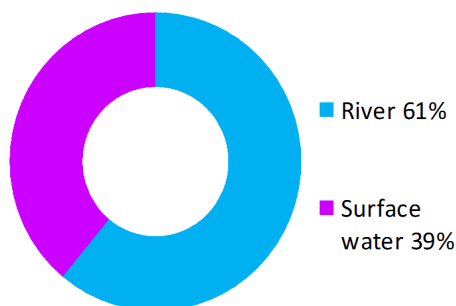


Clyde catchment - Motherwell to Lesmahagow (Potentially Vulnerable Area 11/17/2)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	North Lanarkshire Council, South Lanarkshire Council	River Clyde

Summary of flooding impacts



At risk of flooding

- 420 residential properties
- 210 non-residential properties
- £1.1 million Annual Average Damages

(damages by flood source shown left)

Summary of flooding impacts

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.

Objectives

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

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

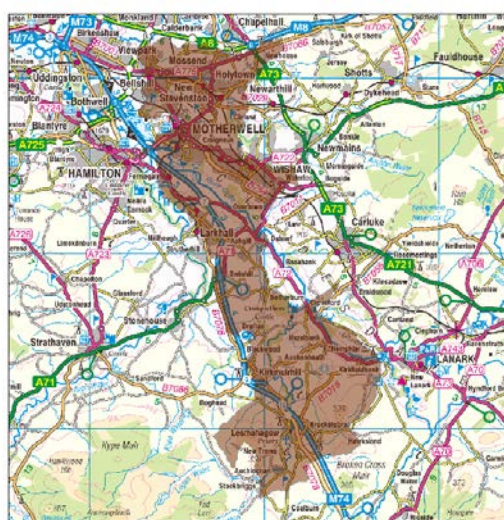
Actions

Clyde catchment – Motherwell to Lesmahagow (Potentially Vulnerable Area 11/17/2)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	North Lanarkshire Council, South Lanarkshire Council	River Clyde

Background

This Potentially Vulnerable Area extends from Mossend and Holytown in the north towards Kirkmuirhill and Lesmahagow. It is approximately 140km² (shown below).



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

There are approximately 420 residential properties and 210 non-residential properties at risk of flooding. The Annual Average Damages are approximately £1.1 million.

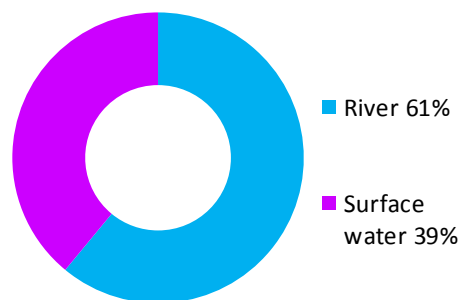


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

River flooding is primarily from the River Clyde and its tributaries. The River Clyde flows through the Potentially Vulnerable Area from Dalsersf, through Overtown towards Hamilton in a generally north westerly direction.

The majority of the risk from river flooding is to non-residential properties, whilst there are residential properties and agricultural land at risk of flooding to the south of Motherwell. The road network is also impacted with notable sections of the A71, A72, A723 and the M74 at risk.

Surface water flooding has the largest impact in terms of the number of properties, with 320 properties at risk. However, this flooding is typically shallow, therefore, the potential damages to each property is less than from river flooding. In the south, local road networks around the town of Kirkmuirhill are at risk. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

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 35% 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 420 to 820 and the number of non-residential properties from approximately 210 to 250.

The location of the impacts of flooding is shown in Figure 3. The greatest concentration of risk is in Motherwell, with impacts to properties, people and infrastructure. Sections of the M74 are also at risk of flooding including at Larkhall.

History of flooding

There have been numerous incidents of flooding within this Potentially Vulnerable Area. The floods which caused the highest impact to properties and people are detailed below:

- In 1994 the River Clyde was identified to have reached its highest level in 150 years, covering an area of 50km and resulting in damages estimated at £100million;
- South Lanarkshire – 27 October 1998. Properties were evacuated for five days;
- North Lanarkshire – 30 May 2003. Torrential rain / hailstorm resulting in the flooding of roads and community facilities;
- In May 2003 surface water flooding caused flooding in Wishaw and Overton;
- In 2008 there are several records of sewer flooding which resulted in road closures within North Lanarkshire.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 47,000)	80	420	730
Non-residential properties (total 3,600)	120	210	230
People	170	1,100	1,700
Community facilities	0	<10 Educational buildings	<10 Educational buildings
Utilities assets	<10	30	40
Transport links-roads (km)	5.2 (of which 1.5 is motorway and 0.1 is A road)	14.6 (of which 3.8 is motorway and 0.6 is A road)	19.0 (of which 5.0 is motorway and 0.8 is A road)
Transport links-rail (km)	1.6	6.7	8.9
Environmental designated areas (km ²)	0.4	0.4	0.4
Designated cultural heritage sites	15	16	17
Agricultural land (km ²)	2.2	2.9	3.3

