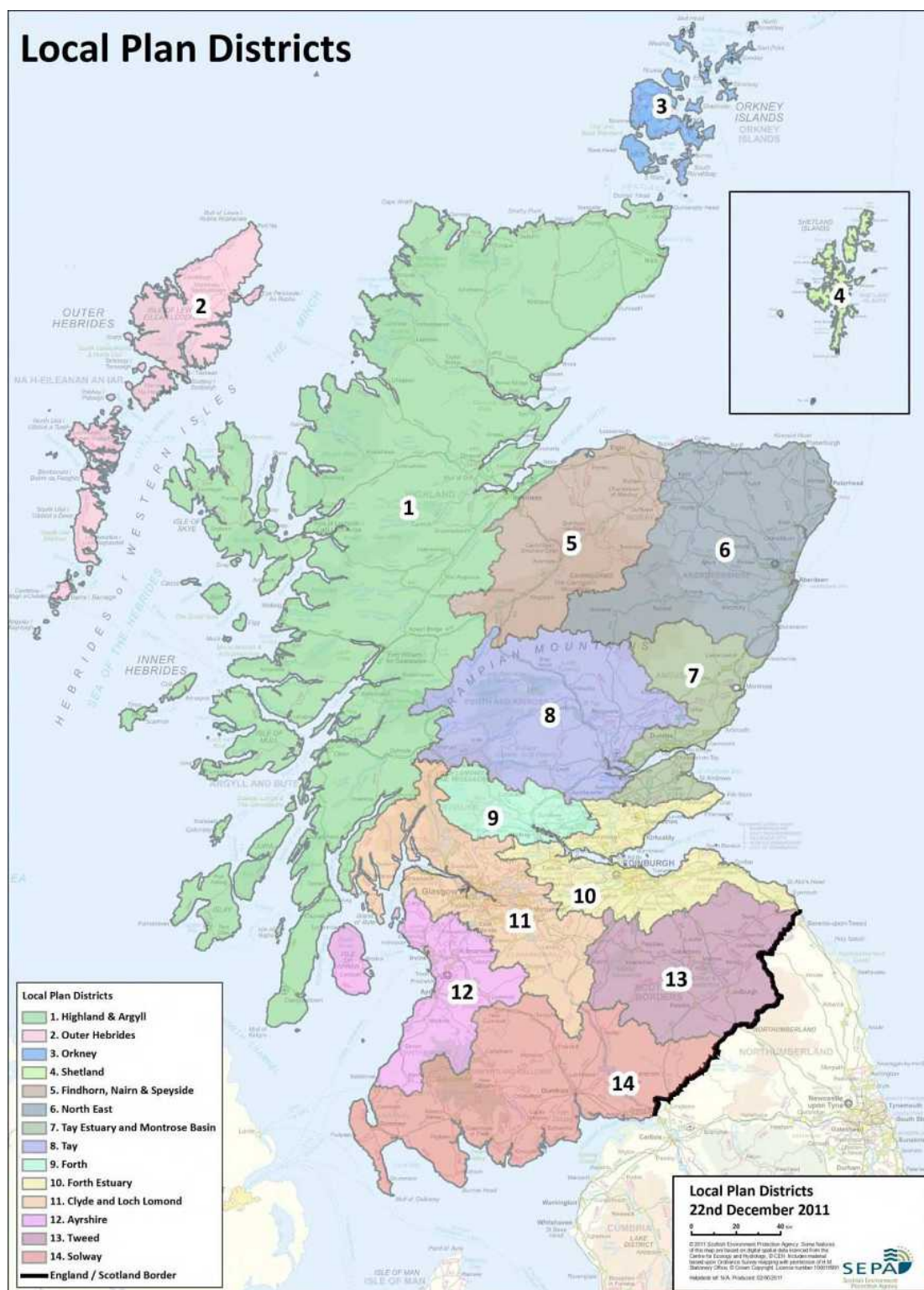
Appendix C – Flood Risk Management Planning – Key Outputs

Appendix D – Long List of Flood Risk Management Measures

Appendix E – Proposed Short List of Flood Risk Management Measures



Map of Local Plan Districts (LPDs)



