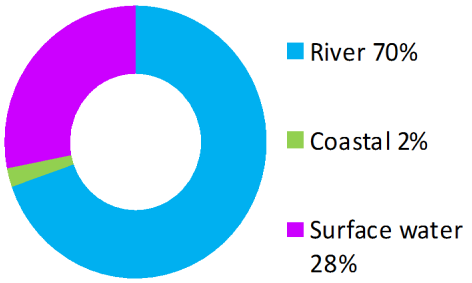
Black Cart Water catchment - Lochwinnoch to Johnstone (Potentially Vulnerable Area 11/12)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	East Renfrewshire Council, Inverclyde Council, North Ayrshire Council, Renfrewshire Council	Black Cart Water

Summary of flooding impacts



At risk of flooding

- 1,300 residential properties
- 550 non-residential properties
- £2.6 million Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

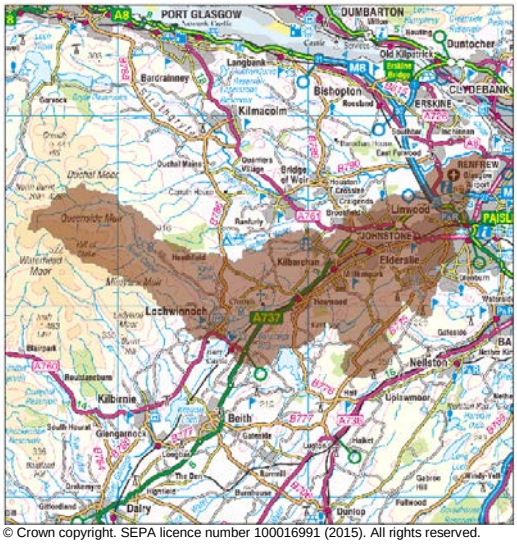
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	Natural flood management study	*Maintain flood warning*	Awareness raising	Surface water plan/study	Emergency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

Black Cart Water catchment – Lochwinnoch to Johnstone (Potentially Vulnerable Area 11/12)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	East Renfrewshire Council, Inverclyde Council, North Ayrshire Council, Renfrewshire Council	Black Cart Water

Background

This Potential Vulnerable Area is located to the south west of Glasgow City incorporating the catchments of the Black Cart Water, River Calder and Old Patrick Water (shown below). The area spans between Glasgow Airport in the north east, the A737 as far as Barr Loch and Queenside Muir in the west, incorporating part of Paisley, Johnstone and several villages. It is approximately 120km^2.



The area has a risk of river, surface water and coastal flooding. The majority of damages are caused by river flooding.

There are approximately 1,300 residential properties and 550 non-residential properties at risk of flooding. The Annual Average Damages are approximately £2.6 million.

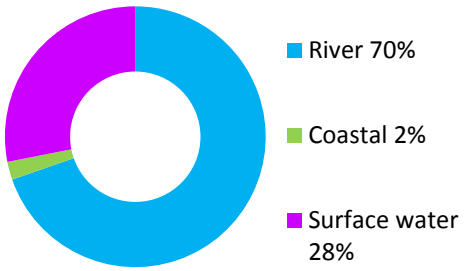


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding within the area is primarily from the Black Cart Water. Within Linwood it is predicted that river flooding will affect people and properties, with flooding predicted upstream from the confluences of the River Gryfe and Candren Burn with the Black Cart Water. Transport routes (notably railway lines, Glasgow Airport and the A737) are also likely to be impacted. Agricultural land in the north east of the area is at risk of flooding from the Black Cart Water.

