

Flood Risk Management (Scotland) Act 2009

INTERIM REPORT on the TAY ESTUARY AND MONTROSE BASIN Local Flood Risk Management Plan



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Foreword

This INTERIM REPORT to the Local Flood Risk Management Plan shows the progress made in delivering the actions to avoid and reduce the risk of flooding, and prepare and protect ourselves and our communities across the local plan district.

“The impacts of flooding experienced by individuals, communities and businesses can be devastating and long lasting. It is vital that we continue to reduce the risk of any such future events and improve Scotland’s ability to manage and recover from any events which do occur.”

(Tay Estuary and Montrose Basin Local Flood Risk Management Plan, June 2016)

The publication of the INTERIM REPORT shows that the coordinated and collaborative efforts of public bodies can be brought together to deliver sustainable outcomes.

The INTERIM REPORT is published by Angus Council on behalf of a partnership comprising five local authorities: Angus Council; Perth and Kinross Council, Fife Council; Aberdeenshire Council; Dundee City Council; as well as Scottish Water; SEPA; Cairngorms National Park Authority and Forestry Commission Scotland.

Individuals are the first line of defence against flooding and have responsibilities to protect themselves from flooding. Through self-help and property level protection, awareness raising and signing up to Floodline, individuals, businesses and communities can and have made key contributions to the delivery of the actions in the Plan, which are detailed in this INTERIM REPORT.

Since the publication of the Plan in June 2016, public sector finances in Scotland have continued to be under considerable pressure. This places an even greater responsibility on SEPA, local authorities and Scottish Water and other responsible authorities to deliver their flood risk management responsibilities and, in particular the actions in the Plan, to manage flooding in a sustainable way.

SEPA, local authorities and Scottish Water and other responsible authorities will continue to work collaboratively to implement the actions in the Plan to its conclusion in June 2022.

Signed :-

Major Ronnie Proctor (Provost)

Mark Salmond

(Convener)

Angus Council – Communities Committee

Date :- 15 January 2019

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Background

The INTERIM REPORT is a legal requirement of the Flood Risk Management (Scotland) Act 2009(Section 37). The INTERIM REPORT is required to be published between July 2018 and June 2019. The INTERIM REPORT includes the conclusions of a review of the Tay Estuary and Montrose Basin Local Flood Risk Management Plan (the 'Plan'), published in June 2016 and includes information on the progress that has been made towards implementing the actions identified in the Plan.

Further details on flood risk management responsibilities in Scotland and the legal requirement for the publication of this INTERIM REPORT can be found in Appendix 1.

A copy of the Tay Estuary and Montrose Basin Local Flood Risk Management Plan can be found at the follow link.

[https://www.angus.gov.uk/sites/angus-cms/files/2017-07/Tay Estuary and Montrose Basin Local Flood Risk Management Plan.pdf](https://www.angus.gov.uk/sites/angus-cms/files/2017-07/Tay_Estuary_and_Montrose_Basin_Local_Flood_Risk_Management_Plan.pdf)

Review of the plan

This section sets out the conclusions of the review of the plan and a summary of progress of actions detailed in Tay Estuary and Montrose Basin Local Flood Risk Management Plan. It draws upon the assessment of progress of actions presented in the subsequent sections.

Key progress in reducing the impacts of flooding since publication

Partnership working within the TEAM B Local plan district has been very positive and enabled the Responsible Authorities to work together to achieve the objectives of the plan. This has ensured that progress against the actions identified in the plan has been good with the majority of actions commenced within the proposed timescale. Responsible Authorities have been able to learn from each other's working practices and experiences and this has been hugely valuable in progressing the actions identified within the plan

1. Angus Council has developed a flood protection scheme for the Brothock Water in Arbroath. This has received confirmation of 80% grant funding and subject to approvals, construction will commence in 2019.
2. Dundee City Council has completed a flood protection scheme for the Dundee coastline.
3. Dundee City Council has developed a flood protection scheme for the coastline at Broughty Ferry. Construction of this project will commence in 2020.
4. Strategic studies are progressing across LPD 7. These cover the following areas:
 - Hatton sewer catchment (Dundee to Arbroath) by Scottish Water
 - Mapping and Modelling of Montrose coastal area and Arbroath – Dundee coastal area by SEPA.
5. A number of LPD wide actions are being undertaken across the district by the Local Authorities and Scottish Water and these include :-
 - maintenance of existing and new assets
 - clearance and repair activities
 - awareness raising – both of flooding in general and the plan led approach to flood risk management

A number of flood protection studies and surface water plans are progressing across the Team B district in partnership with Consultants – specific details of these studies are provided within the report.

How current is the 2016 Plan?

The Plan was published in June 2016 supplementing the Flood Risk Management Strategy published by SEPA in December 2015. The Plan details how the actions identified in the Strategy were to be implemented over the period 2016 to 2022. The Strategy and Plan are based on the National Flood Risk Assessment and the designated Potentially Vulnerable Areas at that time.

Since the identification of the actions in the Plan, there have and continue to be advancements in our knowledge and further development of assessment techniques. These include the publication by SEPA of a new National Flood Risk Assessment and revision to the designation of Potentially Vulnerable Areas in December 2018. These advancements may inform the delivery of the actions in this Plan and will be used in the development of future Strategies and Plans.

It is therefore considered that the Plan on which this INTERIM REPORT is based is still relevant, albeit the planned delivery and actual delivery of some actions has changed. These changes are detailed in the 'Assessment of the progress of actions'.

Significant challenges

Based on a review of the assessment of the progress of actions detailed in this INTERIM REPORT, the following key challenges and issues have been identified that have or may have an impact on the delivery of actions to manage flood risk. Arrangements planned to deliver the remaining actions are described below. Where these challenges have had an impact on the delivery of specific actions or actions across an LPD, this is detailed in the 'Assessment of the progress of actions'.

However, the overall delivery of actions in the Plan has not been impacted by funding or resource issues.

Significant weather events

The Tay Estuary and Montrose Basin LPD was adversely affected by significant weather events in late 2015 and early 2016, which had an impact on the delivery of actions in the Plan from June 2016 onwards. For example, Angus Council and Perth & Kinross Council resources were deployed to deal with the emergency events at the time as well as the follow up activities and necessary works, which were still being delivered into financial year 2017/18. This has caused consequential delays in the planned delivery of some actions as staff resource that would have been delivering planned actions has been delivering emergency actions.

A further significant weather event was experienced in March 2018. This resulted in low temperatures and high levels of snow fall across the district although a gradual thaw meant that flooding from snow melt was limited.

Arrangements planned to deliver the remaining actions affected by significant weather events are described below and detailed in the 'Assessment of the progress of actions' section of this INTERIM REPORT. Specifically each local Authorities approach to resilience and measures for climate change adaption are relevant.

Funding

The 'actions in the Plan to meet agreed goals and objectives in the first six-year cycle considered what would be achievable assuming a similar level of funding for flood risk management activities from The Scottish Government. However, given the timing of spending reviews and annualised financial settlements for local government, the actual ability to deliver all the actions set in the Strategies in December 2015 and detailed in this Plan will be dependent on the availability of the necessary funding in each year of the six year Plan', (Tay Estuary and Montrose Basin Local Flood Risk Management Plan, June 2016).

Allocation of Resources

The delivery of flood risk management actions must be seen in the context of challenging local government finances and increased expectation and demand for public services. This applies to all of the responsible authorities and SEPA.

The impact on the level of funding from Scottish Government in general settlements for local government and in respect of funding for other responsible authorities and SEPA may also have had an effect on the availability and allocation of resources. There is a challenge for priority of flood risk with and against many other worthy demands on public spending.

The availability and retention of skilled staff to deliver flood risk actions has been a limiting factor in some areas. The increased workload created by the weather events noted above has put more pressure on existing staff resources. This has caused consequential delays in the planned delivery of actions.

Prioritisation of actions for next plan cycle

Many actions contained in the plan are to undertake studies that will assess the need for further actions to be implemented in future plans. For example, a flood protection study may recommend that a community flood action group is set up to increase resilience to flooding, or that a flood defences are constructed. This introduces a deadline date by when such actions need to be detailed and submitted by responsible authorities for consideration as actions in the next plans from 2022-28. The deadline date for submission of these actions to SEPA has been set as December 2019. The actions submitted will then be assessed and prioritised against the flood risk objectives, and consulted upon ahead of the publication of the next cycle of Flood Risk Management Strategies in December 2021 and Local Flood Risk Management Plans in June 2022. Any actions that miss this deadline may therefore be delayed for consideration in the next cycle from 2028-34.

Arrangements planned to deliver the remaining actions

The actions in the Plan will continue to be delivered over the remainder of the 2016 to 2022 period. This will be as per the published Plan, subject to revisions in delivery dates as detailed in the 'Assessment of the progress of actions' section of this INTERIM REPORT.

In general, all of the actions in the Plan will be delivered by June 2022.

Where specific measures are required to address a delay and ensure an action is completed then this is described against the relevant action. In addition where there is a risk that remaining actions will not be delivered by the end of the Plan, planned contingencies have been considered, which are described against the relevant action.