Flood Risk Management Planning – Key Outputs

1. Catchment Characterisation:

- (i) An overview of the Local Plan Districts, catchments within them, coastal areas and Potentially Vulnerable Areas. This will include a description of the natural characteristics of the catchment (hydrology, topography, land use, the built environment, urban centres, economic activity, environmental and cultural sensitivity, climate change, etc.);
- (ii) A summary of the natural state of the fluvial environment and coastal processes (including erosion and sediment transportation / natural flood management outputs) as well as any opportunities and constraints to natural flood management;
- (iii) A review of existing Flood Risk Management measures;
- (iv) A summary of the current risk and damages to receptors in each catchment. This will include a description of the flooding impacts for a range of return periods for each Local Plan District, main catchment, coastal area, and Potentially Vulnerable Area, based on:
 - the sources of flooding;
 - the receptors which are at risk and the concentration of these receptors within the regions;
 - the economic, social and environment impact of flooding;
 - the impact of climate change.
- (v) The key output at this stage is a characterisation report for each Local Plan District, broken down by main river catchments and coastal cells. Based on this information, initial objectives for the management of flood risk within each Potentially Vulnerable Area will be drafted.

2. Initial Objective Setting:

- (i) Initial objectives will be based on the characterisation exercise. These initial objectives should be aspirational, and set so as not to limit the subsequent selection and appraisal of measures. The majority of the objectives will be set at the scale of individual Potentially Vulnerable Areas. Where Potentially Vulnerable Areas contain multiple flooding issues, objectives should be set for each significant flooding issue identified (i.e. where more than 50 properties are affected).
- (ii) It is important to note that the initial objectives will be refined further based on the outcome of the detailed appraisal and prioritisation work, which will evaluate what is practical and feasible in terms of technical solutions and resources.

2. Short Listing of Measures:

- (i) To select a short-list of measures to meet the objectives for each Local Plan District, the long list will be screened. The purpose of this step is to remove any potential measures that are clearly not feasible or unrealistic based on three main criteria; Technical, Legal and Financial. This process relies heavily on expert judgement. Where there is doubt, a measure should be retained for further evaluation as part of the short- list. All decisions and reasoning should be clearly set out and recorded.

Long List Of Flood Risk Management Measures

Objective	Category	Measure	Initial Fluvial Screening	Initial Coastal Screening
Avoid	Flood Protection Schemes	Maintain Existing Defences	If a formal flood protection scheme, including coastal defences, is present in the PVA, then always retain this action for the short-list.	
	Relocation	Relocation of properties/infrastructure away from flood risk areas	If any properties are affected by flooding retain for short-list	
	National Planning Policies	Scottish Planning Policy (SPP)	Always retain for short-list	
		Planning Advice Notes (PANs)		
	Local Planning Policies	Specific policies/guidance in local development plans in addition to National Planning Policy – <i>further guidance on this is currently being developed</i>		
		Use of Strategic Flood Risk Assessment to inform local development plans		
Protect (NFM)	Runoff	Woodland planting (conifer, native, broadleaf)	If NFM Screening A identifies moderate to high potential to reduce runoff in PVA catchment then screen LCM Classes: - 3,4,5,6 Highly Applicable – retain - 2,7,8 Less Applicable – retain - others Unlikely to be Applicable – screen out	Automatically screen out for coastal
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	If NFM Screening A identifies moderate to high potential to reduce runoff in PVA catchment then screen LCM Classes: - 3,4,5,6,10,11 Highly Applicable – retain - 7,8,9,12,13,23 Less Applicable – retain - others Unlikely to be Applicable – screen out	
		Cross slope woodlands (shelter belts)	If NFM Screening A identifies moderate to high potential to reduce runoff in PVA catchment then screen LCM Classes: - 3,4,5,6 Highly Applicable – retain - 7,8 Less Applicable – retain - others Unlikely to be Applicable – screen out	
		Creation / restoration of wetlands and ponds	If NFM Screening A identifies moderate to high potential to reduce runoff in PVA catchment then screen LCM Classes: - 1,2,3,4,5,6,9,10,11,12 Highly Applicable – retain - 7,8 Less Applicable – retain - others Unlikely to be Applicable – screen out	
		Upland drain blocking	If NFM Screening A identifies moderate to high potential to reduce runoff in PVA catchment then screen LCM Classes: - 10,11,12,13 Highly Applicable – retain - 1,2,5,8,9 Less Applicable – retain - others Unlikely to be Applicable – screen out	
		Gully woodland planting	If NFM Screening A identifies moderate to high potential to reduce	

