

ANGUS COUNCIL

COMMUNITIES COMMITTEE – 18 NOVEMBER 2014

FLOOD RISK MANAGEMENT (SCOTLAND) ACT 2009 - UPDATE

REPORT BY HEAD OF TECHNICAL AND PROPERTY SERVICES

ABSTRACT

This report updates the committee on issues regarding the Flood Risk Management (Scotland) Act 2009 and seeks approval of the measures to be included in the draft Flood Risk Management Strategy and governance arrangements for the development of Local Flood Risk Management Plans.

1. RECOMMENDATIONS

1.1 It is recommended that the Committee:

- (i) notes the progress made in the development of Flood Risk Management Strategies and Local Flood Risk Management Plans;
- (ii) agrees the measures to be assessed in the development of Flood Risk Management Strategies and Plans to be consulted upon in early 2015;
- (iii) agrees the governance arrangements, including continuation of established member/officer working group, for the further development of Local Flood Risk Management Plans; and
- (iv) agrees the authorisation of the required steps under Strategic Environmental Assessment for the Local Flood Risk Management Plans up to the point of its adoption by the Council to ensure compliance with the requirements of the Environmental Assessment (Scotland) Act 2005.

2. ALIGNMENT TO THE ANGUS COMMUNITY PLAN/SINGLE OUTCOME AGREEMENT/COPORATE PLAN

This report contributes to the following local outcomes contained within the Angus Community Plan and Single Outcome Agreement 2013-2016:

- Our communities are prosperous and fair;
- Our communities are safe and strong;
- Our communities are sustainable; and
- Our natural and built environment is protected and enjoyed.

3. BACKGROUND

3.1 Reference is made to Item 5 of the minute of meeting of the Communities Committee of 19 August 2014.

3.2 At the above meeting, an Information Report with a Flood Risk Management Update was noted (reference Schedule 7 of Report 303/14). The Information Note provided details of the approval of the characterisation and objective setting stages of the Flood Risk Management Strategies, following discussions with the established member/officer working group. The Information Note also details the next important steps required to approve the measures set by these Strategies and levels of approval for the further development of the Local Flood Risk Management Plans.

4. CURRENT POSITION

4.1 Approvals for Flood Risk Management Strategies

4.1.1 As reported to previously (reference Report 333/12), the following levels of approval, which are in line with delegated authority, have been adopted by Angus Council for the key stages of the Flood Risk Management Strategies being developed by SEPA and their consultants:

1. Characterisation – by Head of Technical and Property Services;
2. Objective Setting – by Head of Technical and Property Services following discussion with Member/Officer Working Group;
3. Short list – Report to Communities Committee by Head of Technical and Property Services following discussion with Member/Officer Working Group.

4.1.2 Prior to the 'approval' stage, a technical 'sign-off' process has been applied so as to allow the development of the Strategies to proceed. The technical 'sign-off' is undertaken by officers, and will be followed by the necessary level of approval stated above.

4.1.3 As detailed in section 3.2 above, approval has been given to the characterisation and objective-setting stages by the Head of Technical & Property Services, following discussion with the Member/Officer Working Group.

4.2 Measures

4.2.1 The draft short-list of measures (or 'actions') has been prepared by SEPA through their consultants, reviewed by officers and signed-off in draft form. These were discussed and agreed with the Member/Officer Working Group, to support the recommendations in this report. Member/Officer Working Group meetings were held on 16 September and 28 October 2014.

4.2.2 As reported previously, the approval of the measures is most critical to the application of the Flood Risk Management (Scotland) Act 2009 (the 'Act') to date. The measures will provide the focus for the actions that will be detailed and implemented in the Local Flood Risk Management Plans, where funding and responsibilities will be identified.

4.2.3 The draft short-lists of measures for the areas of Angus within the Tay Estuary and Montrose Basin and Tay districts are presented in Appendix 2 of this report.

4.2.4 The draft short-list of measures for all other Potentially Vulnerable Area (PVA) within the Tay Estuary and Montrose Basin districts for which the council is lead authority under the Act, including those in neighbouring local authority areas, are presented in Appendix 3 of this report.

4.2.5 The short-list of measures fall into categories, which address each of the objectives of sustainable flood risk management as detailed in the previously reported Information Report, as detailed in section 3.2 of this report. In summary, the objectives are to Avoid increasing flood risk; protect to Reduce the likelihood of flooding; prepare to Reduce impacts of flooding; and Accept & Maintain all or part of the risk.

4.2.6 The measure categories by objective are:

- Avoid objective: Maintenance of existing flood protection schemes; relocation; Application of National Planning Policies and Application of Local Planning Policies.
- Protect (Natural Flood Management) objective: Runoff control; River/floodplain restoration; Sediment management; Wave attenuation; and Surge attenuation.
- Protect (Engineering) objective: Construction of Online and Offline storage; Modification of Conveyance; Installation / modification of fluvial control structures; Installation / modification of coastal control structures; Construction of Direct flood Defences; and Sustainable Urban Drainage.

- Prepare objective: Watercourse Maintenance; Property level protection; Flood Forecasting & Warning; Self Help; Emergency Plans; Site Protection Plans; and Improved Understanding through modelling and assessment.

Further detailed explanations of the measures within each category are included in the short-lists of measures template presented in Appendix 1.

- 4.2.7 The potential for each measure to be applied in each PVA, as identified in the National Flood Risk Assessment, based on the agreed objective for that area has been detailed. This is based on initial screening and high-level assessment of suitability based on the characterisation data.
- 4.2.8 The short-lists exclude measures to address surface water flooding. The list of potential protection measures for surface water flooding will be identified during the development of surface water management plans, including the Tayside Integrated Catchment Study (reference Report 333/12), which will developed alongside the Local Flood Risk Management Plans.
- 4.2.9 Proposals for the acceptance of the draft short-list of measures are presented in section 5 of this report.

4.3 Consultation on Flood Risk Management Strategies and Local Flood Risk Management Plans

- 4.3.1 Under the Act, SEPA are required to consult publically on the draft Flood Risk Management Strategies. A phased consultation over the period December 2014 to June 2015 was planned for the characterisation, objective and measures stages.
- 4.3.2 Under the Act, the lead authority responsible for each Local Flood Risk Management Plan is required to consult publically on the draft Plans. Section 35(1) of the Act has been subject to a recent Ministerial Direction in October 2014 to extend the deadline by which lead local authorities must publish a draft of the supplementary part of a local flood risk management plan to 2 March 2015. This extension is granted in support of a joint consultation on the Strategies and Plans. It is therefore planned that the draft Plans are prepared by January/February 2015 for the second phase of consultation from 2 March until June 2015.
- 4.3.3 The draft Strategy will identify and describe the actions required to manage flood risk. The draft Plan will identify timings, funding and responsibilities for the actions to be implemented over the first six-year flood risk management cycle from June 2016. At the proposed stage of development by the time of the consultation, the draft Plans will have a high-level of detail only. Ongoing and confirmed actions, where activity is already underway and funding arrangements are known for 2016-21, will be detailed. All other potential actions to be consulted upon may not be able to be implemented during the period 2016-2021 due to project lead-in times and funding constraints. These actions will be subject to future funding allocations and further detailed technical feasibility to ensure viability. The responses to the consultation will allow for the further development of the objectives and measures/actions.
- 4.3.4 The consultation does also present the opportunity for the council to comment on the draft Strategies and Plans. This is considered beneficial given the compressed timescale and the possibility that there may be developments of details as the consultation proceeds, and potential unresolved matters.

4.4 Approvals for Local Flood Risk Management Plans

The levels of approval for the Flood Risk Management Strategies were approved by committee (reference section 4.1 of this report and Report 333/12) based on a combination of delegated authority to the Head of Technical and Property Services with or without discussions with the Member/Officer Working Group, and planned reports for committee approval. At that time, no detailed proposals for the levels of approval for the Local Flood Risk Management Plans were submitted. Proposals are therefore presented in section 5 below in order for the responsibilities of the council under the Act to continue to be met.

5. OPTIONS

- 5.1 It is proposed that the short-list of measures prepared by SEPA (reference section 4.2 of this report), as discussed and agreed with the Member/Officer Working Group, are approved by the committee.
- 5.2 It is proposed that the draft Local Flood Risk Management Plans are prepared by January/February 2015 for the second phase of consultation from March to June 2015 (reference section 4.3 of this report). The draft Plans are to be prepared by officers along with partners in the Local Plan Districts. It is further proposed that these draft Plans are reviewed by the Member/Officer Working Group, prior to approval and consultation, at the level detailed below.
- 5.3 It is proposed that the level of approval for the Local Flood Risk Management Plans (reference section 4.4 of this report). The levels of approval are in accordance with the principles applied to the Flood Risk Management Strategies.
1. **Draft for Consultation** – by Head of Technical and Property Services following discussion with Member/Officer Working Group;
 2. **Formal Response to Consultation on both Strategies and Plans** – Report to Communities Committee by Head of Technical and Property Services following discussion with Member/Officer Working Group;
 3. **Finalised Local Flood Risk Management Plans** – Report to Communities Committee by Head of Technical and Property Services following discussion with Member/Officer Working Group.
- 5.4 It is considered that updates will be provided to this committee on the development of Local Flood Risk Management Plans, including the consultation exercise (post June 2015) and publication of Flood Risk Management Strategies (December 2015); with Committee Approval of Local Flood Risk Management Plans in advance of June 2016 publication deadline.
- 5.5 In consideration of the requirements for Strategic Environmental Assessment of the Local Flood Risk Management Plans as detailed in section 7.4 of this report, it is proposed that the Plans are subject to a screening exercise and consultation with the Scottish Government's "SEA Gateway" (SEPA, SNH and Historic Scotland).

6. FINANCIAL IMPLICATIONS

Implementation of the Local Flood Risk Management Strategies and Plans will affect Council budgets, both revenue and capital. The Plans must set out how measures to reduce risk would be programmed and funded over the six-year life of the plan, 2016-21. The Act requires Scottish Government to have regard to these Strategies and Plans when allocating funding to SEPA and responsible authorities, but is silent on methodology at this time. Funding arrangements must await, in the first instance, the Scottish Government Spending Review. Agreeing the short-list of options does not, at this time, commit the Council financially.

7. OTHER IMPLICATIONS

7.1 Risks

- 7.1.1 If the draft short-lists of actions are not approved by the council, then the draft Flood Risk Management Strategies and Local Flood Risk Management Plans for the Tay Estuary and Montrose Basin and Tay districts would fail to be agreed by the respective partnerships. The council will therefore have failed to meet its statutory duties under the Act. This would be particularly serious for the Tay Estuary and Montrose Basin partnership where the council is the lead authority and holds specific statutory responsibilities to consult on the Plans. Given the tight statutory timescales, such a failure at this time are also likely to lead to a failure to publish the Local Flood Risk Management Plans by June 2016. This may have significant impact on the council's funding allocations for flood risk management.
- 7.1.2 The other risks associated with this report are detailed in the report.

7.2 Human Rights

The progression of flood protection work has potential implications for property owners and for occupiers in terms of alleged interference with privacy, home or family life (Article 8) and peaceful enjoyment of their possessions (First Protocol, Article 1). However, it is considered that any actual or apprehended infringement of such Convention Rights is justified in the public interest and in accordance with the council's duty to carry out works to reduce the likelihood of flooding of land.

7.3 Equalities

The issues dealt with in this report have been the subject of consideration from an equalities perspective. An equalities impact assessment has been undertaken.