Surface water flooding is shown to impact residential properties along with sections of the M8 and A726. Flooding is primarily in the urban areas of Johnstone and

Linwood, where there are a number of minor culverted tributaries of the Black Cart Water. These have historically contributed to flood risk within the area. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

Local studies have identified that this national assessment underestimates the level of risk in Johnstone. This is in part due the risk from small watercourses which have not been included in the national flood mapping. Interaction between sources of river and surface water flooding is predicted to occur within the urban areas of Johnstone and Linwood. Interaction between sources of river and coastal flooding is predicted to occur in the lower reaches of the Black Cart Water.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. The damages associated with floods of different likelihood are shown in Figure 2. Residential properties affected by river flooding experience the highest economic impact at approximately 60% of the damages.

Within this Potentially Vulnerable Area it is estimated that climate change will increase the number of residential properties at risk of flooding from approximately 1,300 to 1,900 and the number of non-residential properties from approximately 550 to 750.

The location of the impacts of flooding is shown in Figure 3. The largest concentration of impacts is in Johnstone and Paisley with flooding to people, non-residential properties, utilities, roads and railways.

History of flooding

The area has experienced a number of floods which have affected properties and transport routes. Major flooding occurred in rivers and urban watercourses between the 10 and 12 December 1994 when a slow moving weather system delivered persistent rain over a 48 hour period across a wide geographical area. Previously recorded peak river flows were exceeded in major catchments in the region. This event resulted in 180 residential properties in Ferguslie Park, Paisley, being flooded from a 1 in 60 year flow in the Candren Burn. The same event resulted in residential property and road inundation from an unnamed tributary to the Black Cart Water in the Kintyre Avenue area of Linwood.

Surface water flooding was reported in 1998 which affected properties at Low Barholm. River flooding was reported in 2004 resulting in road closures and flooding around properties. Further flooding occurred throughout the area in November and December 2006, with further flooding in January 2007. During this time the capacity of drainage systems in the area was exceeded by the high volumes of water. River and surface water flooding impacted transport and properties, with impacted areas including, Millikenpark, Johnstone centre and Elderslie.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 31,000)	540	1,300	1,900
Non-residential properties (total 7,100)	160	550	750
People	1,200	2,900	4,200
Community facilities	<10 Educational buildings	<10 Educational buildings	<10 Includes: educational buildings and emergency services
Utilities assets	20	60	70
Transport links-roads (km)	8.1 (of which 0.1 is motorway and 1.0 A road)	19.2 (of which 0.3 is motorway and 2.4 A road)	24.1 (of which 0.3 is motorway and 3.2 A road)
Transport links-rail (km)	4.4	6.8	7.5
Transport links-airports	1	1	1
Environmental designated areas (km²)	2.5	2.5	2.6
Designated cultural heritage sites	6	8	9
Agricultural land (km²)	3.6	5.5	6.5

Table 1: Summary of flooding impacts[1]