Objective	Category	Measure	Initial Fluvial Screening	Initial Coastal Screening
			runoff in PVA catchment then screen LCM Classes: - 10,11,12,13 Highly Applicable – retain - 5,8,9,14 Less Applicable – retain - others Unlikely to be Applicable – screen out	
	River/floodplain restoration	Floodplain reconnection	If NFM Screening B identifies moderate to high potential for floodplain storage in PVA catchment then assess morphological pressures database to identify embankments, indicating areas of disconnection. If no potential for reconnection (i.e. no embankments) screen out but consider other restoration options. If embankments identified, retain.	
		Placed large woody debris and boulders	If NFM Screening B identifies moderate to high potential for floodplain storage in PVA catchment then assess morphological pressures database to identify embankments. If embankments identified, screen out but consider Floodplain reconnection. If no embankments, retain.	
		Floodplain woodland	If NFM Screening B identifies moderate to high potential for floodplain storage in PVA catchment then screen LCM Classes: - 3,4,5,6 Highly Applicable – retain for shortlist - 2,7,8 Less Applicable – retain for shortlist - others Unlikely to be Applicable – screen out	
		Riparian woodland		
		Reach restoration – (e.g. re-meandering)	If NFM Screening B identifies moderate to high potential for floodplain storage in PVA catchment then assess morphological pressures database to identify channelisation or realignment (either man-made or natural). Historical maps / local knowledge may also be helpful. Retain if some signs of channelization identified.	
		Creation of washlands (off-line storage)	If NFM Screening B identifies moderate to high potential for floodplain storage in PVA catchment then assess morphological pressures database to identify embankments, indicating potential to set-back embankments. If set-back possible, then assess LCM for wetlands: - 1,2,3,4,5,6,9,10,11,12 Highly Applicable – retain - 7,8 Less Applicable – retain - others Unlikely to be Applicable – screen out	
	Sediment Management	Sediment removal or other in-channel management	If NFM Screening C identifies areas of high deposition which may contribute to flooding within the PVA retain for short-list	
		Sediment traps		
		Bank restoration (e.g. riparian planting, green bank restoration)	Retain for shortlist if fluvial flooding within PVA catchment	
	Wave Attenuation	Beach recharge schemes	Automatically screen out for fluvial	Retain for shortlist if Screening E identifies moderate to high potential and areas of littoral or supra littoral sediment are present
		Shingle re-profiling		Retain for shortlist if Screening E identifies moderate to high potential and areas of supra littoral sediment are present
		Sand dune restoration		Retain for shortlist of Screening E identifies moderate to high potential in areas of low lying, estuarine reclaimed land
		Coastal vegetated shingle restoration		
		Machair restoration		
	Surge attenuation	Creation / restoration of intertidal area including mudflats		Retain for shortlist if Screening D identifies moderate to high

