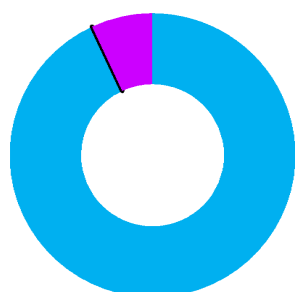


Dalmellington (Candidate Potentially Vulnerable Area 12/19c)

Local Plan District	Local authority	Main catchment
Ayrshire	South Ayrshire Council	Muck Water

Summary of flooding impacts



■ River 90%

■ Surface water 10%

At risk of flooding

- 50 residential properties
- 40 non-residential properties
- £140,000 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>
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

Actions

Dalmellington (Candidate Potentially Vulnerable Area 12/19c)

Local Plan District	Local authorities	Main catchment
Ayrshire	East Ayrshire Council	Muck Water

Background

This candidate Potentially Vulnerable Area is located to the south of the Ayrshire Local Plan District around Dalmellington and is approximately 35km² (shown below).



There are approximately 50 residential properties and 40 non-residential properties at risk of flooding. The total Annual Average Damages are approximately £140,000.

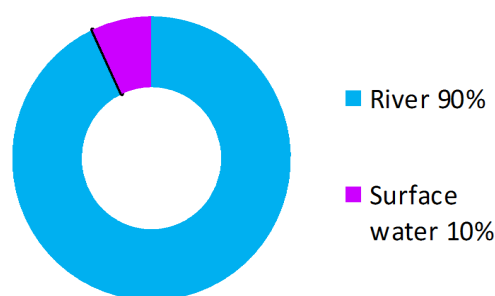


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

This area was not originally identified as a Potentially Vulnerable Area in 2011. However, updated information on flood risk from the new hazard maps identified that this area should be regarded as a candidate Potentially Vulnerable Area due to the risk to people and properties.

River flooding poses the largest flood risk to the area, with the majority being to residential properties within Dalmellington. The Muck Water flows from the south of through a steep forest area parallel to the A713 before flowing through Dalmellington after which it joins the River Doon. The Linn Water originates in forests to the north and flows around Dalmellington. The Linn Water joins the Muck Water to the south west of the town before joining the River Doon. The River Doon flows to the south of the candidate Potentially Vulnerable Area boundary where there is a wide floodplain at Bogton Loch. The largest area of flood risk is to the south west of Dalmellington near the confluence of the three watercourses. There are sections of road and rail infrastructure at risk of flooding (notably the A713 and B741).

There are a small number of isolated areas at risk of surface water flooding and these are predominantly in rural locations.

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.

Damages to residential properties 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 50 to 60.

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

	1 in 10 High likelihood	1 in 200 Medium likelihood	1 in 1000 Low likelihood
Residential properties (total 810)	20	50	50
Non-residential properties (total 210)	30	40	40
People	50	110	110
Community facilities	0	<10 Emergency services	<10 Emergency services
Utilities assets	<10	<10	<10
Transport links – road (km)	1.1	1.6	2.5
Transport links - rail (km)	0.1	0.1	0.1
Environmental designated areas (km ²)	0.1	0.2	0.2
Designated cultural heritage sites	2	2	2
Agricultural land (km ²)	0.5	0.7	1.2

