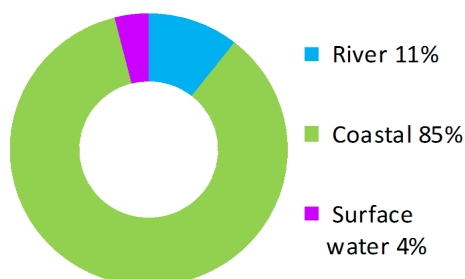


Hoy (Potentially Vulnerable Area 03/06)

Local Plan District	Local authority	Main catchment
Orkney	Orkney Islands Council	Hoy coastal

Summary of flooding impacts



At risk of flooding

- <10 residential properties
- <10 non-residential properties
- £28,000 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>	New flood warning	<i>Community flood action groups</i>	<i>Property level protection scheme</i>	<i>Site protection plans</i>
Flood protection study	<i>Natural flood management study</i>	<i>Maintain flood warning</i>	Awareness raising	<i>Surface water plan/study</i>	Emergency plans/response
<i>Maintain flood protection scheme</i>	<i>Strategic mapping and modelling</i>	Flood forecasting	Self help	Maintenance	Planning policies

Actions

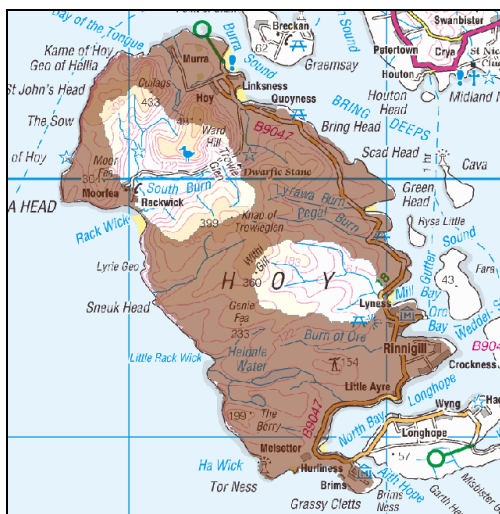
Hoy (Potentially Vulnerable Area 03/06)

Local Plan District	Local authority	Main catchment
Orkney	Orkney Islands Council	Hoy coastal

Background

This Potentially Vulnerable Area covers the island of Hoy (shown below). It is approximately 100km².

The area includes Lyness, Moaness, Rackwick and Melsetter.



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The B9047 and causeway connecting Hoy to South Walls are within the area.

There are fewer than 10 residential and non-residential properties at risk of flooding.

The Annual Average Damages are estimated to be £28,000 with the majority attributed to coastal flooding.

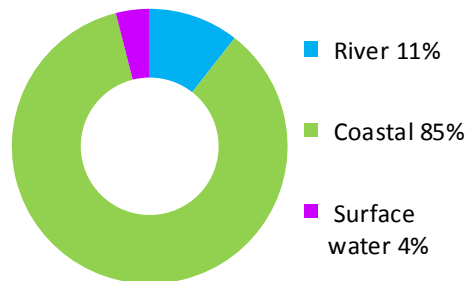


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

There is limited flood risk in this area, however the main focus is on the B9047 linking Hoy and South Walls; it is mainly vulnerable to flooding from wave overtopping.

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.

Roads potentially affected by flooding include the B9047 and B9048. Four designated cultural heritage sites, including scheduled monuments, and designated environmental sites are at risk. This includes the Hoy Special Protection Area and Special Area of Conservation.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to roads followed by damages to residential properties. Note that cultural heritage and environmental sites are not included in the estimate of the economic impact of flooding due to the difficulty in placing an economic value on these impacts.