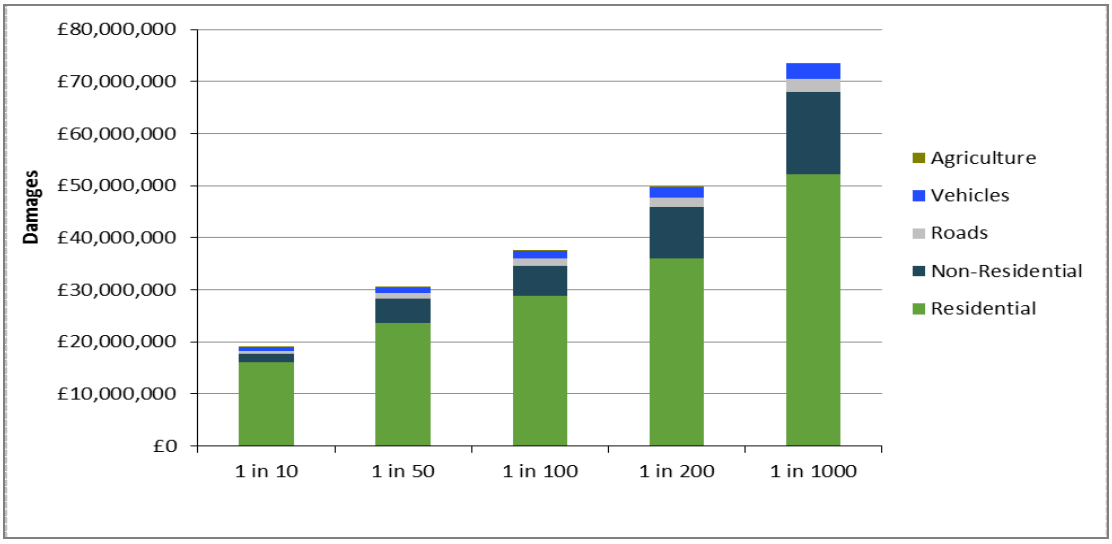


Figure 2: Damages by flood likelihood

[1] Some receptors are counted more than once if flooded from multiple sources

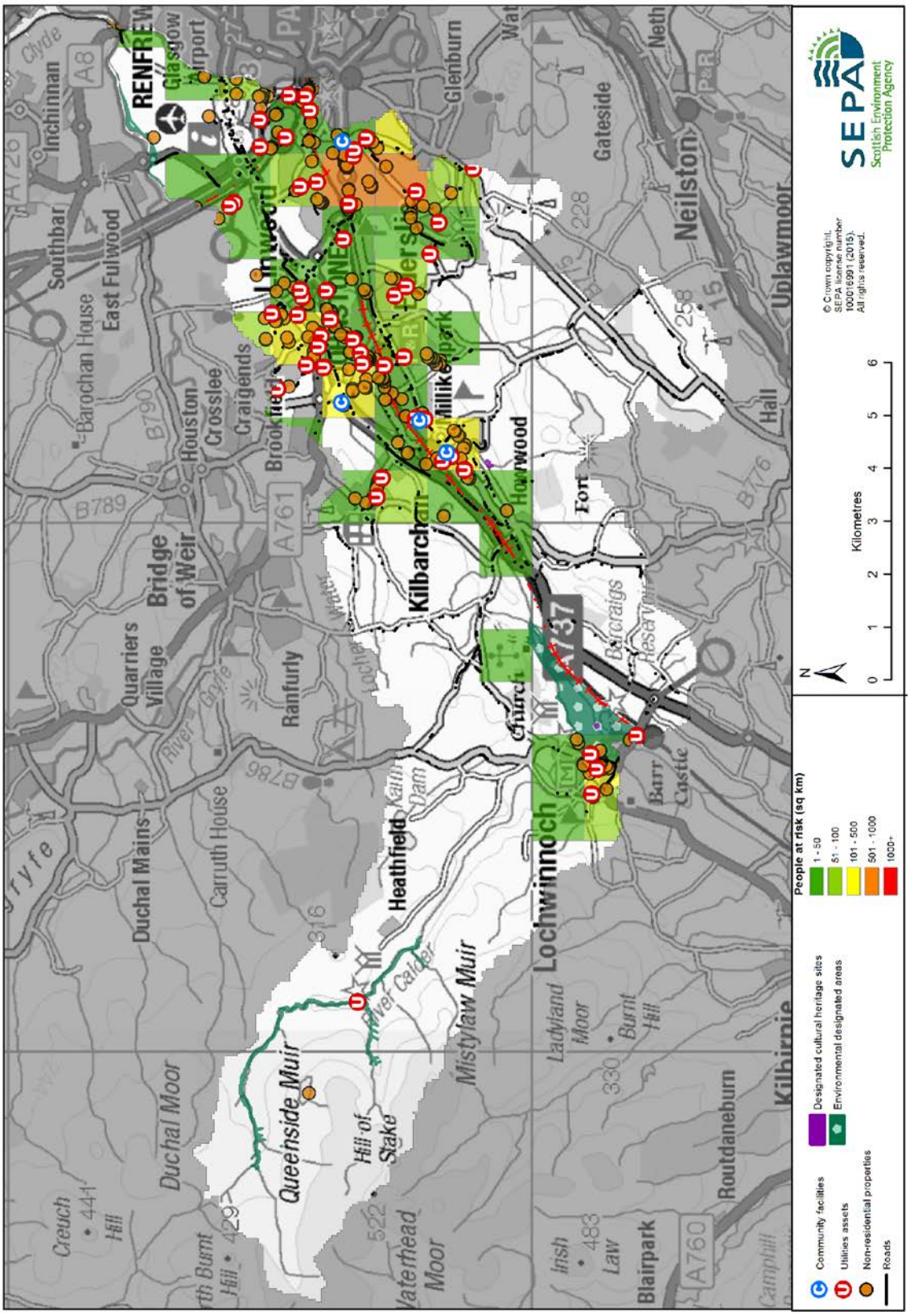
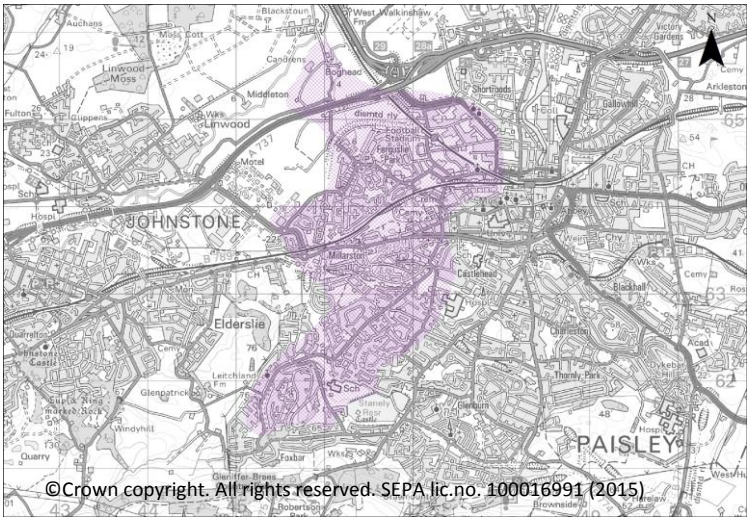


