Flood Risk Management (Scotland) Act

FRM Strategies – Prioritisation of Actions

Flood Protection Studies_v4.0_DRAFT | Version Date:10/08/2015 | NPWG Meeting 3 (Paper 6)

The following table lists (in descending national rank order) all 169 identified Flood Protection Studies. Some of these have NFM elements. Standalone NFM studies are listed in the second table within this document.

Where a study has been identified for C2 delivery, the right hand table column is highlighted in orange.

Rows highlighted in green have undergone a notable change from v3.

Where a Local Authority does not agree with the technical ranking prepared by SEPA, the entire entry is in italic and highlighted in bold for ease of interpretation.

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
							National	LPD	LA			
Aberdeen City Dyce and Buckburn PVA (06/15)	Reduce flood risk in Aberdeen from the River Don. Reduce flood risk from burns including open and culverted lengths Objective ID: 601501, 601502.	A study is recommended to consider all actions in order to develop the most sustainable range of options. The study should be coordinated with the Surface Water Management Plan. Outputs from the Aberdeen Integrated Catchment Study should be considered to take account of culverted water courses, burns and the Rivers Dee and Don to take a comprehensive approach to flood risk management in Aberdeen.	£50,000 - £100,000	If the whole of the Dyce and Buckburn area were to be protected from flooding, present value benefits of £62,597,204 could be achieved over the 100 year design life of a scheme. In reality the study should look to identify flooding hotspots where actions should be targeted. Further study will identify the true benefits of these actions.	£62,597,204	6	1 of 168	1 of 16	1 of 4		Council will be commencing all studies in first cycle through the Integrated Catchment Study process and will be prioritising study areas across the City Council area	C1
Scottish Borders ***Peebles, Innerleithen and Broughton PVA (13/04, 13/08)***	***1. Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Peebles caused by river flooding from the Eddleston Water and River Tweed. 2. Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Innerleithen caused by flooding from the River Tweed and Leithen Water. 3. Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Broughton caused by river flooding. Objective ID: 13013, 13014, 13022.***	***A Flood Protection Study for Peebles, Innerleithen and Broughton (combined engineering and NFM) should assess Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. Natural Flood Management should assess Runoff Control and River/Floodplain Restoration and Sediment Management. The study should co-ordinate with the Eddleston Water restoration project managed by the Tweed Forum. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£100k to £270k***	***839 residential properties and 149 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £52.3M. NFM potential benefits for 105 residential properties and 23 non residential properties at risk for a high likelihood event (Peebles)***	***£52,300,000***	***8***	***1 of 168***	***1 of 5***	***1 of 6***	***2***	-	***C1***
West Dunbartonshire Vale of Leven/ Dumbarton PVA (11/01)	Reduce the risk of River Leven / coastal flooding to residential properties, non residential properties and community facilities in Vale of Leven and Dumbarton. Objective ID: 11075.	A flood protection study should be carried out to further develop current understanding and build on studies undertaken to date. The study should incorporate the fluvial and coastal risk, and be undertaken by West Dunbartonshire Council in partnership with LLTNP, SW and SEPA. The study should assess in detail: direct defences as identified in the River Leven Flood Study; storage at Loch Lomond including discussion with other stakeholders to fully understand the wider impacts and benefits of this action; the Lomond Canal; sediment management; and assessment of the existing embankments at the golf course.	£50,000 - £100,000	There are 614 residential and 71 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £31,729,481. This action may also benefit three electricity substations and 700m of railway track which are not included in this PVD figure.	£31,729,481	8	1 of 168	1 of 32	1 of 2	-	-	C1
Dumfries and Galloway Shoreline Management Plan PVA ()	Reduce the risk of coastal flooding along the Solway coastline. Objective ID: 14122.	It is recommended that a Shoreline Management Plan is carried out to refine the understanding of flooding risk to a number of communities. This study would look at the potential impact of wave overtopping the current erosion and flood protection offered and the opportunities to enhance the natural systems to further protect from flood and erosion. This study will help to identify were further detailed studies may be required.	£100,000 - £150,000	Based on the identified risk in objective areas 14121, 14011, 14029, 14032 and 14026	£26,168,000	8	1 of 168	1 of 11	1 of 10	1	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Aberdeen City Aberdeen City PVA (06/15, 06/18)	Reduce flood risk in Aberdeen from the River Don Reduce flood risk in Aberdeen (Bridge of Don) from burns including open and culverted lengths Reduce flood risk in Aberdeen from the River Dee Reduce flood risk from burns including open and culverted lengths in Aberdeen (Deeside). Objective ID: 601501, 601502, 601801, 601803.	A study is recommended to consider direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The study should be coordinated with the Surface Water Management Plan. Outputs from the Aberdeen Integrated Catchment Study should be considered to take account of culverted water courses, burns and the Rivers Dee and Don to take a comprehensive approach to flood risk management in Aberdeen.	£50,000 - £100,000	If the whole of theAbrdeen City area were to be protected from flooding, present value benefits of £314,106,716 could be achieved over the 100 year design life of a scheme. In reality the study should look to identify flooding hotspots where actions should be targeted. Further study will identify the true benefits of these actions.	£327,562,204	6	5 of 168	2 of 16	2 of 4		Council will be commencing all studies in first cycle through the Integrated Catchment Study process and will be prioritising study areas across the City Council area	C1
Aberdeen City Bridge of Don PVA (06/15, 06/16)	Reduce flood risk in Aberdeen from the River Don. Reduce flood risk in Aberdeen (Bridge of Don) from burns including open and culverted lengths. Reduce the risk of flooding from surface water and burns in Aberdeen (Denmore) Objective ID: 601501, 601502, 601601.	The flood protection study should primarily focus on modifications to inlet of Persley Den and direct defences, but other actions may also be considered in order to develop the most sustainable range of options. The study should be coordinated with the Surface Water Management Plan. Outputs from the Aberdeen Integrated Catchment Study should be considered to take account of culverted water courses, burns and the Rivers Dee and Don to take a comprehensive approach to flood risk management in Aberdeen.	£50,000 - £100,000	Flood protection works could reduce risk to 314 residential properties and 49 non-residential properties which are at medium risk of flooding from the River Don. Present value benefits of £217,258,918 could be achieved over the 100 year design life of a scheme.	£217,258,918	4	5 of 168	2 of 16	2 of 4		Council will be commencing all studies in first cycle through the Integrated Catchment Study process and will be prioritising study areas across the City Council area	C1
Argyll & Bute Oban PVA (01/31)	Reduce risk in Oban from coastal flooding Reduce flood risk in Oban from the Black Lynn Burn Objective ID: 103101, 103102.	A study is recommended to assess flood risk from the Black Lynn Burn, including tidal element and coastal flooding in Oban. The study should focus on direct defences, flood storage, runoff control, sediment management, increasing storage on the existing lochs (Loch Gleann a Bhearraidh and Luachrach Loch), property level protection and individual property relocation for residual risk. Other actions may also be considered to get the most sustainable flood risk management options.	£25,000 to £50,000	Flood protection works could reduce the impact of the flooding of 2975 residential and 260 non-residential properties which are currently at medium likelihood of flooding. Benefits of £45,630,060 could potentially be achieved over 100 year design life of a flood scheme.	£45,630,060	7	5 of 168	1 of 22	1 of 9	1	Agree with ranking	C1
South Lanarkshire ***Lower River Clyde (Strathclyde Park to Shawfield) PVA (11/17/1)***	***Reduce the risk of River Clyde / surface water flooding to residential properties, non residential properties and transport along the River Clyde from Strathclyde Park to Shawfield. Objective ID: 11065.***	***A flood protection study should be carried out along the Lower River Clyde to further investigate the following actions in detail, separately and in combination: improving the conveyance through a number of structures along the River Clyde; the construction of a control structure on the Powburn with a pumping station to force water into the River Clyde; and the construction of flood defences at various locations along the River Clyde from Strathclyde Park to Shawfield. SUDs should be assessed in any future flood study undertaken in the area. This study may also consider the property level protection action and other complimentary actions.***	***£50,000 - £100,000***	***There are 209 residential and 777 non-residential properties at risk in a 200 year river event, with a PVD of £33,363,783. This action may also benefit 2km of A road, 660m of the M74 and 390m of railway track.***	***£33,363,783***	***6***	***8 of 168***	***2 of 32***	***1 of 4***	***2***	***This study is much larger and requires cross local authority working and therefore will take longer to set up.***	***C1***
Highland Inverness - South Kessock PVA (01/21)	Reduce risk in the South Kessock area of Inverness from coastal flooding Objective ID: 102107.	A study is needed to assess the standard of protection of existing embankments and whether they need to be improved. The study should consider wave action and combined flooding from the River Ness and Moray Firth. The study should build on existing information available.	0	Benefits of £27,561,014 could potentially be achieved over the 100yr design life of a flood scheme. There are 422 residential properties and 24 non-residential properties, which could benefit from improved flood protection.	£27,561,014	6	8 of 168	2 of 22	1 of 23	1	There are existing defences which protect South Kessock although there is some uncertainty as regards the SOP they provide. It's acknowledged that the PVD damages are likely to be significantly overestimated.	C1
North Ayrshire Shoreline Management Plan PVA ()	Reduce the risk of coastal flooding along the Ayrshire coastline. Objective ID: 12103.	The Ayrshire Shoreline Management Plan is under development, this study will look to refine knowledge of coastal flood risk in the area including wave overtopping and the current coastal protection offered.	£150,000	Based on the identified risk in the objective areas for the	£26,309,000	6	8 of 168	1 of 12	1 of 5	-	-	C1

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Falkirk Grangemouth PVA (10/11)	Reduce economic damages to residential and non-residential properties in Grangemouth caused by river flooding and coastal flooding. Objective ID: 10035, 10036, 10040, 10041.	Development of proposals for the Grangemouth Flood Protection Scheme (covering objectives 10035, 10036 and 10040). Options that will be considered include direct defences, sediment management and tidal barriers/ gates as well as natural flood management (surge attenuation and sediment management). Study timescale 2015-2017, implementation of actions likely to start 2018-2027 (phased implementation).	£1.7M to £2.2M (Objectives 10035, 10036 and 10040)	1261 residential properties and 99 non residential properties with a PVD (damages avoided) of £26.8M Petrochemical works - PVD (do nothing) unknown	£26,800,000	6	11 of 168	1 of 27	1 of 5	1	-	C1
Glasgow City Shettleston PVA (11/17/1)	Reduce the risk of Tollcross Burn and Camlachie Burn flooding to residential properties and non residential properties in Shettleston. Objective ID: 11026.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: construction of storage from the Tollcross Burn in Tollcross Park, Sandyhills Park and Sandyhills Golf Course modification of conveyance by upgrading a culverted reach along Biggar Road; modification of fluvial control structures by replacing existing trash screens on the Tollcross Burn; and construction of a river wall along the Tollcross Burn. This study should also consider property level protection, SUDs and other complimentary actions.	£30,000 - £50,000 for the flood protection study.	There are 706 residential and 67 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £53,045,023. This action may also benefit four electricity substations which are not included in this PVD figure. There is a significant jump in the damages from the 10 year to the 30 year event.	£53,045,023	5	11 of 168	3 of 32	1 of 8	-	-	C1
Renfrewshire Espedair Burn, Paisley PVA (11/13)	Reduce the risk of Espedair Burn / Gleniffer Burn / surface water flooding to residential properties, non residential properties, community facilities and transport in Paisley. Objective ID: 11059.	Scottish Water are undertaking integrated modelling of the Espedair Burn and sewers in Paisley which will assess the proposed interceptor sewer. This interceptor sewer is designed to remove significant storm sewage from the culverted burn, with the aim of improving receiving water quality and aesthetics. As flood risk reduction is not a design objective of the works, a study should be carried out to investigate if there is any remaining flood risk following these works. If the flood risk remains a flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: the use of the Upper and Lower Glen Dams and Glenburn Reservoir for storage; increasing culvert conveyance; and construction of direct defences. These actions would also serve to benefit properties north of Thornley reservoir. Property level protection and SUDs should be assessed in any future flood study undertaken in the area. Other complimentary actions may be considered in this next step. These actions should also cover objective 11082, reducing flood risk to properties north of Thornley Reservoir.	£50,000 - £100,000	There are 386 residential and 145 non-residential properties at risk in a 200 year fluvial event within the benefitting area of these actions with a PVD of £15,940,269. This action may also benefit 540m of A roads. There are 309 residential and 125 non-residential properties at risk in a 200 year surface water event within the benefitting area, with a PVD of £14,104,368	£30,044,637	5	11 of 168	3 of 32	1 of 6	-	Work is being undertaken by Scottish Water that may impact the flooding within the area. The flood study looking at the remaining flood risk will need to wait until the as built works are known, therefore the study will be completed in Cycle 2.	C2
East Dunbartonshire River Kelvin PVA (11/04)	Reduce the risk of river / surface water flooding to residential properties, non residential properties, community facilities and transport (roads) in Kirkintilloch. Objective ID: 11008.	A study of the River Kelvin catchment is being undertaken and will assess the current level of flood risk. The study is being undertaken in conjunction with WDC, GCC and SEPA. This study will help to provide a revised understanding of the current flood risk to Kirkintilloch. Based on this information there may be the requirement to improve the level of protection offered within Kirkintilloch.	Unknown	The current level of flood risk is to be informed by the initial study of the River Kelvin.	£83,767,166	4	14 of 168	5 of 32	1 of 2	1	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Renfrewshire Candren Burn PVA (11/12)	Reduce the risk of river / surface water flooding to residential properties and non residential properties in Candren Burn catchment. Objective ID: 11044.	A flood protection study should be carried out to investigate further the potential to construct short sections of flood defences along the Candren Burn. SUDs should be assessed in any future flood study undertaken in the area. These actions may be incorporated into the Paisley SWMP.	£50,000 - £100,000	There are 460 residential and 54 non-residential properties at risk in a 200 year river event within the benefitting area, with a PVD of £41,478,100. There are 192 residential and 10 non-residential properties at risk in a 200 year surface water event within the benefitting area, with a PVD of £6,373,525.	£47,851,635	4	14 of 168	5 of 32	2 of 6	-	-	C1
Glasgow City Merrylee PVA (11/13)	Reduce the risk of river / surface water flooding to residential properties and non residential properties in Merrylee. Objective ID: 11027.	A study should be carried out by Glasgow City Council with the cooperation of East Renfrewshire Council to further assess in detail the flood risk in this area.	£50,000 - £100,000	Unknown	£42,607,100	3	16 of 168	7 of 32	2 of 8	-	-	C1
Renfrewshire Johnstone PVA (11/12)	Reduce the risk of river / surface water flooding to residential properties, non residential properties, community facilities and transport in Johnstone. Objective ID: 11049.	A flood protection study should be carried out to further investigate the actions recommended in the Green Networks Integrated Urban Infrastructure report including: the potential to create small areas of offline storage at a number of locations within Johnstone; and the potential to improve culvert conveyance and investigate culvert daylighting. PLP and SUDs should also be assessed in any future flood study undertaken in the area. There is potential to incorporate Kilbarchan (objective 11050) into this study. These actions may be incorporated into the Johnstone / Kilbarchan SWMP.	£50,000 - £100,000	There are 735 properties at risk in a 200 year river event as identified by the councils Interreg project. Given the size of the watercourse causing the flooding the Scottish Pluvial Annual Average Damage value has been used to approximate economic damages. The calculated AAD is 1,243,620. There are 12 residential and 84 non-residential properties at risk in a 200 year surface water event within the benefitting area, with a PVD of £1,563,364. This action may also reduce the impact of flooding to receptors outwith the benefitting area.	£38,639,407	3	16 of 168	7 of 32	3 of 6	-	-	C1
Glasgow City Croftfoot PVA (11/14)	Reduce the risk of river / surface water flooding to residential properties in Croftfoot. Objective ID: 11021.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: construction of storage in Glen Wood; modification of conveyance by upgrading a culvert at King's Park Avenue; and construction of a river wall along sections of the Spittal Burn. This study should also consider the NFM action, SUDs and the PLP action. SUDs may also be considered in the Croftfoot SWMP. It is proposed that Glasgow City Council will carry out hydraulic studies in the Croftfoot and Spittal areas. These studies are being promoted via the City Deals and are awaiting confirmation that funding will be approved. The Cathkin Road bypass project involving attenuation and storage is being promoted via the City Deals and is awaiting confirmation that funding will be approved.	£30,000 - £70,000 for the flood protection study.	There are 206 residential and no non-residential properties at risk in a 200 year fluvial event within the benefitting area. A benefit PVD figure is not available from the ICM data provided. In addition, there is potential risk to a Primary School, and further community facilities.	£33,120,991	3	16 of 168	7 of 32	2 of 8	-	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Glasgow City Castlemilk PVA (11/14)	Reduce the risk of Spittal Burn / surface water flooding to residential properties in Castlemilk. Objective ID: 11020.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: construction of storage in Cathkin Braes Country Park and Glen Wood; modification of conveyance by upgrading a culvert at Ardencraig Road; and construction of an embankment along sections of the Spittal Burn. This study may also consider the NFM action, SUDs and the PLP action. SUDs may also be considered in the Castlemilk SWMP.	£30,000 - £70,000	There are 252 residential and 34 non-residential properties at risk in a 200 year fluvial event within the benefitting area. A benefit PVD figure is not available from the ICM data provided.	£45,983,512	2	19 of 168	10 of 32	4 of 8	-	-	C1
Falkirk ***Airth PVA (10/09)***	***Reduce economic damages to residential and non-residential properties and risk to people in Airth caused by coastal flooding. Objective ID: 10029, 10030.***	***A Flood Protection Study should assess Direct flood Defences and natural flood management (Surge Attenuation). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***108 residential properties and 5 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £19.1M***	***£19,100,000***	***9***	***20 of 168***	***2 of 27***	***2 of 5***	***3***	-	***C1***
Clackmannanshire Tillicoultry PVA (09/04)	Reduce economic damages to residential and non-residential properties in Tillicoultry caused by flooding from the River Devon and Tillicoultry Burn. Objective ID: 9010.	A Flood Protection Study should assess Flood Storage, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £150k	319 residential properties and 95 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £13.2M	£13,200,000	8	21 of 168	1 of 5	1 of 2	-	-	C1
Angus ***Forfar PVA (08/05)***	***Reduce risk to people in Forfar from river flooding. Objective ID: 8011.***	***A Flood Protection / NFM / surface water study (starting in May 2015) should assess Flood Storage, Modification of Conveyance, Direct flood Defences and Sediment Management. Natural Flood Management should assess River/Floodplain Restoration and Sediment Management. The study should also include surface water investigations. The assessment will consider these actions in combination and the impacts on flood risk upstream and downstream of each action. There are ongoing discussions with Scottish Water to progress the surface water element.***	***£50k to £150k***	***45 residential properties and 28 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £12.8M***	***£12,800,000***	***8***	***21 of 168***	***1 of 7***	***1 of 6***	***3***	-	***C1***
Fife ***Kincardine PVA (10/08)***	***Reduce economic damages to residential and non-residential properties in Kincardine caused by river flooding and coastal flooding. Objective ID: 10027.***	***A Flood Protection Study should assess Flood Storage, Direct flood Defences and Sediment Management and Natural Flood Management. Natural Flood Management should assess Surge Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***147 residential properties and 9 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £11.6M***	***£11,600,000***	***8***	***21 of 168***	***3 of 27***	***1 of 16***	***Medium priority***	***Flood Protection Scheme (old) in place.***	***C1***
Angus ***Monifeith PVA (07/10)***	***Reduce economic damages to residential and non-residential properties and risk to people in Monifieth caused by flooding from the Monifieth Burn. Objective ID: 7023.***	***A Flood Protection Study should assess Flood Storage, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £100k***	***243 residential properties and 15 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £16.9M***	***£16,900,000***	***7***	***24 of 168***	***1 of 11***	***2 of 6***	***4***	-	***C1***
Perth & Kinross Pitlochry PVA (08/03)	Reduce economic damages to residential and non-residential properties in Pitlochry from the River Tummel and small watercourses. Objective ID: 8004.	A Flood Protection Study should assess Flood Storage, Sediment Management, Modification of Conveyance, Installation / modification of fluvial control structures and Property Relocation. The study should build on the 2007 draft Mouchel study and consider flooding from the small watercourses and the main river - this could be undertaken in conjunction with SEPA's Improved Understanding objectives for the river. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £100k	121 residential properties and 47 non-residential properties at risk in a 200 year event with a PVD (do nothing) of £18.6M	£18,600,000	6	25 of 168	2 of 7	1 of 6	-	-	C1
Fife Cupar, Caults Mill PVA (07/18)	Reduce economic damages to residential and non-residential properties in Cupar caused by flooding from the River Eden and Lady Burn. Reduce risk to people from river flooding in Cults and Cupar. Objective ID: 7049, 7050, 7051.	A Flood Protection Study should assess Flood Storage, Direct flood Defences, Sediment Management and Property Relocation and Natural Flood Management. Natural Flood Management should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	144 residential properties and 18 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £18.5M	£18,527,259	6	25 of 168	2 of 11	2 of 16	2	Study has been approved by Committee – political priority	C1