Objective	Category	Measure	Initial Fluvial Screening	Initial Coastal Screening
		and saltmarsh, and regulated tidal exchange		potential
Protect (Engineering) Where existing defences are present, then the enhancement of those defences should be considered as an action on the long-list.	Storage	Flood storage online	Consider NFM Screening B which identifies moderate / high potential for floodplain storage in PVA catchment in conjunction with engineering judgement and other feasibility criteria	Automatically screen out for coastal
		Flood storage offline		
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	Apply engineering judgement and consider feasibility criteria	
		Relief / diversion channel / bypass tunnel / culvert		
		Realign channel		
		Culvert		
		Removal of hydraulic constrictions		
		Bridges		
		Control Structures		
	Weir			
	Trash screens			
	Pumping stations			
	Coastal	Revetments	Automatically screen out for fluvial	Apply engineering judgement and consider feasibility criteria
		Groynes		
		Breakwaters		
		Artificial reefs and detached breakwaters		
		Gates and tidal barriers		
	Direct Defences	Embankment	Apply engineering judgement and consider feasibility criteria	
		Wall		
		Adaptable wall (can be added to)		
		Demountable / temporary defences		
	Sustainable Urban Drainage	Sustainable Urban Drainage measures(identified through Surface Water Management Plan)	Automatically screen out for fluvial	Automatically screen out for coastal
Prepare	Watercourse Maintenance	Routine inspection and maintenance of watercourses	Always retain for short-list	Automatically screen out for coastal
		Event triggered watercourse maintenance		
	Property Level Protection	Property Level Protection	If any properties are affected by flooding retain for short-list	
		Resilient property design (retrofit)		
	Flood Forecasting & Warning	Flood forecasting and alerts	Liaise with SEPA regarding assessment of Flood Warning appraisal for inclusion	
		Flood Warning schemes		
	Self Help	Business Continuity Planning	If any non-residential properties are affected by flooding retain for shortlist	
		Flood Insurance		
		Community Flood Action Groups (including resilient community plans)	If any properties are affected by flooding retain for short-list	
		Awareness Raising		
	Emergency Plans	Emergency Response Plans	Always retain for short-list	
Site Protection plans	Site protection plans	If trunk roads, railways, airports, cultural heritage sites, designated environmental sites, utilities present then include on short-list.		
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards and impacts	Always retain for short-list	

Short List of Measures to Manage Flood Risk
PVA 07/12 – Invergowrie and Dundee

Objective	Category	Action	River	Coastal
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓	N/A
	National Planning Policies	Scottish Planning Policy (SPP)	✓	✓
		Planning Advice Notes (PANs)	✓	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X	N/A
		Cross slope woodlands (shelter belts)	X	N/A
		Creation / restoration of wetlands and ponds	X	N/A
		Upland drain blocking	X	N/A
		Gully woodland planting	X	N/A
	River/floodplain restoration	Floodplain reconnection	X	N/A
		Placed large woody debris and boulders	✓	N/A
		Floodplain woodland	✓	N/A
		Riparian woodland	✓	N/A
		Reach restoration – (e.g. re-meandering)	✓	N/A
		Creation of washlands (off-line storage)	X	N/A
	Sediment Management	Sediment removal or other in-channel management	✓	N/A
		Sediment traps	✓	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	✓	N/A
	Wave attenuation	Beach Recharge Schemes	N/A	N/A
		Shingle Re-Profiling	N/A	N/A
		Sand Dune Restoration	N/A	N/A
		Coastal Vegetated Shingle Restoration	N/A	N/A
		Machair Restoration	N/A	N/A
	Surge attenuation	Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange	N/A	N/A
Protect (Engineering)	Storage	Flood storage online	X	N/A
		Flood storage offline	X	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X	N/A
		Relief / diversion channel / bypass tunnel / culvert	X	N/A
		Realign channel	X	N/A
		Culvert modification	X	N/A
		Removal of hydraulic constrictions	X	N/A
		Bridges modification	X	N/A
			X	N/A
	Control Structures	Sluice gate / penstock / flap valve	X	N/A
		Weir	X	N/A
		Trash screens	X	N/A
		Pumping stations	X	N/A
	Installation / modification of coastal control structures	Revetments	N/A	N/A
		Groynes	N/A	N/A
		Breakwaters	N/A	N/A
		Artificial reefs and detached breakwaters	N/A	N/A
		Gates and Tidal Barriers	N/A	N/A
	Direct Defences	Embankment	X	N/A
		Wall	X	N/A
		Adaptable wall (can be added to)	X	N/A
		Demountable / temporary defences	X	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A	N/A