Table 1: Summary of flooding impacts¹

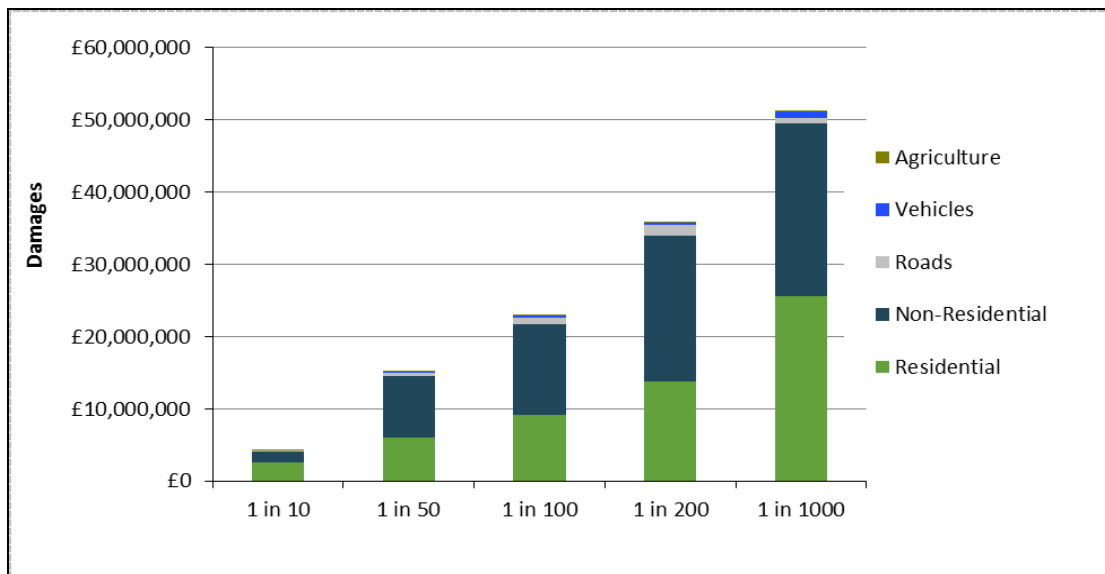


Figure 2: Damages by flood likelihood

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

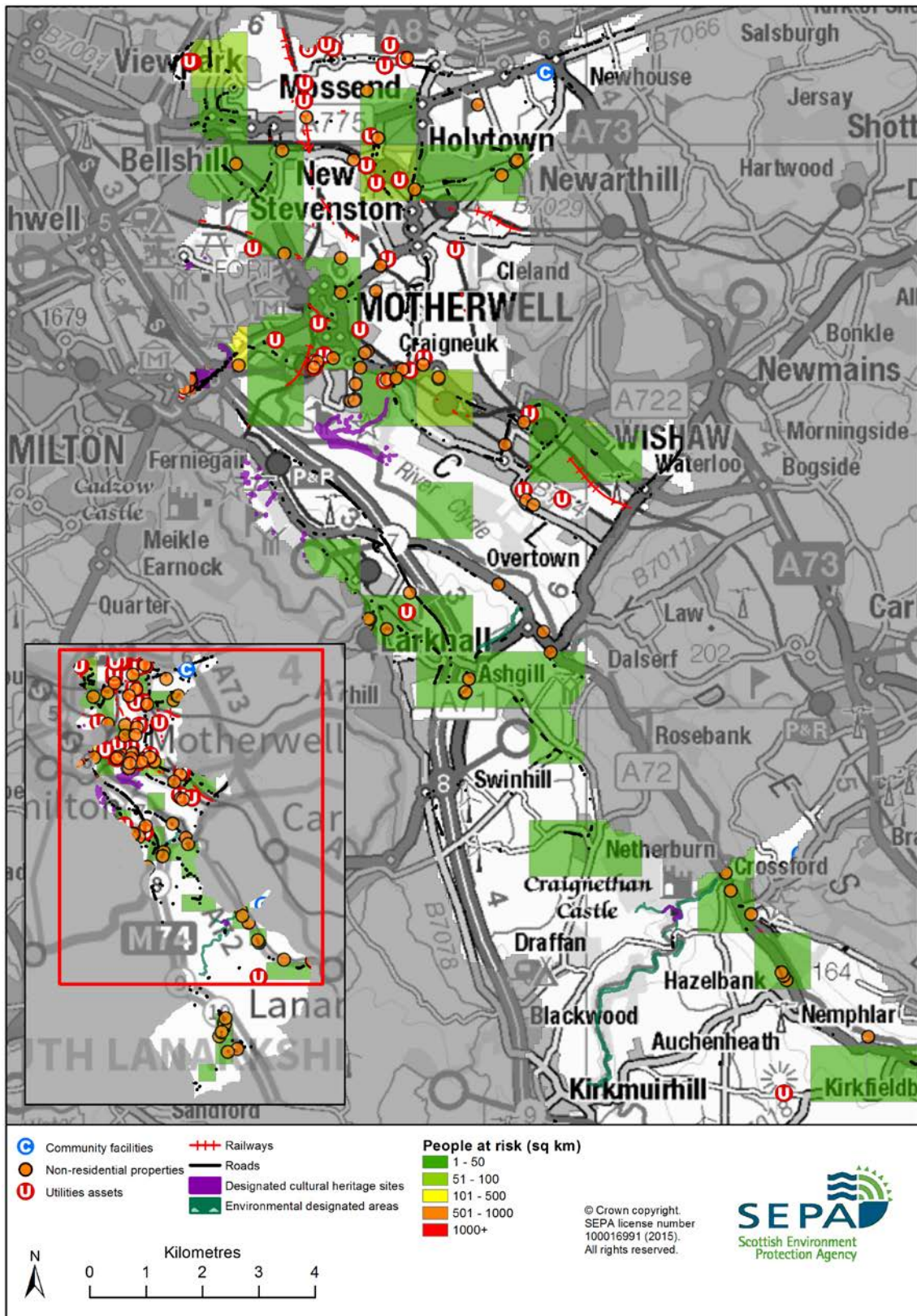


Figure 3: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 11/17/2

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 the Clyde catchment - Motherwell to Lesmahagow Potentially Vulnerable Area.