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 140)	<10	<10	<10
Non-residential properties (total 70)	<10	<10	<10
People	<10	<10	<10
Community facilities	0	0	0
Utilities assets	0	0	0
Transport links (excluding minor roads)	Roads at 10 locations	Roads at 20 locations	Roads at 20 locations
Environmental designated areas (km ²)	3	3	3
Designated cultural heritage sites	4	4	4
Agricultural land (km ²)	0.8	0.9	1

Table 1: Summary of flooding impacts¹

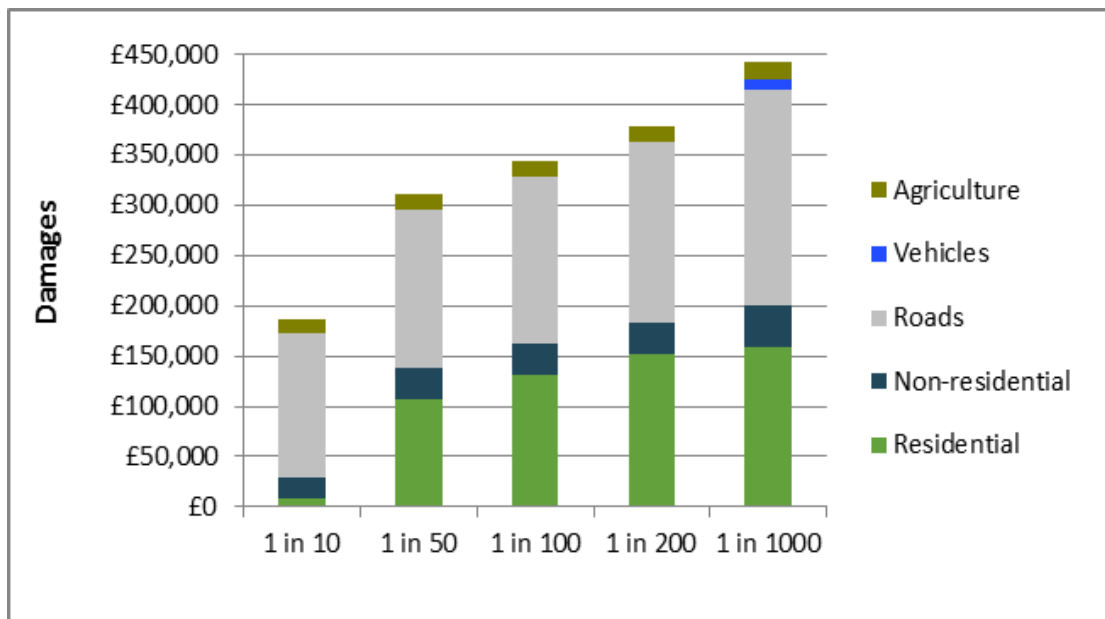


Figure 2: Damages by flood likelihood

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

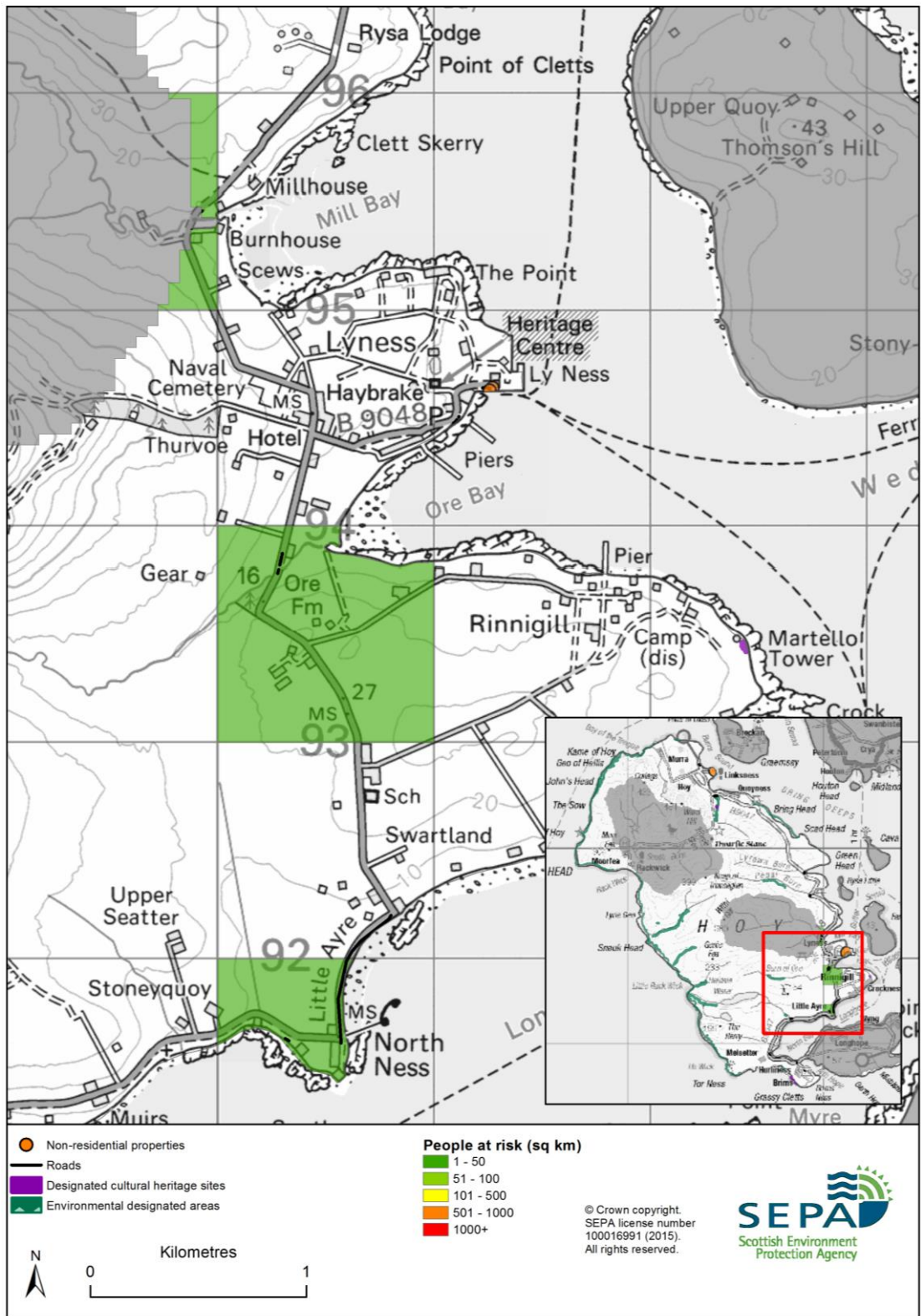


Figure 3: Impacts of flooding