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Scottish Borders ***Earlston PVA (13/05)***	***Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Earlston caused by flooding from the Leader Water / Turfford Burn. Objective ID: 13019.***	***A Flood Protection Study for Earlson should be carried out to assess Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management and Natural Flood Management. NFM should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£50k to £170k***	***61 residential properties and 43 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £15.5M. NFM has the potential to benefit 30 residential properties and 38 non residential properties are at risk for a high likelihood event and could benefit.***	***£15,500,000***	***6***	***25 of 168***	***2 of 5***	***2 of 6***	***3***	***-***	***C1***
Dumfries and Galloway Dalbeattie PVA (14/19)	Reduce the risk of river flooding to residential and non residential properties in Dalbeattie. Objective ID: 14025.	A flood protection study should be carried out to investigate further the improvement of the conveyance of the Kirkgunzeon Lane watercourse through Dalbeattie, and the improvement of direct flood defences on the Kirkgunzeon Lane watercourse in Dalbeattie. The study should determine the Standard of Protection of the existing defences, and should investigate the opportunity for improvement. The study should also consider Natural Flood Mangement and Property Level Protection.	£20-30K	There are 146 residential properties and 49 non-residential properties at risk in a 200 year river event, with a PVD of £13,933,540 (these figures apply to direct defences). This action may also offer protection to a stretch of the A711 and three electricity substations, however these are not included in the benefit figure	£13,933,540	6	25 of 168	2 of 11	2 of 10	2	-	C1
Dumfries and Galloway ***Whithorn PVA (14/24)*** ***Garlieston PVA (14/24)***	***Reduce the risk of coastal flooding to properties in Isle of Whithorn. Objective ID: 14121.*** ***Reduce the risk of coastal flooding to properties in Garlieston. Objective ID: 14032.***	***Initial assessment to refine knowledge of coastal flooding issues is to be made within the second Dumfries and Galloway Shoreline Management Plan. If the SMP identifies further work is required to mitigate current or future risk a flood protection study should be carried out. Based on initial assessment this should examine the benefit of direct flood defences along the coast at Garlieston and Isle of Whithorn. This study may also consider, property level protection actions and other complimentary actions.***	***£20,000 - £30,000***	***There are 74 residential properties and 20 non-residential properties at risk in a 200 year coastal event, with a PVD of £13,659,785.***	***£13,659,785***	***6***	***40 of 168***	***2 of 11***	***2 of 10***	***6***	***Coastal flood studies to be left to the 2nd cycle as Solway coastal flood warning will be active for 6 years, and will indicate if the studies are necessary. Coastal studies to rank lower in list.***	***C2***
Fife Linktown, Kirkcaldy PVA (10/05)	Reduce economic damages to residential and non-residential properties caused by river and coastal flooding. Reduce risk to people in Kirkcaldy from river flooding. Objective ID: 10015, 10016.	A Flood Protection Study should assess Flood Storage, Sediment Management, Modification of Conveyance, Direct flood Defences and Property Relocation as well as Natural Flood Management. Natural Flood Management should assess Runoff Control, River/Floodplain Restoration, Sediment Management and Wave Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	42 residential properties and 50 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £13.0M.	£12,974,409	6	25 of 168	4 of 27	2 of 16	-	-	C1
Fife Newburgh PVA (07/14)	Reduce economic damages to residential and non-residential properties in Newburgh caused by coastal flooding. Objective ID: 7037.	A Flood Protection Study should assess Direct flood Defences and Natural Flood Management (Wave Attenuation). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	117 residential properties and 12 non-residential properties at risk in a 200 year event with a PVD (do nothing) of £12.3M	£12,300,000	6	25 of 168	2 of 11	2 of 16	High priority	-	C1
Fife Dunfermline PVA (10/06)	Reduce economic damages to residential and non-residential properties and risk to people in Dunfermline caused by flooding from the Lyne Burn and Tower Burn. Objective ID: 10019.	A Flood Protection Study should assess Modification of Conveyance, Sediment Management, Installation / modification of fluvial control structures, Direct flood Defences and Property Relocation as well as Natural Flood Management (Runoff Control and Sediment Management). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	59 residential properties and 31 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £12.0M	£12,000,000	6	25 of 168	4 of 27	2 of 16	-	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Dumfries and Galloway ***Moffat PVA (14/02)***	***Reduce the risk of river flooding to properties in Moffat. Objective ID: 14002.***	***Moffat Flood Study has been has identified potential works to mitigate flooding with Moffat including improvements to culverts and construction of flood defences. It is recommended that modelling of potential flooding in this area is updated and the viability of these actions is assessed within an economic appraisal. Given the complexity of flooding issues within the area further options may need to be considered during this study.***	***<£20K***	***There are 306 residential and 41 non-residential properties at risk during a 200 year river event, with a PVD of £11,026,154 (these figures are strategic and not taken from the study, and apply to direct defences). This action may also provide protection to short stretches of the A701 and A708, but this has not been included in the PVD figure***	***£11,026,154***	***6***	***25 of 168***	***2 of 11***	***2 of 10***	***3***	-	***C1***
Outer Hebrides Balivanich, Benbecula PVA (02/06)	Reduce risk in the Balivanich area from river and coastal flooding Objective ID: 200601.	A study is needed to confirm the business case and determine the extent and size of defences required. The study should be focused on Balivanich, but should also confirm the feasibility of defences in the Uachdar area. The study should include direct defences, channel modifications, improvements to the floodgate on the Uachdar drainage system (coastal management action), and consideration of property level protection for any residual flood risk. Other actions may also be considered to develop the most sustainable range of options.	£25,000 to £50,000	The solution could potentially reduce the impact of flooding to 97 residential and 4 non-residential properties which are currently at medium likelihood of flooding. Benefits of £14,650,184 could be achieved over a 100 year design life of a flood scheme.	£14,650,184	5	34 of 168	1 of 5	1 of 5	1	Agree that technical ranking is a fair representation of flood risk in the Outer Hebrides	C1
North Ayrshire Brodick/ Lamlash PVA (12/08)	Reduce the risk of river / coastal flooding to residential properties in Brodick and Lamlash. Objective ID: 12023.	The Ayrshire Shoreline Management Plan will be carried out in partnership with NAC, SAC, SEPA and SNH which will further assess flood issues in the area. This plan will also include consideration of natural flood management actions. A flood protection study should also be carried out to further assess the coastal risk within the area and fluvial risk from the Glen Cloy Burn in Brodick and the Benlister Burn and Monamore Burn in Lamlash. This study should look at the interaction between sources and look to develop mitigation options .While the largest concentrations of risk is in Brodick and Lamalash there are properties at risk between the two towns. The studies should also investigate the use of NFM techniques and Property Level Protection to complement other actions.	£30,000 - £50,000	There are 178 residential and 31 non-residential properties at risk in a 200 year coastal event within area with a PVD of £12,273,658. Of these there are 15 residential properties and 19 non residential properties at risk of flooding in Brodick. There are 43 residential properties and 7 non residentrial properties in Lamlash at risk of flooding.	£20,258,470	3	35 of 168	2 of 12	2 of 5	-	-	C1
Glasgow City Yoker Mains/ Yoker Burn PVA (11/05)	Reduce the risk of river / surface water flooding to residential properties, non residential properties and transport (roads) in Yoker Mains and Yoker Burn catchments. Objective ID: 11016.	A flood protection study should be carried out to further investigate in detail the construction of direct defences along both banks of the Yoker and Garscadden Burns. This study may also consider the NFM, SUDs and PLP actions. SUDs may also be assessed in the Yokermain Burn SWMP.	£30,000 - £50,000	There are 127 residential and 2 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action. A benefit PVD figure is not available from the ICM data provided.	£20,740,815	2	36 of 168	11 of 32	5 of 8	-	-	C1
East Ayrshire Kilmarnock PVA (12/06)	Reduce the risk of flooding from the River Irvine and Kilmarnock Water in Kilmarnock. Objective ID: 12015.	East Ayrshire Council are to assess the current standard of protection of existing defences and assess where they can be enhanced to provide a better standard of protection. This assessment may also consider the property level protection action.	To be assessed by the Local Authority.	The defences are currently thought to have a standard of protection of 1 in 100yr. If these defences were not in place there is potential flooding to over 1000 properties in a 1 in 200yr flood.	£24,334,200	1	37 of 168	3 of 12	1 of 4	1	-	C1
Fife ***Leven PVA (10/03)***	***Reduce economic damages to residential and non-residential properties and risk to people in Leven caused by flooding from the River Leven and Scoonie Burn. Objective ID: 10006.***	***A Flood Protection Study should assess Flood Storage (Scoonie Burn), Modification of Conveyance, Direct flood Defences and Sediment Management. Natural Flood Management should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***26 residential properties and 52 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £8.3M***	***£8,303,061***	***10***	***38 of 168***	***6 of 27***	***6 of 16***	***Low LA priority***	***Risk mostly industrial***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Stirling Aberfoyle PVA (09/01)	Reduce economic damages to residential and non-residential properties in Aberfoyle caused by flooding from the River Forth. Objective ID: 9002.	A Flood Protection Study has been carried out assessing flood storage and sediment management. There is no economically viable option for the design standard of protection (BCR = 0.37) and a 5 year SOP scheme is being self-funded. The study can be revisited in future in order to determine options for higher return periods and following discussions concerning Flood Warning with SEPA.	£30k to £100k	62 residential properties and 46 non-residential properties at risk in a 200 year event with a PVD (do nothing) of £9.33M	£9,330,000	8	39 of 168	2 of 5	1 of 2	-	-	C1
South Lanarkshire Strathaven PVA (11/17/1)	Reduce the risk of river / surface water flooding to residential properties, non residential properties, community facilities and transport in Strathaven. Objective ID: 11071.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: storage from the Powmillon Burn; improving the conveyance through existing structures on the Powmillon Burn; modification of the existing weirs at Strathaven Park and the Old Mill; and construction of flood defences along the Powmillon Burn within Strathaven. SUDs should be assessed in any future flood study undertaken in the area. This study may also consider the NFM and PLP actions.	£30,000 - £50,000	There are 39 residential and 34 non-residential properties at risk in a 200 year river event, with a PVD of £10,143,029. This action may also protect 240m of A road, an electricity substation and a police station.	£10,143,029	7	40 of 168	12 of 32	2 of 4	-	-	C1
Glasgow City Shawfield PVA (11/14)	Reduce the risk of combined flooding to residential properties and non residential properties in Shawfield. Objective ID: 11022.	The potential for construction of storage, modification of conveyance and construction of direct flood defences should be further considered in detail in the Shawfield Masterplan. SUDs should be considered in the Shawfield Masterplan and / or the Rutherglen SWMP. There should be coordination between Glasgow City Council and South Lanarkshire Council when undertaking schemes in the Rutherglen / Shawfield areas. GCC to look if any further work is required above the Clyde Gateway masterplan at Shawfield - potential link with 110650005 - South Lanarkshire study	0	There are 142 residential and 64 non-residential properties at risk in a 200 year fluvial event within the benefitting area of these actions with a PVD of £9,739,778. This action may also benefit two gas regulating utilities and 300m of A roads which are not included in this PVD figure.	£9,739,778	6	41 of 168	13 of 32	6 of 8	-	-	C1
Perth & Kinross Aberfeldy PVA (08/03)	Reduce economic damages to residential and non-residential properties in Aberfeldy from the River Tay and Moness Burn. Objective ID: 8005.	A Flood Protection Study should assess Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. Study has been approved by committee but still awaiting funding.	£50k to £100k	104 residential properties and 44 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £8.7M	£8,700,000	6	41 of 168	3 of 7	2 of 6	-	-	C1
Scottish Borders ***Jedburgh PVA (13/10)***	***Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Jedburgh caused by flooding from the Jed Water and Skiprunning Burn. Objective ID: 13026.***	***A Flood Protection Study should assess Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences, Sediment Management and Natural Flood Management. NFM Study should assess run-off control and sediment management. The assessment should consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£50k to £170k***	***59 residential properties and 69 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £10.9M.***	***£10,900,000***	***5***	***43 of 168***	***3 of 5***	***3 of 6***	***5***	***Not immediate local priority as Jed Water FP scheme will provide benefit.***	***C2***
Glasgow City NW Glasgow PVA (11/04)	Reduce the risk of River Kelvin / surface water flooding to residential properties, non residential properties and community facilities in west and north west Glasgow. Objective ID: 11014.	A study is currently underway to model the River Kelvin and assess the current flood risk; it is being carried out in partnership between East Dunbartonshire Council, Glasgow City Council and SEPA. The outcomes from this study should be carried forward to a flood protection study which should further investigate the following actions in detail, separately and in combination: construction of storage at Glasgow Golf Club and Dawsholm Park; modification of conveyance by deepening the channel at a number of bridges along the River Kelvin; and construction of direct flood defences at a number of locations along the right bank of the River Kelvin. PLP and SUDs may be considered in this study. SUDs may also be assessed within the Glasgow SWMP.	£50,000 - £100,000	There are 138 residential and 29 non-residential properties at risk in a 200 year fluvial event with a PVD of £10,021,319. This action may also benefit an electricity substation and 100m of railway track which are not included in this PVD figure.	£10,021,319	5	43 of 168	14 of 32	7 of 8	-	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Falkirk ***Denny/ Dunipace PVA (10/11)***	***Reduce economic damages to residential and non-residential properties in Denny/ Dunipace caused by flooding from the River Carron, Avon Burn and Castlerankine Burn. Objective ID: 10038.***	***An initial Flood Protection Study is underway which incorporates modelling work (due to report in 2016). Further study will be needed to assess options to manage flood risk including Direct flood Defences, Sediment Management and Natural Flood Management (Runoff control and Sediment Management). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***155 residential properties and 12 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £8.6M. NFM actions could benefit 49 residential properties and 1 non residential properties which are at risk for a high likelihood event.***	***£8,600,000***	***5***	***43 of 168***	***7 of 27***	***3 of 5***	***4***	***-***	***C1***
Moray ***Seatown PVA (05/02)***	***Reduce economic damages and flood risk to the Seatown area of Lossiemouth from river and coastal flooding Objective ID: 500201.***	***A flood protection study is recommended to consider a scheme for Seatown in Lossiemouth. The scheme should include investigation of direct defences to reduce the risk of flooding from the river and sea. Other actions may also be considered to develop the most sustainable range of options.***	***£50,000 - £100,000***	***A scheme could potentially reduce risk to 80 residential properties and 2 non-residential properties at medium likelihood of flooding. The benefits of protecting the properties at risk are potentially £8.4M.***	***£8,400,000***	***5***	***43 of 168***	***1 of 6***	***1 of 2***	***2***	***Local Authority note that based on the flood history, Portgordon should be a higher priority but wish to promote both studies in Cycle 1.***	***C1***
Perth & Kinross Blackford PVA (09/12c)	Reduce economic damages to residential and non-residential properties in Blackford caused by flooding from the Allan Water, Danny Burn, Burn of Ogilvie, Back Burn and Kinpauch Burn. Objective ID: 9031.	A Flood Protection Study should assess Direct flood defences, Modification of Conveyance, Sediment Management and Natural Flood Management. Natural Flood Management should include Runoff control and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £150k	50 residential properties and 17 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £7.7M. 28 residential properties and 5 non residential properties are at risk for a high likelihood event and could benefit from NFM actions.	£7,725,514	5	43 of 168	3 of 5	3 of 6	-	-	C1
North Ayrshire Kilwinning PVA (12/05)	Reduce the risk of the Bannoch Burn / River Garnock / Wood Burn flooding to residential properties and non residential properties in Kilwinning. Objective ID: 12013.	As part of the Stevenston Point Integrated Catchment Management Study further hydraulic modelling will be undertaken on the Wood Burn. Upgrading of culverts on the Wood Burn will be appraised as part of that detailed study. However, a flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: modification of control structures by removing a weir; and construction of a river wall along the River Garnock. This study may also consider the NFM, SUDs and property level protection actions.	£30,000 - £50,000 for the flood protection study	There are 85 residential and 5 non-residential properties at risk in a 200 year coastal event within the benefitting area of the storage action with a PVD of £7,051,675. This action may also benefit 250m of primary roads which are not included in this PVD figure.	£7,051,675	5	43 of 168	4 of 12	3 of 5	-	-	C1
East Dunbartonshire Milngavie PVA (11/04)	Reduce the risk of Allander Water / surface water flooding to residential properties and non residential properties in Milngavie. Objective ID: 11011.	A flood protection study should be carried out to investigate further the construction of direct defences along the Allander Water in Milngavie. This study may also consider the NFM and PLP actions.	£30,000 - £50,000	There are 58 residential and 23 non-residential properties at risk from a 200 year river event, with a PVD of £10,450,898.	£10,450,898	4	49 of 168	15 of 32	2 of 2	2	-	C1
East Renfrewshire Barrhead PVA (11/13)	Reduce the risk of river / surface water flooding to residential properties and non residential properties in Barrhead. Objective ID: 11013.	A flood protection study should be carried out to investigate further the potential for sections of direct defences along the watercourses in Barrhead. This study may also consider the NFM action, if not covered in a White Cart Water catchment wide study, and the PLP action.	£20,000 - £30,000	There are 126 residential and 28 non-residential properties at risk during a 200 year river event, with a PVD of £10,265,380. This action may also protect three electricity substations and a gas regulating utility; however these have not been included in the PVD figure.	£10,265,380	4	49 of 168	15 of 32	1 of 2	1	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Highland Kingussie PVA (05/12)	Reduce economic damages and flood risk to Kingussie from the Gynack Burn Objective ID: 501201.	A flood protection study is recommended to identify a combination of effective mitigation measures from upstream storage in Loch Gynack, direct defences through Kingussie and widening of the railway bridge to improve conveyance as well as sediment management. Other actions may also be considered to reach the most sustainable options.	£ 50,000 - £100,000	Flood protection works could reduce risk to 36 residential properties and 16 non-residential properties at medium likelihood of flooding. Present value benefits of £1,839,873 could be achieved over the 100 year design life of a flood scheme. The study should be carried out alongside the natural flood management study; which may provide additional benefits that cannot be quantified at this stage.	£8,360,638	4	49 of 168	2 of 6	2 of 23	2	Should be taken forward at an early stage to allow potential measure to be taken forward in conjunction with a proposed hydro scheme	C1
Highland ***Nairn Central PVA (01/18)***	***Reduce flood risk in Nairn Central from the River Nairn*** ***Reduce risk in Nairn Central from coastal flooding Objective ID: 101801, 101802.***	***A study is recommended to look at direct defences, but other actions may also be considered in order to develop the most sustainable range of options.***	***£25,000 to £50,000***	***Flood protection works could reduce the impact of the flooding of 344 residential and 24 non-residential properties which are currently at medium likelihood of flooding. Benefits of £7,685,435 could potentially be achieved over 100 year design life of a flood scheme.***	***£7,685,435***	***4***	***49 of 168***	***3 of 22***	***2 of 23***	***5***	***Should be lower due to low flood frequency.***	***C1***
Highland Tarbat Ness peninsula PVA (01/08)	Reduce risk in Inver and Skinnerton from coastal flooding Reduce risk in Balintore from coastal flooding Reduce risk in Portmahomack from coastal flooding Reduce risk in Rockfield from coastal flooding Objective ID: 100801, 100802, 100803, 100804.	A study is recommended to further investigate the feasibility of a flood protection scheme for Tarbat Ness. This may involve different solutions in different locations. The impact of waves on flood risk should be explored. The study should focus onrevetments, direct defences, offshore breakwater, relocation and property level protection, but other actions may also be considered in order to develop the most sustainable range of options.	£50,000 to £75,000	Present value benefits of £8,039,607 could be achieved over the 100 year design lives of flood schemes in all four locations.	£8,039,607	3	53 of 168	4 of 22	4 of 23	4	Local knowledge and preferences.	C1
Angus ***Dundee PVA (07/11)***	***Reduce economic damages to residential and non-residential properties and risk to people in Dundee caused by flooding from the Dighty Water and Fithy Burn. Objective ID: 7027.***	***This study is a LPD priority; Angus Council to lead and work in collaboration with Dundee City Council. A Flood Protection / NFM Study should assess Direct flood Defences and Sediment Management. Natural Flood Management should investigate River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. Part of the study requirements may be met by the ICS.***	***£30k to £120k***	***534 residential properties and 138 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.8M***	***£5,800,000***	***9***	***54 of 168***	***4 of 11***	***3 of 6***	***2***	***Collaboration with Dundee City Council for whom this is high priority.***	***C1***
Aberdeenshire ***Ellon PVA (06/12)***	***Reduce flood risk in Ellon from the River Ythan*** ***Reduce flood risk in Ellon from the Modley Burn*** ***Reduce flood risk in Ellon from the Broomies / Bronie Burn Objective ID: 601201, 601202, 601203.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding in Ellon from the River Ythan, Modley Burn and Broomis / Bronie Burn. The flood protection study should focus on direct defences, online/offline storage, sediment management (especially on Modley Burn and Broomies Burn), modification of conveyance on the Broomies Burn, relocation of properties and property level protection to reduce the likelihood of flooding. Any other actions may also be considered to develop the most sustainable range of options.***	***£50,000 - £100,000***	***Flood protection works could potentially reduce risk to 77 residential properties and 18 non-residential properties. Based on the properties identified to be at risk, £6,103,746 of benefits over 100 years could be achieved through reducing medium likelihood floods.***	***£6,103,746***	***8***	***55 of 168***	***4 of 16***	***1 of 12***	***4***	***Local understanding of flood risk and flood history***	***C1***
East Ayrshire *Catrine PVA (12/14)*	*Reduce the risk of River Ayr flooding to residential properties and non residential properties in Catrine. Objective ID: 12030.*	*A flood protection study should be carried out to further investigate in detail the construction of a river wall along sections of the River Ayr. Property level protection and SUDs should be assessed in any future flood study undertaken in the area.*	*£30,000 - £50,000*	*There are 111 residential and 45 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £5,789,683. This action may also benefit two electricity substations which are not included in this PVD figure.*	*£5,789,683*	*8*	*55 of 168*	*5 of 12*	*2 of 4*	*3*	*-*	*C1*