Next steps

A Final Report on the plan will be published in between July 2021 and June 2022. This will include an updated assessment of the progress made towards implementing the current actions, a summary of the current measures which were not implemented, with reasons for their non-implementation; and a description of any other measures implemented since the plan was finalised which the lead authority considers have contributed to the achievement of the flood risk objectives.

In the meantime, to find out more about how flood risk is being managed please refer to your Local Authority website :-

https://www.angus.gov.uk/the_environment/flooding/flood_management

<http://www.pkc.gov.uk/article/14716/Flooding>

<https://www.dundecity.gov.uk/service-area/city-development/flooding>

<https://www.fifedirect.org.uk/topics/index.cfm?fuseaction=subject.display&subjectid=6128ECEA-FA04-4CEE-11F4FBCDEB3BD6E2>

Conclusions

Since the publication of the Tay Estuary and Montrose Basin Local FRM Plan in June 2016, good progress has been made over the initial three years of the first cycle. This has clearly highlighted the benefits that can be achieved by partnership working in flood risk management.

Flood studies have generally progressed as programmed, and surface water studies have commenced in some areas utilizing the detailed hydraulic modelling outputs from Scottish Water to increase certainty in the predictions of surface water flooding. Detailed consideration of flood sources and pathways has allowed an improved understanding of the impacts of flooding allowing for improved prioritization of measures.

The requirement for sustainable flood measures to be prioritised will drive environmental improvements in conjunction with flood protection, achieving enhancements to communities across the Tay Estuary and Montrose Basin district.

The responsible authorities involved in delivering the actions for the Tay Estuary and Montrose Basin LPD are also involved in delivering actions in other local plan districts.

Assessment of progress

This section sets out an assessment of the progress towards implementing the actions set out in the Team B LFRMP.

There are actions that apply across the whole of the TEAMB LPD and actions that are specific to each of the 19 Potentially Vulnerable Areas (as defined under Section 13 of the Act) in the TEAMB LPD, which are shown below in Figure 1.

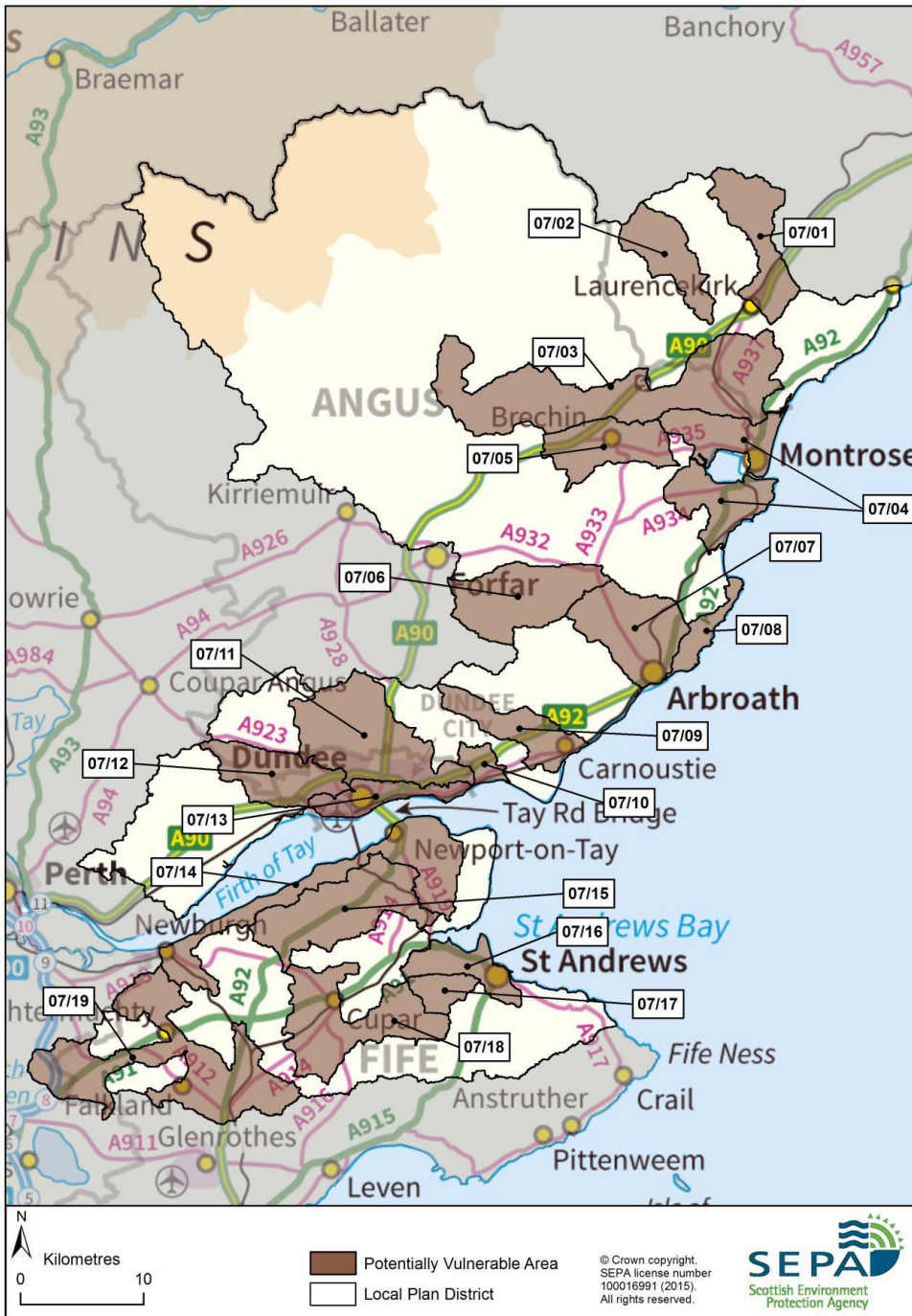


Figure 1: The Tay Estuary and Montrose Basin Local Plan District with Potentially Vulnerable Areas identified

Reproduced from Tay Estuary and Montrose Basin Local Plan District Flood Risk Management Strategy, SEPA (December 2015)

The actions that apply to individual PVA across the TEAMB LPD are shown overleaf in Figure 2. The summary of the assessment of progress is shown using a traffic light system, where each item is marked as Red, Amber or Green (RAG) and where:

- **GREEN** – Action has been/is being delivered and is on programme and within budget;
- **AMBER** – Action is behind programme and/or over budget, but the key dates are still anticipated to be met.
- **RED** – Action is behind programme and/or over budget, with key dates unlikely to be met and/or the outputs unlikely to achieve what was anticipated by the LFRMP.

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	Flood protections scheme/work	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/responses	Planning policies
North of Brechin 07/03																		
Montrose Basin 07/04																		
Brechin 07/05																		
Lunan Water 07/06																		
Arbroath 07/07																		
Coast North of Arbroath 07/08																		
Carnoustie and Barry 07/09																		
Monifieth 07/10																		
Downfield/Dundee Monifieth/Sidlaws 07/11																		
Invergowrie 07/12																		
Dundee and Broughty Ferry 07/13																		

Figure 2: Summary of progress of actions to manage flood risk in the Potentially Vulnerable Areas of the Tay Estuary and Montrose Basin

Progress with LPD-wide Actions

This table provides an assessment of the progress towards implementing general actions that apply across the TEAMB district over the six-year Plan. Further specific information on individual Local Authority's progress towards these actions is provided in Appendix 1.

Action	Status	Description	Delivery Lead	Interim progress	Planned actions to complete
Flood forecasting		Actions taken by SEPA in conjunction with other agencies to provide predictive flood information in advance which enables people to take action to reduce the impact of flooding on their property.	SEPA	SEPA has continued to provide daily national flood guidance statements which provide an assessment of the risk of flooding for a five day period. The service also provides the information for flood warnings to be issued.	Current actions to continue and be further developed as new information becomes available.
Self help		Actions taken by SEPA and Local Authorities in TEAM B to assist, support and educate property owners to protect themselves and their property from flooding.	SEPA/ Local Authorities	Actions have been undertaken by SEPA, Local Authorities and the Responsible Authorities to raise awareness and educate about Self Help actions. Further details on specific PVA related events can be found in the PVA update sheet.	Current actions to continue and be further developed as new information becomes available.
Awareness raising		Actions taken by SEPA and Local Authorities in TEAM B to raise awareness of flood risk.	SEPA/Local Authorities	Actions have been undertaken by SEPA, Local Authorities and the Responsible Authorities in flood prone locations to	Current actions to continue and be further developed as new information becomes available.

				raise awareness and educate about flood risk. Further details on specific PVA related events can be found in the PVA update sheet.	
Maintenance		Actions taken by Local Authorities and Scottish Water to undertake clearance and repair in relation to waterbodies and maintenance of other water related assets.	Local Authorities and Scottish Water	Local Authorities have instigated an inspection regime to inspect waterbodies within their areas and identify and undertake clearance and repair works to reduce flood risk. Scottish Water continue to undertake risk based inspections, maintenance and repair on the public sewer network.	Current actions to continue and be informed by improved understanding of the locations and hydromorphology of the river channels in question. Further specific details on maintenance can be found in Appendix 1.
Emergency plans/response		Actions taken by Local Authorities and SEPA to provide an emergency response to flooding.	Local Authorities, Scottish Water and SEPA (Category 1 and 2 Responders)	The Responsible Authorities under the Civil Contingencies Act 2004 have acted in response to weather warnings received and use best available information from a number of sources to co-ordinate regional and local actions.	Current actions to continue and be informed by improved flood forecasting information provided by SEPA and the MET Office.
Planning Policy		Actions by SEPA and the Local Authorities to ensure that Flood Risk information is considered in	SEPA and Local Authorities	SEPA and Local Authority Officers have continued to provide flood risk information to the Local Plan and the	Current actions to continue and be further developed to prioritise sustainable flood risk management