7.4 Strategic Environmental Assessment (SEA)

- 7.4.1 The Environmental Assessment (Scotland) Act 2005 (the '2005 Act') applies SEA to the proposed Local Flood Risk Management Plans, as detailed in this report. The process requires consideration of whether the PPS is likely to have no or minimal environmental effect (called "pre-screening") or is unlikely to have significant environmental effect (called "screening"). The latter requires prior consultation with the Scottish Government's "SEA Gateway" (SEPA, SNH and Historic Scotland).
- 7.4.2 The draft Flood Risk Management Strategies by SEPA have been subject to a screening direction by the SEA Gateway. A Scoping Report has been consulted upon and an Environmental Report to consider the environmental effects of the Strategies forms part of the consultation exercise detailed in section 4.3 of this report.
- 7.4.3 The additional environmental effects from the Local Flood Risk Management Plans over and above those considered by the SEA of the Strategies are likely to be minimal. However, to evidence this, authorisation is sought to carry out all the required steps under SEA for the Local Flood Risk Management Plans up to the point of its adoption by the Council to ensure compliance with the requirements of the 2005 Act.

Report Author: Ian Cochrane, Head of Technical and Property Services
Email Details: Coummunitiesbusinesssupport@angus.gov.uk

NOTE: The background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (other than any containing confidential or exempt information) which were relied on to any material extent in preparing the above report are:

- Report No 303/14 – Information Report for the Period 27/05/2014 to 19/08/2014 - Communities Committee – 19 August 2014
- Report No 333/12 – Flood Risk Management Scotland Act 2009 Update - Infrastructure Services Committee – 14 June 2012

Appendix 1
Template showing all *Measure Categories* and *Measures* considered

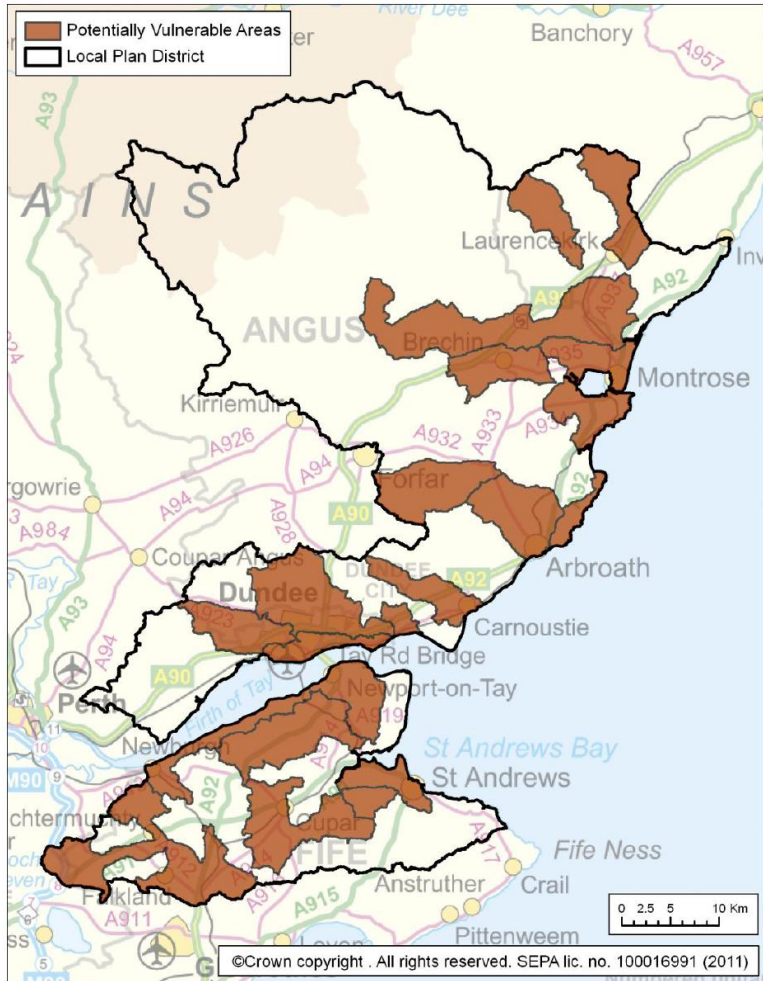
Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	Woodland planting (conifer, native, broadleaf)	Woodland planting (conifer, native, broadleaf)
		Land Management, including; soil and bare earth improvements, changing agricultural field drainage.	Land Management, including; soil and bare earth improvements, changing agricultural field drainage.
		Cross slope woodlands (shelter belts)	Cross slope woodlands (shelter belts)
		Creation / restoration of wetlands and ponds	Creation / restoration of wetlands and ponds
		Upland drain blocking	Upland drain blocking
		Gully woodland planting	Gully woodland planting
	<i>River/floodplain restoration</i>	Floodplain reconnection	Floodplain reconnection
		Placed large woody debris and boulders	Placed large woody debris and boulders
		Floodplain woodland	Floodplain woodland
		Riparian Woodland	Riparian Woodland
		Reach restoration – (e.g. re-meandering)	Reach restoration – (e.g. re-meandering)
Creation of washlands (off-line storage)	Creation of washlands (off-line storage)		

	<i>Sediment management</i>	Sediment removal or other in-channel management	Sediment removal or other in-channel management
		Sediment traps	Sediment traps
		Bank Restoration(e.g. riparian planting, green bank restoration)	Bank Restoration(e.g. riparian planting, green bank restoration)
	<i>Wave attenuation</i>	Beach Recharge Schemes	Beach Recharge Schemes
		Shingle Re-Profiling	Shingle Re-Profiling
		Sand Dune Restoration	Sand Dune Restoration
		Coastal Vegetated Shingle Restoration	Coastal Vegetated Shingle Restoration
		Machair Restoration	Machair Restoration
	<i>Surge attenuation</i>	Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange	Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online	Flood storage online
		Flood storage offline	Flood storage offline
<i>Modification of Conveyance</i>		Increased conveyance through channel modification – deepening / widening / two-stage channel	Increased conveyance through channel modification – deepening / widening / two-stage channel
		Relief/diversion channel / Bypass tunnel/culvert	Relief/diversion channel / Bypass tunnel/culvert
		Realign channel	Realign channel
		Culvert modification	Culvert modification
		Removal of hydraulic constrictions	Removal of hydraulic constrictions
		Bridges modification	Bridges modification
<i>Installation / modification of fluvial control structures</i>		Sluice gate / penstock / flap valve	Sluice gate / penstock / flap valve
		Weir	Weir
		Trash Screens	Trash Screens
		Pumping Stations	Pumping Stations
<i>Installation / modification of coastal control structures</i>		Revetments	Revetments
		Groynes	Groynes
		Breakwaters	Breakwaters
		Artificial reefs and detached breakwaters	Artificial reefs and detached breakwaters

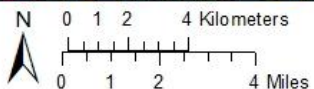
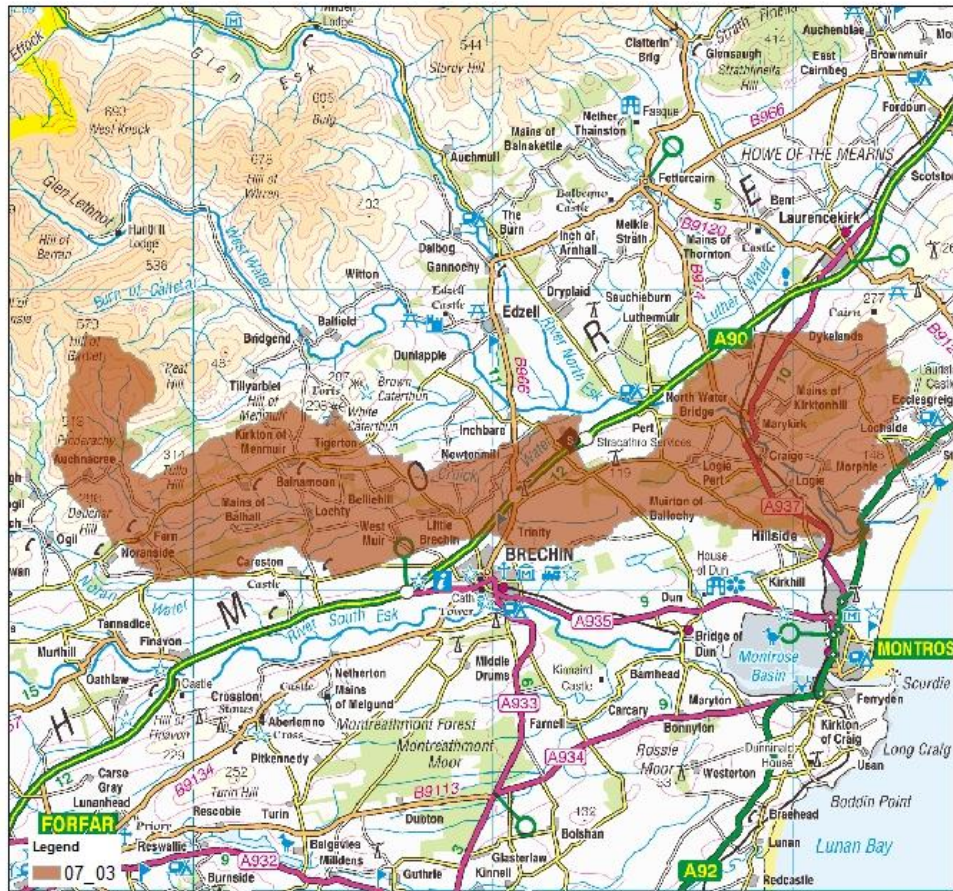
		Gates and Tidal Barriers	Gates and Tidal Barriers
	<i>Construction of Direct flood Defences</i>	Embankment	Embankment
		Wall	Wall
		Adaptable Wall (can be added to)	Adaptable Wall (can be added to)
		Demountable / temporary defences	Demountable / temporary defences
	<i>Sustainable Urban Drainage</i>	Sustainable Urban Drainage measures (identified through Surface Water Management Plan)	Sustainable Urban Drainage measures (identified through Surface Water Management Plan)
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance	Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	Flood forecasting and alerts
		Flood Warning Schemes	Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

Appendix 2
Short-List of Measures for Angus PVA

LPD7: Tay Estuary and Montrose Basin Local Plan District and Potentially Vulnerable Areas, where Angus Council is lead authority



PVA 07/03: North of Brechin



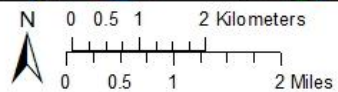
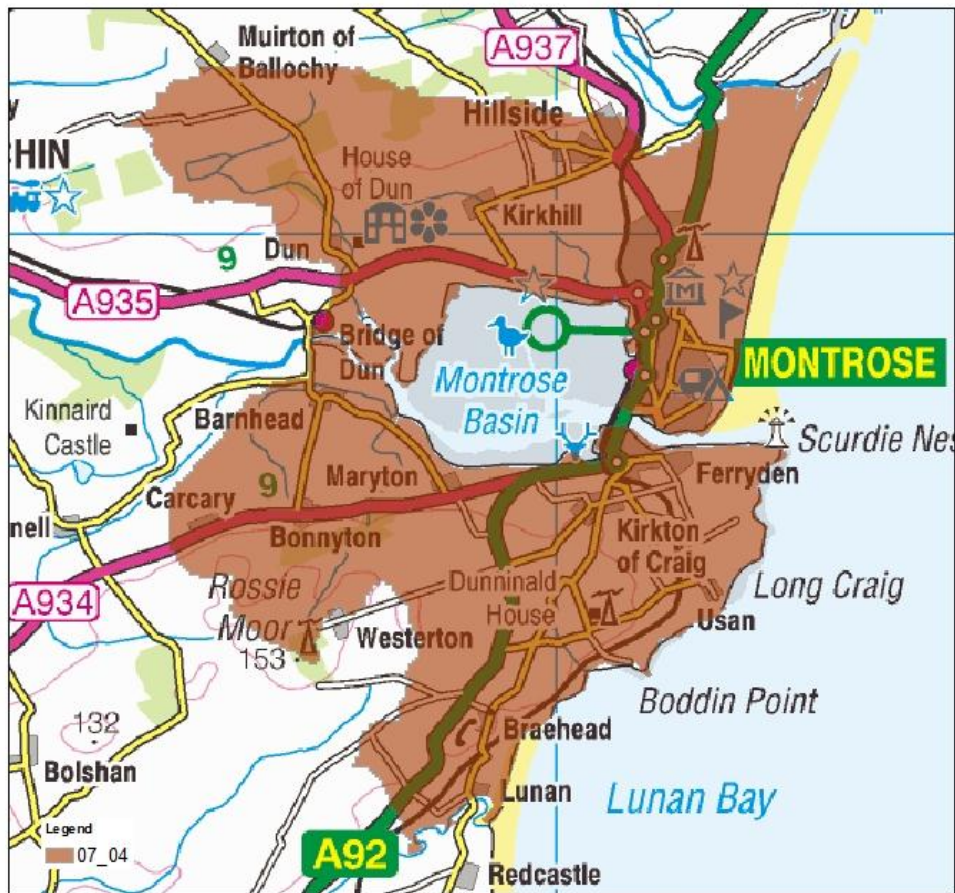
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Source		
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/04: Montrose