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Aberdeenshire *Inverurie and Port Elphinstone PVA (06/13)*	*Reduce flood risk in Inverurie and Port Elphinstone from the River Don Reduce flood risk in Inverurie and Port Elphinstone from the River Urie Objective ID: 601301, 601302.*	*A flood protection study is recommended to develop previous work to consider flood protection works to reduce the likelihood of flooding in Inverurie and the Port of Elphinstone from the River Don and River Urie. The study should cover flood risk from all watercourses in Inverurie and the Port of Elphinstone. Properties at risk from the River Don may also be at risk from the River Urie. The flood protection study should focus on modifications to the bridges to improve conveyance, the construction of direct defences, online/offline storage, relocation of properties and property level protection to reduce the likelihood of flooding. Other actions may also be considered to develop the most sustainable range of options.*	*£50,000 - £100,000*	*Flood protection works could potentially reduce risk to 120 residential properties and 35 non-residential properties. Based on the properties identified to be at risk, £6,813,979 of benefits over 100 years could be achieved through reducing medium likelihood flooding.*	*£6,813,979*	*7*	*57 of 168*	*5 of 16*	*2 of 12*	*1*	*Local understanding of flood risk and flood history*	*C1*
City of Edinburgh *Edinburgh: Niddrie Burn PVA (10/20)*	*Reduce economic damages to residential and non-residential properties and risk to people in Edinburgh/ Burdiehouse caused by flooding from the Niddrie Burn. Objective ID: 10071.*	*A Flood Protection Study should assess Flood Storage, Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. This study should aim to improve gauging on the Niddrie/Burdiehouse Burn catchment. Local Authority and SEPA to determine the best way forward.*	*£30k to £100k*	*178 residential properties and 19 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £6.8M. 1 community facility (hospital) currently at risk of flooding.*	*£6,800,000*	*7*	*57 of 168*	*8 of 27*	*1 of 3*	*2*	*-*	*C1*
Fife *St Andrews PVA (07/16 & 07/17)*	*Reduce economic damages to residential and non-residential properties and risk to people in St. Andrews caused by flooding from the Kinness Burn. Objective ID: 7042, 7046.*	*A Flood Protection Study for Kinness Burn was carried out in 2007 followed by berm investigations in 2011. Further study is required to reassess options to manage flood risk in St Andrews. This study should assess Installation / modification of fluvial control structures, Direct flood Defences, Sediment Management and Natural Flood Management including Runoff control, River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.*	*£30k to £120k*	*127 residential properties and 6 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £6.1M*	*£6,100,000*	*7*	*57 of 168*	*5 of 11*	*7 of 16*	*1*	*Council aiming to complete works also in C1 so study is a priority*	*C1*
Angus Montrose PVA (07/04)	Reduce economic damages to residential and non-residential properties and risk to people in Montrose caused by coastal flooding. Objective ID: 7007, 7008.	A Flood Protection / NFM Study should assess Direct flood Defences. Natural Flood Management study should assess Wave Attenuation and Surge Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50 - £120K	104 residential properties and 43 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.2M	£5,200,000	7	57 of 168	5 of 11	4 of 6	6	-	C1
Dumfries and Galloway *Kirkcudbright PVA (14/22)*	*Reduce the risk of coastal flooding to properties in Kirkcudbright. Objective ID: 14029.*	*Initial assessment to refine knowledge of coastal flooding issues is to be made within the second Dumfries and Galloway Shoreline Management Plan. If the SMP identifies further work is required to mitigate current or future risk a flood protection study should be carried out. Based on initial assessment this should examine the benefit of direct flood defences along the River Dee in Kirkcudbright. The study should take into account the interaction of the River Dee with coastal levels downstream, and the Scottish Water hydro scheme upstream. This study may also consider natural flood management, property level protection actions and other complimentary actions.*	*£30,000 - £50,000*	*There are 85 residential properties and 19 non-residential properties at risk in a 200 year coastal event, with a PVD of £6,378,065. This action may also offer benefit to a stretch of the A755, however this has not been included in the PVD figure.*	*£6,378,065*	*6*	*61 of 168*	*5 of 11*	*5 of 10*	*8*	*Coastal flood studies to be left to the 2nd cycle as Solway coastal flood warning will be active for 6 years, and will indicate if the studies are necessary. Coastal studies to rank lower in list.*	*C2*