		Development Plans and Local Development decisions.		Development Control process on the risk of developing in flood prone areas and the requirement for sustainable surface water drainage for all new developments.	within the Local Plans and local development control decisions. Further discussion/engagement required.
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Figure 3: Progress with LPD-wide Actions for the Tay Estuary and Montrose Basin

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Progress with PVA-specific Actions

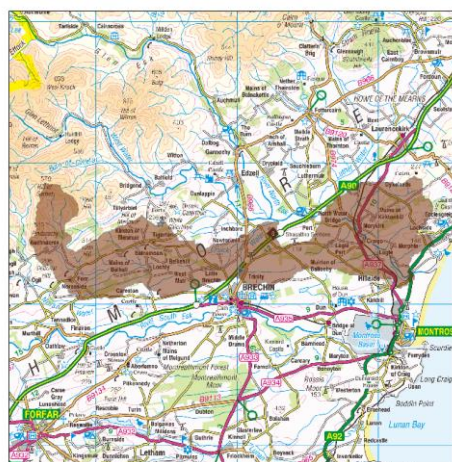
This section sets out an assessment of the progress towards implementing actions that are specific to each of the 19 PVA as shown in Figure 2. Assessments of the progress of actions within each PVA are presented.

There are no specific actions identified for 'property level protection scheme' and 'site protection plans' actions. Consideration of property level protection schemes will be included in the 'flood protection study', 'surface water plan/study' and/or 'emergency plans/response' actions. Site protection plans will be identified through these same 'study' actions and also 'planning policies' action.

North of Brechin (Potentially Vulnerable Area 07/03)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Aberdeenshire Council, Angus Council	River North Esk (Tayside)

Summary of Progress Within PVA



There are approximately 20 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £110,000. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/03.

Key progress has been made with the strategic mapping and modelling work carried out by both SEPA and Scottish Water. This will significantly improve the understanding of flood risk within the catchment.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the North of Brechin PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/03							G		G	G			A	A	A		A	A

Summary of Progress of Actions to Manage Flood Risk in North of Brechin (PVA 07/03)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Strategic Mapping and Modelling		<p>Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.</p> <p>Scottish Water will undertake further investigation and modelling in the Brechin (2018-2020), Laurencekirk (2016-2019) and Montrose (2016-2019) sewer catchments to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009</p>	Scottish Water	08/18	Section 16 Sewer mapping in the Brechin, Laurencekirk and Montrose catchments has been progressed by Scottish Water as scheduled.	Sewer mapping on programme for completion 1 st May 2019.
		<p>SEPA will seek to develop flood mapping in the Cruick Water and Lower North Esk areas to improve understanding of flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.</p> <p>SEPA will seek to incorporate additional surface water data into</p>	SEPA	2016-2018		

		<p>the flood maps to improve understanding of flood risk. Approximately 1,100km² of improved surface water data is currently available within this Local Plan District.</p> <p>River mapping improvements and surface water mapping improvements are SEPA-led. Mapping improvements on the Cruick Water are expected to be carried out in 2017 to 2018. Surface water mapping improvements are expected to be carried out in 2016 to 2017.</p>			<p>SEPA's current Surface water hazard maps use design rainfall estimates based on FEH99 methodology. This has now been superseded by FEH13 methodology. The FEH13 dataset contains the latest science and understanding of rainfall across Scotland and represents a significant change in rainfall amounts compared to FEH99 dataset, as such it is no longer considered appropriate to deliver this action as originally intended.</p> <p>Following a screening exercise to characterise the catchment and identify the data necessary to support mapping improvements a modelling project is currently underway which will enable a revision of the river flood hazard mapping within this catchment.</p>	<p>This action will not be taken forwards as described. SEPA will develop new Surface water flood hazard maps over the remainder of Cycle 1. It is anticipated that updated flood mapping from this revised action will be available early in Cycle 2.</p> <p>Alongside this SEPA will investigate the feasibility of developing an interim approach to assess the change in Surface water hazard (and risk) associated with FEH13, such that we could consider it in the development of the 2021 FRM Strategies.</p> <p>It is planned to complete this action by the end of 2018.</p>
<p>Maintain Flood Warning</p>		<p>SEPA will continue to maintain the Inchbare, Marykirk and the Logie Mill and Craigo flood warning areas which are part of the North Esk river flood warning scheme. When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event</p>	<p>SEPA</p>	<p>Ongoing</p>	<p>SEPA has continued to operate the flood warning service.</p>	<p>SEPA will continue to operate the flood warning service.</p>

		data to ensure that our flood warning service is timely and accurate.				
Flood Forecasting		The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.	SEPA, Met Office	Ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national flood guidance statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties). Each daily statement gives an assessment of the risk of flooding for the next five days to help enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and helps enable communities to be aware and prepared to reduce the impacts of flooding.	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily flood guidance statements and flood alerts issued as required to enable communities and responders to reduce the impacts of flooding.
Self Help		See progress with LPD-wide actions	Responsible Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Responsible Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans /		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

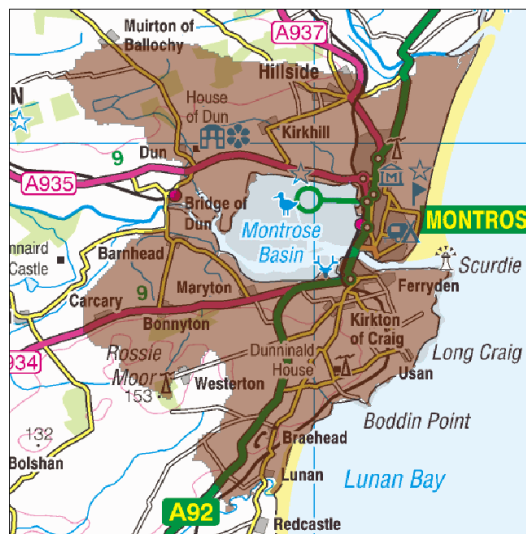
Response						
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

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Montrose Basin (Potentially Vulnerable Area 07/04)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	River North Esk (Tayside)

Summary of Progress Within PVA



There are approximately 130 residential properties and 90 non-residential properties at risk of flooding. The Annual Average Damages are approximately £700,000. Further information can be found in LFRMP under PVA 07/04. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/04.

Key progress has been made with the flood protection study for this PVA. SEPA have made progress on strategic mapping and modelling in order to improve the existing flood maps for the area. The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments. Other actions undertaken have included the inclusion of the Montrose coastal area in the National Coastal Change Assessment being taken forward by a consortium of bodies on behalf of the Scottish Government.

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Overview of actions to manage flooding in the Montrose Basin PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/04																		


Summary of Progress of Actions to Manage Flood Risk in Montrose Basin (PVA 07/04)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
New Flood Warning		Flood Warning is required for communities at risk of coastal flooding along the north east coast including the coast at Montrose. This will be co-ordinated with the flood protection study outputs for Montrose	SEPA	Ongoing to 2021/22	SEPA has completed development of a flood forecasting model for Aberdeenshire and Angus coastline and has worked with Aberdeenshire Council to develop procedures for the new flood warning service.	SEPA will continue to operate the flood warning service.
Flood Protection Study		Flood protection study for Montrose will assess whether flood defences and natural flood management can be used to reduce flood risk. Natural flood management options will consider wave and surge attenuation. The study will also consider the viability of property level protection. The study will take a sustainable approach and consider the interactions between actions and effects on coastal processes along the shoreline, in line with Angus Shoreline Management Plan.	Angus Council	By 2018/19	The flood protection study for Montrose commenced in June 2018 and is progressing well. AECOM were appointed to carry out this study and to date there has been considerable focus on the coastal flooding element. The flood study is likely to meet the completion date of June 2019.	Angus Council will continue to work with the consultants to finalise the flood study report. Once complete a programme of engagement and consultation will take place to disseminate the findings and discuss prioritised options.