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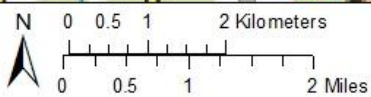
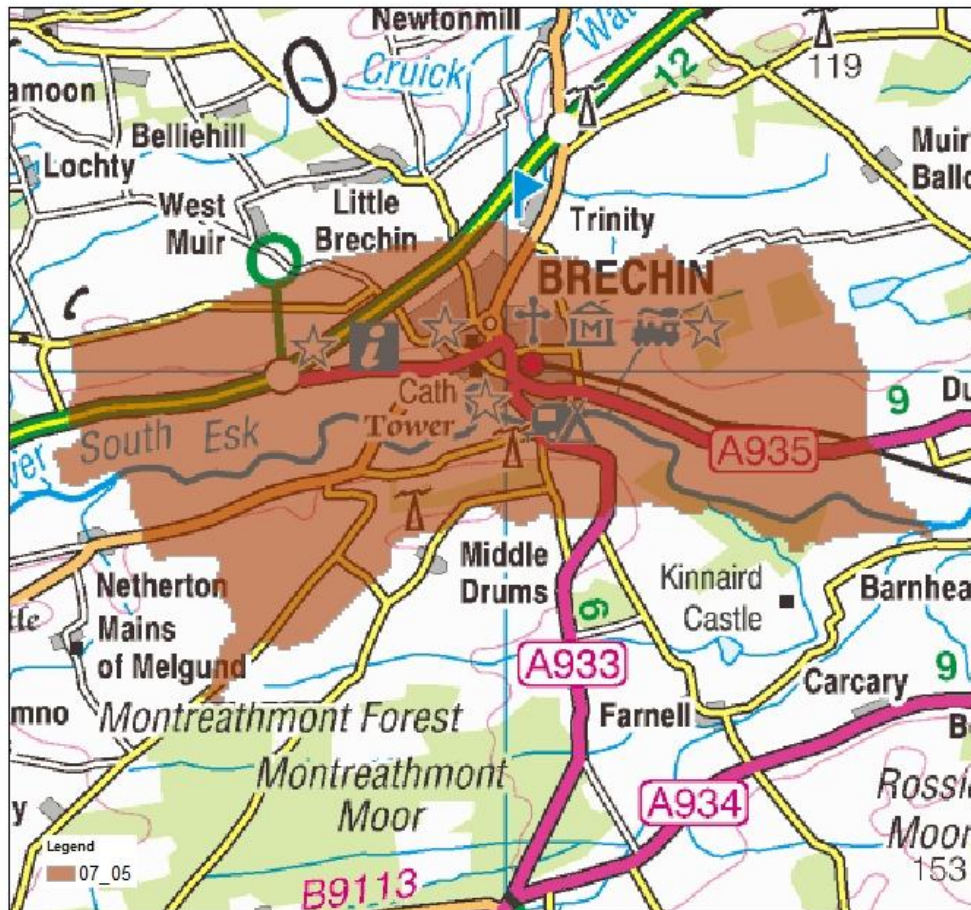


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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
Sand Dune Restoration			
Coastal Vegetated Shingle Restoration			
<i>Surge attenuation</i>			Machair Restoration
			Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Installation / modification of coastal control structures</i>		Revetments
			Groynes
Breakwaters			
Artificial reefs and detached breakwaters			
Gates and Tidal Barriers			
<i>Construction of Direct flood Defences</i>			Embankment
			Wall
			Adaptable Wall (can be added to)
			Demountable / temporary defences
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	

		Event triggered watercourse maintenance	
<i>Property level protection</i>		Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
<i>Flood Forecasting & Warning</i>			Flood forecasting and alerts
			Flood Warning Schemes
<i>Self Help</i>		Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
<i>Emergency Plans</i>		Emergency Response Plans	Emergency Response Plans
<i>Site Protection Plans</i>		Site protection plans	Site protection plans
<i>Improved Understanding through modelling and assessment</i>		Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/05: Brechin



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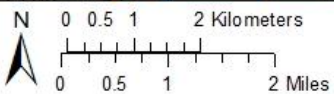
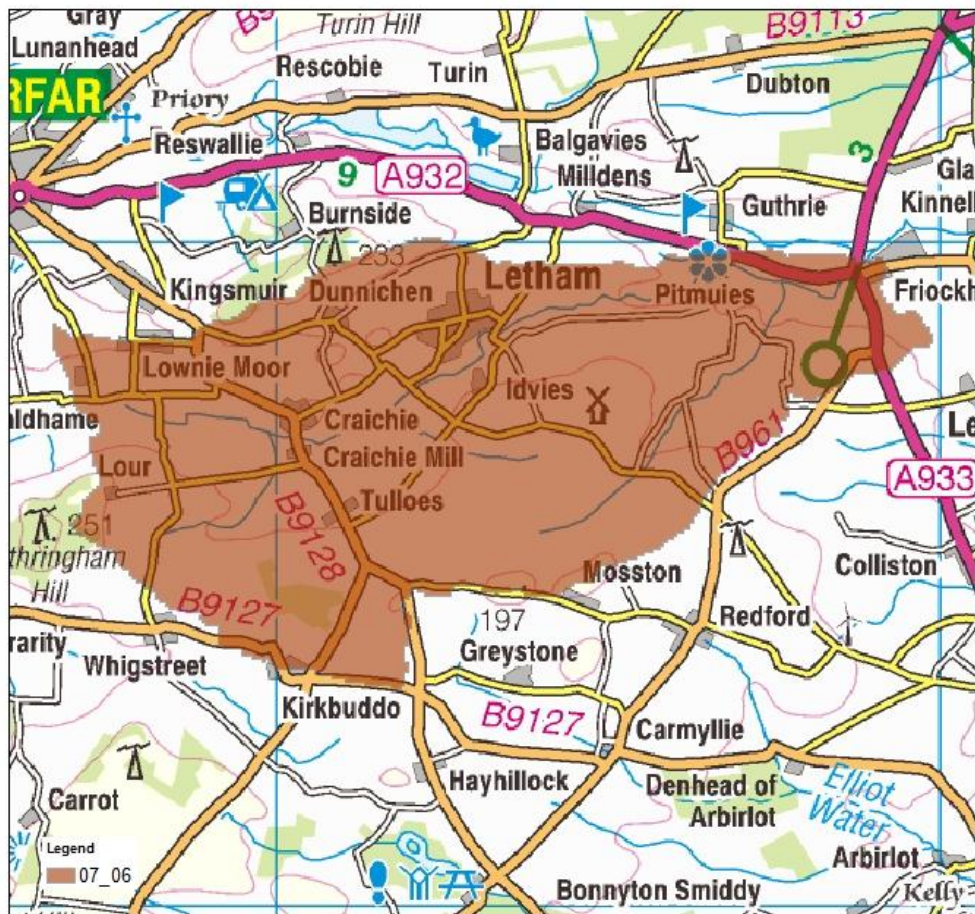


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Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	Land Management, including; soil and bare earth improvements, changing agricultural field drainage.
		Creation / restoration of wetlands and ponds
		Upland drain blocking
		Gully woodland planting
	<i>River/floodplain restoration</i>	Floodplain reconnection
		Floodplain woodland
		Riparian Woodland
		Reach restoration – (e.g. re-meandering)
		Creation of washlands (off-line storage)
	<i>Sediment management</i>	Sediment removal or other in-channel management
		Sediment traps
		Bank Restoration(e.g. riparian planting, green bank restoration)
	Objective	
<i>Measure Category and Measure</i>	<i>Modification of Conveyance</i>	Culvert modification
	<i>Installation / modification of</i>	Sluice gate / penstock / flap valve Weir

	<i>fluvial control structures</i>	Trash Screens Pumping Stations
	<i>Construction of Direct flood Defences</i>	Embankment Wall Adaptable Wall (can be added to) Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/06: Lunan Water



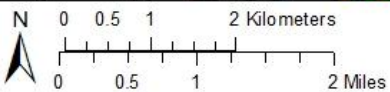
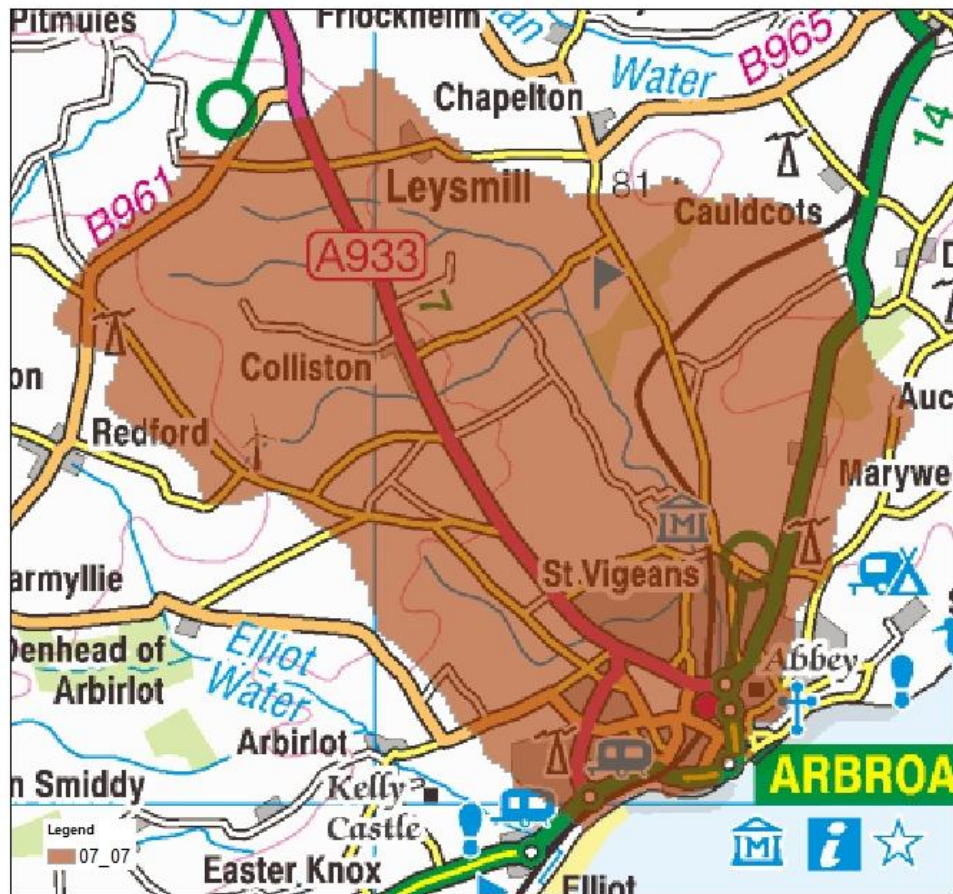
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Source		
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/07: Arbroath