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Aberdeenshire ***Insch PVA (06/11)***	***Reduce flood risk in Insch from The Shevoch*** ***Reduce flood risk in Insch from the Valentine Burn Objective ID: 601101, 601102.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding in Insch from The Shevoch and Valentine Burn. The flood protection study should focus on modifications to the bridges to improve conveyance, the construction of direct defences, river or floodplain restoration, relocation of properties and property level protection to reduce the likelihood of flooding. Other actions may also be considered to develop the most sustainable range of options.***	***£50,000 - £100,000***	***Flood protection works could potentially reduce risk to 52 residential properties and 20 non-residential properties. Based on the properties identified to be at risk, £6,304,791 of benefits over 100 years could be achieved through reducing medium likelihood floods.***	***£6,304,791***	***6***	***61 of 168***	***6 of 16***	***3 of 12***	***2***	***Local understanding of flood risk and flood history***	***C1***
East Lothian ***Cockenzie, Port Seton, Prestonpans PVA (10/23)***	***Reduce economic damages to residential and non-residential properties caused by river and coastal flooding. Objective ID: 10080.***	***A Flood Protection Study should assess Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. Natural Flood Management should assess Wave Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***63 residential properties and 14 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £6.2M***	***£6,236,581***	***6***	***61 of 168***	***9 of 27***	***1 of 3***	***3***	***No known fluvial issues to the LA. Known coastal issues.***	***C1***
Dumfries and Galloway ***Annan PVA (14/08)***	***Reduce the risk of coastal flooding to residential and non residential properties in Annan. Objective ID: 14011.***	***Initial assessment to refine knowledge of coastal flooding issues is to be made within the second Dumfries and Galloway Shoreline Management Plan. If the SMP identifies further work is required to mitigate current or future risk a flood protection study should be carried out. Based on initial assessment this should examine the benefit direct flood defences along the River Annan in Annan. This study may also consider property level protection actions and other complimentary actions.***	***£20,000 - £30,000***	***There are 96 residential and 25 non-residential properties at risk of flooding during a 200 year coastal event, with a PVD of £6,067,737. This action may also benefit a stretch of multitrack railway, however this has not been included in the PVD figure.***	***£6,067,737***	***6***	***61 of 168***	***5 of 11***	***5 of 10***	***7***	***Coastal flood studies to be left to the 2nd cycle as Solway coastal flood warning will be active for 6 years, and will indicate if the studies are necessary. Coastal studies to rank lower in list.***	***C2***
Clackmannanshire Menstrie PVA (09/04)	Reduce economic damages to residential and non-residential properties, flood risk to community facilities and risk to people in Menstrie caused by flooding from the Menstrie Burn. Objective ID: 9011, 9013.	A Flood Protection / NFM study should be carried out for Menstrie. Initial study has been completed following flood on 29/08/12. Most of the short term / maintenance related matters identified in the study have been addressed. Further information (rainfall and gauge data for the catchment) is being gathered to inform further modelling and consequent economic appraisal of possible direct defences. The study might lead to implementation of actions at later stages of FRM cycle, subject to funding availability. NFM component should build on existing NFM work but look at the wider catchment area. It should examine run-off control and sediment management.	£30k to £120k	149 residential properties and 10 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.8M. 35 residential properties are at risk from high likelihood event and may benefit from NFM	£5,800,000	6	61 of 168	4 of 5	2 of 2	-	-	C1
Scottish Borders ***Eyemouth PVA (10/26)***	***Reduce economic damages to residential and non-residential properties in Eyemouth caused by coastal flooding. Objective ID: 10084.***	***A Flood Protection Study should be carried out in conjunction with NFM and Shoreline management plan (2016 - 2018). The combined study should assess the following: Direct flood Defences, Sediment Management and Wave Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£50k to £170k***	***34 residential properties and 21 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.7M***	***£5,701,885***	***5***	***66 of 168***	***10 of 27***	***4 of 6***	***1***	***LA priority as shoreline management plan confirmed to go ahead.***	***C1***
Perth & Kinross Dunkeld PVA (08/08)	Reduce economic damages to residential and non-residential properties in Dunkeld from River Tay and River Braan. Objective ID: 8017.	A Flood Protection Study should assess Modification of Conveyance, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. The study should build on existing investigations by Mouchel and will take a staged approach to allow collaboration with SEPA on Improved Understanding objective for Tay.	£50k to £100k	179 residential properties and 74 non-residential properties at risk in a 200 year event with a PVD (do nothing) of £5.8M	£5,800,000	4	67 of 168	4 of 7	4 of 6	-	-	C1
West Lothian ***Whitburn PVA (10/29c)***	***Reduce economic damages to residential and non-residential properties in Whitburn caused by flooding from the White Burn. Objective ID: 10094.***	***A Flood Protection Study should assess Modification of Conveyance, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £100k***	***137 residential properties and 1 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.4M***	***£5,400,000***	***3***	***68 of 168***	***11 of 27***	***1 of 4***	***2***	***-***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Highland ***Muir of Ord PVA (01/16)***	***Reduce flood risk in Muir of Ord from the Allt Fionnaidh / Logie Burn and Ord Loch Objective ID: 101601.***	***Currently the flood risk for the Muir of Ord is thought to be overestimated due to difficulties in modelling how the Ord Loch interacts with the surrounding watercourses. Improvements to the modelling are required to confirm the extent of flood risk in Muir of Ord and the surrounding rural areas. A hydraulic study should focus on Ord Loch and how it interacts with the surrounding watercourses.***	***£25,000 to £50,000***	***Currently the modelling is thought to overestimate the impact of flooding. Improved understanding of the flood extents will allow the potential benefits for any flood works to be confirmed. Based on existing flood risk and hazard maps present value benefits of £6,377,790 could be achieved over the 100 year design life of a flood scheme. The potential benefits are likely to be lower if flood risk is overestimated.***	***£6,377,790***	***2***	***69 of 168***	***5 of 22***	***5 of 23***	***12***	***The flood risk in Muir of Ord is overestimated.***	***C2***
Fife Cardenden PVA (10/28c)	Reduce economic damages to residential and non residential properties from river flooding in Cardenden (Bowhill). Objective ID: 10097.	A Flood Protection Study should assess Flood Storage, Direct flood Defences, Sediment Management and Natural Flood Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	55 residential properties and 5 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £4.7M	£4,700,000	7	70 of 168	12 of 27	8 of 16	-	-	C1
Fife Cairneyhill PVA (10/07)	Reduce economic damages to residential and non-residential properties caused by river and coastal flooding. Objective ID: 10025.	A Flood Protection Study should assess Sediment Management, Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Property Relocation. Natural Flood Management should assess Runoff control and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	38 residential properties and 6 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £4.6M.	£4,600,000	7	70 of 168	12 of 27	8 of 16	-	-	C1
Perth & Kinross Scone PVA (08/11)	"Reduce economic damages to residential and non-residential properties caused by river flooding. Reduce economic damages and number of residential properties at risk of surface water flooding as far as practical. Objective ID: 8023, 8021	The Council engaged Mouchel to carry out a flood protection study for the Annaty Burn in Scone in 2007. This study identified a viable flood scheme and this is included on the prioritised list of flood protection works. A further study has now been identified and should consider NFM and also develop a SWMP. Natural Flood Management should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. This study should be progressed to inform the proposed flood protection works on the Annaty Burn. The Council carried out a Flood Protection Study for the barrel drain in Scone in 2007 which did not identify a viable flood scheme. However the Council intends to re-examine this previous study following recent failures of the drain and this will be carried out in conjunction with this new study.	£50k to £150k	56 residential properties and 58 non-residential properties at risk in a 200 year event (fluvial / surface water) with a PVD of £4.8M	£4,846,878	6	72 of 168	5 of 7	5 of 6	-	-	C1
Dumfries and Galloway ***Kirkconnel PVA (14/01)***	***Reduce the risk of river flooding to properties in Kirkconnel. Objective ID: 14001.***	***A flood protection study has been commissioned by Dumfries & Galloway Council. This study should assess the modification of conveyance and the construction of direct flood defences on the River Nith and Polbower Burn in Kirkconnel. There are flooded properties within Kirkconnel that may be suitable for relocation, and this should be considered in the flood study. The study may also consider property level protection. The study should take into consideration the planned actions for New Cumnock upstream and actions as part of the pilot catchment study on the Nith.***	***£20-30K***	***The detailed study will produce more accurate figures, however the strategic economic impacts are: 91 residential and 5 non-residential properties at risk in a 200 year river event, with a PVD of £4,777,951 (figures apply to both direct defences and modification of conveyance). This action may also provide protection to a short stretch of the primary road A76, however this has not been included in the PVD figure***	***£4,777,951***	***6***	***72 of 168***	***7 of 11***	***7 of 10***	***4***	***-***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Fife Auchtermuchty PVA (07/19)	Reduce economic damages to residential and non-residential properties in Auchtermuchty caused by flooding from the Auchtermuchty Burn. Objective ID: 7052.	A scheme is in place that reduced some of the identified risk. A study was carried out but did not identify a viable scheme here. If required, a future Flood Protection Study should assess Flood Storage, Sediment Management, Property Relocation and Natural Flood Management. Natural Flood Management should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £150k	44 residential properties and 13 non-residential properties at risk in a 200 year event with a PVD (do nothing) of £4.67M. 60 residential properties and 0 non residential properties are at risk for a high likelihood event and could benefit from NFM actions.	£4,670,000	6	72 of 168	7 of 11	10 of 16	-	-	C1
Angus ***Carnoustie PVA (07/09)***	***Reduce economic damages to residential and non-residential properties in Carnoustie caused by flooding from the Barry Burn and coastal flooding. Objective ID: 7022.***	***This study is a local priority. A Flood Protection Study has started to be progressed and investigates Flood Storage, Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. The potential for Natural Flood Management is being assessed: River/Floodplain Restoration, Sediment Management and Wave Attenuation. The assessment is considering these actions in combination and the impacts on flood risk upstream and downstream of each action and recognising that the existing defences may not operate to the design standard.***	***£30k to £120k***	***37 residential properties and 8 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.0M***	***£5,000,000***	***5***	***75 of 168***	***8 of 11***	***5 of 6***	***1***	***Study ongoing. Existing defences may not operate at design standard.***	***C1***
South Ayrshire Girvan PVA (12/18)	Reduce the risk of river / coastal flooding to residential properties and non residential properties in Girvan. Objective ID: 12032.	The Ayrshire Shoreline Management Plan will be carried out in partnership with NAC, SAC, SEPA and SNH which will assess the potential engineering actions in detail. This plan will also include consideration of natural flood management actions. A fluvial flood protection study should also be carried out to further investigate the following actions in detail, separately and in combination: construction of storage in Victory Park; modification of conveyance on the Mill Burn, including assessing the impact of the Scottish Water pipes in the Mill Burn; and tidal interaction with the Mill Burn and installation of a flap valve. This study may also consider natural flood management, property level protection actions and other complimentary actions.	£30,000 - £70,000	There are 99 residential and 15 non-residential properties at risk in a 200 year fluvial event within the benefitting area of these actions with a PVD of £4,708,983. This action may also benefit two electricity substations which are not included in this PVD figure.	£4,708,983	5	75 of 168	6 of 12	1 of 3	-	-	C1
Argyll & Bute Tarbert PVA (01/39)	Reduce risk in Tarbert from coastal flooding Objective ID: 103901.	A study is recommended to further investigate the feasibility of a flood protection scheme for coastal flooding in Tarbert, focusing on direct defences, revetments (coastal management action),and consideration of property level protection for residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the length and size of defences needed, and the business case for flood protection works. The flood mapping for Tarbert should be refined as part of the study as it is currently thought to underestimate the flood risk.	£25,000 to £50,000	Flood protection works could reduce the impact of the flooding of 12 residential and 23 non-residential properties which are currently at medium likelihood of flooding. Benefits of £4,662,663 could potentially be achieved over 100 year design life of a flood scheme.	£4,662,663	5	75 of 168	6 of 22	2 of 9	2	Agree with ranking	C1
Renfrewshire Lochiwinnoch PVA (11/12)	Reduce the risk of river flooding to residential properties, non residential properties and transport (roads) in Lochwinnoch. Objective ID: 11052.	A flood protection study should be carried out to further investigate the potential to construct direct defences along the River Calder within Lochwinnoch. This study may also consider the property level protection action.	£30,000 - £70,000	There are 63 residential and 21 non-residential properties at risk in a 200 year river event, with a PVD of £4,511,364. This action may also protect 410m of the A760 and an electricity substation; however these have not been included in the PVD figure	£4,511,364	5	75 of 168	17 of 32	4 of 6	-	Current resource constraints mean that it would not be possible to complete this study within cycle 1.	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Fife Glenrothes PVA (10/04)	Reduce risk to people in Glenrothes from river flooding. Objective ID: 10012.	ICS is scheduled to start 2017 and may identify a need for a further study. Such Flood Protection Study should assess Conveyance and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. FIFE COUNCIL TO CONSIDER WHETHER TO RULE OUT	£30k to £50k	As this flood mechanism has not been modelled values for the indicators and benefits cannot be defined.	£5,145,008	4	79 of 168	14 of 27	11 of 16	-	-	C1
Outer Hebrides Stornoway PVA (02/02)	Reduce risk to Stornoway from coastal flooding Reduce disruption to roads in the Braigh area from coastal flooding Objective ID: 200201, 200202.	A study is needed to confirm the business case and determine the extent and size of defences required. The study should focus on options of constructing new or improving existing direct defences around the harbour area (in particular Cromwell Street) and along the northern edge of Stornoway, improvements to the existing flapvalve on the outfall of the unnamed watercourse through the Goat Hill area (coastal management action), consideration of property level protection for any residual flood risk and improving the existing flood defence walls (direct defences) either side of the A866 on the isthmus between Stornoway and the Eye peninsula (the Braighe area). Any other actions may also be considered to develop the most sustainable range of options. Wave overtopping should be considered as part of the study.	£25,000 to £50,000	The solution could reduce the impact of flooding to 13 residential and 55 non-residential properties which are currently at medium likelihood of flooding. Benefits of £4,184,102 could be achieved over 100 year design life of a flood scheme. Protection could also be improved to the Braigh from wave overtopping to reduce the frequent disruption to the only road link to the Eye peninsula.	£4,894,656	4	79 of 168	2 of 5	2 of 5	2	Agree that technical ranking is a fair representation of flood risk in the Outer Hebrides	C1
Orkney ***Whitehall PVA (03/02)***	***Reduce risk in Whitehall from coastal flooding Objective ID: 300201.***	***A flood protection study is recommended to consider flood protection works for Whitehall. The study should primarily focus on coastal management actions, direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The investigation will assess the impact from wave overtopping to confirm the existing risk and define the height and extent of flood protection works required.***	***£25,000 - £50,000***	***Flood protection works could reduce risk to 26 residential properties and 7 non-residential properties at risk during medium likelihood floods. Present value benefits of £4,862,726 could be achieved over the 100 year design life of a scheme.***	***£4,800,000***	***4***	***79 of 168***	***1 of 6***	***1 of 6***	***3***	***No detailed work here, there is some observed flooding from wave overtopping.***	***C1***
East Renfrewshire Giffnock PVA (11/13)	Reduce the risk of river / surface water flooding to residential properties in Giffnock. Objective ID: 11012.	A diversion at Thornliebank is being carried out by Scottish Water which may alleviate flooding in the area. A study should be carried out to investigate if there is any remaining flood risk following these works. If the flood risk remains a flood protection study should be carried out to further investigate the construction of direct flood defences, and the creation of an offline storage area adjacent to the Woodfarm Playing Fields. This study may also consider the PLP action.	£20,000 - £100,000	There are 47 residential and 5 non-residential properties at risk in a 200 year river event, with a PVD of £4,613,286. This action may also protect an electricity substation; however this has not been included in the PVD figure.	£4,613,286	4	79 of 168	18 of 32	2 of 2	2	Cycle 2 so that benefit from the final Scottish water work can be assessed.	C2
East Lothian Tranent PVA (10/23)	Reduce risk to people in Tranent from river flooding. Objective ID: 10081.	A Flood Protection Study should assess Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	29 residential properties and 46 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £4.6M	£4,600,000	4	79 of 168	14 of 27	2 of 3	2	-	C1
Fife Kemback, Pitscottie PVA (07/18)	Reduce economic damages to residential and non-residential properties caused by river flooding. Objective ID: 7050.	A Flood Protection Study for Kemback should assess Direct flood Defences, Sediment Management and Property Relocation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	45 residential properties and 18 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £5.0M	£4,983,727	2	84 of 168	9 of 11	12 of 16	-	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
North Ayrshire Largs PVA (12/01)	Reduce the risk of river flooding to residential properties in the north east of Largs. Objective ID: 12001.	A flood protection study should be carried out to further investigate in detail modification of conveyance by upgrading culverts in the Brisbane Glen Road area. This study may also include consideration of natural flood management, property level protection and other complimentary actions.	£20,000 - £50,000	Regional pluvial data information was used as a substitute modelling for the minor watercourse flooding. 28 residential properties are at risk in a 200 year event, with an AAD of £42,515. From historic records five properties are known to be at risk in a 1 in 5 year event.	£4,501,882	2	84 of 168	7 of 12	4 of 5	-	-	C1
Aberdeenshire Stonehaven coastal frontage PVA (06/23)	***Reduce risk in Stonehaven from coastal flooding Objective ID: 602302.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of coastal flooding in Stonehaven. The flood protection study should consider wave attenuation actions, coastal management actions, the construction of direct defences, relocation of properties and property level protection to reduce the risk of flooding. Other actions may also be considered to develop the most sustainable range of options. The number of properties at risk does not include the impact of wave overtopping which should be considered in the study.***	***£100,000 - £250,000***	***Flood protection works could potentially reduce risk to 47 residential properties and 7 non-residential properties which are estimated to be at risk from coastal flooding during medium likelihood floods. Based on the properties identified to be at risk, £4 million of benefits over 100 years could be achieved through reducing flooding from medium likelihood floods.***	***£4,000,000***	***7***	***86 of 168***	***7 of 16***	***4 of 12***	***3***	***Recent history of severe flood damage due to wave overtopping***	***C1***
Highland Nairn PVA (05/08)	Reduce economic damages and flood risk to Nairn from the River Nairn and Auldearn Burn Objective ID: 500801.	A flood protection study is recommended. The study should include investigation of modification of conveyance actions on the Auldearn Burn, river and floodplain restoration, sediment management and direct defences to reduce risk from both rivers; the River Nairn and Auldearn Burn. Other actions should also be considered to get the most sustainable options for flood risk management.	£ 50,000 - £100,000	A scheme could reduce risk to 57 residential properties and 9 non-residential properties at medium likelihood of flooding. Present value benefits of £3,858,934 could be achieved over the 100 year design life of a flood scheme. The study should be carried out alongside the natural flood management study; which may provide additional benefits that cannot be quantified at this stage. A combined study for Central and East Nairn could achieve combined present value benefits of up to £11,544,369 over the 100 year design life of flood protection works for Nairn as a whole.	£3,800,000	7	86 of 168	3 of 6	6 of 23	6	Regular flooding occurs at Balmakeith estate - a culvert replacement is scheduled.	C1
South Lanarkshire Upper River Clyde (upstream of Strathclyde Park) PVA (11/17/2)	Reduce the risk of the River Clyde / surface water flooding to residential properties, non residential properties and transport along the River Clyde (upstream of Strathclyde Park). Objective ID: 11068.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: improving the conveyance of a number of existing structures on the upper River Clyde; and the construction of flood defences at various locations along the upper River Clyde (upstream of Strathclyde Park). SUDs should be assessed in any future flood study undertaken in the area. This study may also consider the PLP action.	£50,000 - £100,000	There are 42 residential and 11 non-residential properties at risk in a 200 year river event, with a PVD of £4,437,383. This action may also protect 700m of the A72; however this has not been included in the PVD figure.	£4,437,383	6	88 of 168	19 of 32	3 of 4	-	-	C1
Highland Inverness PVA (01/21)	***Reduce flood risk in Inverness from the River Ness between Ness Bridge and Ness Islands Objective ID: 102106.***	***The Upper Ness scheme has previously been developed to Planning and Flood Prevention Order stage, but not progressed to construction due to public objections and a weak business case. It is recommended that the previously proposed scheme is reviewed to refine the works and strengthen the business case. Other actions may also be considered to develop the most sustainable range of options.***	***<£25,000***	***The business case for flood protection works will need to be developed further as part of the study to fully justify the scheme. Flood protection works could reduce the impact of the flooding of 113 residential and 49 non-residential properties which are currently at medium likelihood of flooding. Benefits of £3,939,660 could potentially be achieved over 100 year design life of a flood scheme.***	***£3,939,660***	***6***	***88 of 168***	***7 of 22***	***6 of 23***	***8***	***This scheme has a flood protection order, but was dropped as not cost beneficial. Study to investigate alternative solution.***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
West Lothian ***Linlithgow PVA (10/13)***	***Reduce economic damages to residential and non-residential properties in Linlithgow caused by flooding from the River Avon and Bell's Burn. Objective ID: 10047.***	***A Flood Protection Study should assess the following: Modification of Conveyance, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £100k***	***56 residential properties and 13 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £4.1M***	***£4,100,000***	***5***	***90 of 168***	***16 of 27***	***2 of 4***	***3***	***-***	***C1***
Highland ***Fort William PVA (01/25)***	***Reduce flood risk in Fort William from the River Nevis*** ***Reduce flood risk in Fort William from Loch Linnhe Objective ID: 102501, 102502.***	***A study is recommended focussing on direct defences, revetments and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The tidal impact in the River Nevis should be considered.***	***£25,000 to £50,000***	***Flood protection works could reduce the impact of the flooding of 64 residential and 37 non-residential properties which are currently at medium likelihood of flooding. Benefits of £4,057,886 could potentially be achieved over 100 year design life of a flood scheme.***	***£4,057,886***	***5***	***90 of 168***	***8 of 22***	***8 of 23***	***9***	***Generally agree with ranking***	***C1***
Fife Culross PVA (10/08)	Reduce economic damages to residential and non-residential properties and risk to people in Culross caused by coastal flooding. Objective ID: 10026.	A Flood Protection Study should assess Direct flood Defences, Sediment Management and Natural Flood Management. Natural Flood Management should include Wave Attenuation and Surge Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	83 residential properties and 13 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £4.0M	£4,000,000	5	90 of 168	16 of 27	13 of 16	-	-	C1
Aberdeenshire ***Ballater PVA (06/22)***	***Reduce flood risk in Ballater from the River Dee Objective ID: 602201.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding in Ballater from the River Dee. The flood protection study should primarily focus on direct defences, relocation of properties and property level protection, but other actions may also be considered in order to develop the most sustainable range of options.***	***£50,000 - £100,000***	***Flood protection works could potentially reduce risk to 192 residential and 32 non-residential properties which are estimated to be at risk from the River Dee during medium likelihood floods. Based on the properties identified to be at risk, £3,832,032 of benefits over 100 years could be achieved through reducing flooding from medium likelihood events. There are no properties at risk from high likelihood events and the impacts of climate change will have a significant impact on increasing the risk in Ballater.***	***£3,832,032***	***5***	***90 of 168***	***8 of 16***	***5 of 12***	***6***	***The LA thinks the damages are quite low, as mostly at risk from low likelihood floods. However, the caravan parks floods regularly at high return periods. The LA believe Fettercairn should be higher on list than Ballater.*** ***Study assigned to C2 following review after NPWG2***	***C2***
North Ayrshire Largs PVA (12/03)	Reduce the risk of river / coastal flooding to residential properties in Largs. Objective ID: 12004.	A flood protection study should be carried out to further investigate in detail the fluvial and coastal flood risk in Largs. This should include updating the existing modelling on the Gogo Water, and further investigation into enhancing and extending the existing coastal defences. The Ayrshire Shoreline Management Plan will cover Largs and may include this coastal action.	£30,000 - £50,000	There are 201 residential and 72 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £3,696,082. This action may also benefit five electricity substations and 300m of primary road which are not included in this PVD figure.	£3,696,082	5	90 of 168	8 of 12	5 of 5	-	-	C1
West Dunbartonshire Duntocher Burn PVA (11/05)	Reduce the risk of river / surface water flooding to residential properties, non residential properties and community facilities from the Duntocher Burn. Objective ID: 11079.	A flood protection study should be carried out to further investigate upgrading a culvert that carries the Duntocher Burn under the canal. SUDs should be assessed in any future flood study undertaken in the area.	£20,000 - £30,000	There are 3 residential and 10 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £3,598,710. This action may also benefit an electricity substation and a telephone exchange which are not included in this PVD figure.	£3,598,710	5	90 of 168	20 of 32	2 of 2	-	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
South Ayrshire Troon PVA (12/07)	Reduce the risk of coastal / surface water flooding to non residential properties in Troon. Objective ID: 12020.	The Ayrshire Shoreline Management Plan should further investigate the following actions in detail, separately and in combination in Troon: coastal management by revetments; and construction of direct defences by enhancing seawalls.	To be provided by the Local Authority.	There are 420 residential and 358 non-residential properties at risk in a 200 year coastal event within the benefitting area of the storage action with a PVD of £4,054,753. This action may also benefit four electricity substations and 430m of A roads which are not included in this PVD figure.	£4,054,753	4	96 of 168	9 of 12	2 of 3	-	-	C1
Dumfries and Galloway ***Creetown PVA (14/17)***	***Reduce the risk of river / coastal flooding to residential properties in Creetown. Objective ID: 14023.***	***A flood protection study should be carried out to investigate further the construction of direct flood defences on the Moneypool and Balloch Burns in Creetown. This study should take account of the interaction of the Moneypool and Balloch Burns with the tidal River Cree. The study may consider Natural Flood Management and Property Level Protection***	***£20-30K***	***There are 82 residential properties and 15 non-residential properties at risk in a 200 year river event with a PVD of £3,497,840***	***£3,497,840***	***4***	***96 of 168***	***8 of 11***	***8 of 10***	***5***	-	***C1***
Outer Hebrides South Uist - Bornish to Boisdale PVA (02/08)	Reduce risk to southern South Uist from river and coastal flooding Objective ID: 200801.	Further investigations into the operation of the existing sluice gates is recommened to determine their impact on flood risk and the feasibility of improving their operation for this purpose (installation/modification of river control structures action). A dune management plan is to be developed for the machair and sand dunes on the west coast of South Uist to cover wave attenuation and considering the long term stability of the coastaline and flood risk management. Other actions may also be considered to develop the most sustainable range of options.	<£25,000	The business case for improvements to the existing sluice gates would need to be developed as part of the study. This would include confirming the number of properties which may benefit and any traffic disruption which could be avoided through improvements to existing structures. Potentially up to 18 residential and 5 non-residential properties may have some benefits from future flood protection works.	£3,858,756	3	98 of 168	3 of 5	3 of 5	3	Agree that technical ranking is a fair representation of flood risk in the Outer Hebrides	C1
Scottish Borders ***Newcastleton PVA (14/03)***	***Reduce risk to residential properties from river flooding within Newcastleton. Objective ID: 14003.***	***A flood protection study should be carried out to investigate further the construction of direct flood defences on the Liddel Water in Newcastleton. The study should consider Natural Flood Management and Property Level Protection.***	***£20-30K***	***There are 128 residential properties and 5 non-residential properties at risk in a 200 year river event, with a PVD of £3,569,289***	***£3,569,289***	***3***	***98 of 168***	***9 of 11***	***5 of 6***	***4***	***-***	***C1***
North Lanarkshire Cumbernauld PVA (11/04)	Reduce the risk of the Luggie Water flooding to residential properties in Cumbernauld. Objective ID: 11035.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: the potential to redesign the Badenheath Bridge to increase conveyance of the Luggie Burn; and the construction of direct defences along the Luggie Burn to reduce the risk of flooding to Cumbernauld. This study should also consider the potential role of Property Level Protection.	£30,000 - £50,000	There are 56 residential properties at risk in a 200 year event, with a PVD of £4,423,102.	£4,423,102	2	100 of 168	21 of 32	1 of 4	-	-	C1
North Lanarkshire Holytown PVA (11/17/2)	Reduce the risk of flooding to residential properties in Holytown. Objective ID: 11038.	A pluvial study of Holytown is to be carried out by the council to further assess the flow paths and potential flood risk in the area.	£20-30K	There are 77 residential and 22 non residential properties at risk in a 200 year pluvial event.	£3,668,370	1	101 of 168	22 of 32	2 of 4	-	-	C1
Aberdeenshire ***Fettercairn PVA (07/02)***	***Reduce economic damages to residential and non-residential properties in Fettercairn caused by river flooding. Objective ID: 7003.***	***Investigative studies were carried out about Aberdeenshire Council looking at a range of options to reduce flood risk; further work is needed to identify preferred options. The study should be carried out in conjunction with the Natural Flood Management study assessing the following: Runoff Control and sediment management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. Improved flood mapping from the study including representation of existing flood protection measures to be shared with SEPA.***	***£10k to £70k***	***39 residential properties and 10 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.6M. 30 residential properties and 4 non residential properties are at risk for a high likelihood event and could benefit from NFM actions.***	***£2,600,000***	***7***	***102 of 168***	***10 of 11***	***6 of 12***	***5***	***LA believes Fettercairn should be higher on the list than Ballater. Politically higher priority than Tarland or Ballater.*** ***Study assigned to C2 following review after NPWG2***	***C2***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Argyll & Bute ***Dunoon PVA (11/07)***	***Reduce the risk of Milton Burn flooding to residential properties in Dunoon. Objective ID: 11006.***	***There is potential to extend the Milton Burn Flood Prevention Scheme to achieve a standard of protection of 1 in 100 year event plus climate change for a greater area of Dunoon, and this should be investigated further by a flood protection study.*** ***SUDs should be assessed in any future flood study undertaken in the area. This study may also consider the NFM and PLP actions.***	***£30,000 - £50,000***	***There are 31 residential and 3 non-residential properties at risk in a 200 year event, with a PVD of £3,278,162. This action may also protect an electricity substation but this has not been included in the PVD figure.***	***£3,278,162***	***6***	***103 of 168***	***23 of 32***	***3 of 9***	***5***	***Local Knowledge and Flood History***	***C2***
Aberdeenshire ***Aboyne PVA (06/20)***	***Reduce flood risk in Aboyne from Tarland Burn and River Dee Objective ID: 602002.***	***A flood study should be carried out to address flooding from the Tarland Burn and River Dee in Aboyne. To reduce flood risk from the Tarland Burn it is recommended previous work carried out by Aberdeenshire Council is developed further. The flood protection study should primarily focus on direct defencs, relocation of properties, runoff reduction, river or floodplain restoration, sediment management and property level protection. Other actions may also be considered to develop the most sustainable range of options.***	***£50,000 - £100,000***	***Flood protection works could reduce risk to 101 properties at risk from Tarland Burn during medium likelihood floods. Present value benefits of £2,284,000 could be achieved over the 100 year design life of a flood scheme. Flood protection works could reduce risk to 31 residential properties and 9 non-residential properties which are estimated to be at risk from the River Dee during medium likelihood floods. Present value benefits of £1,020,873 could be achieved over the 100 year design life of the flood scheme for the River Dee in Aboyne.***	***£3,304,873***	***5***	***104 of 168***	***9 of 16***	***7 of 12***	***9***	***Local understanding of flood risk and flood history***	***C2***
Highland ***Golspie PVA (01/06)***	***Reduce risk in Golspie from coastal flooding Objective ID: 100601.***	***The study should primarily focus on coastal management (revetments), direct defences (flood walls), wave attenuation through beach recharge (natural flood management) and consideration of property level protection for any residual risk, but other actions may also be considered in order to develop the most sustainable range of options. The study should look to confirm the extent and size of defences required and the business case for flood protection works. This study should be carried out alongside the natural flood management study to ensure a coordinated response to the flood risk is developed.***	***£25,000 to £50,000 (for combined flood protection and natural flood management study)***	***Flood protection works could reduce the impact of flooding to 18 residential and 3 non-residential properties which are currently at medium likelihood of flooding. Present value benefits of £3,288,281 could be achieved over the 100 year design life of a flood scheme. The study should be carried out alongside the natural flood management study; which may provide additional benefits that cannot be quantified at this stage.***	***£3,288,281***	***5***	***104 of 168***	***9 of 22***	***9 of 23***	***7***	***Recent history of flooding***	***C1***
Fife Tayport PVA (07/14)	Reduce economic damages to residential and non residential properties in Tayport caused by coastal flooding. Objective ID: 7038.	A Flood Protection Study is in progress (due for completion in May 2015) assessing Direct flood Defences. This study should also include Natural Flood Management (Wave Attenuation). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	17 residential properties and 1 non-residential property at risk in a 200 year event with a PVD (do nothing) of £2.83M	£2,830,000	5	104 of 168	11 of 11	14 of 16	-	-	C1
Highland ***Ballachulish PVA (01/28)***	***Reduce flood risk in Ballachulish from River Laroch Objective ID: 102801.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for Ballachulish, focusing on direct defences and channel modifications between Laroch Beag and Albert Road, and consideration of property level protection. Sediment management in the River Laroch to reduce bank erosion and any other actions may also be considered in order to develop the most sustainable range of options. The study should look to confirm the length and size of works needed and the business case for flood protection works.***	***£25,000 to £50,000***	***The business case for flood protection works will need to be developed further as part of the study to fully justify the scheme. Flood protection works could reduce the impact of the flooding of 17 residential and 5 non-residential properties which are currently at medium likelihood of flooding. Benefits of £2,761,092 could potentially be achieved over 100 year design life of a flood scheme.***	***£2,761,092***	***5***	***104 of 168***	***9 of 22***	***9 of 23***	***14***	***The LA has no information on historical flooding. Thus low priority at this stage.***	***C2***