Surface Water Plan/ Study		Provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist Angus Council with SWMP process.	Scottish Water	06/17	Scottish Water have provided the outputs from the S16 assessment which can be used in the preparation of surface water management plans for this PVA.	Scottish Water will continue to work with Angus Council and AECOM on the preparation of surface water management plans for this PVA. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding.
		Prepare Surface Water Management Plans (SWMPs) to cover Montrose and Ferryden. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc.	Angus Council		The surface water management plans for this PVA are being undertaken as part of the flood study by AECOM. Work will commence on these when the coastal focus has completed.	Angus Council will continue to work with AECOM to prepare the surface water management plans for this PVA. These plans will identify joint and/or separate solutions to surface water flooding within the area. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding.
Strategic Mapping and Modelling		Review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk by 2019/20.	Scottish Water		Scottish Water have provided the outputs from the S16 assessment which can be used in the preparation of surface water management plans for this PVA.	Scottish Water will continue to work with Angus Council and AECOM on the preparation of surface water management plans for this PVA. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding.
		Develop flood mapping in the Montrose area to improve understanding of coastal flood risk. Update strategic Coastal Maps	SEPA		Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this	It is planned to complete this action in 2019. SEPA will await the conclusion of this local study and review its suitability to inform updates to

					<p>location:</p> <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Coastal modelling and mapping project for north-east Scotland. <p>These projects will collectively enable the revision of flood mapping for the coastline from Scrabster to Arbroath.</p> <p>A detailed local authority study is being undertaken for Montrose to inform coastal flood hazard at that location.</p>	existing flood mapping alongside the wider coastal hazard mapping improvements in this area.
Maintain Flood Protection Scheme*		Undertake routine, reactive, programmed, regulatory and emergency response inspections. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.	Angus Council	Ongoing	Angus Council have maintained the existing flood protection scheme which extends from the northern end of the splash seawall frontage to the eastern end of Montrose port.	Angus Council will continue to undertake routine, reactive, regulatory and responsive inspections and programme and co-ordinate required maintenance works where resources allow.
Maintain Flood Warning		Continue to maintain the Kinnaird/Bridge of Dun flood warning area (South Esk river flood warning scheme).			SEPA has continued to operate this flood warning service for Kinnaird/Bridge of Dun.	SEPA has continued to operate this flood warning service for Kinnaird/Bridge of Dun.
Flood Forecasting					SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood

					Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.
Community Flood Action Groups		See progress with LPD-wide actions		Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans / Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

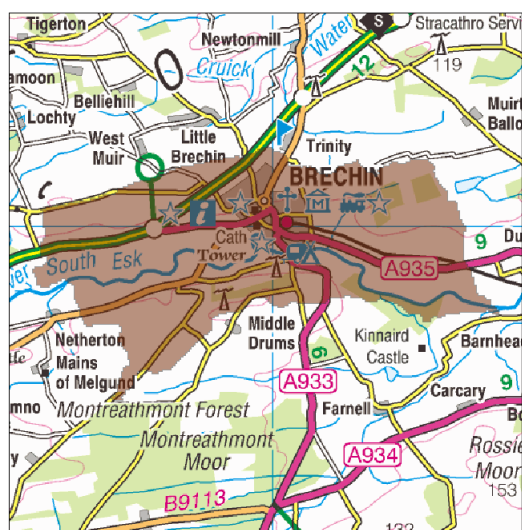
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
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Brechin (Potentially Vulnerable Area 07/05)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	River North Esk (Tayside)

Summary of Progress Within PVA



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There are approximately 100 residential properties and 70 non-residential properties at risk of flooding. The Annual Average Damages are approximately £670,000. Further information can be found in LFRMP under PVA 07/05. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/05.

Key progress has been made on natural flood management works in the upper River South Esk catchment.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

Strategic mapping and modelling has also been undertaken by Scottish Water to improve the understanding of surface water flooding in this PVA.

Overview of actions to manage flooding in the Brechin PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/05																		

Summary of Progress of Actions to Manage Flood Risk in Brechin (PVA 07/05)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Natural Flood Management Works		River South Esk restoration project Contour planting in South Esk upper catchment	Angus Council with SEPA, SNH, Forestry Commission, Fisheries and Landowners	2016 - 2020	South Esk restoration works at Rottal complete. Contour planting in upper catchment commenced.	Continue contour planting in upper catchment.
Natural Flood Management Study		Natural Flood Management project to include opportunities from contour/riparian tree planting and other NFM techniques to achieve reduction in runoff to River South Esk.	Angus Council	By 2018 - 19	Study procurement delayed.	Procure NFM Study to consider the benefits that rural SUDS/ditch blocking/reducing soil compaction in the upper catchment can make. Include monitoring to measure improvements.
Surface Water Plan/ Study		Provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist Angus Council with SWMP process.	Scottish Water	01/2018	Section 16 Sewer mapping in the Brechin catchments has been progressed by Scottish Water as scheduled.	On programme to complete December 2021.

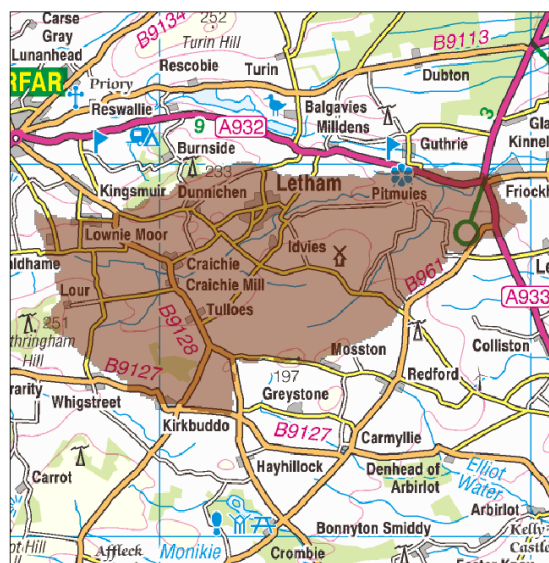
		<p>Prepare Surface Water Management Plans (SWMPs) to cover Brechin. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc.</p>	<p>Angus Council</p>	<p>To 2020</p>	<p>Surface Water management plan partnership established.</p>	<p>Angus Council will coordinate the surface water management plan for Brechin through the partnership as the outcomes of the S16 study by Scottish Water become available.</p>
<p>Strategic Mapping and Modelling</p>		<p>Review the assessment of flood risk within the highest risk sewer prepare Surface Water Management Plans (SWMPs) to cover Brechin. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. in this area as required under Section 16</p>	<p>Scottish Water</p>	<p>To 2020</p>	<p>Sewer mapping progressing as scheduled</p>	<p>On track to deliver within agreed timescale</p>
<p>Maintain Flood Protection Scheme*</p>		<p>Undertake routine, reactive, programmed, regulatory and emergency response inspections.</p>	<p>Angus Council</p>	<p>Ongoing</p>	<p>Angus Council has undertaken inspections on the Brechin Flood Protection Scheme</p>	<p>Angus Council will continue to undertake these inspections to ensure the scheme continues to provide an effective level of protection.</p>

<p>Maintain Flood Warning</p>		<p>SEPA will continue to maintain the Brechin, Kinnaird/Bridge of Dun and the Finavon and Tannadice flood warning areas which are part of the South Esk river flood warning scheme.</p>	<p>SEPA</p>	<p>To 2022 and beyond</p>	<p>SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.</p>	<p>SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.</p>
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Lunan (Potentially Vulnerable Area 07/06)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	Lunan Water

Summary of Progress Within PVA



There are approximately 20 residential properties at risk of flooding. The Annual Average Damages are approximately £60,000. Further information can be found in LFRMP under PVA 07/06. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/06. Key progress has been made through strategic mapping and modelling by Scottish water to identify surface water flood risk in this PVA. SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area. The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the Lunan PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/06																		

Summary of Progress of Actions to Manage Flood Risk in Lunan (PVA 07/06)

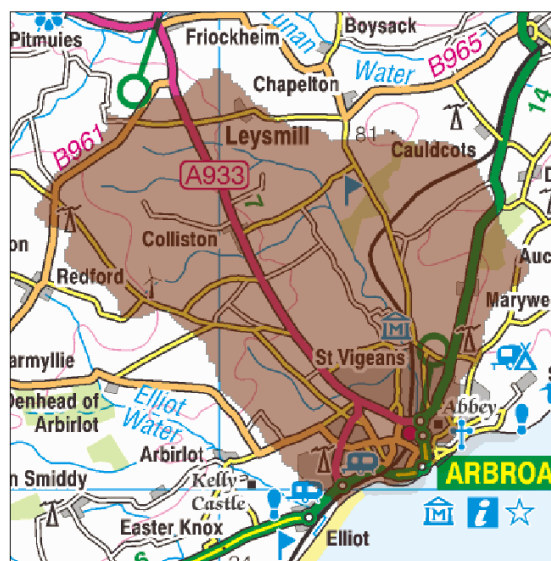
Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Strategic Mapping and Modelling		Scottish Water will undertake further investigation and modelling in the Letham sewer catchment to improve knowledge and understanding of flood risk in this area	Scottish Water	09/18	S16 Sewer mapping progressing as scheduled.	Mapping to continue and complete on 01/09/2019
		Surface water mapping improvements.	SEPA	Ongoing	Action changed to - all surface water hazard mapping will be updated using FEH 13.	This action will continue through the remainder of cycle 1 with outputs available early in cycle 2.
Flood Forecasting			SEPA	Ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.

					next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	
Self Help		See progress with LPD-wide actions		Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans / Response		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

Arbroath (Potentially Vulnerable Area 07/07)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	Brothock Water

Summary of Progress Within PVA



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There are approximately 250 residential properties and 140 non-residential properties at risk of flooding. The Annual Average Damages from flooding are approximately £1.6 million. Further information can be found in LFRMP under PVA 07/07. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/07.

Key progress has been made with the development of the Brothock Water Flood Protection Scheme which has an anticipated 2019 start date.

SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

Other actions undertaken have include strategic mapping and modelling by Scottish Water to demonstrate surface water flood risk in this PVA.