Figure 3: Impacts of flooding

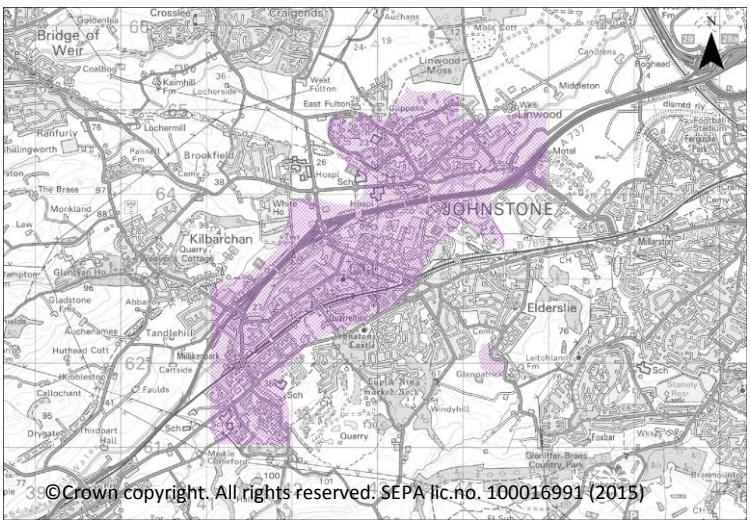
Objectives to manage flooding in Potentially Vulnerable Area 11/12

Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Black Cart Water catchment - Lochwinnoch to Johnstone Potentially Vulnerable Area.