Reduce the risk of river flooding to residential properties in Greenacres

Indicators:

- 60 residential properties
- £47,000 Annual Average Damages

Target area:



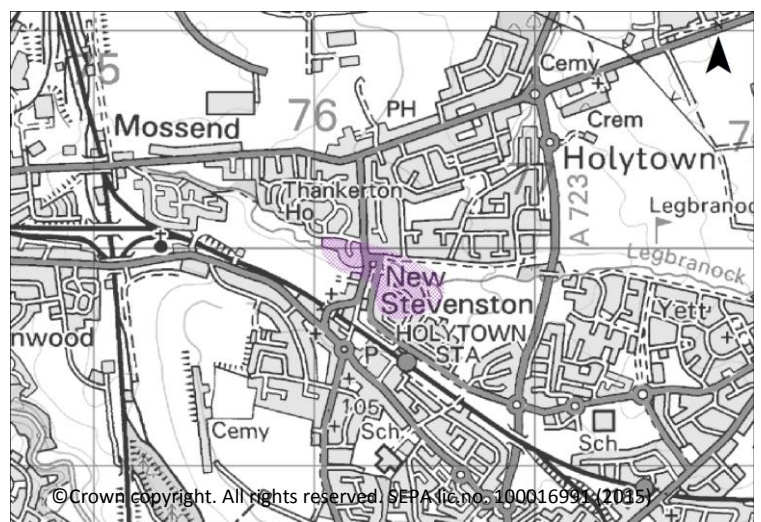
Objective ID: 11037

Reduce the risk of flooding to residential properties in Holytown

Indicators:

- <10 non-residential properties
- £8,600 Annual Average Damages

Target area:



Objective ID: 11038

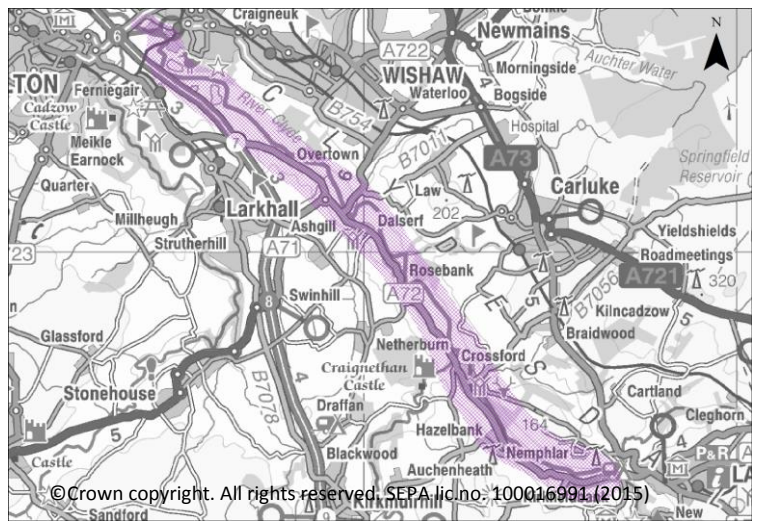
Reduce the risk of flooding to residential properties, non-residential properties and transport routes along the River Clyde, upstream of Strathclyde Park

Indicators:

Target area:

- 160 residential properties
- 20 non-residential properties
- £570,000 Annual Average Damages
- 2.0km of road

Objective ID: 11068



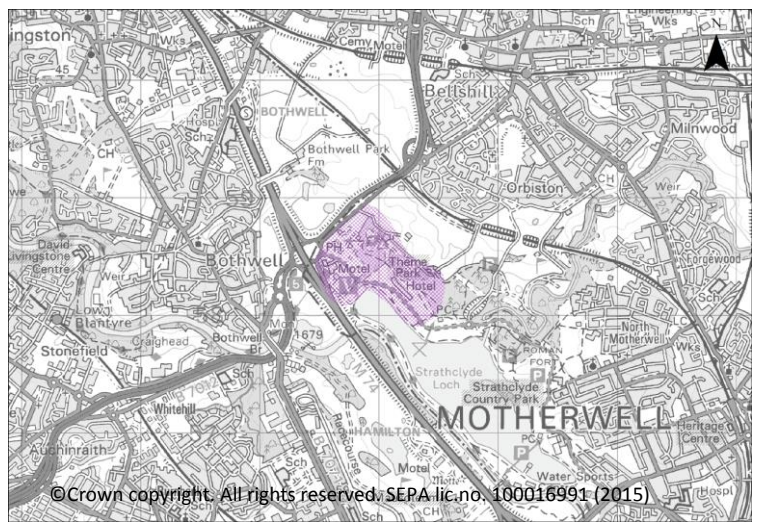
Reduce the risk of river flooding to non-residential properties in Bothwellhaugh

Indicators:

Target area:

- <10 non-residential properties
- £16,000 Annual Average Damages

Objective ID: 11203



Target area	Objective	ID	Indicators within PVA
Clyde Catchment – Motherwell to Lesmahagow	Reduce the physical risk, or disruption risk, related to areas of the M74 at risk of flooding	11306	<ul style="list-style-type: none"> • 340m of the M74 at 15 locations
Motherwell and Wishaw	Reduce the economic damages and risk to people from surface water flooding in Motherwell and Wishaw	11113	* See note below
Applies across Clyde and Loch Lomond Local Plan District	Avoid an overall increase in flood risk	11127	<ul style="list-style-type: none"> • 420 residential properties • £1.1 million Annual Average Damages
Applies across Clyde and Loch Lomond Local Plan District	Reduce overall flood risk	11132	<ul style="list-style-type: none"> • 420 residential properties • £1.1 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 11/17/2 there are 280 residential properties at risk and Annual Average Damages of £440,000.

Actions to manage flooding in Potentially Vulnerable Area 11/17/2

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 the Clyde catchment - Motherwell to Lesmahagow Potentially Vulnerable Area.

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

Action (ID):	FLOOD PROTECTION SCHEME/WORKS (11306021)		
Objective (ID):	Reduce the physical risk, or disruption risk, related to areas of the M74 at risk of flooding (11306)		
Delivery lead:	Transport Scotland		
Status:	Under development	Indicative delivery:	2016-2021
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the trunk road.		