Overview of actions to manage flooding in the Arbroath PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/07																		

Summary of Progress of Actions to Manage Flood Risk in Arbroath (PVA 07/07)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Flood Protection Scheme/ Works		<p>The Arbroath Flood Protection Scheme will reduce river flood risk. The scheme is being advanced as a formal flood protection scheme under the Flood Risk Management (Scotland) Act 2009. The proposed scheme will provide a 1 in 200 year standard of protection and is to be delivered by 2018/19 addressing fluvial flood risk from the Brothock Water. It is anticipated that the scheme will be at a cost of £11.4m. The proposed scheme has estimated damages avoided of £16 million and an estimated benefit cost ratio of 1.40.</p> <p>The scheme includes improvements to existing flood defences and the construction of two upstream flood storage areas; this will attenuate flood waters in areas to the north and north-west of Arbroath reducing peak flows downstream. It</p>	Angus Council	By 2018/19	Hydraulic modelling and outline design complete. Consultation exercises held with stakeholders and public. Scheme confirmed without modifications. Subject to Approval	Detailed design in progress.

		<p>is expected that the scheme will remove 530 people at risk of flooding saving an estimated £840,000 in annual average damages.</p>				
<p>Surface Water Plan/ Study</p>		<p>Prepare Surface Water Management Plans (SWMPs) to cover Arbroath, Arbirlot, Auchmithie and Colliston. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Angus Council will co-ordinate this work with Scottish Water and SEPA through the local plan district (LPD) partnership with delivery of the SWMP by 2019/2020.</p>	<p>Angus Council</p>	<p>To 2020</p>	<p>The surface water management partnership has been established. The surface water management plan for Arbroath has commenced. AECOM have been appointed to carry out this work on behalf of Angus Council.</p>	<p>The outputs from Scottish Water's Integrated catchment modelling will be incorporated in the surface water management plan to provide an accurate representation of surface water flooding in this PVA.</p>
		<p>An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in Arbroath, Arbirlot, Auchmithie and Colliston. The study has improved knowledge and understanding of surface water flood risk and The study has improved knowledge and understanding of surface water</p>	<p>Scottish Water</p>	<p>12/2016</p>	<p>Integrated catchment study complete and outputs provided to Angus Council.</p>	<p>Optioneering phase commenced.</p>

		<p>flood risk and interactions between the above ground and below ground drainage network, e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).</p>				
<p>Strategic Mapping and Modelling</p>		<p>Review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk by 2019/20. Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.</p>	<p>Scottish Water</p>			
		<p>Develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. A detailed local authority led study has already been undertaken in this area and SEPA will work collaboratively to ensure consistent modelling approaches are applied. Strategic coastal mapping improvements in this area are dependent on the implementation</p>	<p>SEPA</p>		<p>Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this location:</p> <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Collection of topographic survey data of beach profiles 	<p>A technical specification for coastal modelling and mapping for the coastline from Arbroath to Berwick Upon Tweed is under development. Opportunities will be sought to align the delivery of this project with any required developments to Flood Warning schemes in the area.</p> <p>It is planned that this action will be completed by the end of Cycle 1.</p>

		<p>of local authority led flood protection scheme. Timescales are therefore indicative only and it is estimated that these improvements will be carried out in 2018 to 2019 subject to positive assessment. However, wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019</p>			<p>and defences.</p> <p>These projects/datasets will inform future a future coastal modelling and mapping project for the coastline from Arbroath to Berwick Upon Tweed.</p>	
<p>Maintain Flood Protection Scheme</p>		<p>The existing Brothock Water Flood Prevention Scheme 1987 provides protection from river flooding. The existing scheme is situated between Arbroath Harbour and St.Vigeans. The scheme comprises a number of features to reduce flood risk in Arbroath. This included the construction of floodwalls, heightening of existing walls, altering the soffit level of two bridges, re-grading and realignment of existing embankments, removing various buildings and structures that span the Brothock Water, installation of concrete screens and waterproofing buildings that span the Brothock Water.</p> <p>The new Arbroath Flood Protection Scheme, due for completion in 2018/19 will provide a higher level of protection from river flooding. Details of the scheme are shown above in section 'Flood Protection</p>	<p>Angus Council</p>	<p>Ongoing</p>	<p>Angus Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.</p>	<p>Action to continue</p>

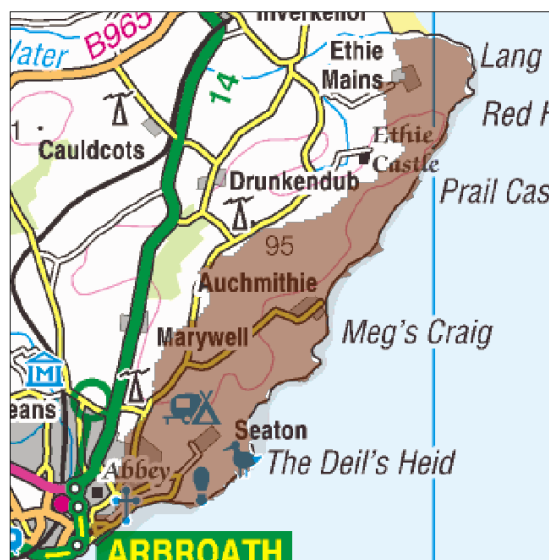
		Scheme/Works ¹ .				
Maintain Flood Warning		<p>Continue to maintain the Arbroath flood warning area which is part of the Brothock river flood warning scheme.</p> <p>SEPA will continue to maintain the Arbroath Coastal flood warning area which is part of the Firth of Forth and Tay coastal flood warning scheme.</p> <p>When flood events occur in an area with an existing flood warning service, SEPA will seek to verify the flood forecasts and warnings. SEPA will use feedback and post-event data to ensure that our flood warning service is timely and accurate.</p>	SEPA	Ongoing	SEPA has continued to operate this flood warning system.	SEPA will continue to operate this flood warning system
Flood Forecasting		<p>The Scottish Flood Forecasting Service is an existing and ongoing joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website.</p>	SEPA/ Met Office	Ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding.	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.

					SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans / Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

Coast North of Arbroath (Potentially Vulnerable Area 07/08)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	Kincardine and Angus Coastal

Summary of Progress Within PVA



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Approximately 30 residential properties and 10 non-residential properties have a risk of flooding. The Annual Average Damages are approximately £56,000. Further information can be found in LFRMP under PVA 07/08. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/08.

Key progress has been made through the establishment of the surface water management partnership.

SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

Overview of actions to manage flooding in the Coast North of Arbroath PVA

PVA	Flood protection scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/08																		

Summary of Progress of Actions to Manage Flood Risk in Coast North of Arbroath (PVA 07/08)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Surface Water Plan/ Study		Prepare Surface Water Management Plans (SWMPs) to cover Arbroath, Arbirlot, Auchmithie and Colliston. This will identify the most sustainable measures to manage urban drainage and the risk of surface water flooding, as well as sources of flooding such as the sewer network, watercourses and sea. This will establish a long-term action plan for each area to manage surface water and influence future capital investment, drainage maintenance, land-use planning, emergency planning etc. Scottish Water will provide local knowledge and understanding of the sewer network. This includes Scottish Water corporate data (as applicable) and, where available, outputs of Section 16 or integrated catchment studies, to assist with the surface water management	Angus Council	2020/21	The surface water management partnership has been established. The surface water management plan for Arbroath has commenced. AECOM have been appointed to carry out this work on behalf of Angus Council.	The outputs from Scottish Water's Integrated catchment modelling will be incorporated in the surface water management plan to provide an accurate representation of surface water flooding in this PVA.

		<p>planning process. Scottish Water will work with and support surface water management planning through ensuring that best available knowledge and data is used to input into the surface water management plans.</p>				
<p>Strategic Mapping and Modelling</p>		<p>Review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk by 2019/20. Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009.</p>	<p>Scottish Water</p>	<p>12/2016</p>	<p>Modelling and review complete.</p>	<p>Maintain involvement in the SWMP partnership.</p>
		<p>Develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.</p>	<p>SEPA</p>	<p>2019/20</p>	<p>Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this location:</p> <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Collection of topographic survey data of beach profiles and defences. <p>These projects/datasets will</p>	<p>A technical specification for coastal modelling and mapping for the coastline from Arbroath to Berwick Upon Tweed is under development. Opportunities will be sought to align the delivery of this project with any required developments to Flood Warning schemes in the area.</p> <p>It is planned that this action will be completed by the end of Cycle 1.</p>

					inform future a future coastal modelling and mapping project for the coastline from Arbroath to Berwick Upon Tweed.	
Flood Forecasting		The Scottish Flood Forecasting Service is an existing and ongoing joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business.	SEPA, Met Office		SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

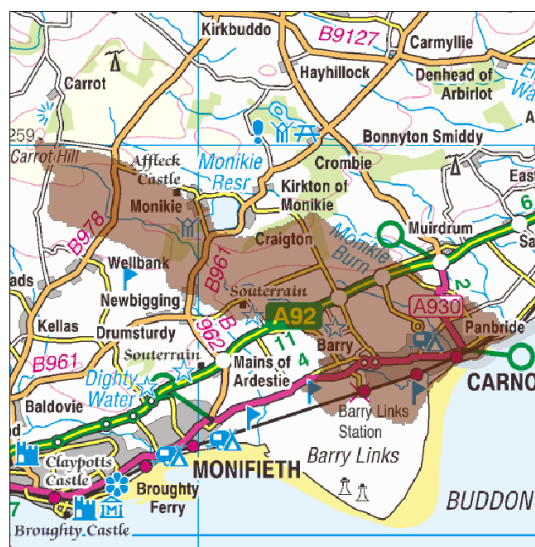
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans / Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

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Carnoustie and Barry (Potentially Vulnerable Area 07/09)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council	Dundee Coastal

Summary of Progress Within PVA



There are approximately 180 residential properties and 30 non-residential properties at risk of flooding. The Annual Average Damages are approximately £470,000. Further information can be found in LFRMP under PVA 07/09. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/09.