Table 1: Summary of flooding impacts¹

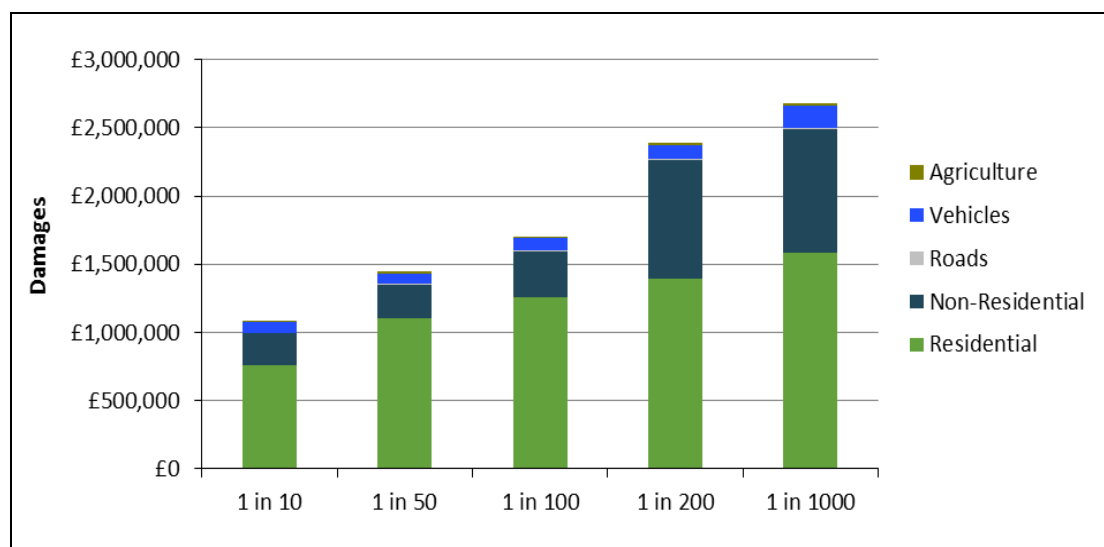


Figure 2: Damages by flood likelihood

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

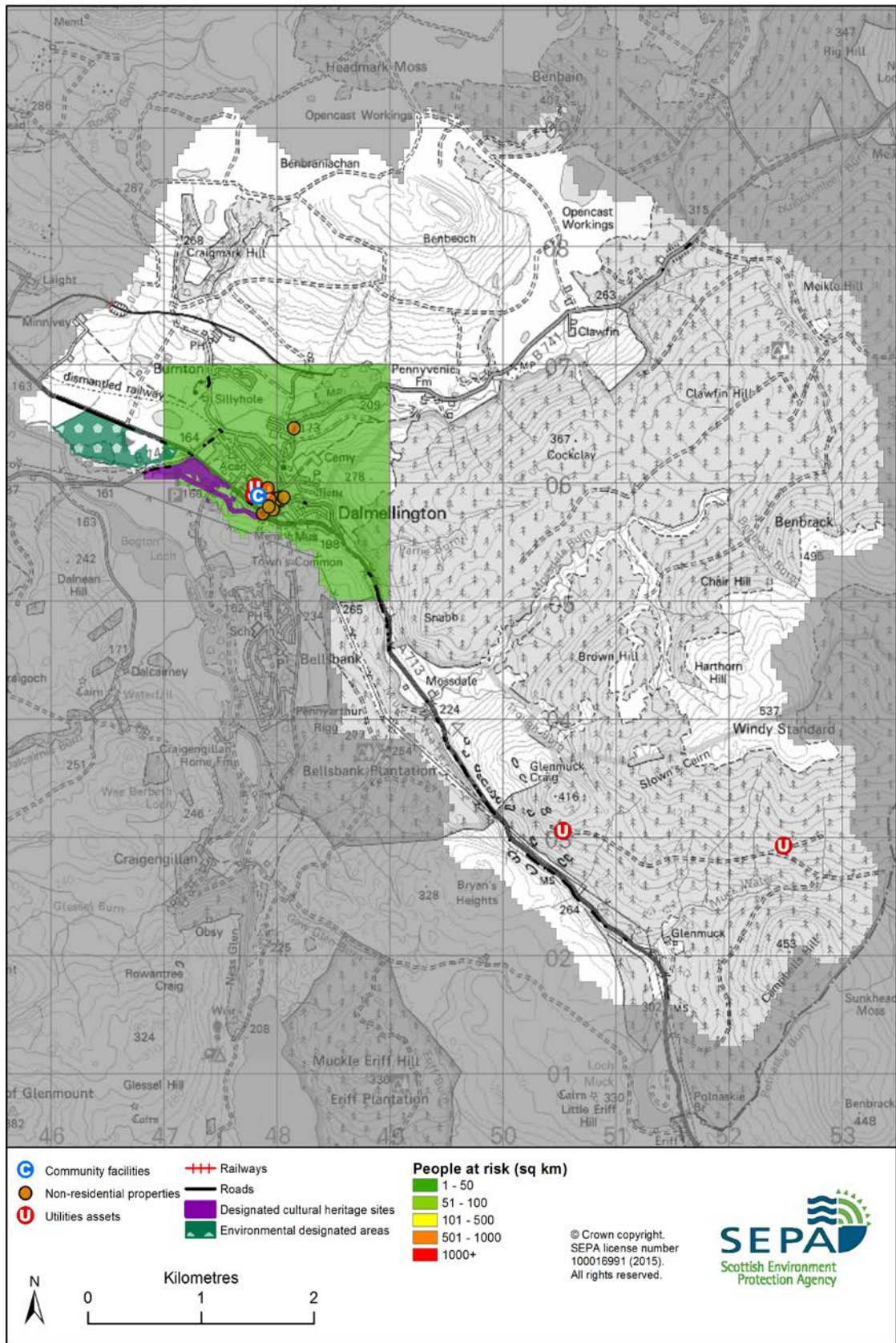


Figure 3: Impacts of flooding

History of flooding

There is a limited local history of flooding. Flooding from the Muck Water in 2009 resulted in overtopping of the B741 Bridge and closure of the B741. Further records of flooding from the Muck Water and the River Doon resulted in flooding to agricultural land and roads but there was little damage to properties reported.