Action (ID):	FLOOD PROTECTION STUDY (110680005)		
Objective (ID):	Reduce the risk of flooding to residential properties, non-residential properties and transport routes along the River Clyde, upstream of Strathclyde Park (11068)		
Delivery lead:	South Lanarkshire Council		
Priority:	National: 88 of 168	Within local authority: 3 of 4	
Status:	Not started	Indicative delivery:	2016-2021
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme on the upper River Clyde (upstream of Strathclyde Park) focusing on, improving the conveyance of a number of existing structures and the benefit of flood defences at various locations along the upper River Clyde. This should also assess the benefit of sustainable drainage systems and property		

	<p>level protection.</p> <p>A separate study of the lower River Clyde is also being carried out (action 110650005) and should be considered when selecting the most sustainable combination of actions.</p> <p>SEPA will review the output from this study for inclusion in the Flood Maps.</p>
Potential impacts	
Economic:	The flood protection study should consider how to reduce flood risk to 40 residential properties and 10 non-residential properties in this location, with potential damages avoided of up to £4.4 million.
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community. 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 is the potential for direct negative construction impacts to the Milton Lockhart Wood Site of Special Scientific Interest. There is likely to be the loss of habitat and displacement of species in the vicinity of the conveyance works; however, these may re-establish and return to the area. Downstream of these conveyance works there may be negative impacts on water quality through localised increased erosion and sedimentation on the River Clyde. There is likely to be a loss of natural and semi-natural habitat in the direct footprint and vicinity of the defences. There is the potential for permanent, negative impacts to several bridges which are listed structures on the River Clyde from conveyance actions. There is the potential for direct defences to have negative impacts on Garrion and Mauldslie listed bridges and the setting of several listed buildings on the river.

Action (ID):	FLOOD PROTECTION STUDY (110380005)		
Objective (ID):	Reduce the risk of flooding to residential properties in Holytown (11038)		
Delivery lead:	North Lanarkshire Council		
Priority:	National:		Within local authority:
	101 of 168		2 of 4
Status:	Not started	Indicative delivery:	2016-2021
Description:	<p>A study is recommended to further investigate surface water flood risk in Holytown. The identified risk from strategic mapping does not correspond with the flooding history in this area. Therefore a detailed study should be carried out to assess the flow paths and potential flood risk.</p> <p>Review of the study will establish the level of risk and if further stages are required to examine actions to manage flooding.</p> <p>The flood mapping from the study should be used to revise SEPA's strategic mapping.</p>		
Potential impacts			
Economic:	Current strategic modelling identifies 80 residential properties and 20 non-residential properties at risk of flooding. The study should look to revise these values and identify a potential benefit from any works.		

Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment.

Action (ID):	FLOOD PROTECTION STUDY (110370005)		
Objective (ID):	Reduce the risk of river flooding to residential properties in Greenacres (11037)		
Delivery lead:	North Lanarkshire Council		
Priority:	National:	Within local authority:	
	146 of 168	4 of 4	
Status:	Not started	Indicative delivery:	2016-2021
Description:	A study is recommended to further investigate the feasibility of flood protection work in Greenacres, focusing on direct defences and sustainable drainage systems. Property level protection should also be considered to reduce residual risk. 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 60 residential properties at risk of flooding in this location, with potential damages avoided of up to £780,000.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community.		
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. There is the potential for indirect impacts during works to the Hamilton Low Parks Site of Special Scientific Interest, through increased sedimentation and reduced water quality. There is likely to be a loss of natural and semi-natural habitat in the footprint and vicinity of the defences. There is the potential for direct defences to have negative impacts on the views from Hamilton Palace protected gardens and designed landscapes across the River Clyde.		

Action (ID):	SURFACE WATER PLAN/STUDY (111131018)		
Objective (ID):	Reduce the economic damages and risk to people from surface water flooding in Motherwell and Wishaw (11113)		
Delivery lead:	North Lanarkshire 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. 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 and watercourses.
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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):	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:	<p>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.</p> <p>From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible.</p> <p>The South Lanarkshire Council winter awareness campaign, between October and March includes information on flooding.</p> <p>Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>		

Action (ID):	MAINTENANCE (111320007)		
Objective (ID):	Reduce overall flood risk (11132)		
Delivery lead:	Local authorities, asset / land managers		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p>		

Action (ID):	SITE PROTECTION PLANS (112030015)		
Objective (ID):	Reduce the risk of river flooding to non-residential properties in Bothwellhaugh (11203)		
Delivery lead:	North Lanarkshire Council		
Status:	Not started	Indicative delivery:	2016-2021
Description:	<p>Site protection plans are developed to identify whether normal operation of a facility can be maintained during a flood. This may be due to existing protection or resilience of the facility or the network.</p> <p>A site protection plan should be developed for the Caravan Park and hotels in Bothwellhaugh adjacent to M&D's theme park.</p>		

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:	<p>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.</p>		

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:	<p>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.</p>		