Key progress has been made through the flood protection study which has considered all sources of flooding in this PVA.

SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the Carnoustie and Barry PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/09																		

Summary of Progress of Actions to Manage Flood Risk in Carnoustie and Barry (PVA 07/09)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Flood Protection Study		Angus Council will undertake a flood protection study for Carnoustie and Barry to be delivered by the financial year 2019/20. This will assess a number of options to manage flood risk including flood storage, modification of conveyance, fluvial control structures, sediment management and the viability of property level protection.	Angus Council	2019/20	Angus Council has procured a flood study for Carnoustie and Barry and hydraulic modelling is complete and being reviewed by Angus Council. This study is being carried out by JBA Consultants.	Identification and prioritisation of flood protection measures to reduce the flood risk to Carnoustie and Barry. Study on track to complete July 2019.
Surface Water Plan/ Study			Angus Council	2019/20	Surface water management plans for the areas of Carnoustie and Barry are being undertaken as part of the flood study and in partnership with Scottish Water and SEPA. The partnership has been established and data from Scottish Water reviewed.	Further identification of areas subject to surface water flooding within this PVA and design of actions to reduce risk where possible to be developed.
Strategic Mapping		Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and	Scottish Water	09/2018	September 2018. Pre Optioneering Catchment Plan and prioritisation stages completed.	Optioneering phase of study on track to be completed.

and Modelling		understanding of flood risk in the area.				
			SEPA		<p>Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this location:</p> <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Collection of topographic survey data of beach profiles and defences. <p>These projects/datasets will inform future a future coastal modelling and mapping project for the coastline from Arbroath to Berwick Upon Tweed.</p>	<p>A technical specification for coastal modelling and mapping for the coastline from Arbroath to Berwick Upon Tweed is under development. Opportunities will be sought to align the delivery of this project with any required developments to Flood Warning schemes in the area.</p> <p>It is planned that this action will be completed by the end of Cycle 1.</p>
Maintain Flood Protection Scheme			Angus Council		<p>Angus Council will maintain the existing Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs</p>	<p>Angus Council will continue to undertake this action.</p>

					basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.	
Flood Forecasting					SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

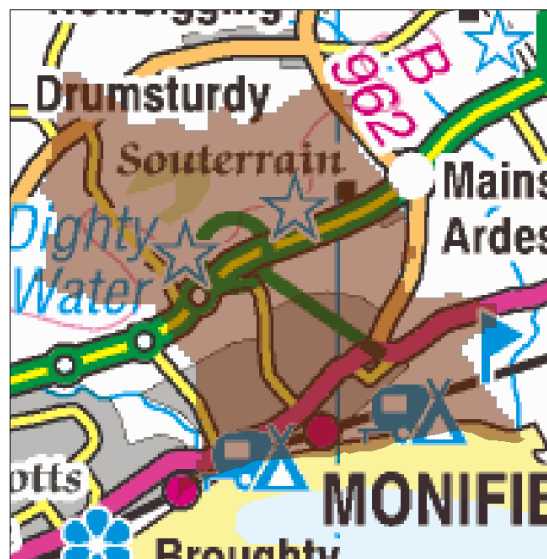
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans/ Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

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Monifieth (Potentially Vulnerable Area 07/10)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council	Dundee Coastal

Summary of Progress Within PVA



There are approximately 250 residential properties and 20 non-residential properties at risk of flooding. The Annual Average Damages are approximately £670,000. Further information can be found in LFRMP under PVA 07/10. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/10.

Key progress has been made through the procurement of the flood protection study which considers all sources of flooding in this PVA.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the Monifieth PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/10																		

Summary of Progress of Actions to Manage Flood Risk in Monifieth (PVA 07/10)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
New Flood Warning			SEPA		Initial investigation into flood risk and potential new flood warning areas undertaken across Fife/Perth & Kinross.	Identification and prioritisation of flood protection measures to reduce the flood risk to Carnoustie and Barry. Study on track to complete July 2019.
Flood Protection Study		Angus Council will undertake a flood protection study to be delivered by financial year 2019/20. This will assess whether flood storage, flood defences and sediment management could reduce flood risk.	Angus Council	2019/20	Angus Council has procured a flood study for Monifieth in conjunction with the study for Carnoustie and Barry and hydraulic modelling is complete and being reviewed by Angus Council. This study is being carried out by JBA Consultants.	Identification and prioritisation of flood protection measures to reduce the flood risk to Monifieth. Study on track to complete July 2019.
Surface Water Plan/ Study			Angus Council	2019/20	Surface water management plans for the Monifieth PVA are being undertaken as part of the wider flood study and in partnership with Scottish Water and SEPA. The partnership has been established and data from Scottish Water reviewed.	Further identification of areas subject to surface water flooding within this PVA and design of actions to reduce risk where possible to be developed.

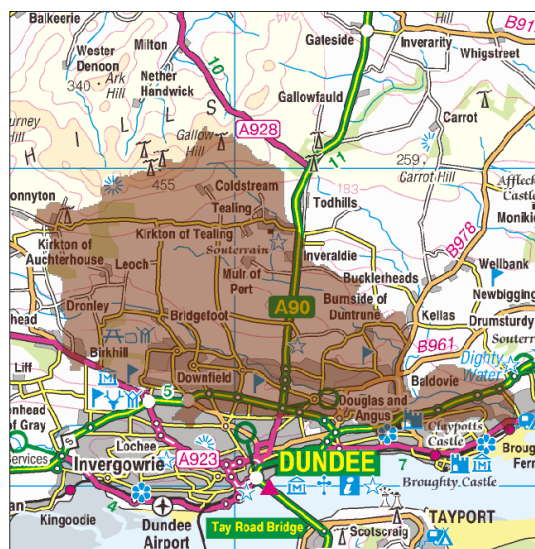
Strategic Mapping and Modelling		Scottish Water will undertake further investigation and modelling in the Hatton Sewer catchment to improve knowledge and understanding of flood risk in this PVA.	Scottish Water	01/2016	Integrated catchment study complete and outputs provided to Angus Council.	Optioneering phase commenced.
			SEPA			
Maintain Flood Protection Scheme			Angus Council		Angus Council will maintain the existing coastal Flood Protection Schemes ensuring works are co-ordinated and infrastructure is fully assessed. This will be done by undertaking routine, reactive, programmed, regulatory and emergency response inspections. This work will be carried out by Angus Council engineers on a priority needs basis as resource allows. The general maintenance standard target is to conduct watercourse inspections annually and structural inspections biennially.	Action to continue.
Flood Forecasting			SEPA	ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.

					statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.	
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans/ Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

Downfield and Dundee/Monifieth and Sidlaws (Potentially Vulnerable Area 07/11)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council	Dighty Water

Summary of Progress Within PVA



There are approximately 190 residential properties and 80 non-residential properties at risk of flooding. The Annual Average Damages are approximately £580,000. Further information can be found in LFRMP under PVA 07/11. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/11.

Key progress has been made with the procurement of the flood study for the area and creating the surface water management planning partnership. Scottish Water have completed detailed integrated catchment modelling which provides an in-depth picture of flooding within the catchment.

SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the Downfield and Dundee/Monifieth and Sidlaws PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/11																		

Summary of Progress of Actions to Manage Flood Risk in Downfield and Dundee/Monifieth and Sidlaws (PVA 07/11)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Flood Protection Study		Undertake a flood protection study of the Downfield and Dundee to be delivered by financial year 2019/20. This will assess whether flood defences, sediment management and natural flood management could reduce flood risk. Natural flood management options that will be considered include river / floodplain restoration and sediment management. The study will also investigate the viability of property level protection. The study will take a sustainable approach and consider the interaction between actions upstream and downstream and potential effects on coastal processes along the shoreline.	Angus Council, Dundee City Council	2016 - 2019	The flood protection study for the Downfield and Dundee, Monifieth and Sidlaws area commenced in June 2018 and is progressing well. RPS were appointed to carry out this study. The flood study is likely to meet the completion date of June 2019.	Angus Council will continue to work with Dundee Council, Perth and Kinross Council and RPS to finalise the flood study report. Once complete a programme of engagement and consultation will take place to disseminate the findings and discuss prioritised options.
Surface Water Plan/ Study		A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which sets objectives for the management of surface water	Angus Council, Dundee City Council	July 2019	The surface water management plans for this PVA are being undertaken as part of the Flood Study by RPS. An event for the Local	Angus Council will continue to work with Dundee Council and Perth and Kinross Council and Scottish Water and RPS to prepare the surface water management