Short List of Measures to Manage Flood Risk
PVA 07/12 – Invergowrie and Dundee

Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓	N/A
		Event triggered watercourse maintenance	✓	N/A
	Property Level Protection	Property Level Protection	✓	✓
		Resilient property design (retrofit)	✓	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓	N/A
		Flood Warning schemes	✓	N/A
	Self Help	Business Continuity Planning	✓	✓
		Flood Insurance	✓	✓
		Community Flood Action Groups (including resilient community plans)	✓	✓
		Awareness Raising	✓	✓
	Emergency Plans	Emergency Response Plans	✓	✓
	Site Protection plans	Site protection plans	✓	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓	✓

Short List of Measures to Manage Flood Risk
PVA 07/19 – Auchtermuchty (Remainder of PVA)

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes (Dunshalt Village FPS Only – this is not in Perth & Kinross)	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X
		Cross slope woodlands (shelter belts)	X
		Creation / restoration of wetlands and ponds	X
		Upland drain blocking	X
		Gully woodland planting	X
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	✓
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	✓
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	✓
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	✓
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	✓
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/01 – Blair Atholl

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/02 – Kinloch Rannoch

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/03 – Pitlochry

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	X
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	✓
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	✓
		Flood storage offline	✓
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	✓
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	✓
		Pumping stations	X
	Direct Defences	Embankment	X
		Wall	X
		Adaptable wall (can be added to)	X
		Demountable / temporary defences	X
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/03 – Aberfeldy

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	X
		Riparian woodland	X
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	X
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	✓
		Weir	✓
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/03 – Weem

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/04 – Alyth

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X
		Cross slope woodlands (shelter belts)	X
		Creation / restoration of wetlands and ponds	X
		Upland drain blocking	X
		Gully woodland planting	X
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	X
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	X
		Wall	X
		Adaptable wall (can be added to)	X
		Demountable / temporary defences	X
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/06 – Blairgowrie

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
			N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/07 – Coupar Angus

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	x
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	✓
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	✓
		Creation of washlands (off-line storage)	✓
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	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	X
		Culvert modification	X
		Removal of hydraulic constrictions	✓
		Bridges modification	✓
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/08 – Bankfoot

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	x
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X
		Cross slope woodlands (shelter belts)	X
		Creation / restoration of wetlands and ponds	X
		Upland drain blocking	X
		Gully woodland planting	X
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	X
		Riparian woodland	X
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	X
		Sediment traps	X
		Bank restoration (e.g. riparian planting, green bank restoration)	X
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	X
		Removal of hydraulic constrictions	✓
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	X
		Wall	X
		Adaptable wall (can be added to)	X
		Demountable / temporary defences	X
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/08 – Dunkeld

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	x
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	X
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	✓
		Realign channel	✓
		Culvert modification	✓
		Removal of hydraulic constrictions	✓
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/08 – Remainder of PVA

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans	✓ ✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	✓
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	X
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/10 – Almondbank

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	X
		Riparian woodland	X
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	✓
		Flood storage offline	✓
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	✓
		Removal of hydraulic constrictions	✓
		Bridges modification	✓
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Note: SEPA is re-assessing the flood map in the Almondbank area with the intention of updating it by December 2014. The catchment characterisation, initial objectives, and short listing of measures will also be finalised by this date.

Short List of Measures to Manage Flood Risk
PVA 08/11 – Scone

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X
		Cross slope woodlands (shelter belts)	X
		Creation / restoration of wetlands and ponds	X
		Upland drain blocking	X
		Gully woodland planting	X
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	X
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	✓
		Removal of hydraulic constrictions	✓
		Bridges modification	✓
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/12 – Perth to Kinfauns (North of A90)