Helpdesk ref: N/A. Produced: 28/8/2013

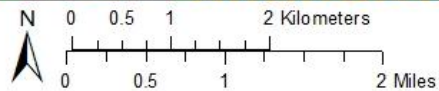


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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes	
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
Use of Strategic Flood Risk Assessment to inform local development plans		Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain reconnection	
		Placed large woody debris and boulders	
		Floodplain woodland	
		Riparian Woodland	
		Reach restoration – (e.g. re-meandering)	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
Bank Restoration(e.g. riparian planting, green bank restoration)			
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online	
	<i>Modification of Conveyance</i>	Culvert modification	
		Removal of hydraulic constrictions	
Bridges modification			

	<i>Installation / modification of fluvial control structures</i>	Trash Screens	
	<i>Construction of Direct flood Defences</i>	Embankment	
		Wall	
		Adaptable Wall (can be added to)	
		Demountable / temporary defences	
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	
		Flood Warning Schemes	
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/08: Coast north of Arbroath



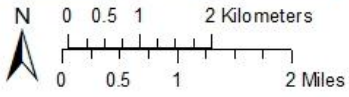
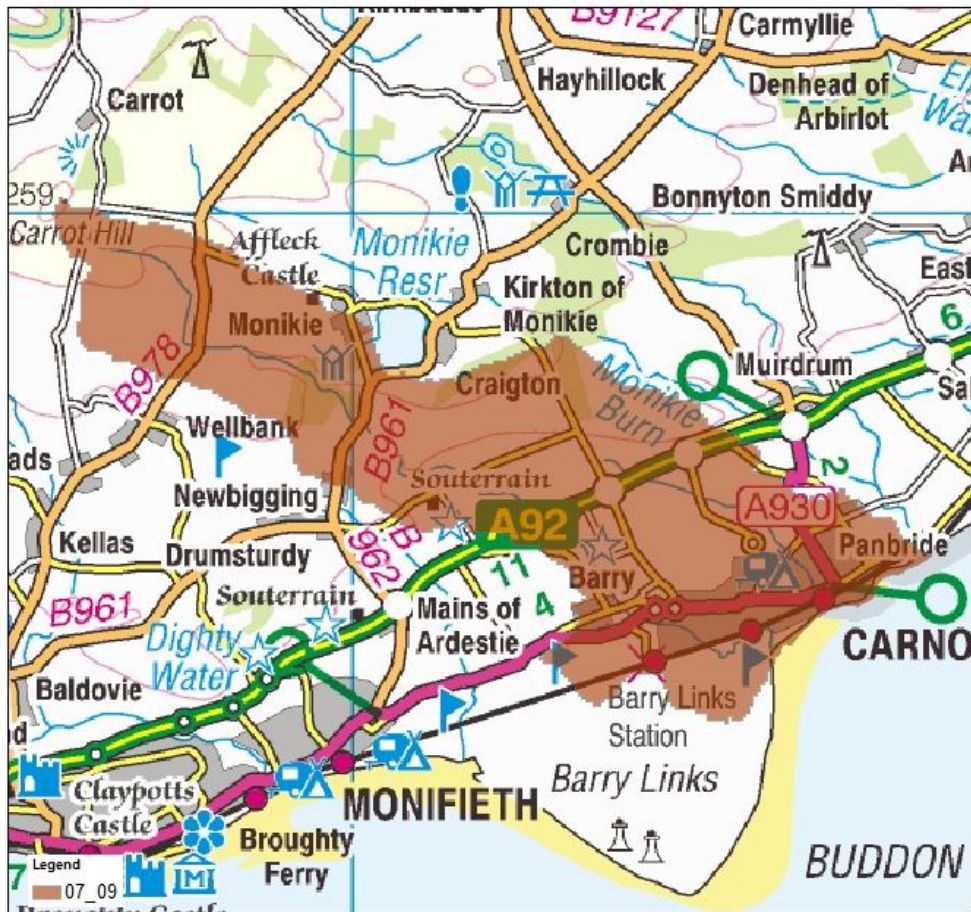
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Source		
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/09: Carnoustie



Helpdesk ref. N/A. Produced: 28/8/2013



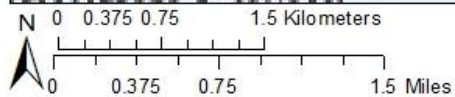
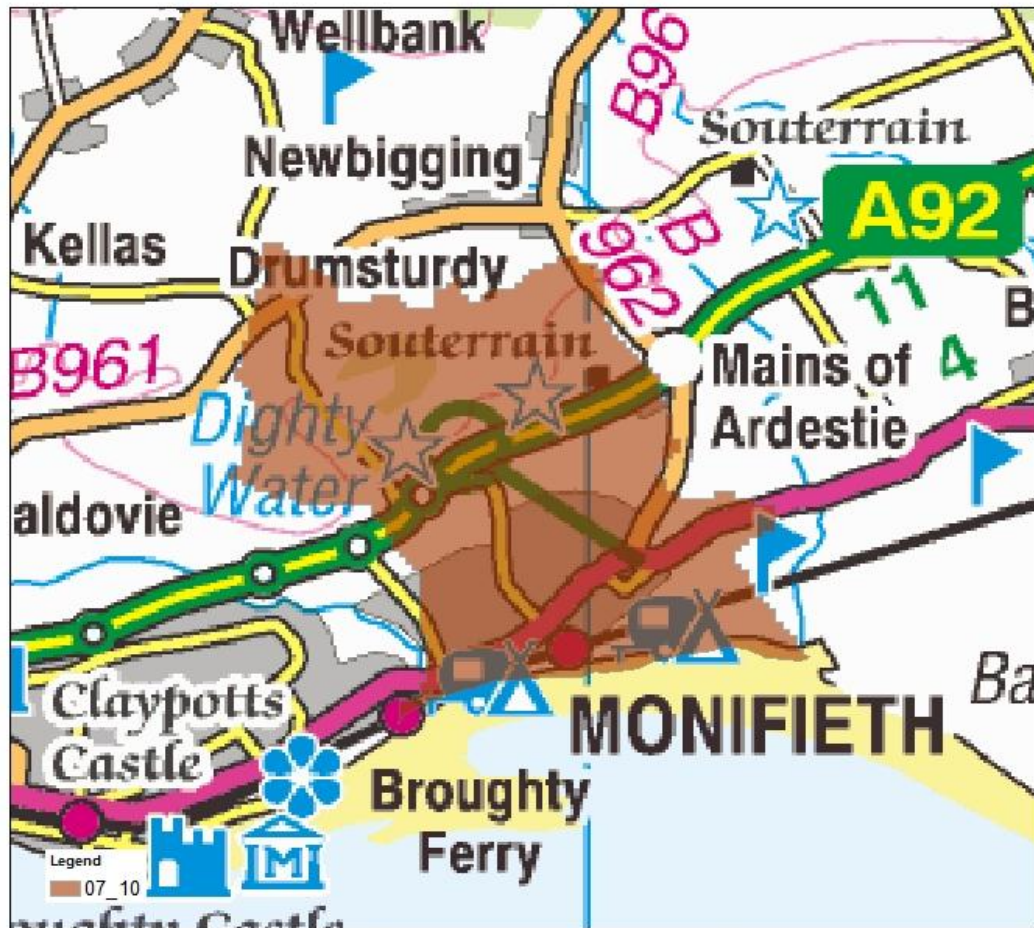
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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
	Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	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	
	<i>River/floodplain restoration</i>	Floodplain reconnection	
		Placed large woody debris and boulders	
		Floodplain woodland	
		Riparian Woodland	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
		Bank Restoration(e.g. riparian planting, green bank restoration)	

	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
			Sand Dune Restoration
			Coastal Vegetated Shingle Restoration
			Machair Restoration
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online	
		Flood storage offline	
	<i>Modification of Conveyance</i>	Increased conveyance through channel modification – deepening / widening / two-stage channel	
		Relief/diversion channel / Bypass tunnel/culvert	
		Realign channel	
	<i>Installation / modification of fluvial control structures</i>	Sluice gate / penstock / flap valve	
		Trash Screens	
	<i>Installation / modification of coastal control structures</i>		Gates and Tidal Barriers
	<i>Construction of Direct flood Defences</i>	Embankment	Embankment
		Wall	Wall
		Adaptable Wall (can be added to)	Adaptable Wall (can be added to)
		Demountable / temporary defences	Demountable / temporary defences
	Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood</i>	Flood forecasting and alerts	

	<i>Forecasting & Warning</i>	Flood Warning Schemes	
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/10: Monifieth



Helpdesk ref: N/A. Produced: 28/8/2013

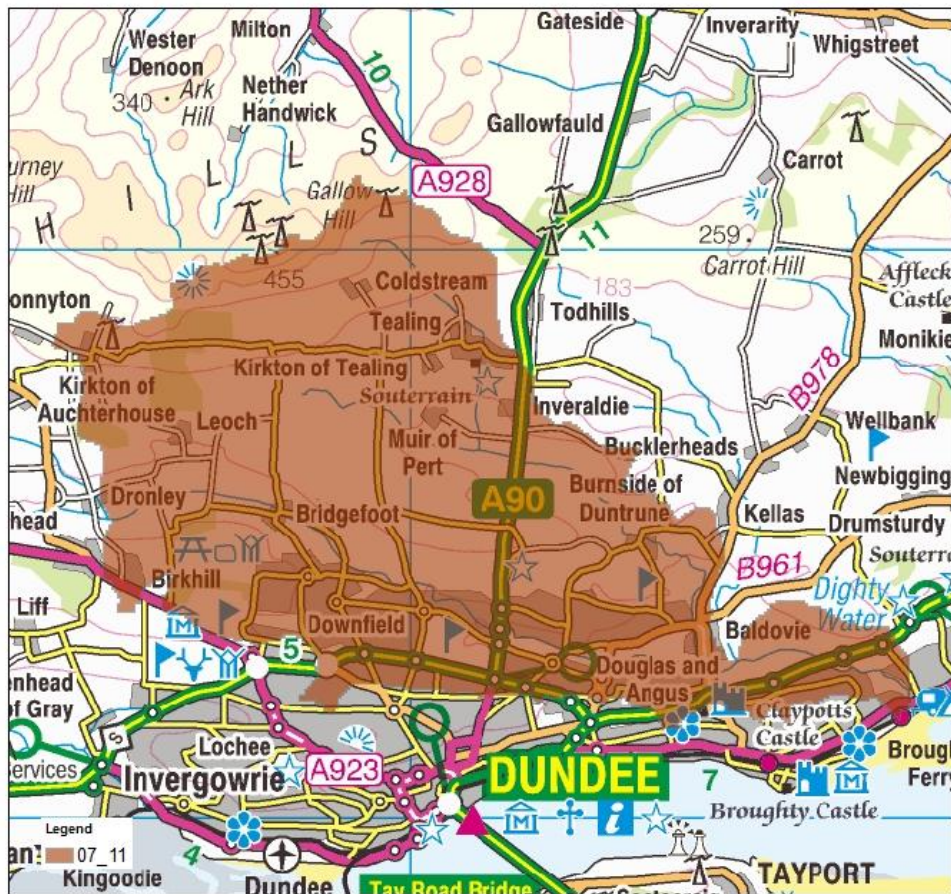


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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>		Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
Use of Strategic Flood Risk Assessment to inform local development plans		Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain woodland	
		Riparian Woodland	
		Reach restoration – (e.g. re-meandering)	
	<i>Sediment management</i>	Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online	
		<i>Construction of Direct flood Defences</i>	
	Wall		
	Adaptable Wall (can be added to)		
	Demountable / temporary defences		
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level</i>	Property Level Protection	