Objectives to manage flooding in Potentially Vulnerable Area 12/19c

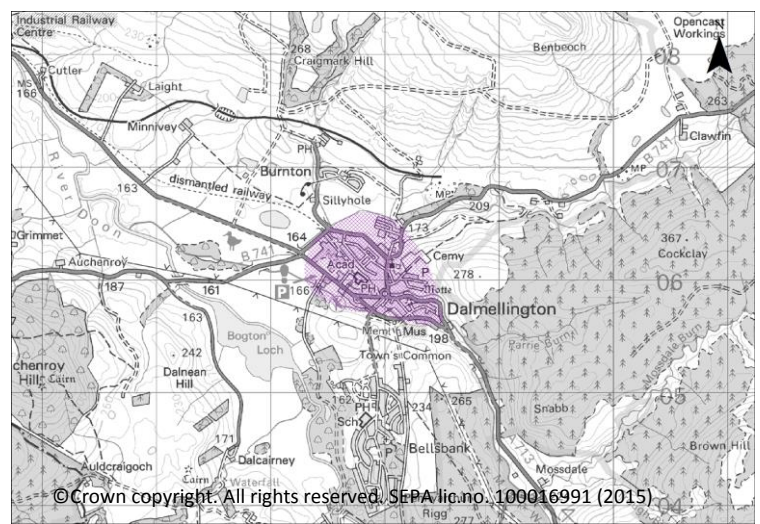
Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target 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 Dalmellington Candidate Potentially Vulnerable Area.

Reduce the risk of flooding from the Muck Water, to residential properties in Dalmellington

Indicators:

Target area:

- 40 residential properties
- £81,000 Annual Average Damages



Objective ID: 12033

Target area	Objective	ID	Indicators within PVA
Applies across Ayrshire Local Plan District	Avoid an overall increase in flood risk	12039	<ul style="list-style-type: none"> • 50 residential properties • £140,000 Annual Average Damages
Applies across Ayrshire Local Plan District	Reduce overall flood risk	12101	<ul style="list-style-type: none"> • 50 residential properties • £140,000 Annual Average Damages
Applies across Ayrshire 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.		

Actions to manage flooding in Potentially Vulnerable Area 12/19c

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 Dalmellington Candidate 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>
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 STUDY (120330005)		
Objective (ID):	Reduce the risk of flooding from the Muck Water, to residential properties in Dalmellington (12033)		
Delivery lead:	East Ayrshire Council		
Priority:	National:		Within local authority:
	110 of 168		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 along the Muck Water, focusing on sections of river walls. 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 14 residential properties in this location, with potential damages avoided of up to £2.8 million.		
Social:	A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people located within the flood protection study area. There may be negative impacts through disturbance to the local community during the construction phase and 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 likely to be a loss of semi-natural habitats and displacement of species in the footprint and vicinity of the defences. There is the potential for negative impacts on local water quality		

Environmental:	downstream of works during the construction period, which has the potential for slight temporary impacts on the Dalmellington Moss Site of Special Scientific Interest. There is the potential for impacts on the setting of the Dalmellington Heritage Conservation Area and the Doon Tavern and Dalmellington Inn listed buildings.
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Action (ID):	FLOOD FORECASTING (121010009)		
Objective (ID):	Reduce overall flood risk (12101)		
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 (121010011)		
Objective (ID):	Reduce overall flood risk (12101)		
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 (121010013)		
Objective (ID):	Reduce overall flood risk (12101)		
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. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.</p>		

Action (ID):	MAINTENANCE (121010007)		
Objective (ID):	Reduce overall flood risk (12101)		
Delivery lead:	South Ayrshire Council, 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):	EMERGENCY PLANS/RESPONSE (121010014)		
Objective (ID):	Reduce overall flood risk (12101)		
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 (120390001)		
Objective (ID):	Avoid an overall increase in flood risk (12039) Reduce overall flood risk (12101)		
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.		