History of flooding

There have been very few floods recorded within this Potentially Vulnerable Area, due to the high topography of the majority of the island and the sparsely spread population.

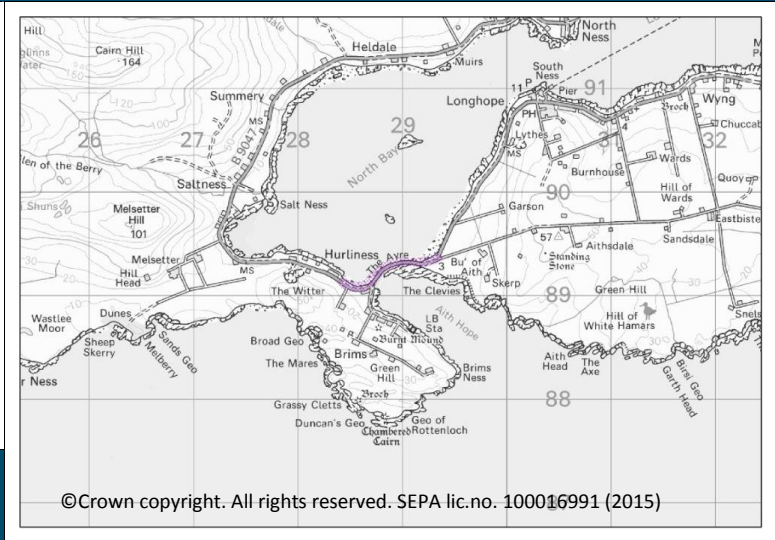
In October 2006 extreme rainfall resulted in the Millburn swelling, which in turn caused structural damage to the Millburn Bridge, a vital section of the road network in the area. In December 2011, coastal flooding occurred when high sea levels and strong wave action resulted in damage to the coastal defence wall that protects the road deck at Longhope Ayre. Overtopping spread debris across the road making it impassable.