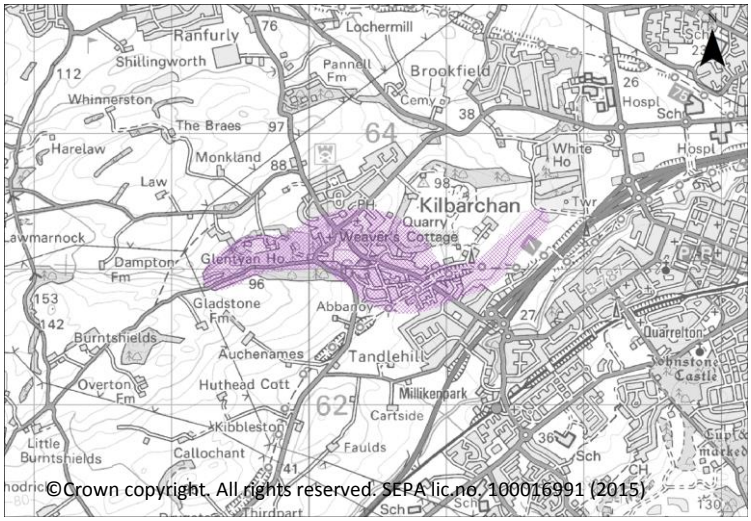
Reduce the risk of river and surface water flooding to residential properties and non-residential properties in the Candren Burn catchment

Indicators:	Target area:
• 840 residential properties • 160 non-residential properties • £1.7 million Annual Average Damages	
Objective ID: 11044	

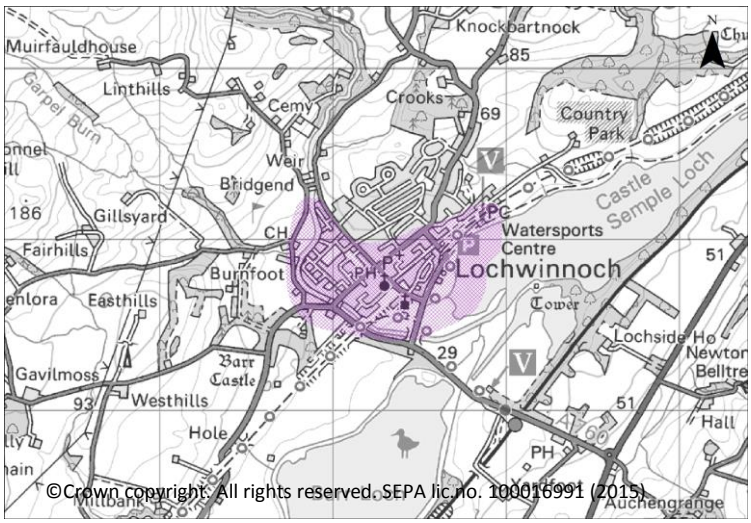
Reduce the risk of river and surface water flooding to residential properties, non-residential properties, community facilities and transport routes in Johnstone

Indicators:	Target area:
• 180 residential properties • 230 non-residential properties • £320,000 Annual Average Damages • 3 educational buildings • 3.5km of road	
Objective ID: 11049	

Reduce the risk of flooding from the Kilbarchan Burn and surface water to residential properties, non-residential properties and transport routes in Kilbarchan

Indicators:	Target area:
• 40 residential properties • 30 non-residential properties • £60,000 Annual Average Damages • 0.6km of road	
Objective ID: 11050	

Reduce the risk of river flooding to residential properties, non-residential properties and transport routes in Lochwinnoch

Indicators:	Target area:
• 60 residential properties • 30 non-residential properties • £140,000 Annual Average Damages • 1.1km of road	
Objective ID: 11052	

Target area	Objective	ID	Indicators within PVA
Lochwinnoch	Reduce the physical or disruption risk related to the transport network for rail.	11303	• 4.1km of rail track at 25 locations
Johnstone and Kilbarchan	Reduce the economic damages and risk to people from surface water flooding in Johnstone and Kilbarchan	11116	* See note below
Linwood	Reduce the economic damages and risk to people from surface water flooding in Linwood	11117	* See note below
Paisley	Reduce the economic damages and risk to people from surface water flooding in Paisley	11118	* See note below
Applies across Clyde and Loch Lomond Local Plan District	Avoid an overall increase in flood risk	11127	• 1,300 residential properties • £2.6 million Annual Average Damages
Applies across Clyde and Loch Lomond Local Plan District	Reduce overall flood risk	11132	• 1,300 residential properties • £2.6 million Annual Average Damages
Applies across Clyde and Loch Lomond Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 11/12 there are 590 residential properties at risk and Annual Average Damages of £720,000.