	<i>protection</i>	Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	
		Flood Warning Schemes	
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/11: Downfield, Dundee



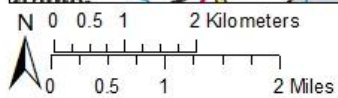
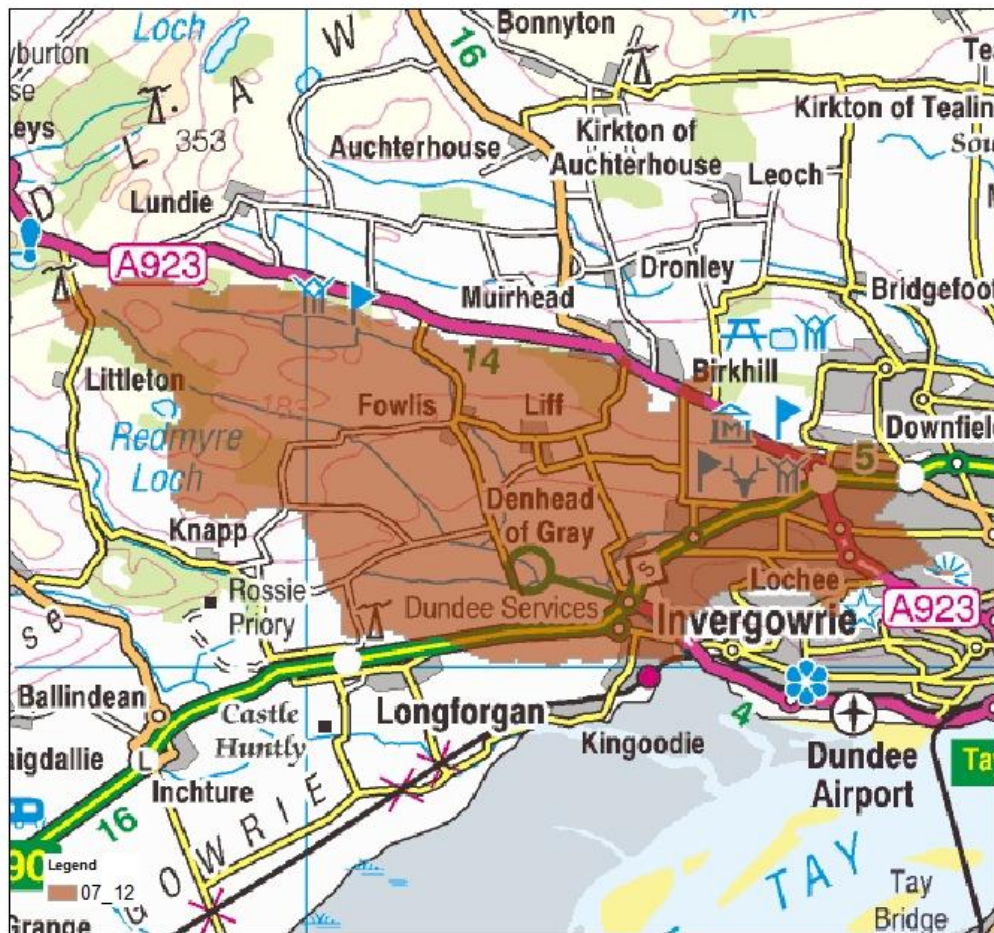
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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
Use of Strategic Flood Risk Assessment to inform local development plans		Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain reconnection	
		Placed large woody debris and boulders	
		Floodplain woodland	
		Riparian Woodland	
		Reach restoration – (e.g. re-meandering)	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
		Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Direct flood Defences</i>	Embankment	
		Wall	
		Adaptable Wall (can be added to)	
		Demountable / temporary defences	
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level</i>	Property Level Protection	

	<i>protection</i>	Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	
		Flood Warning Schemes	
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/12: Invergowrie and Dundee



Helpdesk ref: N/A. Produced: 28/8/2013

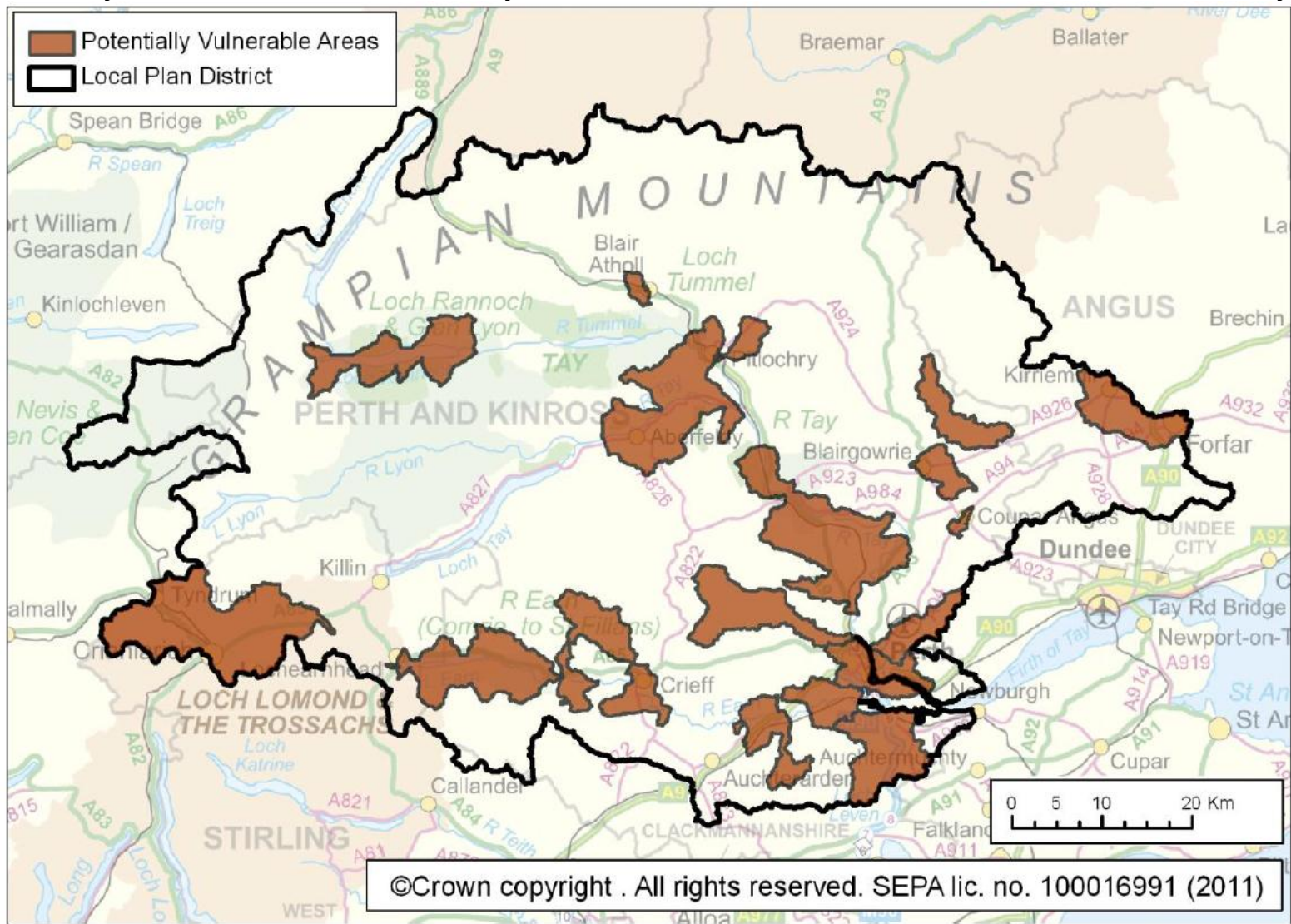


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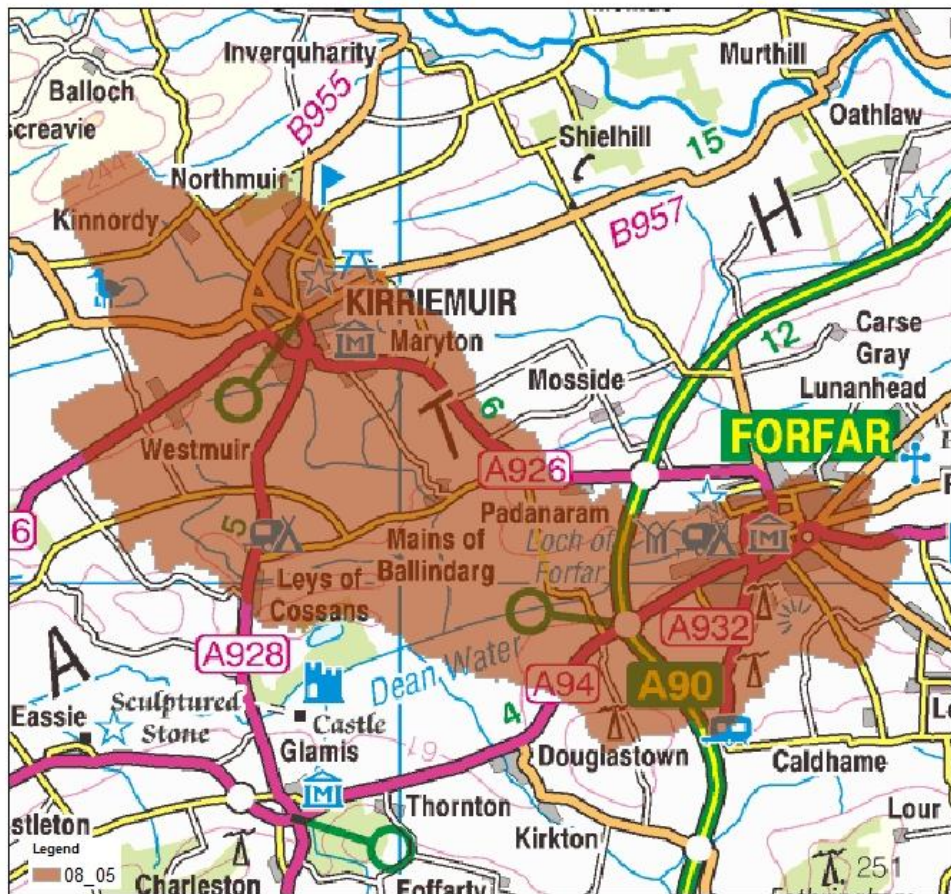
Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>		Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
		Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Placed large woody debris and boulders	
		Floodplain woodland	
		Riparian Woodland	
		Reach restoration – (e.g. re-meandering)	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
Bank Restoration(e.g. riparian planting, green bank restoration)			
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	
		Flood Warning Schemes	
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups

		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

LPD7: Tay Local Plan District and Potentially Vulnerable Areas, where Perth & Kinross Council is lead authority