Flood Risk Management (Scotland) Act

FRM Strategies – Prioritisation of Actions

Flood Protection Studies_v4.0_DRAFT | Version Date:10/08/2015 | NPWG Meeting 3 (Paper 6)

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
City of Edinburgh Edinburgh: Water of Leith PVA (10/17)	Reduce economic damages to residential and non-residential properties in Port of Leith / Granton area caused by coastal flooding. Objective ID: 10095.	To undertake a study of the siltation in the Water of Leith basin in conjunction with the operation of the docks.	45000	12 residential properties and 6 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.8M	£2,758,102	5	104 of 168	18 of 27	2 of 3	1	-	C1
Fife Cowdenbeath PVA (10/28c)	Reduce economic damages to residential and non residential properties from river flooding in Cowdenbeath. Objective ID: 10098.	A Flood Protection Study should assess Flood Storage, Modification of Conveyance and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	42 residential properties and 5 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.5M	£2,500,000	5	104 of 168	18 of 27	14 of 16	-	-	C1
East Lothian ***Dunbar, West Barns, North Berwick PVA (10/25)***	***Reduce economic damages to residential and non-residential properties caused by river and coastal flooding. Objective ID: 10083.***	***A Flood Protection Study in Dunbar/ West Barnes should assess Modification of Conveyance, Direct flood Defences and Sediment Management. Natural Flood Management should assess Wave Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. The study should also assess the risk and mitigation of wave overtopping at North Berwick.***	***£30k to £120k***	***49 residential properties and 15 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £3.4M***	***£3,384,500***	***4***	***110 of 168***	***20 of 27***	***3 of 3***	***1***	***Wave overtopping risk at North Berwick has not been studied. The risk may qualify North Berwick for PVA designation.***	***C1***
Falkirk ***Falkirk Westquarter PVA (10/11)***	***Reduce economic damages to residential and non-residential properties in Falkirk West Quarter caused by flooding from the Westquarter Burn. Objective ID: 10037.***	***Vegetation management and maintenance should be continued to control erosion. A future Flood Protection Study, if required, should assess Direct flood Defences and Sediment Management.***	***£30k to £100k***	***67 residential properties and 1 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £3.3M***	***£3,300,000***	***4***	***110 of 168***	***20 of 27***	***4 of 5***	***5***	***Ongoing management is reducing flood risk. Study to be considered in future planning cycles.***	***C1/C2***
Orkney St. Margaret's Hope PVA (03/07)	Reduce flood risk in St Margaret's Hope from coastal flooding and the access road to Hope school Objective ID: 300701.	A flood protection study is recommended to consider flood protection works for St. Margaret's Hope. The study should primarily focus on coastal management actions, direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The investigation will assess the impact from wave overtopping to confirm the existing risk and define the height and extent of flood protection works required.	£25,000 - £50,000	Flood protection works could reduce risk to 50 residential properties and 10 non-residential properties during medium likelihood floods, however these numbers are estimated and will be refined within the study. Present value benefits of potentially £2,921,380 could be achieved over the 100 year design life of a scheme. These benefits should be refined during the study The costs and benefits for flood protection works would be dependent whether the road was protected or solely properties.	£2,900,000	4	110 of 168	2 of 6	2 of 6	2	The council regularly needs to put up temporary barriers at high tides to prevent flooding. Generally the 1st location to be affected by coastal flooding.	C1
Orkney ***Pierowall PVA (03/08)***	***Reduce risk in Pierowall from coastal flooding Objective ID: 300801.***	***A flood protection study is recommended to consider flood protection works for Pierowall. The study should primarily focus on coastal management actions, direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The investigation will assess the impact from wave overtopping to confirm the existing risk and define the height and extent of flood protection works.***	***£25,000 - £50,000***	***Flood protection works could reduce risk to 40 residential properties and 20 non-residential properties at risk during medium likelihood floods, however these numbers are estimated and will be refined within the study. Present value benefits of potentially £1,482,204 could be achieved over the 100 year design life of a scheme. These benefits would be refined within the study. The costs and benefits for flood protection works would be dependent whether the road was protected or solely properties.***	***£2,900,000***	***4***	***110 of 168***	***2 of 6***	***2 of 6***	***5***	***In 2005 Pierowall experienced a 1 in 22 year event.***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
East Ayrshire ***Dalmellington PVA (12/19c)***	***Reduce the risk of the Muck Water flooding to residential properties in Dalmellington Objective ID: 12033.***	***A flood protection study should be carried out to further investigate the construction of river walls along the Muck Water.***	***£30,000 - £50,000***	***There are 14 residential and no non-residential properties at risk in a 200 year fluvial event within the benefitting area of these actions with a PVD of £2,750,720.***	***£2,750,720***	***4***	***110 of 168***	***10 of 12***	***3 of 4***	***4***	-	***C1***
Renfrewshire Hawkhead Burn, Paisley PVA (11/13)	Reduce the risk of Hawkhead Burn / surface water flooding to residential properties and non residential properties in Paisley. Objective ID: 11058.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: formalising storage upstream of the former railway line and school; improving the conveyance of the Hawkhead Burn; and construction of direct defences along the Hawkhead Burn through Paisley. SUDs and property level protection should be assessed in any future flood study undertaken in the area. These actions may be incorporated into the Paisley SWMP.	£30,000 - £50,000	There are 25 residential and 1 non-residential properties at risk in a 200 year fluvial event within the benefitting area of this action with a PVD of £2,660,576. There is 1 non-residential property at risk in a 200 year surface water event, with a PVD of £32,899.	£2,693,475	4	110 of 168	24 of 32	5 of 6	-	Current resource constraints mean that it would not be possible to complete this study within cycle 1.	C2
Scottish Borders ***Bonchester Bridge PVA (13/13)***	***Reduce economic damages to residential and non-residential properties and flood risk to community facilities caused by river flooding. Objective ID: 13032.***	***A Flood Protection Study should assess Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £100k***	***38 residential properties and 7 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £3.0M***	***£3,000,000***	***3***	***116 of 168***	***4 of 5***	***6 of 6***	***5***	***Not a high priority compared to risk in other areas***	***C2***
Perth & Kinross Perth PVA (08/13)	Reduce economic damages to residential and non-residential properties and risk to people in Perth caused by flooding from the Perth Town Lade and the Craigie Burn. Objective ID: 8029.	A Flood Protection Study should consider flood risk from the Craigie Burn. The study should assess the following for the Craigie Burn: Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £100k	58 residential properties and 4 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.8M	£2,800,000	3	116 of 168	6 of 7	6 of 6	-	-	C1
Stirling Gargunnock PVA (09/06)	Reduce economic damages to residential and non-residential properties in Gargunnock caused by flooding from the Gargunnock Burn. Objective ID: 9018.	A flood protection study to assess the level of flood risk in Gargunnock. No flooding issues previously identified by Stirling Council and doubts over SEPA hazard maps - probably due to multiple culverts/ bridges. The watercourse should be resurveyed and the model updated in collaboration between SEPA / LA.	Unknown	49 residential properties and 1 non-residential property at risk in a 200 year event with a PVD (do nothing) of £3.5M.	£3,446,204	2	118 of 168	5 of 5	2 of 2	-	-	C1
Highland ***Dingwall and Blairninich PVA (01/14)***	***Reduce flood risk in Dingwall from the River Peffery*** ***Reduce flood risk in Blairninich from the River Peffery*** ***Reduce risk in Dingwall from coastal flooding Objective ID: 101401, 101402, 101403.***	***The study should primarily focus on direct defences (flood walls), storage runoff control, river or floodplain restoration, sediment management and consideration of property level protection for any residual risk, but other actions may also be considered in order to develop the most sustainable range of options.***	***£25,000 to £75,000***	***Flood protection works could reduce the impact of the flooding to61 residential and 28 non-residential properties which are currently at medium likelihood of flooding. Benefits of £2,330,257 from river flooding could potentially be achieved over 100 year design life of a flood scheme.***	***£2,330,257***	***9***	***119 of 168***	***11 of 22***	***11 of 23***	***3***	***Frequent flooding and political pressure to improve the flooding situation in Dingwall. In addition opportunity to undertake improvement works in conjunction with new road construction.***	***C1***
Highland ***Aviemore (River Spey) PVA (05/11)***	***Reduce economic damages and flood risk to Aviemore from the River Spey Objective ID: 501101.***	***A flood protection study is recommended to assess direct defences to reduce risk in Aviemore from the River Spey.***	***£ 50,000 - £100,000***	***Flood protection works could reduce risk to 8 residential properties and 5 non-residential properties at medium likelihood of flooding. Present value benefits of £1,237,175 could be achieved over the 100 year design life of a flood scheme.***	***£1,200,000***	***7***	***120 of 168***	***4 of 6***	***12 of 23***	***10***	***There is an existing study from 2---, but proposed flood scheme had negative cost/benefit.***	***C1***
Falkirk ***Slamannan PVA (10/13)***	***Reduce risk to people in Bathgate, Blackridge, Linlithgow and Slamannan from river flooding. Objective ID: 10049.*** ***This study will focus on Slamannan. Studies in other areas area also planned.***	***A Flood Protection Study will be informed by the ongoing surface water study and ICS and should assess Sediment Management and Direct flood Defences. The study should also investigate Natural Flood Management (Runoff control and Sediment Management). The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.***	***£30k to £120k***	***18 residential properties and 1 non-residential properties at risk in a 200 year event in Slamannan with a PVD of £2.1M.***	***£2,072,633***	***6***	***121 of 168***	***22 of 27***	***5 of 5***	***2***	***Local priority due to ongoing studies and investigations***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
South Lanarkshire Biggar PVA (13/07)	Reduce economic damages to residential and nonresidential properties in Biggar caused by flooding from the Biggar Burn. Objective ID: 13021.	A Flood Protection Study should assess the following: Flood Storage, Modification of Conveyance, Direct flood Defences and Sediment Management. The study should be carried out in conjunction with the Natural Flood Management study assessing the following: River/Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	38 residential properties and 12 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.3M. 15 residential properties and 10 non residential properties are at risk for a high likelihood event and could benefit from NFM actions.	£2,300,000	5	122 of 168	5 of 5	4 of 4	-	-	C1
Aberdeenshire ***Kintore PVA (06/13)***	***Reduce flood risk in Kintore from all watercourses (River Don, Torry Burn, Tuach Burn and Loch Burn) Objective ID: 601303.***	***A hydraulic stuy should be taken forward to assess the culverted sections of watercourses and the alignment of the watercourses following the A96 works. This will allow locations of risk to be confirmed within the modelling and against historic flood locations. The improved understanding of risk will increase the understanding of flood mechanisms and focus the area of further study, confirming the risk from all four watercourses; the River Don, Torry Burn, Tuach Burn and Loch Burn. The study should then progress to identify the most sustainable actions to manage flood risk.***	***0***	***The baseline mapping identifies 25 residential and 13 non-residential properties at risk in the area during medium likelihood events. Based on this potential benefits of 2,187,547 over 100 years could be achieved. This value is likely to change during the initial stages of the study.***	***£2,187,547***	***5***	***122 of 168***	***10 of 16***	***8 of 12***	***7***	***Local understanding of flood risk and flood history***	***C2***
Highland Kinlochewe PVA (01/13)	Reduce flood risk in Kinlochewe from the A'Ghairbhe river Objective ID: 101301.	A study is recommended to further investigate the feasibility of a flood protection scheme for Kinlochewe, focusing on direct defences, the use of a control structure at Loch Clair to increase storage upstream, runoff contro, large woody debris and boulders in tributaries (river or floodplain restoraion), sediment management and consideration of property level protection for any residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the extent and size of defences required and the business case for flood protection works.	£25,000 to £50,000	Flood protection works could reduce the impact of the flooding to 14 residential and 9 non-residential properties which are currently at medium likelihood of flooding. Benefits of £1,818,082 could potentially be achieved over 100 year design life of a flood scheme.	£1,818,082	5	122 of 168	12 of 22	13 of 23	13	Generally agree with ranking	C2
South Ayrshire Ayr PVA (12/09)	Reduce the risk of coastal / surface water flooding to residential properties and non residential properties in Ayr. Objective ID: 12024.	The Ayrshire Shoreline Management Plan is under development, this study will look to refine knowledge of coastal flood risk in the area including wave overtopping and the current coastal protection offered. In parallel a SWMP of Ayr will identify and look for options to mitigate Surface water flooding. Based on the output from these study there may be the requirement to investigate possible mitigation options for the combined sources within Ayr including investigatation the following actions in detail, separately and in combination: coastal management by revetments; and construction of direct defences by enhancing seawalls, SUDs options from the SWMP. Other complimentary actions may be considered in this next step.	To be provided by the Local Authority.	There are 112 residential and 19 non-residential properties at risk in a 200 year fluvial event within the benefitting area of these actions with a PVD of £1,575,489. This action may also benefit one electricity substation and 150m of A roads which are not included in this PVD figure.	£1,575,489	5	122 of 168	11 of 12	3 of 3	-	-	C1
Renfrewshire Kilbarchan PVA (11/12)	Reduce the risk of Kilbarchan Burn / surface water flooding to residential properties, non residential properties and transport (roads) in Kilbarchan. Objective ID: 11050.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: storage for the Kilbarchan Burn at Bog Park; improved conveyance of the Kilbarchan Burn through Kilbarchan by upgrading of culverts and watercourse channel; and sediment management. SUDs should be assessed in any flood study undertaken in the area. There is potential to incorporate this study into the proposed Johnstone study (objective 11049).	£30,000 - £70,000	There are 21 residential and 12 non-residential properties at risk in a 200 year river event, with a PVD of £1,340,608. This action may also protect 2 electricity substations; however this has not been included in the PVD figure. There are 17 residential and 13 non-residential properties at risk in a 200 year surface water event within the benefitting area, with a PVD of £291,194.	£1,631,802	5	122 of 168	25 of 32	6 of 6	-	This area is linked to the Johnstone study and therefore will be completed at the same time.	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Outer Hebrides North Uist PVA (02/05)	Reduce disruption to roads at high risk from coastal flooding Objective ID: 200501.	Further investigation into the feasibility of reducing wave overtopping at the Baleshare causeway is required (direct defences action). A dune management plan is to be developed for the machair and sand dunes on the west coast of North Uist to cover wave attenuation and considering the long term stability of the coastaline and flood risk management. Other actions may also be considered to develop the most sustainable range of options.	£25,000 to £50,000	The business case for works to the Baleshare causeway would need to be developed as part of the study, focusing on the disruption to traffic during high risk floods, which has not been quantified at this stage. The causeway is the only access between Baleshare and North Uist.	£1,961,476	4	127 of 168	4 of 5	4 of 5	4	Agree that technical ranking is a fair representation of flood risk in the Outer Hebrides	C1
Argyll & Bute ***Helensburgh PVA (11/02)***	***Reduce the risk of coastal flooding to residential properties and non residential properties in Helensburgh. Objective ID: 11003.***	***A proposed development has been put forward by the council, including rebuilding of the swimming pool and raising of a car park out of the flood extents. It is recommended that a flood protection study should be carried out to further investigate new and / or enhanced sections of defences along the seafront to protect flooding to the remainder of Helensburgh.***	***£30,000 - £70,000***	***There are 26 residential and 13 non-residential properties at risk in a 200 year coastal event, with a PVD of £1,171,843. This action may also offer protection to 530m of the A814; however this has not been included in the PVD figure.***	***£1,171,843***	***4***	***127 of 168***	***26 of 32***	***4 of 9***	***3***	***Local Knowledge and Flood History***	***C1***
Angus Kirriemuir PVA (08/05)	Reduce economic damages to residential and non-residential properties caused by river flooding. Objective ID: 8010.	A Flood Protection / NFM Study in Kirriemuir should assess Flood Storage, Sediment Management, Modification of Conveyance, Direct flood Defences and Property Relocation. Natural Flood Management should assess Floodplain Restoration and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£50k to £150k	15 residential properties and no non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £1.2M.	£1,165,406	4	127 of 168	7 of 7	6 of 6	5	-	C1
Highland ***Glencoe PVA (01/28)***	***Reduce flood risk in Glencoe from Loch Leven Objective ID: 102802.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for Glencoe. The focus should be on direct defences, revetments (coastal management actions), and consideration of property level protection for residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the length and size of defences needed, and the business case for flood protection works.***	***£25,000 to £50,000***	***The business case for flood protection works will need to be developed further as part of the study to fully justify the scheme. Flood protection works could reduce the impact of the flooding of 20 residential and 5 non-residential properties which are currently at medium likelihood of flooding. Benefits of £1,151,888 could potentially be achieved over 100 year design life of a flood scheme.***	***£1,151,888***	***4***	***127 of 168***	***13 of 22***	***14 of 23***	***15***	***Generally agree with ranking***	***C2***
Aberdeen City Fittie (Footdee) PVA (06/18)	Reduce risk from coastal flooding in the Aberdeen harbour area Objective ID: 601802.	The current SEPA national coastal modelling does not identify properties to be at flood risk, however there is a history of flooding. Thus a hydraulic study should be undertaken and the risk from wave overtopping should be considered. Once the properties are at risk of flooding isare identified, the most sustainable combination of actions to manage risk should be identified.	£25,000 - £50,000	Based on the current estimated number of properties at risk potential benefits of £1.6 million could be achieved over the 100 year design life of a scheme. The study should confirm the true number of properties at risk of coastal flooding and the potential benefits.	£1,665,235	3	131 of 168	11 of 16	4 of 4	-	-	C1
Highland ***Lochinver Primary School and nursery PVA (01/05)***	***Reduce the number of community facilities at risk of flooding from Loch Culag in Lochinver. Objective ID: 100501.***	***A study is recommended for Lochinver Primary School and nursery to reduce the likelihood of flooding from Loch Culag. The study should primarily focus on direct defences around the perimeter of the school grounds, but other actions may also be considered in order to develop the most sustainable range of options. The study should look to confirm the size of defence required and the business case for flood protection works.***	***<£25,000***	***Present value benefits of £1,806,486 could be achieved over the 100 year design life of a flood scheme for Lochinver Primary School and nursery.***	***£1,806,486***	***2***	***132 of 168***	***14 of 22***	***15 of 23***	***16***	***Generally agree with ranking***	***C2***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