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/13 – Perth

Objective	Category	Action	River	Coastal
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓	✓
		Planning Advice Notes (PANs)	✓	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	TBC	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	TBC	N/A
		Cross slope woodlands (shelter belts)	TBC	N/A
		Creation / restoration of wetlands and ponds	TBC	N/A
		Upland drain blocking	TBC	N/A
		Gully woodland planting	TBC	N/A
	River/floodplain restoration	Floodplain reconnection	TBC	N/A
		Placed large woody debris and boulders	TBC	N/A
		Floodplain woodland	TBC	N/A
		Riparian woodland	TBC	N/A
		Reach restoration – (e.g. re-meandering)	TBC	N/A
		Creation of washlands (off-line storage)	TBC	N/A
	Sediment Management	Sediment removal or other in-channel management	TBC	N/A
		Sediment traps	TBC	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	TBC	N/A
	Wave attenuation	Beach Recharge Schemes	N/A	TBC
		Shingle Re-Profiling	N/A	TBC
		Sand Dune Restoration	N/A	TBC
		Coastal Vegetated Shingle Restoration	N/A	TBC
		Machair Restoration	N/A	TBC
	Surge attenuation	Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange	N/A	TBC
Protect (Engineering)	Storage	Flood storage online	TBC	N/A
		Flood storage offline	TBC	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	TBC	N/A
		Relief / diversion channel / bypass tunnel / culvert	TBC	N/A
		Realign channel	TBC	N/A
		Culvert modification	TBC	N/A
		Removal of hydraulic constrictions	TBC	N/A
		Bridges modification	TBC	N/A
	Control Structures	Sluice gate / penstock / flap valve	TBC	N/A
		Weir	TBC	N/A
		Trash screens	TBC	N/A
		Pumping stations	TBC	N/A
	Installation / modification of coastal control structures	Revetments	N/A	TBC
		Groynes	N/A	TBC
		Breakwaters	N/A	TBC
		Artificial reefs and detached breakwaters	N/A	TBC
		Gates and Tidal Barriers	N/A	TBC
	Direct Defences	Embankment	TBC	TBC
		Wall	TBC	TBC
		Adaptable wall (can be added to)	TBC	TBC
		Demountable / temporary defences	TBC	TBC
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A	N/A

Short List of Measures to Manage Flood Risk
PVA 08/13 – Perth

Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓	N/A
		Event triggered watercourse maintenance	✓	N/A
	Property Level Protection	Property Level Protection	✓	✓
		Resilient property design (retrofit)	✓	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓	X
		Flood Warning schemes	✓	X
	Self Help	Business Continuity Planning	✓	✓
		Flood Insurance	✓	✓
		Community Flood Action Groups (including resilient community plans)	✓	✓
		Awareness Raising	✓	✓
	Emergency Plans	Emergency Response Plans	✓	✓
	Site Protection plans	Site protection plans	✓	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓	✓

Note: SEPA is re-assessing the flood map in the Perth area with the intention of updating it by December 2014. The catchment characterisation, initial objectives, and short listing of measures will also be finalised by this date.

Short List of Measures to Manage Flood Risk
PVA 08/14 – Comrie

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	✓
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	✓
		Creation of washlands (off-line storage)	✓
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	✓
		Flood storage offline	✓
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	X
		Removal of hydraulic constrictions	X
		Bridges modification	X
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/15 – Forteviot

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	N/A
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans	✓ ✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/16 – Dunning

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	N/A
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 08/17 – Bridge of Earn

Objective	Category	Action	River	Coastal
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓	N/A
	National Planning Policies	Scottish Planning Policy (SPP)	✓	✓
		Planning Advice Notes (PANs)	✓	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A	N/A
		Cross slope woodlands (shelter belts)	N/A	N/A
		Creation / restoration of wetlands and ponds	N/A	N/A
		Upland drain blocking	N/A	N/A
		Gully woodland planting	N/A	N/A
	River/floodplain restoration	Floodplain reconnection	N/A	N/A
		Placed large woody debris and boulders	N/A	N/A
		Floodplain woodland	N/A	N/A
		Riparian woodland	N/A	N/A
		Reach restoration – (e.g. re-meandering)	N/A	N/A
		Creation of washlands (off-line storage)	N/A	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A	N/A
		Sediment traps	N/A	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A	N/A
	Wave attenuation	Beach Recharge Schemes	N/A	N/A
		Shingle Re-Profiling	N/A	N/A
		Sand Dune Restoration	N/A	N/A
		Coastal Vegetated Shingle Restoration	N/A	N/A
		Machair Restoration	N/A	N/A
	Surge attenuation	Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange	N/A	N/A
Protect (Engineering)	Storage	Flood storage online	N/A	N/A
		Flood storage offline	N/A	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A	N/A
		Realign channel	N/A	N/A
		Culvert modification	N/A	N/A
		Removal of hydraulic constrictions	N/A	N/A
		Bridges modification	N/A	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A	N/A
		Weir	N/A	N/A
		Trash screens	N/A	N/A
		Pumping stations	N/A	N/A
	Direct Defences	Embankment	N/A	N/A
		Wall	N/A	N/A
		Adaptable wall (can be added to)	N/A	N/A
		Demountable / temporary defences	N/A	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A	N/A