Actions to manage flooding in Potentially Vulnerable Area 11/12

Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation. Selection of actions to deliver the agreed objectives was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Black Cart Water catchment - Lochwinnoch to Johnstone Potentially Vulnerable Area.

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

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (11303021)		
Objective (ID):	Reduce the physical or disruption risk related to the transport network for rail. (11303)		
Delivery lead:	Network Rail		
Status:	**Under development**	Indicative delivery:	**2016-2021**
Description:	Network Rail will carry out civil engineering work which will reduce flood risk to identified sections of the rail network within this Potentially Vulnerable Area.		

Action (ID):	**FLOOD PROTECTION STUDY** (110440005)		
Objective (ID):	Reduce the risk of river and surface water flooding to residential properties and non-residential properties in the Candren Burn catchment (11044)		
Delivery lead:	Renfrewshire Council		
Priority:	National:	Within local authority:	
	14 of 168	**2 of 6**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme along the Candren Burn, focusing on the use of sustainable drainage systems and short sections of flood defences . The study should also examine the potential benefit of property level protection both as a single action and in combination		

	with other actions. Other actions may also be considered to select the most sustainable combination of actions.
Potential impacts	
Economic:	The flood protection study should consider how to reduce flood risk to 660 residential properties and 60 non-residential properties in this location, with potential damages avoided of up to £48 million.
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there are three utilities which have been identified as potentially benefitting from this action. There may be changes in visual amenity and land use as a result of this action.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. This study is proposed for the Candren Burn (water body ID 10022). The physical condition of this river is identified by river basin management planning to be at less than good status. Future works could improve the condition of the river or degrade it. Opportunities to improve the condition of the river should be considered by coordinating with river basin management planning. There are no international or national level environmental designations that are likely to be impacted by this action. There is likely to be a loss of semi-natural habitat in the footprint and vicinity of the defences. There is the potential for local negative impacts on morphology and sediment dynamics which in turn may increase sediment load. There are several listed buildings to the north of Old Mill Road, whose setting may be impacted by direct defences.

Action (ID):	**FLOOD PROTECTION STUDY** (110490005)		
Objective (ID):	Reduce the risk of river and surface water flooding to residential properties, non-residential properties, community facilities and transport routes in Johnstone (11049)		
Delivery lead:	Renfrewshire Council		
Priority:	National:	Within local authority:	
	16 of 168	**3 of 6**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A study is recommended to further investigate the feasibility of actions recommended in the Green Networks Integrated Urban Infrastructure report. These focused on the potential to create small areas of offline storage at a number of locations within Johnstone and the potential to improve culvert conveyance and investigate culvert daylighting. In addition to this the study should examine the potential benefit of automatic property level protection and sustainable drainage systems. Other actions may also be considered to select the most sustainable combination of actions. This may be combined into the study investigating the flood risk within Kilbarchan (action 110500005). This study is linked to the Johnstone and Kilbarchan surface water management plans which will help to identify the potential of some actions.		
Potential impacts			

Economic:	The flood protection study should consider how to reduce flood risk to 740 residential and non-residential properties in this location,with potential damages avoided of up to £39 million.
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there are two utilities which have been identified as potentially benefitting from this action. There may be changes in visual amenity and land use as a result of this action.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. There are no international or national level environmental designations that are likely to be impacted by this action. There is likely to be a loss of agricultural land and semi-natural habitats in the footprint of a storage area. There is the potential for local positive impacts on biodiversity with the creation of small wetland areas. Downstream of the modified culverts there may be slight negative impacts on water quality through increased erosion and sedimentation on the Black Cart Water.