		<p>flood risk and identify the most sustainable actions to achieve the objectives will be prepared. This will include agreeing the most sustainable actions to manage surface water determined from the Integrated Catchment Study and co-ordinating the implementation of the actions. The Surface Water Management Plan will be developed in 2017 and the actions identified considered for implementation following this as part of the flood risk management planning process.</p>			<p>Authorities and Scottish Water was held in late November to discuss priorities and agree information requirements.</p>	<p>plans for this PVA. These plans will identify joint and/or separate solutions to surface water flooding within the area. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding. This study is on track to complete in July 2019.</p>
		<p>An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority Areas). The study has improved knowledge and understanding of surface water flood risk and The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network, e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).</p>	<p>Scottish Water</p>	<p>2021</p>	<p>This study by Scottish Water has entered the optioneering phase and all partners have been involved in identifying and agreeing priorities. The modelling outputs from the study are being used in the preparation of the surface water management plans for this PVA.</p>	<p>Scottish Water will continue to work with Angus Council, Dundee Council and Perth and Kinross Council and to prepare the surface water management plans for this area. These plans will identify joint and/or separate solutions to surface water flooding within the area. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding.</p>
		<p>Review the assessment of flood risk within the highest risk sewer</p>	<p>Scottish Water</p>	<p>2019/20</p>	<p>S16 Sewer mapping within highest risk sewer catchments</p>	

Strategic Mapping and Modelling		<p>catchments to improve knowledge and understanding of surface water flood risk.</p> <p>Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009 by 2019/20.</p>			<p>in the area was completed by Scottish Water in February 2017.</p> <p>This information will be used within the surface water management planning process with the SWMP partnership.</p>	
		<p>Develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability.</p> <p>Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.</p>	SEPA	December 2019	<p>Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this location:</p> <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Collection of topographic survey data of beach profiles and defences. <p>The outputs from these projects will inform a future coastal modelling and mapping project for the coastline from Arbroath to Berwick Upon Tweed.</p>	<p>A technical specification for coastal modelling and mapping for the coastline from Arbroath to Berwick Upon Tweed is under development. Opportunities will be sought to align the delivery of this project with any required developments to Flood Warning schemes in the area.</p> <p>It is planned that this action will be completed by the end of Cycle 1.</p>

<p>Flood Forecasting</p>		<p>The Scottish Flood Forecasting Service is an existing and ongoing joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business.</p>	<p>SEPA, Met Office</p>	<p>ongoing</p>	<p>SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national Flood Guidance Statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties) and regional Flood Alerts issued to the public. Each daily statement gives an assessment of the risk of flooding for the next five days to enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and enables communities to be aware and prepared to reduce the impacts of flooding.</p>	<p>SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily Flood Guidance Statements and regional Flood Alerts issued as required to enable communities and responders to reduce the impacts of flooding. SEPA is currently exploring options to develop a public version of the daily Flood Guidance Statement to provide better and earlier information to the public.</p>
<p>Community Flood Action Groups</p>		<p>Dundee City Council and Angus Council will work with existing flood action groups to set out arrangements to reduce flood risk, improve preparedness and increase resilience against flooding. Dundee City Council and Angus Council are engaging with Dighty Flood Action Group and Strathmartine Community Council Flood Group respectively. Angus Council and Dundee City Council</p>	<p>Angus Council, Dundee City Council</p>		<p>Dundee City Council and Angus Council have continued to engage with the community groups regarding concerns about flooding.</p>	<p>Contact has recently been made with the community group "Dighty Connect" to understand their priorities for the Dighty Water. The community groups will continue to be consulted once the outputs from the flood study are available to gauge views on any proposed measures for the Dighty Water. These measures will seek to improve water and habitat quality wherever possible.</p>

		will co-ordinate these works with each other, Scottish Water and emergency services when required. Completion of the Integrated Catchment Study may identify further collaboration opportunities.				
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans/ Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

Invergowrie (Potentially Vulnerable Area 07/12)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Angus Council, Dundee City Council, Perth and Kinross Council	Invergowrie Burn

Summary of Progress Within PVA



There are approximately 240 residential properties and 60 non-residential properties at risk of flooding. The Annual Average Damages are approximately £740,000. Further information can be found in LFRMP under PVA 07/12. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/12.

Key progress has been made through the wider Flood Study and the establishment of the surface water management partnership for Invergowrie. The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

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Overview of actions to manage flooding in the Invergowrie PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/12																		

Summary of Progress of Actions to Manage Flood Risk in Invergowrie (PVA 07/12)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Natural Flood Management Study		Undertake a natural flood management study to assess whether river / floodplain restoration and sediment management could help reduce flood risk in Invergowrie. The study will take a catchment approach and consider the potential benefits and disbenefits and interaction between actions upstream and downstream economically, socially and environmentally.	Angus Council, Dundee City Council, Perth & Kinross Council	2019/20	The Invergowrie natural flood management study is programmed to commence in the 2019/20 financial year.	This study has not gone to tender yet and will not be delivered within the LFRMP dates, The proposed tender date is 30 June 2019 and the study will complete within Cycle 1.
Surface Water Plan/ Study		A surface water management plan or plans to cover Dundee, Broughty Ferry, Invergowrie, Lochee and Monifieth, which set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives will be prepared.	Angus Council, Dundee City Council, Perth & Kinross Council	2019	The SWMP for Invergowrie is being undertaken as part of the Dundee Downfield, Monifieth and Sidlaws Flood Protection study which commenced in June 2018. The SWMP partnership has been established and available information reviewed.	Angus Council will continue to work with Dundee City Council, Perth and Kinross Council, Scottish Water and RPS to prepare the surface water management plans for this PVA. These plans will identify joint and/or separate solutions to surface water flooding within this PVA. Once the plans are finalised the SWMP partners will support the prioritisation of solutions and jointly seek funding.

						This study is on track to complete in July 2019.
Strategic Mapping and Modelling		Undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16 of the Flood Risk Management (Scotland) Act 2009	Scottish Water	09/2018	An integrated catchment study will be carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.	Optioneering phase ongoing.
Flood Forecasting		The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings.	SEPA	ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national flood guidance statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties). Each daily statement gives an assessment of the risk of flooding for the next five days to help enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and helps enable communities to be aware and prepared to reduce the impacts of flooding.	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily flood guidance statements and flood alerts issued as required to enable communities and responders to reduce the impacts of flooding.

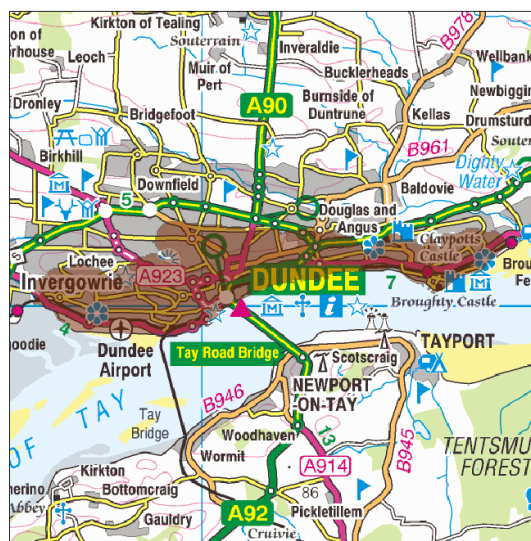
Self Help		See progress with LPD-wide actions	Responsible Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Responsible Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Emergency Plans/ Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

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Dundee and Broughty Ferry (Potentially Vulnerable Area 07/13)

Local Plan District	Local Authority	Main Catchment
Tay Estuary and Montrose Basin	Dundee City Council	Dundee Coastal

Summary of Progress Within PVA



There are approximately 1,300 residential properties and 460 non-residential properties at risk of flooding. The Annual Average Damages are approximately £4.3 million. Further information can be found in LFRMP under PVA 07/13. Further information can be found in the [Tay Estuary and Montrose Basin \(TEAMB\) Local Flood Risk Management Plan](#) under PVA 07/13.

Key progress has been made with completion of the Dundee Flood Protection Scheme. SEPA have also made progress on strategic mapping and modelling in order to improve the existing flood maps for the area.

The PVA has been exposed to recent significant weather events including Storms Desmond and Frank in December 2015 and January 2016, which resulted in flooding in the Tay Estuary and Montrose Basin catchments.

Other actions undertaken have included mapping and modelling to progress development of surface water management plans for this PVA.