PVA 08/05: Kirriemuir, Forfar



N 0 1 2 Kilometers
 0 1 2 Miles
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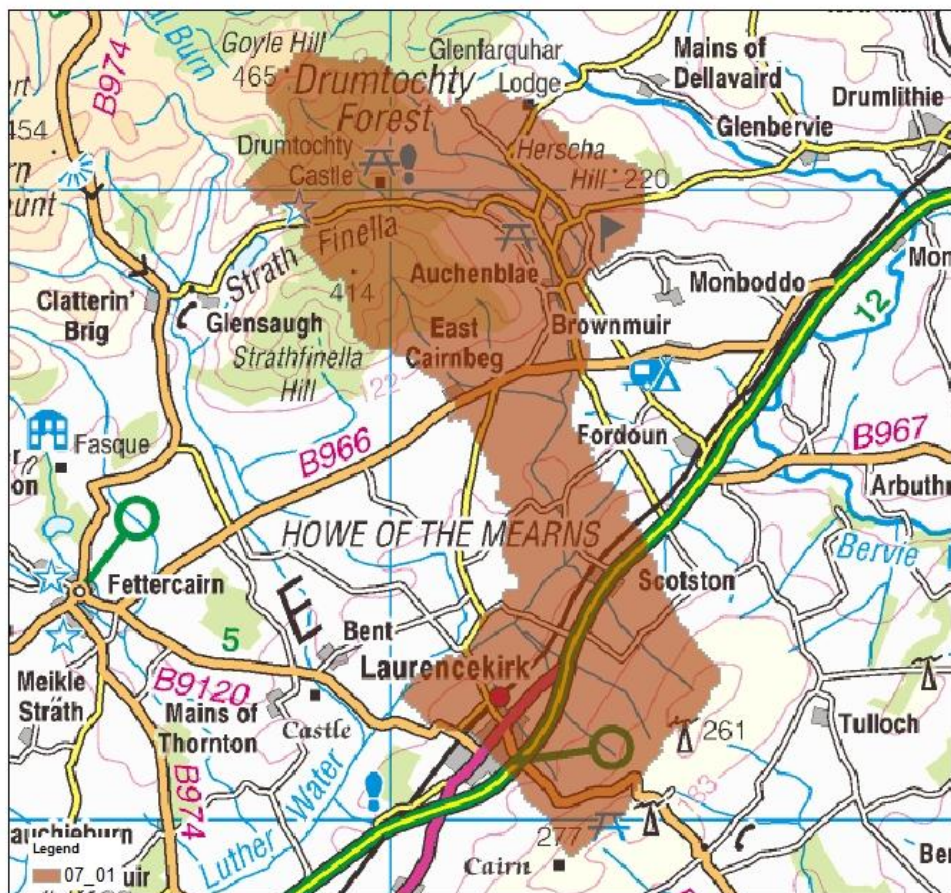
Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain reconnection
		Floodplain woodland
		Riparian Woodland
		Reach restoration – (e.g. re-meandering)
		Creation of washlands (off-line storage)
	<i>Sediment management</i>	Sediment removal or other in-channel management
		Sediment traps
	Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online
		Flood storage offline
	<i>Modification of Conveyance</i>	Increased conveyance through channel modification – deepening / widening / two-stage channel

	<i>Construction of Direct flood Defences</i>	Embankment Wall Adaptable Wall (can be added to) Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

Appendix 3

Short-List of Measures for PVA outside Angus but within LPD7: Tay Estuary and Montrose Basin Local Plan District and Potentially Vulnerable Areas, where Angus Council is lead authority

PVA 07/01: Laurencekirk



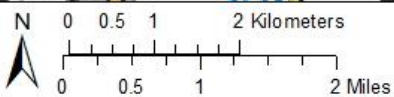
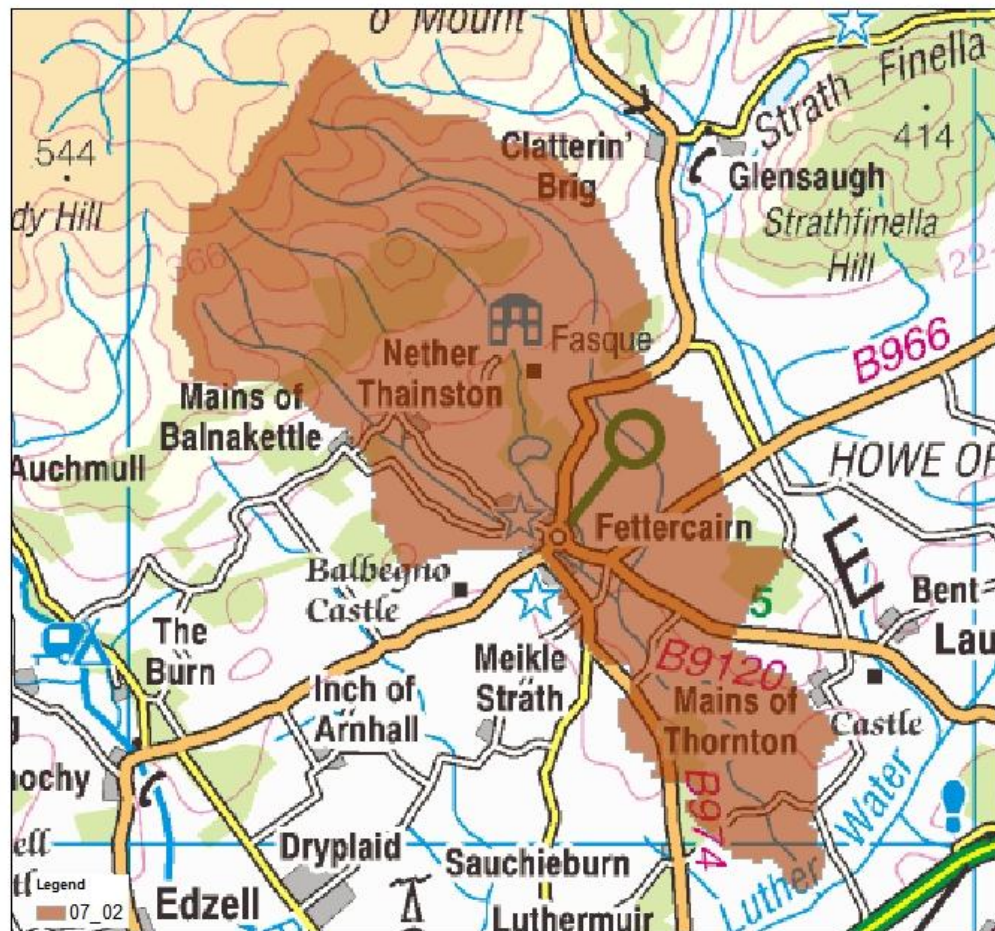
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Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/02: Fettercairn



Helpdesk ref N/A. Produced: 28/8/2013

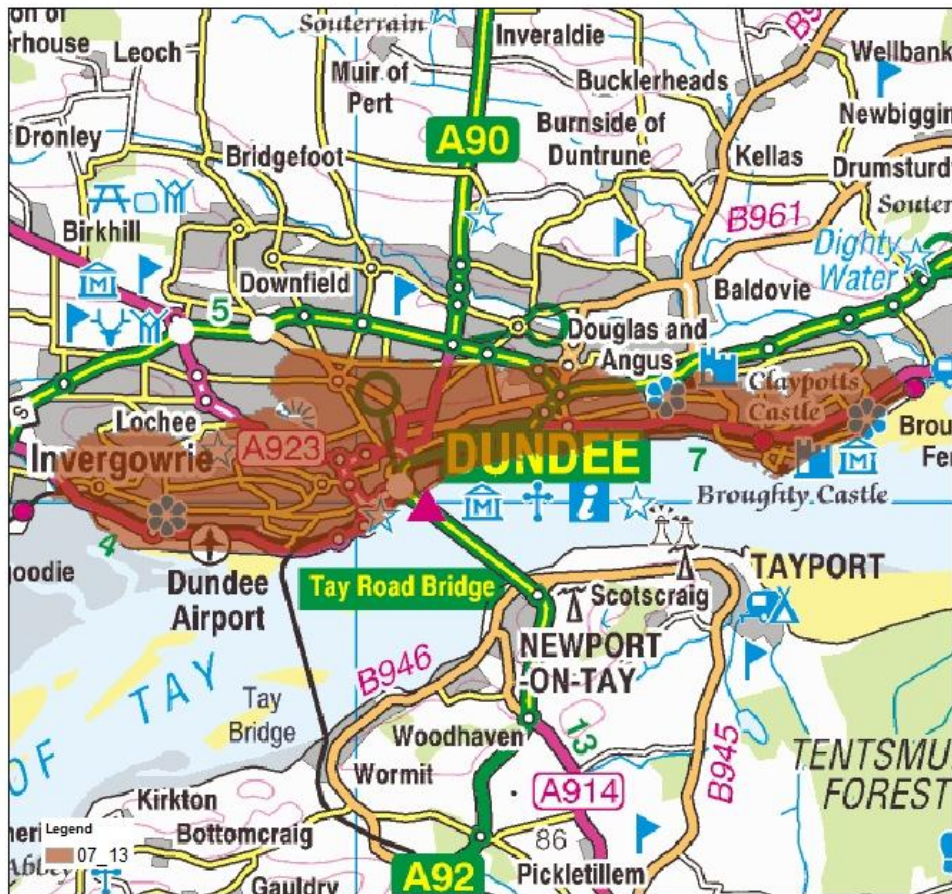


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Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	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
	<i>River/floodplain restoration</i>	Creation of washlands (off-line storage)
<i>Sediment management</i>	Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online
		Flood storage offline

	<i>Modification of Conveyance</i>	Relief/diversion channel / Bypass tunnel/culvert Bridges modification
	<i>Construction of Direct flood Defences</i>	Embankment Wall Adaptable Wall (can be added to) Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/13: Dundee and Broughty Ferry



0 0.5 1 2 Kilometers
0 0.5 1 2 Miles
Helpdesk ref: N/A. Produced: 28/8/2013



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Dundee

Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>		Maintain Existing Flood Protection Schemes
	<i>Relocation</i>		Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
	Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
			Coastal Vegetated Shingle Restoration
			Machair Restoration
	<i>Surge attenuation</i>		Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Installation / modification of coastal control structures</i>		Revetments
	<i>Construction of Direct flood Defences</i>		Embankment
			Wall
			Adaptable Wall (can be added to)
			Demountable / temporary defences

Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>		Flood forecasting and alerts
			Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

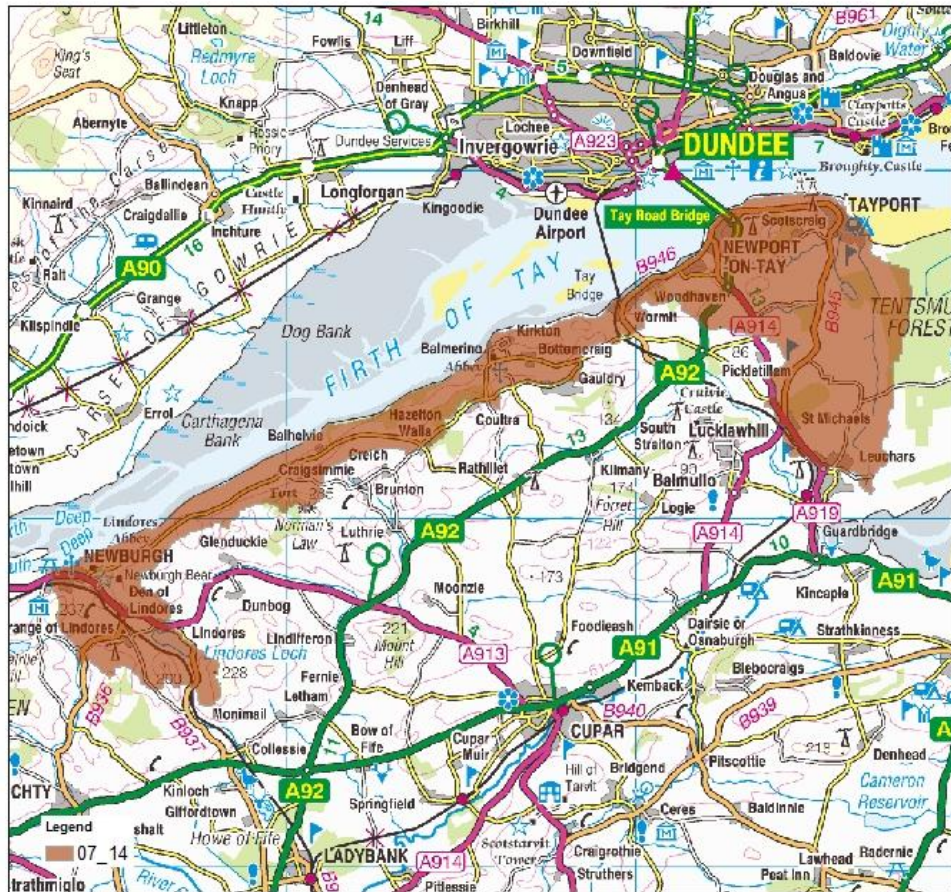
Broughty Ferry

Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>		Maintain Existing Flood Protection Schemes
	<i>Relocation</i>		Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
Planning Advice Notes (PANs)		Planning Advice Notes (PANs)	

