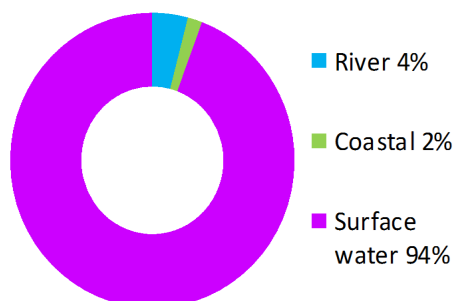


## Bishopton (Potentially Vulnerable Area 11/10)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	Renfrewshire Council	River Gryfe

### Summary of flooding impacts



### At risk of flooding

- 30 residential properties
- <10 non-residential properties
- £35,000 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.

<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	<i>New flood warning</i>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
<i>Flood protection study</i>	<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

## Bishopton (Potentially Vulnerable Area 11/10)

Local Plan District	Local authority	Main catchment
Clyde and Loch Lomond	Renfrewshire Council	River Gryfe

### Background

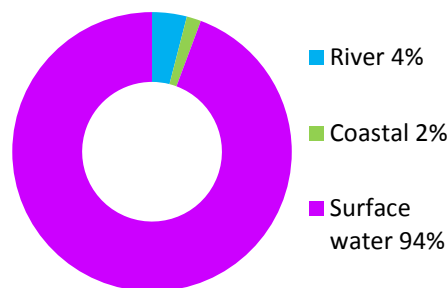
This Potentially Vulnerable Area is located to the west of Glasgow City and is approximately 20km<sup>2</sup> (shown below). The area is centred on Bishopton and incorporates a large amount of wooded areas which surround the site of the former Bishopton Royal Ordnance Factory.



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

There are approximately 30 residential properties at risk of flooding. The Annual Average Damages are approximately £35,000.



**Figure 1:** Annual Average Damages by flood source

### Summary of flooding impacts

Surface water flooding is the primary source of risk in the area. It occurs throughout the area, including the Craighend area of Erskine with impacts to sections of the transport network, notably railway lines, the M8, M989 and Greenock Road. There is historical evidence of surface water flooding on Greenock Road, with damage to the carriageway recorded. The areas at highest risk from surface water flooding will require the preparation of surface water management plans.

River flooding is primarily from the Craighend and Dargavel Burns. The floodplain along both these watercourses is almost entirely within the confines of an industrial site, which is located off Station Road. A detailed flood risk model of these two watercourses indicates that the risk of river flooding could potentially be greater than that indicated in the national modelling. Local measures are in place to reduce the risk of flooding from these watercourses. In the south east corner of the area the Dargavel Burn discharges to the River Gryfe, which in itself has a relatively large floodplain at this location, with some residential properties at risk of flooding.

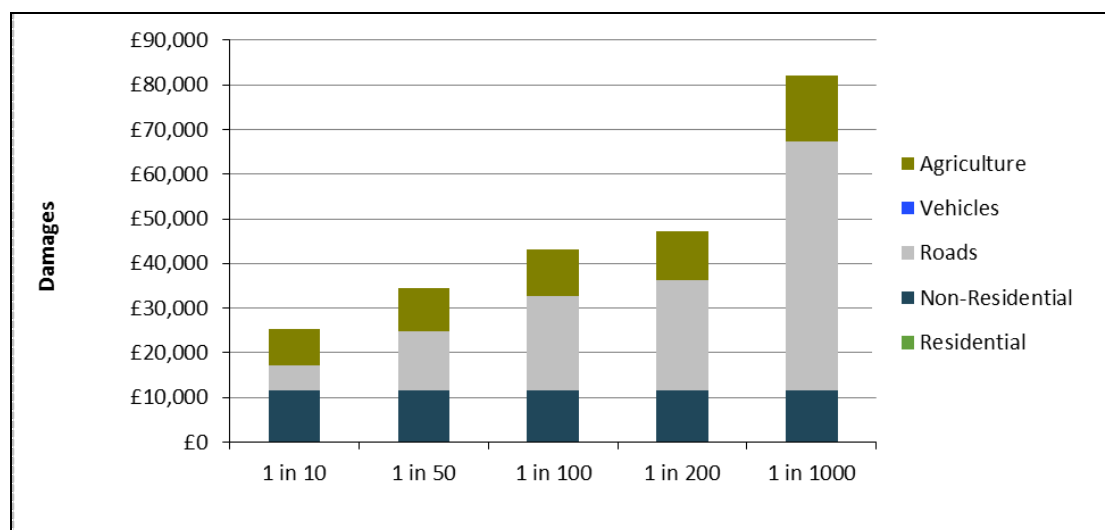
The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1. The damages associated with floods of different likelihood are shown in Figure 2.