Action (ID):	**FLOOD PROTECTION STUDY** (110520005)		
Objective (ID):	Reduce the risk of river flooding to residential properties, non-residential properties and transport routes in Lochwinnoch (11052)		
Delivery lead:	Renfrewshire Council		
Priority:	National:		Within local authority:
	75 of 168		**4 of 6**
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme along the River Calder within Lochwinnoch, focusing on the benefit of direct defences. Other actions may also be considered to select the most sustainable combination of actions. A separate study looking at natural flood management actions will also cover this area.		
Potential impacts			
Economic:	The flood protection study should consider how to reduce flood risk to 60 residential properties and 20 non-residential properties in this location, with potential damages avoided of up to £4.5 million.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there is one utility which has been identified as potentially benefitting from this action. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. There may be changes in visual amenity and land use as a result of this action. Any defences would need to be well set back from Castle Semple Loch to minimise impacts.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. This action has the potential for permanent, direct, negative impacts on the Castle Semple and Barr Loch Site of Special Scientific Interest. There is		

Environmental:	likely to be a loss of natural and semi-natural habitat in the footprint and vicinity of the defences. If defences are not well set back from Castle Semple Loch and its associated wetlands there is the potential for significant negative impacts on site status, water quality and hydromorphology. Development should take place outside the Site of Special Scientific Interest designation area; however, it should not affect the ecological connectivity of the site.

Action (ID):	**FLOOD PROTECTION STUDY** (110500005)		
Objective (ID):	Reduce the risk of flooding from the Kilbarchan Burn and surface water to residential properties, non-residential properties and transport routes in Kilbarchan (11050)		
Delivery lead:	Renfrewshire Council		
Priority:	National:		Within local authority:
	122 of 168		**6 of 6**
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme in Kilbarchan. The study will focus on storage for the Kilbarchan Burn at Bog Park and improved conveyance of the Kilbarchan Burn through Kilbarchan by upgrading of culverts and watercourse channel. A separate study (action 11050003) will also investigate managing the sediment getting into the channel using natural flood management actions. Other actions may also be considered to select the most sustainable combination of actions. The study may be combined into the study investigating the flood risk within Johnstone (action 110490005). This study is linked to the Johnstone and Kilbarchan surface water management plans which will help to identify the potential of some actions, including sustainable drainage systems.		
Potential impacts			
Economic:	The flood protection study should consider how to reduce flood risk to 20 residential properties and 12 non-residential properties in this location, with potential damages avoided of up to £1.6 million. The economic impact of natural flood management actions is difficult to define. However, these actions can reduce flood risk for high likelihood events. In this location, it has been estimated that 20 residential and non-residential properties could potentially benefit from natural flood management actions.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. In addition there are two utilities which have been identified as potentially benefitting from this action. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. There may be changes in visual amenity and land use as a result of this action.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. There are no international or national level environmental designations that are		

Environmental:	likely to be impacted by this action. There will be a loss of improved grasslands at Bog Park; however, there is the potential for long term positive impacts with the creation of new wetland habitat with this action. There may be increased flows from the conveyance action which could have localised erosion impacts downstream. Modification of conveyance may cause the short term loss of some habitats and displacement of species, which should recolonise and return to the area following construction activities. Modification of conveyance in this area will need to be sensitive to the setting of the Kilbarchan heritage conservation area.