	<i>Planning Policies</i>		
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
		Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
			Coastal Vegetated Shingle Restoration
			Machair Restoration
	<i>Surge attenuation</i>		Creation/ restoration of intertidal area including mudflats and saltmarsh, and regulated tidal exchange
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Installation / modification of coastal control structures</i>		Revetments
	<i>Construction of Direct flood Defences</i>		Embankment
			Wall
			Adaptable Wall (can be added to)
			Demountable / temporary defences
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>		Flood forecasting and alerts
			Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency</i>	Emergency Response Plans	Emergency Response Plans

	<i>Plans</i>		
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/14: Newburgh/Tayport



N 0 1 2 4 Kilometers
 0 1 2 4 Miles
 Helpdesk ref: N/A. Produced: 28/8/2013

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Newburgh

Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Placed large woody debris and boulders	
		Floodplain woodland	
		Riparian Woodland	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
<i>Wave attenuation</i>	Bank Restoration(e.g. riparian planting, green bank restoration)		
		Coastal Vegetated Shingle Restoration Machair Restoration	
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online	
	<i>Modification of Conveyance</i>	Culvert modification	
		Removal of hydraulic constrictions	
<i>Installation / modification of coastal control structures</i>		Revetments Groynes	

	<i>Construction of Direct flood Defences</i>		Embankment
			Wall
			Adaptable Wall (can be added to)
			Demountable / temporary defences
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>		Flood forecasting and alerts
			Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

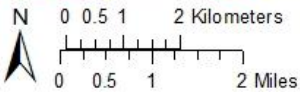
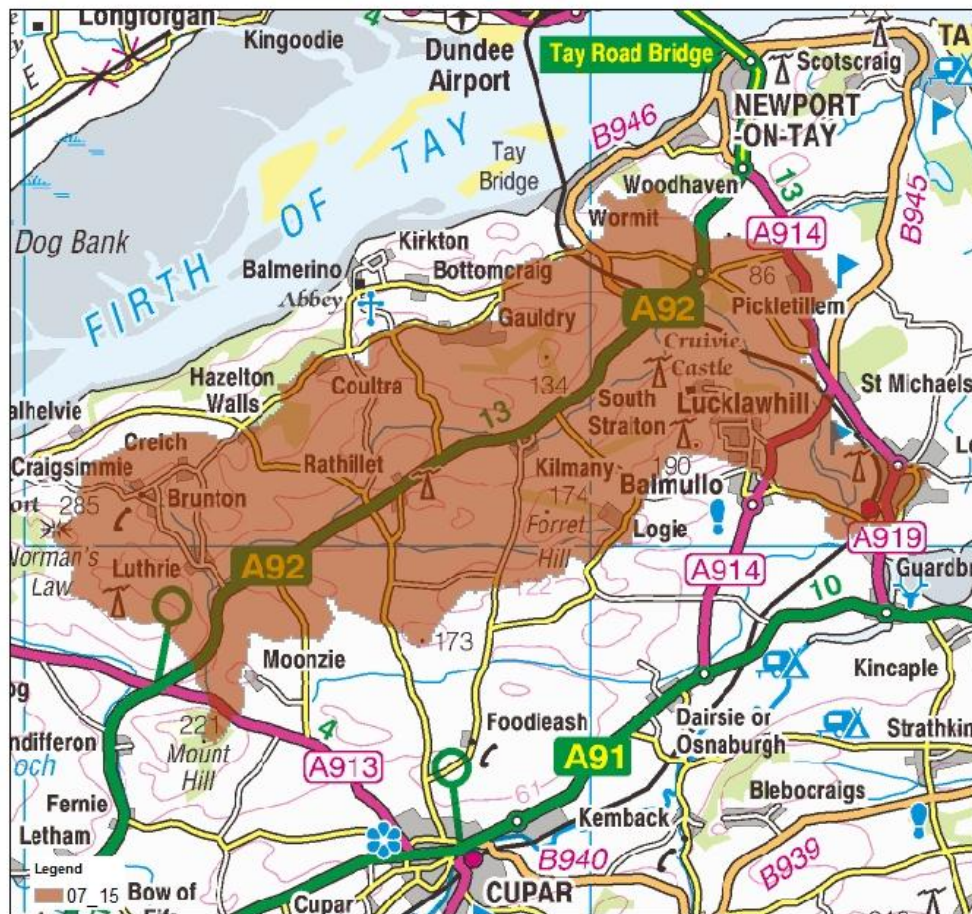
Tayport

Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)

	<i>Planning Policies</i>		
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
		Use of Strategic Flood Risk Assessment to inform local development plans	Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
			Coastal Vegetated Shingle Restoration
			Machair Restoration
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Installation / modification of coastal control structures</i>		Revetments
			Groynes
			Breakwaters
			Artificial reefs and detached breakwaters
			Gates and Tidal Barriers
	<i>Construction of Direct flood Defences</i>		Embankment
			Wall
			Adaptable Wall (can be added to)
			Demountable / temporary defences
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>		Flood forecasting and alerts
			Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising

	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/15: Lucklawhill



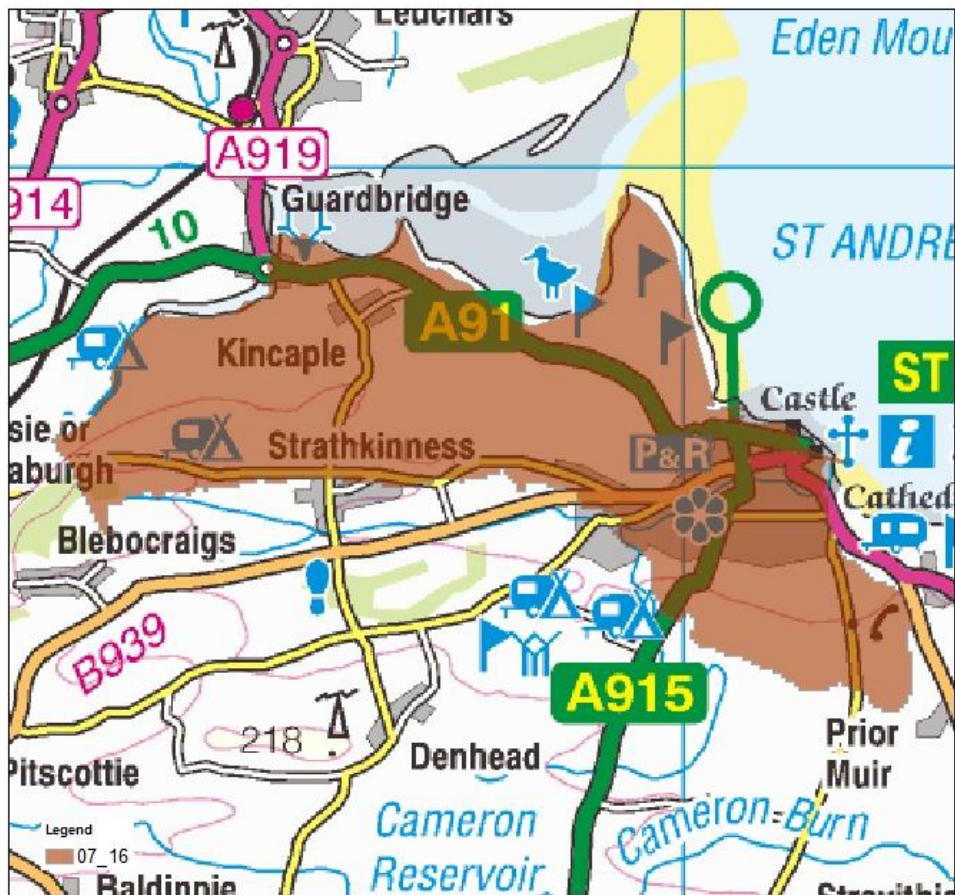
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Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/16: St Andrews



Legend
07_16

N 0 0.5 1 2 Kilometers
0 0.5 1 2 Miles

Helpdesk ref: N/A. Produced: 28/8/2013

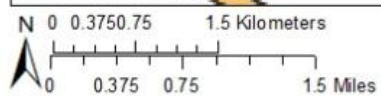
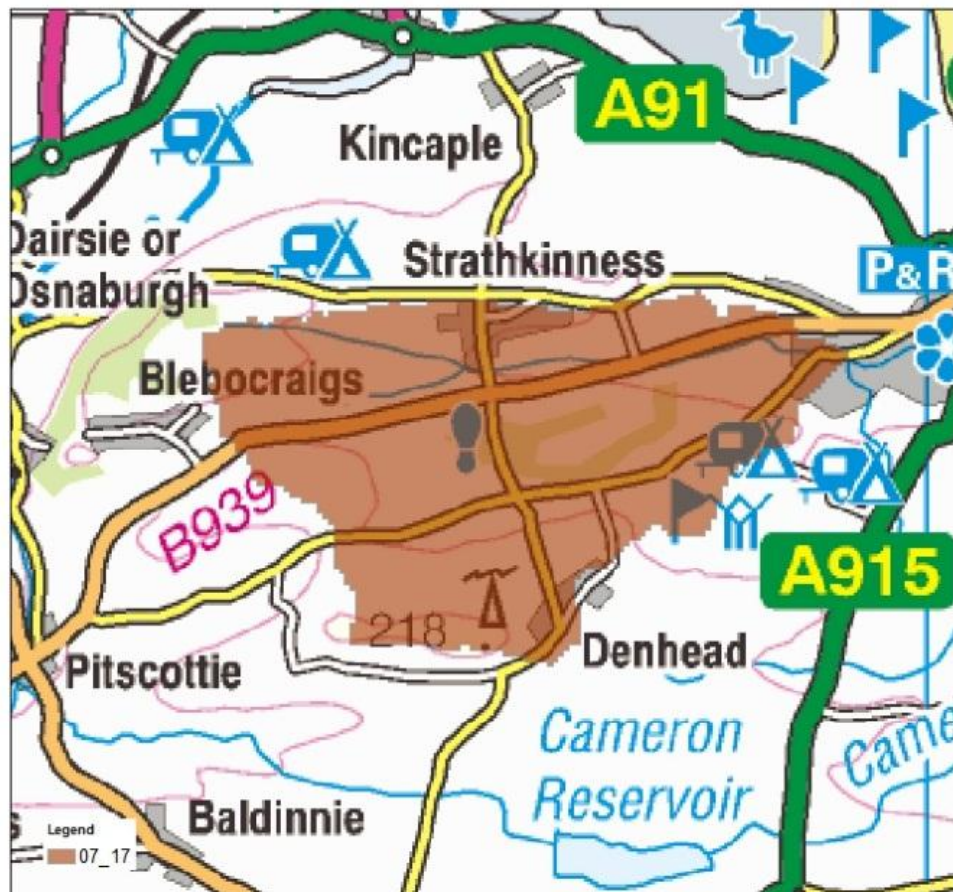