Surface water damages may be under-represented in Figure 2 due to limitations in the available modelling output. The damages from surface water flooding to residential properties are likely to provide the greatest contribution to damages, not shown within the Figure 2.

The location of the impacts of flooding is shown in Figure 3. The greatest impacts are in Erskine.

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 2,400)	20	30	30
Non-residential properties (total 120)	<10	<10	<10
People	40	60	60
Community facilities	0	0	0
Utilities assets	0	0	0
Transport links-roads (km)	0.7 (of which 0.1 is motorway)	1.0 (of which 0.1 is motorway)	1.3 (of which 0.2 is motorway)
Transport links-rail (km)	4.4	7.4	10.2
Environmental designated areas (km <sup>2</sup> )	0	0	0
Designated cultural heritage sites	2	2	2
Agricultural land (km <sup>2</sup> )	0.5	0.6	0.6

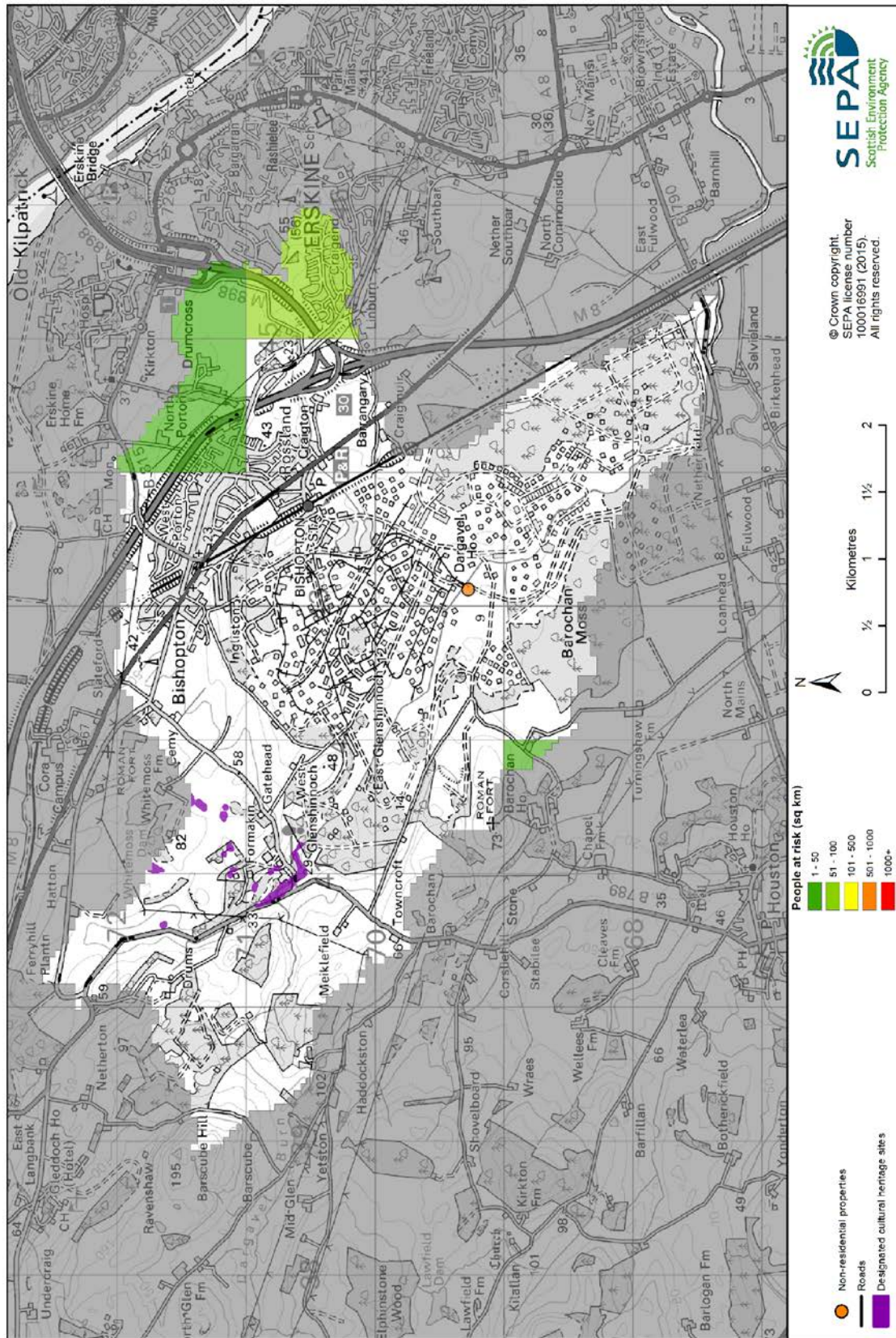
**Table 1:** Summary of flooding impacts<sup>1</sup>