Short List of Measures to Manage Flood Risk
PVA 08/17 – Bridge of Earn

Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓	✓
		Event triggered watercourse maintenance	✓	✓
	Property Level Protection	Property Level Protection	✓	✓
		Resilient property design (retrofit)	✓	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓	✓
		Flood Warning schemes	✓	✓
	Self Help	Business Continuity Planning	✓	✓
		Flood Insurance	✓	✓
		Community Flood Action Groups (including resilient community plans)	✓	✓
		Awareness Raising	✓	✓
	Emergency Plans	Emergency Response Plans	✓	✓
	Site Protection plans	Site protection plans	✓	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓	✓

Short List of Measures to Manage Flood Risk
PVA 08/17 – Remainder of PVA

Objective	Category	Action	River	Coastal
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	X	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓	N/A
	National Planning Policies	Scottish Planning Policy (SPP)	✓	✓
		Planning Advice Notes (PANs)	✓	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	X	N/A
		Cross slope woodlands (shelter belts)	X	N/A
		Creation / restoration of wetlands and ponds	X	N/A
		Upland drain blocking	X	N/A
		Gully woodland planting	X	N/A
	River/floodplain restoration	Floodplain reconnection	✓	N/A
		Placed large woody debris and boulders	X	N/A
		Floodplain woodland	✓	N/A
		Riparian woodland	✓	N/A
		Reach restoration – (e.g. re-meandering)	X	N/A
		Creation of washlands (off-line storage)	X	N/A
	Sediment Management	Sediment removal or other in-channel management	✓	N/A
		Sediment traps	✓	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	✓	N/A
Protect (Engineering)	Storage	Flood storage online	X	N/A
		Flood storage offline	X	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X	N/A
		Relief / diversion channel / bypass tunnel / culvert	X	N/A
		Realign channel	X	N/A
		Culvert modification	X	N/A
		Removal of hydraulic constrictions	X	N/A
		Bridges modification	X	N/A
	Control Structures	Sluice gate / penstock / flap valve	X	N/A
		Weir	X	N/A
		Trash screens	X	N/A
		Pumping stations	X	N/A
	Direct Defences	Embankment	✓	N/A
		Wall	✓	N/A
		Adaptable wall (can be added to)	✓	N/A
		Demountable / temporary defences	✓	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓	N/A
		Event triggered watercourse maintenance	✓	N/A
	Property Level Protection	Property Level Protection	✓	✓
		Resilient property design (retrofit)	✓	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X	N/A
		Flood Warning schemes	X	N/A
	Self Help	Business Continuity Planning	✓	✓
		Flood Insurance	✓	✓
		Community Flood Action Groups (resilient community plans)	✓	✓
		Awareness Raising	✓	✓
	Emergency Plans	Emergency Response Plans	✓	✓
	Site Protection plans	Site protection plans	✓	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓	✓