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Overview of actions to manage flooding in the Dundee and Broughty Ferry PVA

PVA	Flood protections scheme/works	Natural flood management works	New flood warning	Flood protection study	Natural flood management study	Surface water plan/study	Strategic mapping and modelling	Maintain flood protection scheme*	Maintain flood warning	Flood forecasting	Property level protection scheme	Community flood action groups	Self help	Awareness raising	Maintenance	Site protection plans	Emergency plans/response	Planning policies
07/13																		

Summary of Progress of Actions to Manage Flood Risk in Dundee and Broughty Ferry (PVA 07/13)

Action	Status (RAG)	Description	Delivery Lead	Planned Dates	Interim Progress	Planned Actions to complete
Flood Protection Scheme/ Works		Dundee City Council will prepare a flood protection scheme for Dundee City to protect properties at risk of coastal flooding. Scheme for the Dundee coastline. Scheme includes: set-back walls, flood defences. Central Waterfront sea wall raising to commence in 2015/16. Standard of protection: 1 in 200 years + CC.	Dundee City Council	2017	Dundee Flood Protection Scheme completed in August 2018.	N/A
		Dundee City Council will prepare a flood protection scheme for Broughty Ferry to protect properties at risk of coastal flooding. Scheme for the Broughty Ferry coastline. Scheme includes: new sea walls, set-back embankments, sand dune replenishment, rock armour. Standard of protection: 1 in 200 years + CC.		2019	Broughty Ferry Flood Protection Scheme design at advanced stage. Formal notification complete and now considering objections.	Commencement of construction currently programmed for early 2019 with an 18 month construction period.
			Dundee City Council	2019/20	SWMPs have been partly delivered by the ongoing	The preparation of a SWMP by Dundee City Council for Cycle 1

Surface Water Plan/ Study					Tayside Integrated Catchment Study (ICS).	PVA 07/13 will be concluded by the end of Cycle 1 and will be developed further on completion of the Tayside ICS.
		An integrated catchment study covering the Hatton DOA catchment was carried out in SR10 (2010-2015) to support the surface water management planning process in (SWMP Priority Areas). The study has improved knowledge and understanding of surface water flood risk and The study has improved knowledge and understanding of surface water flood risk and interactions between the above ground and below ground drainage network, e.g. with the sewer network, watercourses and (where applicable) the sea. The Optioneering phase of this study, to establish the preferred solution(s) to the significant flooding issues, will be carried out in SR15 (2015-2021).	Scottish Water	2016- 2021	An integrated catchment study has been carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.	Optioneering phase of study ongoing with SWMP partnership.
Strategic Mapping and Modelling		Review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk. Scottish Water will undertake further investigation and modelling in the Hatton sewer catchment to improve knowledge and understanding of flood risk in this area as required under Section 16	Scottish Water	2021		

		of the Flood Risk Management (Scotland) Act 2009 by 2019/20.				
		Develop flood mapping in the Arbroath to Dundee area to improve understanding of coastal flood risk. The extent and timing of improvements will depend on detailed scoping and data availability. Wider coastal mapping and modelling improvements may take place in this area and these will be further refined in 2016 with the intention of updating the strategic coastal maps in 2016 to 2019.	SEPA	2016-2021	Following the establishment of a coastal flood hazard map development framework and characterisation of the coastline, several projects are currently underway at this location: <ul style="list-style-type: none"> • Development of a national coastal joint probability dataset; • Update to the UK design extreme sea level dataset; • Collection of topographic survey data of beach profiles and defences. <p>These projects/datasets will inform future a future coastal modelling and mapping project for the coastline from Arbroath to Berwick Upon Tweed.</p>	A specification for coastal modelling and mapping for the coastline from Arbroath to Berwick Upon Tweed is under development. Opportunities will be sought to align the delivery of this project with any required developments to Flood Warning schemes in the area. It is anticipated that this action will be completed by the end of Cycle 1.
Maintain Flood Protection Scheme			Dundee City Council	Ongoing	Dundee City Council are committed to maintaining existing Flood defences along the coast and the new Flood Protection Schemes.	Routine, reactive, programmed, regulatory and emergency response inspections are completed with repair works completed where/when necessary.
Maintain Flood Warning		SEPA will continue to maintain the Broughty Ferry, Dundee Central and Riverside West flood warning areas which are part of the Firth of	SEPA	Ongoing	SEPA has continued to operate the flood warning service.	SEPA will continue to operate the flood warning service.

		Forth and Tay coastal flood warning scheme.				
Flood Forecasting		The Scottish Flood Forecasting Service is an existing and ongoing joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The flood guidance statements provide an assessment of the risk of flooding for a five day period allowing responders time to put preparations in place to reduce the impact of flooding. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business.	SEPA, Met Office	Ongoing	SEPA has continued to operate the Scottish Flood Forecasting Service (SFFS) Partnership with the Met Office with daily, national flood guidance statements issued to Category 1 and 2 agencies (such as emergency responders, local authorities and other organisations with flooding management duties). Each daily statement gives an assessment of the risk of flooding for the next five days to help enable these organisations to put preparations in place to reduce the impact of flooding. SEPA's Flood Alert service is freely available to everyone and helps enable communities to be aware and prepared to reduce the impacts of flooding.	SEPA will continue and improve the Scottish Flood Forecasting Service (SFFS) with the Met Office, with daily flood guidance statements and flood alerts issued as required to enable communities and responders to reduce the impacts of flooding.
Self Help		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Awareness Raising		See progress with LPD-wide actions	Relevant Authorities	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Maintenance		See progress with LPD-wide actions	Local authorities, asset / land managers	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

Emergency Plans/Response		See progress with LPD-wide actions	Category 1 and 2 responders	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions
Planning Policies		See progress with LPD-wide actions	Planning authority	Ongoing	See progress with LPD-wide actions	See progress with LPD-wide actions

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Other actions

This section sets out details of additional significant actions undertaken in the LPD by local authorities to contribute to the implementation of the current actions in the plan and the achievement of the objectives in the plan.

List of Acronyms and Abbreviations

FRM	Flood Risk Management
ICS	Integrated Catchment Study
LFRMP	Local Flood Risk Management Plan
LPD	Local Plan District
NFM	Natural Flood Management
PVA	Potentially Vulnerable Area
Q&S	Quality & Standards (Scottish Water)
SEPA	Scottish Environment Protection Agency
SR10/15	Spending Review periods for 2010-2015 and 2016-2021 for Scottish Water capital maintenance expenditure
SWMP	Surface Water Management Planning
TEAMB	Tay Estuary and Montrose Basin

Appendix 1: Flood risk management responsibilities in Scotland and the legal requirement for the publication of this INTERIM REPORT

Flood risk management in Scotland

The Scottish Ministers, SEPA and responsible authorities must exercise their flood risk related functions with a view to reducing overall flood risk (reference Section 1(1) of the Flood Risk Management (Scotland) Act 2009).

Through the preparation of a national flood risk assessment and setting of objectives to reduce the level of flood risk by SEPA, which is published in Flood Risk Management Strategy, and the publication of Local Flood Risk Management Plan's by 'lead' local authorities, which detail how and when the actions agreed to meet these objectives are to be done, SEPA and all responsible authorities must act to manage flood risk in a sustainable way.

[Flood Risk Management Strategy for Tay Estuary and Montrose Basin](#)

[Local Flood Risk Management Plan for Tay Estuary and Montrose Basin](#)

Legal requirement

This document sets out the conclusions of the review of the Local Flood Risk Management Plan (LFRMP) for the Tay Estuary and Montrose Basin (TEAMB) Local Plan District (LPD) as required by Section 37 of the Flood Risk Management (Scotland) Act 2009 (the "Act").

37 Local flood risk management plans: interim report

(1) Not earlier than 2 years and not later than 3 years after a local flood risk management plan is finalised, the lead authority must —
(a) review the plan, and

(b) publish a report on the conclusions of the review including information on the progress that has been made towards implementing the measures identified in the implementation part of the plan.

(2) The lead authority must make copies of the report available for public inspection.

The TEAMB LFRMP, which includes the 'implementation part of the plan', was published in June 2016. The Interim Report is therefore to be published between July 2018 and June 2019. The Interim Report will provide a summary of the LFRMP actions ('measures') and the proposed delivery timescales.

The information on progress will include:

- an assessment of the progress towards implementing each of the actions;
- reasons for any actions where delivery is not as planned; and
- a description of arrangements planned to deliver the remaining actions and to address delayed actions.

The Interim Report is published by the 'lead authority' as defined by Section 34(9) of the Act in partnership with SEPA and the 'responsible authorities', as defined by Section 5 of the Act, will be in the LPD. The approval of the Interim Report will be in accordance with the agreed governance arrangements in the LPD. The responsible authorities for the TEAMB LPD are:

- Angus Council (lead authority)
- Aberdeenshire Council
- Cairngorms National Park
- Dundee City Council
- Fife Council
- Forestry Commission Scotland
- Perth & Kinross Council
- Scottish Water.

The lead authority must also publish a Final Report on the LFRMP under Section 38 of the Act between July 2021 and June 2022 (not earlier than 5 years and not later than 6 years from the publication of the plan). The Final Report will provide an assessment of current actions and a summary of current actions not implemented, with reasons for their non-implementation. The Final Report will also include a description of any other measures implemented, which the lead authority considers have contributed to the achievement of the objectives summarised in the LFRMP.

Publication

The published Interim Report for the TEAMB LFRMP will be made available for public inspection, as per Section 37(2) of the Act, via the website of the lead authority, Angus Council:

www.angus.gov.uk; search for "Interim Report LFRMP".

Links to the published Interim Report for the TEAMB LFRMP will also be provided from Scottish Government, SEPA and other responsible authority websites.

A hard (paper) copy of the published Interim Report for the TEAMB LFRMP is also available for public inspection on weekdays between 9am and 5pm at the following location(s):

Angus Council, Angus House, Orchardbank, Forfar DD1 1AN

Copies of the published Interim Report for the TEAMB LFRMP may also be available at offices of other responsible authorities. It is advised that the responsible authority be contacted to make such arrangements.

Detailed arrangements for publication of the Interim Report for TEAMB LFRMP are in Appendix 2.

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