**Figure 2:** Damages by flood likelihood

<sup>1</sup> Some receptors are counted more than once if flooded from multiple sources





**Figure 3: Impact of flooding**

## History of flooding

There have been several reported incidents of flooding within the Potentially Vulnerable Area. Surface water flooding has been the main source of flooding in the Rossland area with records dating back to 1991. Surface water flooding in 2006 and 2008, caused sewerage problems and flooded the A8 carriageway. Outside of the Rossland area there is a relatively low incidence of flooding.

## Objectives to manage flooding in Potentially Vulnerable Area 11/10

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 Bishopton Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Erskine	Reduce the economic damages and risk to people from surface water flooding in Erskine	11114	* 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"> <li>• 30 residential properties</li> <li>• £35,000 Annual Average Damages</li> </ul>
Applies across Clyde and Loch Lomond Local Plan District	Reduce overall flood risk	11132	<ul style="list-style-type: none"> <li>• 30 residential properties</li> <li>• £35,000 Annual Average Damages</li> </ul>
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 11/10 there are 30 residential properties at risk and Annual Average Damages of £32,000.

## Actions to manage flooding in Potentially Vulnerable Area 11/10

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 Bishopton Potentially Vulnerable Area.

Selected actions					
<i>Flood protection scheme/works</i>	<i>Natural flood management works</i>	<i>New flood warning</i>	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
<i>Flood protection study</i>	<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

<b>Action (ID):</b>	<b>SURFACE WATER PLAN/STUDY (111141018)</b>		
<b>Objective (ID):</b>	Reduce the economic damages and risk to people from surface water flooding in Erskine (11114)		
<b>Delivery lead:</b>	Renfrewshire Council		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2022-2027</b>
<b>Description:</b>	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.		

<b>Action (ID):</b>	<b>SURFACE WATER PLAN/STUDY (111141019)</b>		
<b>Objective (ID):</b>	Reduce the economic damages and risk to people from surface water flooding in Erskine (11114)		
<b>Delivery lead:</b>	Scottish Water in partnership with Renfrewshire Council		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	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.		

<b>Action (ID):</b>	<b>STRATEGIC MAPPING AND MODELLING (111320019)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (11132)		
<b>Delivery lead:</b>	Scottish Water		
<b>Status:</b>	<b>Not started</b>	Indicative delivery:	<b>2016-2021</b>
<b>Description:</b>	Scottish Water will carry out an assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

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

<b>Action (ID):</b>	<b>SELF HELP (111320011)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (11132)		
<b>Delivery lead:</b>	—		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	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.		



<b>Action (ID):</b>	<b>AWARENESS RAISING (111320013)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (11132)		
<b>Delivery lead:</b>	Responsible authorities		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<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. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>		

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

<b>Action (ID):</b>	<b>EMERGENCY PLANS/RESPONSE (111320014)</b>		
<b>Objective (ID):</b>	Reduce overall flood risk (11132)		
<b>Delivery lead:</b>	Category 1 and 2 Responders		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	<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>		

<b>Action (ID):</b>	<b>PLANNING POLICIES (111270001)</b>		
<b>Objective (ID):</b>	Avoid an overall increase in flood risk (11127) Reduce overall flood risk (11132)		
<b>Delivery lead:</b>	Planning authority		
<b>Status:</b>	<b>Existing</b>	Indicative delivery:	<b>Ongoing</b>
<b>Description:</b>	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.		