Short List of Measures to Manage Flood Risk
PVA 09/02 – Braco

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	N/A
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	N/A
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	N/A
		Cross slope woodlands (shelter belts)	N/A
		Creation / restoration of wetlands and ponds	N/A
		Upland drain blocking	N/A
		Gully woodland planting	N/A
	River/floodplain restoration	Floodplain reconnection	N/A
		Placed large woody debris and boulders	N/A
		Floodplain woodland	N/A
		Riparian woodland	N/A
		Reach restoration – (e.g. re-meandering)	N/A
		Creation of washlands (off-line storage)	N/A
	Sediment Management	Sediment removal or other in-channel management	N/A
		Sediment traps	N/A
		Bank restoration (e.g. riparian planting, green bank restoration)	N/A
Protect (Engineering)	Storage	Flood storage online	N/A
		Flood storage offline	N/A
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	N/A
		Relief / diversion channel / bypass tunnel / culvert	N/A
		Realign channel	N/A
		Culvert modification	N/A
		Removal of hydraulic constrictions	N/A
		Bridges modification	N/A
	Control Structures	Sluice gate / penstock / flap valve	N/A
		Weir	N/A
		Trash screens	N/A
		Pumping stations	N/A
	Direct Defences	Embankment	N/A
		Wall	N/A
		Adaptable wall (can be added to)	N/A
		Demountable / temporary defences	N/A
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	X
		Flood Warning schemes	X
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
LPD9 Candidate PVA – Blackford

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	x
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	X
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	X
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	X
		Placed large woody debris and boulders	X
		Floodplain woodland	X
		Riparian woodland	X
		Reach restoration – (e.g. re-meandering)	X
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	X
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	X
		Realign channel	X
		Culvert modification	✓
		Removal of hydraulic constrictions	✓
		Bridges modification	✓
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓

Short List of Measures to Manage Flood Risk
PVA 10/04 – Kinross, Milnathort, Glenrothes, Kinglassie

Objective	Category	Action	River
Avoid	Flood Protection Schemes	Maintain Existing Flood Protection Schemes	✓
	Relocation	Relocation of properties/infrastructure away from flood risk areas	✓
	National Planning Policies	Scottish Planning Policy (SPP)	✓
		Planning Advice Notes (PANs)	✓
	Local Planning Policies	Specific policies/guidance in LDP's in addition to National Planning Policy	✓
		Use of Strategic Flood Risk Assessment to inform local development plans	✓
Protect (Natural Flood Management)	Runoff Control	Woodland planting (conifer, native, broadleaf)	✓
		Land Management, including: soil and bare earth improvements, changing agricultural field drainage	✓
		Cross slope woodlands (shelter belts)	✓
		Creation / restoration of wetlands and ponds	✓
		Upland drain blocking	✓
		Gully woodland planting	✓
	River/floodplain restoration	Floodplain reconnection	✓
		Placed large woody debris and boulders	✓
		Floodplain woodland	✓
		Riparian woodland	✓
		Reach restoration – (e.g. re-meandering)	✓
		Creation of washlands (off-line storage)	X
	Sediment Management	Sediment removal or other in-channel management	✓
		Sediment traps	✓
		Bank restoration (e.g. riparian planting, green bank restoration)	✓
Protect (Engineering)	Storage	Flood storage online	✓
		Flood storage offline	X
	Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel	X
		Relief / diversion channel / bypass tunnel / culvert	✓
		Realign channel	✓
		Culvert modification	✓
		Removal of hydraulic constrictions	✓
		Bridges modification	✓
	Control Structures	Sluice gate / penstock / flap valve	X
		Weir	X
		Trash screens	X
		Pumping stations	X
	Direct Defences	Embankment	✓
		Wall	✓
		Adaptable wall (can be added to)	✓
		Demountable / temporary defences	✓
	Sustainable Urban Drainage	SUD measures (identified through Surface Water Management Plan)	N/A
Prepare	Watercourse Maintenance	Routine and event specific watercourse maintenance	✓
		Event triggered watercourse maintenance	✓
	Property Level Protection	Property Level Protection	✓
		Resilient property design (retrofit)	✓
	Flood Forecasting & Warning	Flood forecasting and alerts	✓
		Flood Warning schemes	✓
	Self Help	Business Continuity Planning	✓
		Flood Insurance	✓
		Community Flood Action Groups (including resilient community plans)	✓
		Awareness Raising	✓
	Emergency Plans	Emergency Response Plans	✓
	Site Protection plans	Site protection plans	✓
	Improved Understanding	Modelling and other assessments to improve knowledge of flood hazards	✓