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Source		River	Coastal
Objective		Avoid	Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)	Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	Specific policies/guidance in local development plans in addition to National Planning Policy
Use of Strategic Flood Risk Assessment to inform local development plans		Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)	Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	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	
	<i>River/floodplain restoration</i>	Floodplain woodland	
		Riparian Woodland	
	<i>Sediment management</i>	Sediment removal or other in-channel management	
		Sediment traps	
		Bank Restoration(e.g. riparian planting, green bank restoration)	
	<i>Wave attenuation</i>		Beach Recharge Schemes
			Shingle Re-Profiling
			Coastal Vegetated Shingle Restoration
			Machair Restoration
Objective		Protect (Engineering)	Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Direct flood</i>	Embankment	
		Wall	

	<i>Defences</i>	Adaptable Wall (can be added to)	
		Demountable / temporary defences	
Objective		Prepare	Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance	
		Event triggered watercourse maintenance	
	<i>Property level protection</i>	Property Level Protection	Property Level Protection
		Resilient property design (retrofit)	Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts	Flood forecasting and alerts
		Flood Warning Schemes	Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning	Business Continuity Planning
		Flood Insurance	Flood Insurance
		Community Flood Action Groups	Community Flood Action Groups
		Awareness Raising	Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/17: St Andrew (Denhead, Strathkinness)



Helpdesk ref: N/A. Produced: 28/8/2013

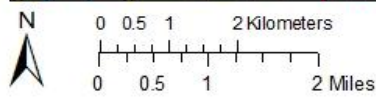
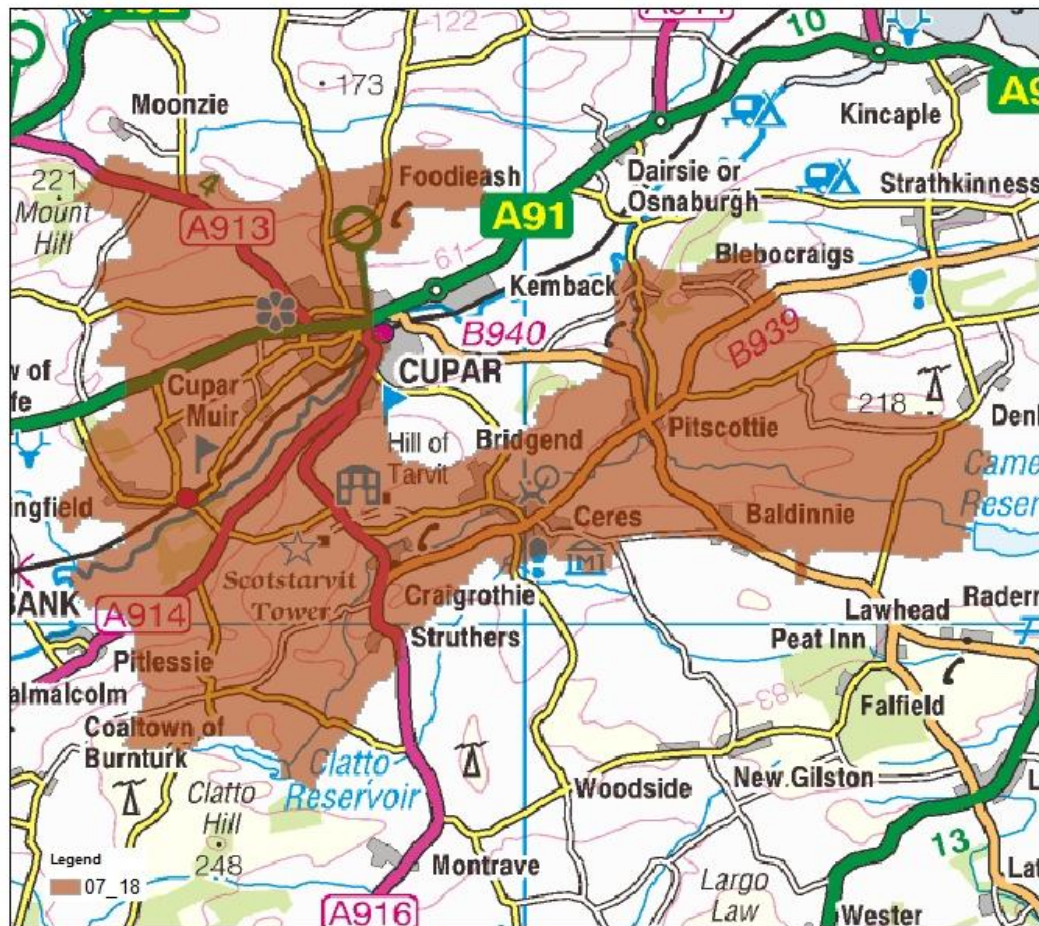


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Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	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
	<i>River/floodplain restoration</i>	Floodplain woodland
		Riparian Woodland
	<i>Sediment management</i>	Sediment removal or other in-channel management
Sediment traps		
Bank Restoration(e.g. riparian planting, green bank restoration)		
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Installation / modification of fluvial control structures</i>	Weir
		Trash Screens
	<i>Construction of Direct flood</i>	Embankment
		Wall

	<i>Defences</i>	Adaptable Wall (can be added to) Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

PVA 07/18: Cupar



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Helpdesk ref. N/A. Produced: 28/8/2013

Cupar

Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain reconnection
		Placed large woody debris and boulders
		Floodplain woodland
		Riparian Woodland
		Reach restoration – (e.g. re-meandering)
	Creation of washlands (off-line storage)	
	<i>Sediment management</i>	Sediment removal or other in-channel management
		Sediment traps
Bank Restoration(e.g. riparian planting, green bank restoration)		
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online
	<i>Construction of</i>	Embankment

	<i>Direct flood Defences</i>	Wall Adaptable Wall (can be added to) Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
<i>Emergency Plans</i>	Emergency Response Plans	
<i>Site Protection Plans</i>	Site protection plans	
<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.	

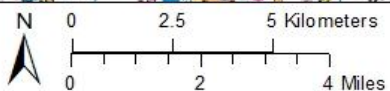
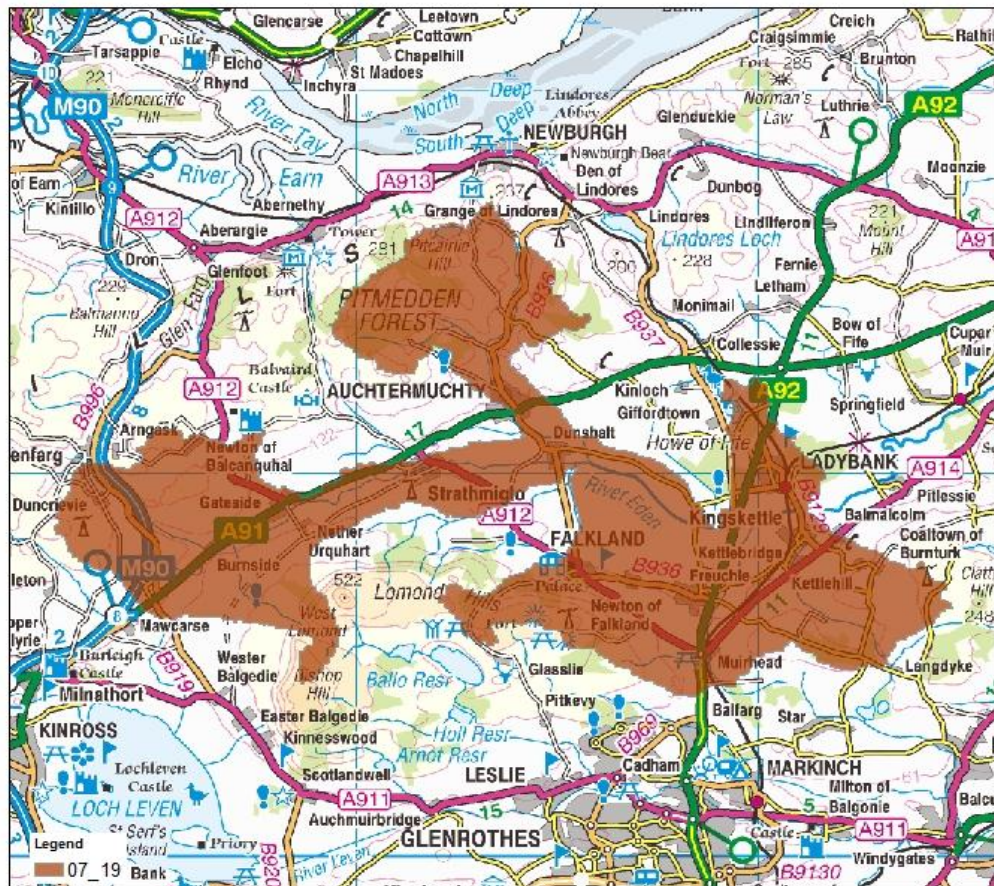
Remainder of Cupar PVA

Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away

		from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP) Planning Advice Notes (PANs)
	<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>Runoff control</i>	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
	<i>River/floodplain restoration</i>	Placed large woody debris and boulders
		Floodplain woodland
		Riparian Woodland
	<i>Sediment management</i>	Reach restoration – (e.g. re-meandering)
		Sediment removal or other in-channel management
		Sediment traps
		Bank Restoration(e.g. riparian planting, green bank restoration)
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Direct flood Defences</i>	Embankment
		Wall
		Adaptable Wall (can be added to)
		Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance

	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.

PVA 07/19: Auchtermuchty



Helpdesk ref: N/A. Produced: 28/8/2013



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Auchtermuchty

Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)
<i>Application of Local Planning Policies</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	
	Use of Strategic Flood Risk Assessment to inform local development plans	
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Placed large woody debris and boulders
		Floodplain woodland
		Riparian Woodland
	<i>Sediment management</i>	Sediment removal or other in-channel management
		Sediment traps
	Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance

	<i>Property level protection</i>	Property Level Protection Resilient property design (retrofit)
	<i>Flood Forecasting & Warning</i>	Flood forecasting and alerts
		Flood Warning Schemes
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection Plans</i>	Site protection plans
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.

Remainder of Auchtermuchty PVA

Source		River
Objective		Avoid
<i>Measure Category and Measure</i>	<i>Maintenance of existing flood protection schemes</i>	Maintain Existing Flood Protection Schemes
	<i>Relocation</i>	Relocation of properties/infrastructure away from flood risk areas
	<i>Application of National Planning Policies</i>	Scottish Planning Policy (SPP)
		Planning Advice Notes (PANs)
<i>Application of Local Planning</i>	Specific policies/guidance in local development plans in addition to National Planning Policy	

	<i>Policies</i>	Use of Strategic Flood Risk Assessment to inform local development plans
Objective		Protect (NFM)
<i>Measure Category and Measure</i>	<i>River/floodplain restoration</i>	Floodplain reconnection
		Placed large woody debris and boulders
		Floodplain woodland
		Riparian Woodland
		Reach restoration – (e.g. re-meandering)
	<i>Sediment management</i>	Sediment removal or other in-channel management
	Sediment traps	
	Bank Restoration(e.g. riparian planting, green bank restoration)	
Objective		Protect (Engineering)
<i>Measure Category and Measure</i>	<i>Construction of Online and Offline storage</i>	Flood storage online
		Culvert modification
		Trash Screens
	<i>Construction of Direct flood Defences</i>	Embankment
		Wall
		Adaptable Wall (can be added to)
		Demountable / temporary defences
Objective		Prepare
<i>Measure Category and Measure</i>	<i>Watercourse Maintenance</i>	Routine and event specific watercourse maintenance
		Event triggered watercourse maintenance
	<i>Property level protection</i>	Property Level Protection
		Resilient property design (retrofit)
	<i>Self Help</i>	Business Continuity Planning
		Flood Insurance
		Community Flood Action Groups
		Awareness Raising
	<i>Emergency Plans</i>	Emergency Response Plans
	<i>Site Protection</i>	Site protection plans

	<i>Plans</i>	
	<i>Improved Understanding through modelling and assessment</i>	Modelling and other assessments to improve knowledge of flood hazards and impacts.