North Lanarkshire Kilsyth PVA (11/04)	Reduce the risk of river flooding to residential properties and non residential properties in Kilsyth. Objective ID: 11036.	A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: use of the Scottish Canals feeder as a bypass channel to divert some flow from the Colzium Burn to Banton Loch for storage; and increasing the conveyance of the Ebroch Burn by altering the footbridge Burngreen Park. This study may also consider the property level protection action.	£30,000 - £50,000	There are 33 residential and 10 non-residential properties at risk during a 200 year river event, with a PVD of £1,679,415.	£1,679,415	2	132 of 168	27 of 32	3 of 4	-	-	C1
Argyll & Bute ***Garelochhead PVA (11/02)***	***Reduce the risk of coastal flooding to residential properties and non residential properties in Garelochhead. Objective ID: 11002.***	***A flood protection study should be carried out to investigate further the lower reaches of the McAuley Burn and to enhance the existing retaining wall in Garelochhead against coastal flooding. This study may also consider property level protection and other complimentary actions.***	***£30,000 - £50,000***	***There are 12 residential and 5 non-residential properties at risk in a 200 year coastal event, with a PVD of £1,305,333.***	***£1,305,333***	***2***	***132 of 168***	***27 of 32***	***5 of 9***	***6***	***Local Knowledge and Flood History***	***C2***
Highland ***Alness PVA (01/10)***	***Reduce flood risk in Alness from the Contullich Burn Objective ID: 101002.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for the Contullich Burn, focusing on trash screens for trees and other large debris (installation/modification of river control structures), sediment management and consideration of property level protection. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the business case for flood protection works.***	***<£25,000***	***The standard of protection which could be provided by flood protection works needs to be confirmed by the study. Up to 7 residential and 2 non-residential properties may benefit from flood protection works, potentially achieving benefits of £671,530 over 100 year design life of a flood scheme.***	***£671,530***	***7***	***135 of 168***	***15 of 22***	***16 of 23***	***17***	***Generally agree with ranking***	***C2***
East Ayrshire ***Dalrymple PVA (12/15)***	***Reduce the risk of the River Doon / Primpton Burn flooding to residential properties in Dalrymple. Objective ID: 12031.***	***A flood protection study should be carried out to further investigate the following actions in detail, separately and in combination: a change in operating procedure of Loch Doon for storage to a 10 year SoP; modification of conveyance through a historic bridge; and construction of direct defences. This study may also consider the property level protection action.***	***£30,000 - £50,000***	***There are 29 residential and 3 non-residential properties at risk in a 10 year fluvial event within the benefitting area of the storage action with a PVD of £692,589. There are 125 residential and 8 non-residential properties at risk in a 200 year fluvial event within the benefitting area of the direct defences action with a PVD of £1,069,812.***	***£1,069,812***	***6***	***136 of 168***	***12 of 12***	***4 of 4***	***2***	***-***	***C1***
Aberdeenshire ***Tarland PVA (06/20)***	***Reduce flood risk in Tarland from the Tarland Burn Objective ID: 602001.***	***A flood protection study is recommended to develop the previous work carried out by Aberdeenshire Council to consider flood protection works to reduce the likelihood of flooding in Tarland from the Tarland Burn. Development of the previous work should consider a combination of actions to reduce risk from medium likelihood floods. The flood protection study should primarily focus on modification of conveyance, construction of direct defences, relocation of properties and property level protection, to compare against the previously identified online storage options. Other actions may also be considered in order to develop the most sustainable range of options.***	***£50,000 - £100,000***	***Flood protection works could reduce risk to 22 properties which are estimated to be at risk from the Tarland Burn during medium likelihood floods. Present value benefits of £757,000 could be achieved over the 100 year design life of the scheme.***	***£757,000***	***6***	***136 of 168***	***12 of 16***	***9 of 12***	***8***	***Local understanding of flood risk and flood history***	***C2***
West Lothian ***Bathgate PVA (10/13)***	***Reduce risk to people in Bathgate, Blackridge, Linlithgow and Slamannan from river flooding. Objective ID: 10049.*** ***This study will focus on Bathgate. Studies in other areas area also planned.***	***A Flood Protection Study should assess Sediment Management, Direct flood Defences, Property Relocation and Natural flood management. Natural Flood Management Study should investigate runoff control and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. There is an opportunity for partnership working with the Almond / Avon reconnection project and Bathgate restoration project.***	***£30k to £120k***	***11 residential properties and 1 non-residential property at risk in a 200 year event in Bathgate with a PVD of £1.0M. 14 residential properties and 2 non residential properties are at risk for a high likelihood event and could benefit from NFM actions.***	***£1,022,705***	***5***	***138 of 168***	***23 of 27***	***3 of 4***	***1***	***This is Falkirk Council priority due to ongoing initiatives and opportunity to collaborate. There are also 2 schemes that do not provide much protection.***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Fife East Wemyss PVA (10/05)	Reduce economic damages to residential and non-residential properties caused by river and coastal flooding. Objective ID: 10015.	A Flood Protection Study in East Wemyss should assess Flood Storage, Sediment Management, Modification of Conveyance, Direct flood Defences, Property Relocation and Natural Flood Management including Runoff Control, River/Floodplain Restoration, Sediment Management and Wave Attenuation. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £120k	23 residential properties and 9 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £0.9M.	£929,659	5	138 of 168	23 of 27	16 of 16	-	-	C1
Shetland ***Walls PVA (04/02)***	***Reduce economic damages and risk to residential and non-residential properties from coastal flooding in Shetland Mainland West. Objective ID: 400201.***	***A hydraulic study is recommended to assess flood risk in Walls Wave action should be considered as part of the study. It is thought that SEPA's strategic flood risk and hazard maps under-estimate flood risk in Walls The study should identify the most sustainable range of actions to address flood risk.***	***<£25,000***	***Potentially there are present value benefits of £923,198 that could be achieved over a 100 year design life of a scheme, should flood protection works be progressed in the future. Seven residential and one non-residential property could benefit.***	***£923,198***	***5***	***138 of 168***	***1 of 3***	***1 of 3***	***3***	***No history of flooding***	***C1***
Highland ***Garve PVA (01/15)***	***Reduce flood risk in Garve from the Black Water Objective ID: 101501.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for Garve, focusing on direct defences, modification of conveyance, and consideration of property level protection for residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the extent and size of defences required and the business case for flood protection works.***	***£25,000 to £50,000***	***Flood protection works could reduce the impact of the flooding to 11 residential and 1 non-residential properties which are currently at medium likelihood of flooding. Benefits of £783,765 could potentially be achieved over 100 year design life of a flood scheme.***	***£783,765***	***5***	***138 of 168***	***16 of 22***	***17 of 23***	***18***	***Generally agree with ranking***	***C2***
Argyll & Bute ***Campbeltown PVA (01/40)***	***Reduce risk in Campbeltown from coastal flooding Objective ID: 104002.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for the coastal frontage of Campbeltown, focusing on direct defences. The study should look to confirm the existing defence levels of structures and the promenade to identify where structures need to be raised and where gaps in the defences need to be filled (i.e. at the piers). Other actions may also be considered to develop the most sustainable range of options.***	***<£25,000***	***Flood protection works could reduce the impact of the flooding of 96 residential and 178 non-residential properties which are currently at medium likelihood of flooding. Benefits of £1,131,975 could potentially be achieved over 100 year design life of a flood scheme. There is potential for disruption to the operational areas of the harbour which would need to be considered and mitigated during the design of the works.***	***£1,131,975***	***4***	***142 of 168***	***17 of 22***	***6 of 9***	***7***	***Local Knowledge and Flood History***	***C2***
Midlothian Dalkeith and Lasswade PVA (10/22)	Reduce economic damages to residential and non-residential properties caused by river flooding. Objective ID: 10077.	A Flood Protection Study in Dalkeith and Lasswade should assess Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	11 residential properties and 3 non-residential properties at risk in a 200 year event with a PVD of £0.6M	£648,898	4	142 of 168	25 of 27	1 of 1	-	-	C1
Argyll & Bute ***Rothesay PVA (11/06)***	***Reduce the risk of combined flooding to residential properties and non residential properties in Rothesay. Objective ID: 11004.***	***A flood protection study should be carried out to further investigate the potential to use Kirk Dam for storage. This study should also consider natural flood management, property level protection and other complimentary actions.***	***£30,000 - £70,000***	***There are 161 residential and 112 non-residential properties at risk in a 200 year river event, with a PVD of £628,378.***	***£628,378***	***4***	***142 of 168***	***29 of 32***	***6 of 9***	***9***	***Local Knowledge and Flood History***	***C2***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Highland ***Thurso - Burnside area PVA (01/01)***	***Reduce flood risk in Thurso (Burnside) from the Burnside / Wolf Burn Objective ID: 100103.***	***A study is recommended to further investigate the feasibility of improving conveyance along the Wolf Burn/Burnside Burn and the tributary to the north-west of the Thurso Business Park, and consideration of property level protection for any residual flood risk. Other actions may also be considered in order to develop the most sustainable range of options. The study should look to confirm the extent of works required and the business case for flood protection works. The study should also look to confirm the level of flood risk for Thurso Business Park which may be currently underestimated based on historic flooding.***	***£25,000 to £50,000***	***Flood protection works could reduce the impact of the flooding to 7 residential properties which are currently at medium likelihood of flooding. Present value benefits of £623,864 could be achieved over the 100 year design life of a flood scheme. There may also be additional benefits for the Thurso Business Park, which has historically had flooding problems but is not shown to be at risk in the baseline mapping.***	***£623,864***	***4***	***142 of 168***	***17 of 22***	***18 of 23***	***19***	***Generally agree with ranking***	***C2***
Orkney St. Mary's PVA (03/05)	Reduce risk in St Mary's from coastal flooding Objective ID: 300502.	A flood protection study is recommended to consider a flood protection works for St. Marys. The study should primarily focus on coastal management actions, direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. As localised extents of defences may only be required the investigation should define the height and extent of the works.	<£25,000	Flood protection works could reduce risk to 7 residential properties and 5 non-residential properties during medium likelihood floods. Present value benefits of £1,082,043 could be achieved over the 100 year design life of a scheme.	£1,082,043	3	146 of 168	4 of 6	4 of 6	4	LA agree with revised priority of 4th.	C1
Outer Hebrides Lochmaddy, Trumisgarry PVA (02/04)	Reduce disruption to roads in North Uist at high risk from coastal flooding Objective ID: 200401.	A study is recommended to investigate what improvements could be made to the existing flapvalve structures (coastal management action) on culverts to reduce coastal flooding of the B893 road as a result of interaction with the small watercourses. The impacts of improvement works would require further assessment. Other actions may also be considered to develop the most sustainable range of options.	<£25,000	The business case for works in this location would need to be developed as part of the study, focusing on the disruption to traffic during high risk floods.	£1,036,393	3	146 of 168	5 of 5	5 of 5	5	Agree that technical ranking is a fair representation of flood risk in the Outer Hebrides	C1
North Lanarkshire Greenacres PVA (11/17/2)	Reduce the risk of river flooding to residential properties in Greenacres. Objective ID: 11037.	A flood protection study should be carried out to investigate further the construction of flood defences around properties in Greenacres. SUDs should be assessed in any future flood study undertaken in the area.	£30,000 - £50,000	There are 59 residential properties at risk in a 200 year event, with a PVD of £780,655.	£780,655	3	146 of 168	30 of 32	4 of 4	-	-	C1
Dumfries and Galloway ***Dalbeattie/ Kipford PVA (14/19)***	***Reduce the risk of coastal flooding to residential properties between Dalbeattie and Kippford. Objective ID: 14026.***	***Initial assessment to refine knowledge of coastal flooding issues is to be made within the second Dumfries and Galloway Shoreline Management Plan. If the SMP identifies the requirement to mitigate flooding an area an in-house flood study should be completed to consider the impacts of road flooding on access to properties.***	***<£20,000***	***There are 4 residential properties at risk in a 200 year coastal event. Less frequent events cause flooding of the road along the sea front and can prevent access to properties.***	***£643,126***	***3***	***146 of 168***	***10 of 11***	***9 of 10***	***10***	***-***	***C2***
Moray ***Portgordon PVA (06/01)***	***Reduce risk in Portgordon from coastal flooding Objective ID: 600101.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding to Portgordon from coastal flooding. The flood protection study should include the investigation of coastal management actions and direct defences. Other actions may also be considered to develop the most sustainable range of options.***	***£50,000-£100,000***	***Flood protection works could potentially reduce risk to 37 residential properties and 3 non-residential properties which are identified to be at risk. These are additional to the properties identified at risk in the flood maps. The properties are felt to be underestimated for the high likelihood floods. Based on the current number of properties identified to be at risk, £787,154 of benefits over 100 years would be achieved. With further information on the impact of wave overtopping and flood depths the number of properties at risk could change and the benefits increase.***	***£787,154***	***2***	***150 of 168***	***13 of 16***	***2 of 2***	***1***	***Local Authority is concerned that the potential damages are significantly underestimated in Portgordon. This is based on frequent flood history linked to wave overtopping.***	***C1***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Highland ***Dornoch PVA (01/07)***	***Reduce flood risk in Dornoch from the Dornoch Burn Objective ID: 100701.***	***A study is recommended for Dornoch to investigate the impact on flood risk of structures crossing the burn and potential blockage scenarios. The study should primarily focus on modification of conveyance (removal or replacement of structures), installation/modification of river control structures (trash screens), direct defences (flood walls), and consideration of property level protection for any residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the type and extent of defences required and the business case for flood protection works.***	***£25,000 to £50,000***	***Flood protection works could reduce the impact of flooding to 2 residential and 5 non-residential properties which are currently at medium likelihood of flooding. Present value benefits of £649,888 could be achieved over the 100 year design life of a flood scheme.***	***£649,888***	***2***	***150 of 168***	***19 of 22***	***19 of 23***	***20***	***Generally agree with ranking***	***C2***
Highland ***Newmill PVA (05/08)***	***Reduce economic damages and flood risk to Newmill from the Auldearn Burn Objective ID: 500802.***	***A flood protection study is recommended to consider a scheme for Newmill to reduce risk from Auldearn Burn. The scheme should include investigation of modification of conveyance actions and direct defences. Other actions may also be considered to develop the most sustainable range of options.***	***£25,000 - £50,000***	***Actions identified in the study could potentially reduce risk to 5 residential properties and 1 non-residential property at medium to high likelihood of flooding. The benefits to protect the properties at risk are potentially £547,729.***	***£547,729***	***6***	***152 of 168***	***5 of 6***	***20 of 23***	***22***	***Generally agree with ranking***	***C2***
Highland ***Nairn West PVA (01/17)***	***Reduce flood risk in Nairn West from the Alton Burn Objective ID: 101701.***	***A study is recommended to further investigate the feasibility of a flood protection scheme for Nairn West, focusing on improving road bridges to improve conveyance, and consideration of property level protection for residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the feasibility of improving the road structures and the impact on flood risk, and the business case for flood protection works. Surveys of the road structures may be required.***	***£25,000 to £50,000 (including surveys of road structures)***	***Flood protection works could reduce the impact of the flooding of up to 3 residential and 2 non-residential properties which are currently at medium likelihood of flooding. Benefits of up to £486,917 could potentially be achieved over 100 year design life of a flood scheme.***	***£486,917***	***6***	***152 of 168***	***20 of 22***	***20 of 23***	***21***	***Generally agree with ranking***	***C2***
Shetland Vidlin PVA (04/01)	Reduce economic damages and risk to non-residential properties and community facilities in Vidlin from coastal flooding Objective ID: 400101.	A hydraulic study is recommended to assess flood risk in Vidlin. Wave action should be considered as part of the study. It is thought that SEPA's strategic flood risk and hazard maps under-estimate flood risk in Vidlin. The study should identify the mosts sustainable range of actions to address flood risk.	<£25,000	The baseline mapping identifies the school and church in Vidlin as at high likelihood of flooding. There are no residential properties identified as at risk. There is currently a low level of certainty in the baseline modelling as it does not include wave overtopping. Potentially there are present value benefits of £351,341 which could be achieved over a 100 year life of a future flood scheme. If wave action is considered in the study the potential benefits could be higher.	£351,341	5	154 of 168	2 of 3	2 of 3	2	School and ferry terminal potentially at risk	C1
Argyll & Bute ***Lochgilphead PVA (01/38)***	***Reduce flood risk in Lochgilphead from the Badden Burn Objective ID: 103801.***	***A hydraulic study is recommended to investigate river and coastal flooding in Lochgilphead. The flood risk in the Lochgilphead area is complex due to the interaction of different sources, which are not thought to be currently represented accurately in the baseline flood modelling. A better understanding of the interaction of the Badden Burn with the Crinan Canal and the tide is needed before the feasibility of actions can be appraised in greater detail.***	***£25,000 to £50,000***	***Based on the current baseline potential benefits of £183,093 can be achieved, however, this is likely to be underestimated due to the complex interactions between flood sources.***	***£183,093***	***5***	***154 of 168***	***21 of 22***	***8 of 9***	***4***	***Local Knowledge and Flood History including annual road closures***	***C1***
Argyll & Bute ***Cardross PVA (11/01)***	***Reduce the risk of river / surface water flooding to residential properties and community facilities in Cardross. Objective ID: 11001.***	***A flood protection study should be carried out to investigate further the construction of storage areas upstream of the Moore's Bridge and to assess the drainage in Cardross. This study may also consider property level protection and other complimentary actions.***	***£20,000 - £30,000***	***There are 10 residential and 1 non-residential properties at risk in a 100 year fluvial event with a PVD of £602,388.***	***£602,388***	***4***	***156 of 168***	***31 of 32***	***9 of 9***	***8***	***Local Knowledge and Flood History***	***C2***