Action (ID):	**NATURAL FLOOD MANAGEMENT STUDY** (110500003)		
Objective (ID):	Reduce the risk of flooding from the Kilbarchan Burn and surface water to residential properties, non-residential properties and transport routes in Kilbarchan (11050)		
Delivery lead:	Renfrewshire Council		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	It is recommended that a natural flood management study should be carried out to further investigate the potential benefit for sediment management at Kilbarchan. This may be carried out as a separate study or as part of the flood protection study within this area.		
Potential impacts			
Economic:	The economic impacts have not been defined at this stage.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community.		
Environmental:	Natural flood management actions can have a positive impact on the ecological quality of the environment by restoring and enhancing natural habitats. There are no international or national level environmental designations that are likely to be impacted by this action. There are likely to be local improvements in water quality through reduced sedimentation; however, increased flows may have localised erosion impacts downstream. Sediment management works may cause the short term loss of some habitats and displacement of species, which should recolonise and return to the area following sediment management activities.		

Action (ID):	**NATURAL FLOOD MANAGEMENT STUDY** (110520003)		
Objective (ID):	Reduce the risk of river flooding to residential properties, non-residential properties and transport routes in Lochwinnoch (11052)		
Delivery lead:	Renfrewshire Council		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	It is recommended that a natural flood management study should be carried out to further investigate the potential benefit for runoff control and sediment management in Lochwinnoch. The study should look at the land management upstream of Lochwinnoch and start engagement with local land owners to establish the potential for		

	works. This may be carried out as a separate study or as part of the flood protection study within this area (action 110520005).
Potential impacts	
Economic:	The economic impacts have not been defined at this stage.
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism.
Environmental:	Natural flood management actions can have a positive impact on the ecological quality of the environment by restoring and enhancing natural habitats. Runoff control actions could affect the Renfrewshire Heights Site of Special Scientific Interest. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the Renfrewshire Heights Special Protection Area. There are likely to be local improvements in water quality through reduced sedimentation; however, increased flows may have localised erosion impacts downstream where the River Calder meets Castle Semple Loch Site of Special Scientific Interest. Implementation of bank restoration in this area will need to be sensitive to the setting of the Lochwinnoch heritage conservation area.

Action (ID):	**SURFACE WATER PLAN/STUDY** (111161018)		
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Johnstone and Kilbarchan (11116)		
Delivery lead:	Renfrewshire Council		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (111171018)		
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Linwood (11117)		
Delivery lead:	Renfrewshire Council		
Status:	**Not started**	Indicative delivery:	**2022-2027**
Description:	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (111171019)		
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Linwood (11117)		
Delivery lead:	Scottish Water in partnership with Renfrewshire Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	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.		

Action (ID):	**SURFACE WATER PLAN/STUDY** (111180018)		
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Paisley (11118)		
Delivery lead:	Renfrewshire Council		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives. The Metropolitan Glasgow Strategic Drainage Partnership will support the 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.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (111320016)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	SEPA		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	SEPA will seek to incorporate additional surface water data into the flood maps to improve understanding of flood risk. Approximately 2,200km² of improved surface water data is currently available within this Local Plan District. The inclusion of additional surface water hazard data resulting from the completion of local authority surface water management plans and Scottish Water integrated catchment studies will be considered as these projects are completed.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (111320019)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	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.		

Action (ID):	**MAINTAIN FLOOD PROTECTION SCHEME** (110490017)		
Objective (ID):	Reduce the risk of river and surface water flooding to residential properties, non-residential properties, community facilities and transport routes in Johnstone (11049)		
Delivery lead:	Renfrewshire Council		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Collier Street / Rankine Street Flood Protection Scheme has been designed to protect properties in the area against a 200 year flood inclusive of climate change allowances. This scheme will be maintained, and will continue to manage flooding according to the design standard at the time of construction. Levels of flood risk are likely to increase over time as a consequence of climate change.		

Action (ID):	**FLOOD FORECASTING** (111320009)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	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 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.		

Action (ID):	**SELF HELP** (111320011)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (111320013)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact. From 2016 SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (111320007)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	Local authorities, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.		

Action (ID):	**EMERGENCY PLANS/RESPONSE** (111320014)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations.		

Action (ID):	**PLANNING POLICIES** (111270001)		
Objective (ID):	Avoid an overall increase in flood risk (11127) Reduce overall flood risk (11132)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		