Objectives to manage flooding in Potentially Vulnerable Area 03/06

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 Hoy Potentially Vulnerable Area.

Reduce disruption to roads from coastal flooding with particular reference to the causeway linking Hoy to South Walls
 Indicators: Target area:

- B9047 The Ayre
- Objective ID: 300601



Target area	Objective	ID	Indicators within PVA
Applies across Orkney Local Plan District	Avoid an overall increase in flood risk	300001	<ul style="list-style-type: none"> • <10 residential properties • £28,000 Annual Average Damages
Applies across Orkney Local Plan District	Reduce overall flood risk	300002	<ul style="list-style-type: none"> • <10 residential properties • £28,000 Annual Average Damages
Applies across Orkney 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 03/06

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 Hoy Potentially Vulnerable Area.

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

Action (ID):	NEW FLOOD WARNING (3000020010)		
Objective (ID):	Reduce overall flood risk (300002)		
Delivery lead:	SEPA		
Status:	Not started	Indicative delivery:	2016-2021
Description:	The area under consideration covers the coastline of the Orkney Islands. Forecasting capability is currently under development.		

Action (ID):	FLOOD PROTECTION STUDY (3006010005)		
Objective (ID):	Reduce disruption to roads from coastal flooding with particular reference to the causeway linking Hoy to South Walls (300601)		
Delivery lead:	Orkney Islands Council		
Priority:	National:	Within local authority:	
	164 of 168	6 of 6	
Status:	Not started	Indicative delivery:	2016-2021
Description:	A flood protection study for the causeway is required to investigate the most suitable action for long term maintenance of the road. The study should primarily focus on coastal management actions to strengthen the existing road or actions to raise the height of the existing road, but other actions may also be considered in order to develop the most sustainable range of actions.		

Potential impacts	
Economic:	Reducing the flood impacts to the road (B9047) for high likelihood floods would result in potential damages avoided of up to £1,000. Although the quantified flood damages are small, there are wider benefits which should be investigated in the study.
Social:	The recommended actions from the proposed flood protection study would result in improved access between the islands of Hoy and South Walls during high likelihood floods and reduce to the risk to life. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There may be impacts on coastal habitats through any potential increased disruption of natural processes, coastal squeeze and possible increase to coastal erosion risk.

Action (ID):	FLOOD FORECASTING (3000020009)		
Objective (ID):	Reduce overall flood risk (300002)		
Delivery lead:	SEPA		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p> <p>The Potentially Vulnerable Area is within the 'Orkney' flood alert area.</p>		

Action (ID):	SELF HELP (3000020011)		
Objective (ID):	Reduce overall flood risk (300002)		
Delivery lead:	—		
Status:	Existing	Indicative delivery:	Ongoing
Description:	<p>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.</p>		

Action (ID):	AWARENESS RAISING (3000020013)		
Objective (ID):	Reduce overall flood risk (300002)		
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 (3000020007)		
Objective (ID):	Reduce overall flood risk (300002)		
Delivery lead:	Orkney Islands 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 (3000020014)		
Objective (ID):	Reduce overall flood risk (300002)		
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> <p>Orkney Islands Council monitors the flood risk daily by comparing forecast tide and surge levels with land levels. This enables advanced warning of coastal flood events to be provided.</p>		

Action (ID):	PLANNING POLICIES (3000010001)		
Objective (ID):	Avoid an overall increase in flood risk (300001) Reduce overall flood risk (300002)		
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>		