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Glasgow City Gorbals PVA (11/13)	Reduce the risk of River Clyde / coastal flooding to non residential properties and community facilities in Gorbals. Objective ID: 11017.	The Gorbals Tidal weir morphology study should be progressed. This study should also investigate the potential risk to the City of Glasgow College, Glasgow Sherrif Court and Glasgow Central Mosque and the potential benefit of property level protection.	Unknown	Unknown	£321,563	4	156 of 168	31 of 32	8 of 8	-	-	C1
Shetland ***Cunningsburgh PVA (04/03)***	***Reduce disruption to the A970 road, economic damages and risk to residential and non-residential properties in the Cunningsburgh area from river flooding. Objective ID: 400301.***	***The A970 is the key road linking the southern end of the mainland, including the airport at Sumburgh, to the rest of Shetland. Flooding in the Cunningsburgh area causes significant disruption to residents, commuters, and visitors. Therefore a study should be undertaken to assess direct defences upstream of the A970 on the Burn of Laxdale and Burn of Mail and improvements to the conveyance through the culverts underneath the road. Other actions may also be considered to develop the most sustainable range of options.***	***<£25,000***	***If protection works are taken forwars, they will benefit one residential property and one non-residential property, along with the A970 road (key road linking the southern end of the mainland, including the airport at Sumburgh, to the rest of Shetland). There is currently a low level of certainty in the baseline modelling; it is thought to underestimate the flood risk in the Cunningsburgh area based on the recent flood history. It is not possible to estimate the potential benefits of flood protection works at this stage; the potential benefits should be identified as part of the study.***	***£321,563***	***4***	***156 of 168***	***3 of 3***	***3 of 3***	***1***	***History of flooding to property and disruption of road between Lerwick and Sumburgh airport***	***C1***
Highland ***Thurso (River Thurso) PVA (01/01)***	***Reduce risk in Thurso (Riverside area) from coastal flooding.*** ***Reduce flood risk in Thurso from the River Thurso. Objective ID: 100101, 100102.***	***A hydraulic study is recommended to investigate flood mechanisms, as SEPA's strategic maps are thought to misrepresent current flooding mechanisms and underestimate flood risk. The study is to look at combined coastal and river flooding. Following the improvements to the modelling, the study should focus on coastal revetments, direct defences and property level protection should be progressed if justified by the level of flood risk. Other actions may also be considered in order to develop the most sustainable range of options.***	***£25,000 to £50,000***	***Currently the baseline modelling is thought to underestimate the impacts of flooding. Improved understanding of the flood extents will allow the potential benefits for any flood works to be confirmed. Based on existing flood risk and hazard maps present value benefits of £233,800 could be achieved over the 100 year design life of a flood scheme. The potential benefits are likely to be higher if flood risk is underestimated.***	***£233,800***	***4***	***156 of 168***	***22 of 22***	***22 of 23***	***11***	***Current modelling doesn't fully reflect river and coastal flooding issues. Floods approximately annually and political pressure to improve the flood risk situation.***	***C1***
Highland ***Aviemore (Aviemore Burn) PVA (05/11)***	***Reduce economic damages and flood risk to Aviemore from the Aviemore Burn Objective ID: 501102.***	***A hydraulic study is to be taken forward to confirm flood risk in Aviemore from the Aviemore Burn. Currently SEPA's flood risk and hazard maps do not match historic flood extents.***	***0***	***Two non-residential properties and two residential properties are shown to be at medium likelihood of flooding in SEPA's flood risk and hazard maps. Based on available data, the present value benefits of £82,723 could be achieved over the 100yr design life of a scheme. However, this is to be confirmed through the study.***	***£82,723***	***4***	***156 of 168***	***6 of 6***	***22 of 23***	***23***	***Generally agree with ranking***	***C2***
West Lothian Blackridge PVA (10/13)	Reduce risk to people in Bathgate, Blackridge, Linlithgow and Slamannan from river flooding. Objective ID: 10049. This study will focus on Blackridge. Studies in other areas area also planned.	A Flood Protection Study should assess Sediment Management and Modification of Conveyance with focus on existing culverts. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action.	£30k to £100k	5 residential properties and 3 non-residential properties at risk in a 200 year event (fluvial / surface water) in Blackridge with a PVD of £0.05M.	£54,528	4	156 of 168	26 of 27	4 of 4	4	-	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Aberdeenshire ***Roanheads, Peterhead. PVA (06/08)***	***Reduce risk in Peterhead from coastal flooding Objective ID: 600801.***	***A flood protection study is currently under development by Peterhead Port Authority to consider flood protection works to reduce the likelihood of flooding to Roanheads in Peterhead from coastal flooding. If flood protection works are not carried out by the Port Authority, the flood protection study should be developed to consider the impact from wave overtopping and primarily focus on coastal management actions, direct defences, relocation and property level protection, but other actions may also be considered in order to develop the most sustainable range of options.***	***£25,000 - £50,000***	***Flood protection works could reduce risk to 6 residential properties and 1 non-residential property. These properties are indicated to be at risk from local knowledge and were not identified in the SEPA flood maps as the properties are at risk from wave overtopping which is not estimated in the strategic flood maps. Based on the properties identified to be at risk, present value benefits of £100,795 could be achieved over the 100 year design life of the scheme. With further information on the impact of wave overtopping and flood depths, these benefits could change.***	***£100,795***	***3***	***162 of 168***	***14 of 16***	***10 of 12***	***11***	***Local understanding of flood risk and flood history***	***C2***
Orkney ***Churchill Barriers PVA (03/07)***	***Reduce disruption to roads at high risk from coastal flooding, in particular the causeways on the Churchill Barriers Objective ID: 300702.***	***A flood protection study is progressing to reduce flooding to Churchill Barrier 2 from high likelihood floods. The study is primarily focusing on coastal management actions and wave attenuation to minimise the impact of waves, but other actions may also be considered in order to develop the most sustainable range of options.***	***£25,000 - £50,000***	***Reducing the impacts of flooding for Churchill Barrier 2 during high likelihood floods would result in an economic benefit of £37,352 due to reduce flood damages to the road. There are wider benefits that are unable to be quantified and should be considered within the ongoing study when considering the actions.***	***£37,352***	***3***	***162 of 168***	***5 of 6***	***5 of 6***	***1***	***There is huge economic disruption if the road is closed- however current methodology does not allow SEPA to take this in to account.***	***C1***
Orkney Ayre Road PVA (03/06)	Reduce disruption to roads at high risk from coastal flooding with particular reference to the causeway linking Hoy to South Walls Objective ID: 300601.	A flood protection study for the causeway is recommended to investigate the most suitable action for long term maintenance of the road. The study should primarily focus on coastal management actions to strengthen the existing road or actions to raise the height of the existing road, but other actions may also be considered in order to develop the most sustainable range of actions.	<£25,000	Reducing the flood impacts to the road (B9047) for high likelihood floods would result in an economic benefit of £1,014 due to reduce flood damages to the road. Although the quantified flood damages are small, there are wider benefits that are unable to be quantified and should be considered in the study when considering the actions.	£304,902	2	164 of 168	6 of 6	6 of 6	6	This road is less often flooded than the Churchill Barriers.	C1

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
Aberdeenshire ***Banff PVA (06/03)***	***Reduce risk in Banff from the River Deveron and coastal flooding Objective ID: 600301.***	***A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding to Banff from coastal flooding. The flood protection study should primarily focus on coastal management actions, direct defences, relocation and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The study should assess the impact from wave overtopping to confirm the existing risk and define the height and extent of flood protection works required.***	***£25,000 - £50,000***	***Flood protection works could reduce risk to 7 residential properties and 3 non-residential properties identified to be at risk from medium likelihood coastal floods. These properties are indicated to be at risk from local knowledge and were not identified in the SEPA flood maps as the properties are at risk from wave overtopping which is not estimated in the strategic flood maps. Based on the properties identified to be at risk, present value benefits of £149,587 could be achieved over the 100 year design life of the scheme. With further information on the impact of wave overtopping and flood depths, these benefits could change.***	***£149,587***	***2***	***164 of 168***	***15 of 16***	***11 of 12***	***10***	***Local understanding of flood risk and flood history***	***C2***
City of Edinburgh ***Edinburgh: Gogar Burn PVA (10/27)***	***Reduce risk to community facilities caused by river flooding. Objective ID: 10090.***	***A Flood Protection Study should assess Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. This study should also aim to improve the accuracy of the flood mapping in the Gyle/ Gogar Burn area.***	***£30k to £100k***	***1 community facility (airport fire station) at risk in a 200 year event.***	***£160,782***	***1***	***166 of 168***	***27 of 27***	***3 of 3***	***3***	***Shifted to C2 following review after NPWG2***	***C2***
Aberdeenshire Portsoy PVA (06/02)	Reduce flood risk in the vicinity of Loch Soy and Soy Avenue Objective ID: 600201.	A flood protection study is recommended to consider flood protection works to reduce the likelihood of flooding to Soy Avenue, this should build on a previous study on Soy Burn. The study should firstly confirm the existing flood risk prior to developing actions within the study. The flood protection study should then primarily focus on storage, sediment management, runoff control, river/floodplain restoration, modification of conveyance, property level protection and relocation to reduce the likelihood of flooding from the Soy Burn, but other actions may also be considered in order to develop the most sustainable range of options.	£25,000 - £50,000	Flood protection works could reduce risk to 10 residential properties. The properties at risk are estimated and will be verified within the study. Based on the 8 properties at risk, present value benefits of £138,915 could be achieved over the 100 year design life of a flood scheme. With confirmation of the number of properties at risk and flood depths in the flood protection study, these benefits could change.	£138,915	1	166 of 168	16 of 16	12 of 12	12	Local understanding of flood risk and flood history	C2
Dumfries and Galloway Moniaive PVA (14/25c)	Accept standard of protection offered by Moniaive Flood Protection Scheme. Objective ID: 14038.	Flood protection study in Moniaive to assess the current level of risk and assess mitigation options if required	0	0	£0	0	168 of 168	11 of 11	10 of 10	-	-	C1

The following table lists all of the standalone NFM Studies. NFM Studies are assumed C1 delivery unless otherwise identified.

Local Authority	Location	Objective	Indicators	Next-Step	Estimated Cost of Next Step
Aberdeen City	LPD6 (06/19)	Reduce flood risk in Peterculter from the Culter Burn (601901)	£504,966 annual average damages from residential properties, an estimated 429 people at risk from medium likelihood floods	A natural flood management study is recommended to assess river/floodplain restoration and sediment management actions to reduce the likelihood of flooding. This is to be taken forward with the Priority Catchments work and the Deeside Catchment Partnership.	<£25,000
Angus	South Esk (PVA 07/05)	Reduce risk to people in Brechin caused by flooding from the River South Esk	191 people at risk (1:200 year event)	South Esk pilot catchment project aims to identify and prioritise opportunities for delivering improvements to river habitats whilst helping to reduce flood risk. Phase 1 study has been completed and SEPA is currently in discussion with landowners with regard to taking forward some sites to options appraisal and outline design.	£20k to £50k
CaLL discussions to determine lead	White Cart Catchment (11/13)	Reduce the risk of river flooding to residential properties and non residential properties from the White Cart Water.	665 Residential properties; 259 Non-Residential properties; 1.3km of Road, Annual average damages of £980,832.	A catchment wide natural flood management study is recommended to consider how actions can be used to complement the existing scheme along with other areas in the White Cart Water catchment. The study should investigate the impact of combining the sediment management and runoff control actions from all the objectives within the White Cart Water catchment. These actions may benefit areas in Glasgow City, East Renfrewshire and Renfrewshire.	£40K-£60K
CaLL discussion to determine lead	Rutherglen (11/14)	Reduce the risk of combined flooding to residential properties and non residential properties in Shawfield / Croftfoot and Castlemilk	40 Residential properties; 36 Non-Residential properties; 0.4km of Road, Annual average damages of £321,758.	A natural flood management study should be undertaken to further investigate in detail the potential benefit for runoff control to Croftfoot. This action may be covered in a catchment wide NFM study to consider the impact of combining the NFM actions from all the objectives within the catchment of the Mallsmire Burn/Polmadie Burn/Cityford Burn. However if a catchment wide study is not progressed this action may be considered within the flood protection study. These actions may benefit areas in Glasgow City and South Lanarkshire.	£20K-£40K
CaLL discussion to determine lead	Kilsyth to Bearsden - North of Glasgow City (11/04)	Reduce the risk of Allander Water / surface water flooding to residential properties and non residential properties in Milngavie. (11011)	185 Residential properties; 90 Non-Residential properties, Annual average damages of £691,618.	A natural flood management study should be undertaken to further assess in detail the potential to reduce the impact of flooding using NFM. Large areas of potential have been identified within the River Kelvin catchment for runoff control and floodplain restoration within the catchment. Other complimentary actions should be investigated as part of the study. These actions may benefit towns within East Dunbartonshire Council and Glasgow City Council.	£20K-£40K
Dumfries & Galloway	Ecclefechan - Annan (14/08)	Reduce the risk of river flooding to residential and non-residential properties in Ecclefechan.	50 Residential properties; 4 Non-Residential properties, Annual average damages of £73,803.	A Natural Flood Management Study should be undertaken to further assess in detail the potential for runoff control to Ecclefechan. This study should be progressed in Cycle 2.	£20,000 - £40,000
East Dunbartonshire	Kilsyth to Bearsden - North of Glasgow City (11/04)	Reduce the risk of river / surface water flooding to residential properties, non residential properties, community facilities and transport (roads) in Kirkintilloch. (11008)	505 Residential properties; 128 Non-Residential properties; 2.8km of road, Annual average damages of £687,325.	SEPA are currently carrying out a pilot study: Potential options for river restoration and natural flood management in the Glazert catchment. This study should assess in detail runoff control and floodplain restoration. This action may also impact areas downstream of Kirkintilloch within the River Kelvin catchment.	
East Dunbartonshire	Kilsyth to Bearsden - North of Glasgow City (11/04)	Reduce the risk of Park Burn /surface water flooding to residential properties in Kirkintilloch. (11009)	46 Residential properties,Annual average damages of £86,038.	A NFM study should be carried out to understand the actions that could benefit the Park Burn FPS.	£20K-£40K
East Dunbartonshire	Kilsyth to Bearsden - North of Glasgow City (11/04)	Reduce the risk of Allander Water / surface water flooding to residential properties and non residential properties in Milngavie. (11011)	185 Residential properties; 90 Non-Residential properties, Annual average damages of £691,618.	A natural flood management study should be undertaken to further assess in detail the potential to reduce the impact of flooding using NFM. Large areas of potential have been identified within the River Kelvin catchment for runoff control and floodplain restoration within the catchment. Other complimentary actions should be investigated as part of the study. These actions may benefit towns within East Dunbartonshire Council and Glasgow City Council.	£20K-£40K

Local Authority	Location	Objective	Indicators	Next-Step	Estimated Cost of Next Step
East Lothian	Musselburgh (10/21)	Reduce economic damages to residential and non-residential properties in Musselburgh caused by flooding from the River Esk and coastal flooding. (10075)	£1,574,382 Annual Average Damages (Residential Properties)	A Natural Flood Management Study should assess Wave Attenuation. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. The study should be linked to the flood protection works.	£20k to £50k
Fife Council	(10/07)	Reduce economic damages to residential and non-residential properties caused by coastal flooding. (10025)	£122,648 Annual Average Damages (Residential Properties) £128,076 Annual Average Damages (Non-Residential Properties)	A Natural Flood Management Study should assess Wave Attenuation in Torryburn.	£20k to £50k
Fife Council	(07/19)	Reduce economic damages to residential and non-residential properties caused by river flooding. (7053)	£138,471 Annual Average Damages (Residential Properties) £13,264 Annual Average Damages (Non-Residential Properties)	A natural flood management study for Dunshalt, Freuchie Mill and Kingskettle should assess river/ floodplain restoration and sediment management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream.	£50k to £100k
Glasgow City are ins discussion to determine lead	Yoker Catchment - Clyde (Clydebank to Partick) (11/05)	Reduce the risk of river / surface water flooding to residential properties, non residential properties and transport (roads) in Yoker Mains and Yoker Burn catchments.	373 Residential properties 48 Non-Residential properties, 3.0 km of Road, Annual average damages of £1,176,258.	A natural flood management study should be undertaken to further investigate in detail the potential benefit for runoff control to Bearsden. This action may be considered within the flood protection study.	£20K-£40K
Glasgow City are ins discussion to determine lead	Rutherglen (11/14)	Reduce the risk of Spittal Burn / surface water flooding to residential properties in Castlemilk.	504 Residential properties, Annual average damages of £602,640.	A natural flood management study should be undertaken to further investigate in detail the potential benefit for runoff control to Castlemilk. – This may be incorporated into a larger NFM study This action may be covered in a catchment wide NFM study to consider the impact of combining the NFM actions from all the objectives within the catchment of the Mallsmire Burn/Polmadie Burn/Cityford Burn. However if a catchment wide study is not progressed this action may be considered within the flood protection study and/or surface water management plan. Glasgow City Council to look at areas that are being proposed in terms of benefit and action locations.	£20K-£40K
Glasgow City are ins discussion to determine lead	Rutherglen (11/14)	Reduce the risk of combined flooding to residential properties and non residential properties in Shawfield.	184 Residential properties; 111 Non-Residential properties, Annual average damages of £440,167.	The potential for runoff control, floodplain restoration and sediment management in Richmond Park should be further considered in detail in the Shawfield Masterplan. A catchment wide NFM study is recommended to consider the impact of combining the NFM actions from all the objectives within the catchment of the Mallsmire Burn/Polmadie Burn/Cityford Burn. Glasgow City Council to look at areas that are being proposed in terms of benefit and action locations to determine lead – this may be incorporated into a larger NFM study.	
Inverclyde	Kilmacolm (11/21c)	Reduce the risk of Glenmosston Burn flooding to residential properties and non residential properties in Kilmacolm.	10 Residential properties, 1 Non-Residential properties,	A natural flood management study should be carried out to further investigate the potential benefit for floodplain restoration at Glen Moss in Kilmacolm. These actions should help complement the protection that will be offered by the Glenmosston Burn works. Scoping study is to be carried out by Inverclyde to inform future direction of the NFM study. Discussions with SNH are required to investigate potential for natural flood management within the SSSI area. The timescale for this study is cycle 1.	
North Ayrshire	Upper Garnock Catchment (12/04)	Reduce the risk of river / surface water flooding to residential properties and non residential properties in Kilbirnie, Glengarnock and Longbar.	783 Residential properties, 100 Non-Residential properties, Annual average damages of £719,414.	A natural flood management study should be undertaken to further investigate in detail the potential benefit for runoff control and sediment management to Kilbirnie and Glengarnock. Natural flood management has been looked at as part of the potential works, however it is recommended that further consideration should be made to detail the potential benefit in the tributaries of the River Garnock.	£20K-£40K

Local Authority	Location	Objective	Indicators	Next-Step	Estimated Cost of Next Step
Perth & Kinross	(07/12)	Reduce economic damages to residential and non-residential properties in Invergowrie and Dundee caused by flooding from the Invergowrie Burn. (7031)	£110,677 Annual Average Damages (Residential Properties)	A Natural Flood Management Study should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream.	£20k to £50k
Perth & Kinross	(08/04)	Reduce economic damages to residential and non-residential properties in Alyth from the Alyth Burn. (8007)	£84,098 Annual Average Damages (Residential Properties)	A Natural Flood Management Study should assess River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream.	£20k to £50k
Renfrew-shire	Black Cart Catchment - Lochwinnoch to Johnstone (11/12)	Reduce the risk of Kilbarchan Burn / surface water flooding to residential properties, non residential properties and transport (roads) in Kilbarchan.	41 Residential properties; 26 Non-Residential properties; 0.6 km of Road, Annual average damages of £59802.	A natural flood management study should be carried out to further investigate the potential benefit for sediment management at Kilbarchan. This action may be considered within the flood protection study (110500006) depending on funding streams.	£20K - £40K
Renfrew-shire	Black Cart Catchment - Lochwinnoch to Johnstone (11/12)	Reduce the risk of river flooding to residential properties, non residential properties and transport (roads) in Lochwinnoch.	62 Residential properties; 26 Non-Residential properties; 1.1km of Road, Annual average damages of £139,878.	A natural flood management study should be carried out to further investigate the potential benefit for runoff control and sediment management in Lochwinnoch. This may be carried out as a separate study or as part of the flood protection study within this area (110520006) depending on funding streams.	£20K - £40K
Renfrew-shire	White Cart Catchment (11/13)	Reduce the risk of Espedair Burn / Gleniffer Burn / surface water flooding to residential properties, non residential properties, community facilities and transport in Paisley.	665 Residential properties; 259 Non-Residential properties; 1.3km of Road, Annual average damages of £980,832.	A catchment wide natural flood management study is recommended to consider how actions can be used to complement the existing scheme along with other areas in the White Cart Water catchment. The study should investigate the impact of combining the sediment management and runoff control actions from all the objectives within the White Cart Water catchment.	£20K - £40K
Scottish Borders	(13/04)	Reduce economic damages to residential and non-residential properties and flood risk to community facilities in Galashiels and Stow caused by flooding from the Gala Water and River Tweed. (13015)	£140,982.52 Annual Average Damages (Residential Properties) £508,243 Annual Average Damages (Non-Residential Properties) 2 x Educational Buildings	A Natural Flood Management Study should assess Runoff Control and River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. NFM was not part of the Gala scheme therefore the LA keen to look at NFM options.	£20k to £50k
Scottish Borders	(13/12)	Reduce economic damages to residential, non-residential and community properties in Hawick caused by flooding from the River Teviot.	£793,227 Annual Average Damages (Residential Properties) £901,232 Annual Average Damages (Non-Residential Properties) 1 educational building 1 child day care centre. 1,228 People at Risk (1 in 200 year event).	A Natural Flood Management Study should assess Runoff control and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. To be undertaken in cycle 1.	£20k to £50k

Local Authority	Location	Objective	Indicators	Next-Step	Estimated Cost of Next Step
South Lanarkshire	(13/07)	Reduce economic damages to residential and nonresidential properties in Biggar caused by flooding from the Biggar Burn. (13021)	£58,604 Annual Average Damages (Residential Properties) £43,857 Annual Average Damages (Non-Residential Properties)	A Natural Flood Management Study should assess the following: River/Floodplain Restoration and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. The study should be carried out in conjunction with the flood protection study.	£20k to £50k
Stirling	(09/01)	Reduce economic damages to residential and non-residential properties in Aberfoyle caused by flooding from the River Forth. (9002)	£101,217 Annual Average Damages (Residential Properties) £123,798 Annual Average Damages (Non-Residential Properties)	This is an ongoing Duchrie catchment pilot study looking at a range of Natural Flood Management options including Runoff control and Sediment Management. Timescales for completion 2016. The study should inform any future flood protection studies. Undertaken in partnership with National Park and Forestry Commission.	£20k to £50k
West Dunbartonshire	Loch Lomond and Vale of Leven (11/01)	Reduce the risk of River Leven / coastal flooding to residential properties, non residential properties and community facilities in Vale of Leven and Dumbarton.	2592 Residential properties; 524 Non-Residential properties, Annual average damages of £15,128,544.	A natural flood management study should be undertaken by LLTNP in partnership with West Dunbartonshire Council to further investigate in detail the potential benefit for runoff control to Loch Lomond.	£20K - £40K
West Lothian	(10/13)	Reduce risk to people in Bathgate, Blackridge, Linlithgow and Slamannan from river flooding. (10049)	241 People at Risk (1 in 200 year event)	A Natural Flood Management Study should assess Runoff control and Sediment Management. The assessment should also consider the potential benefits and disbenefits to locations both upstream and downstream. The study should be carried out in conjunction with the flood protection study and in collaboration with Falkirk Council.	£20k to £50k