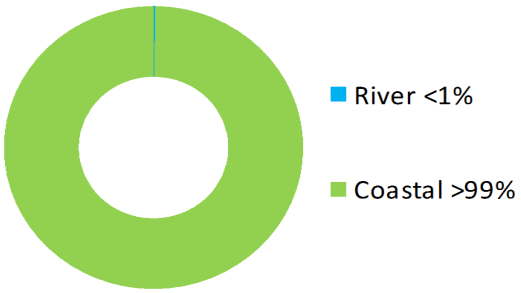
Westray (Candidate Potentially Vulnerable Area 03/08c)

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

Summary of flooding impacts



At risk of flooding

- 40 residential properties
- 20 non-residential properties
- £90,000 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

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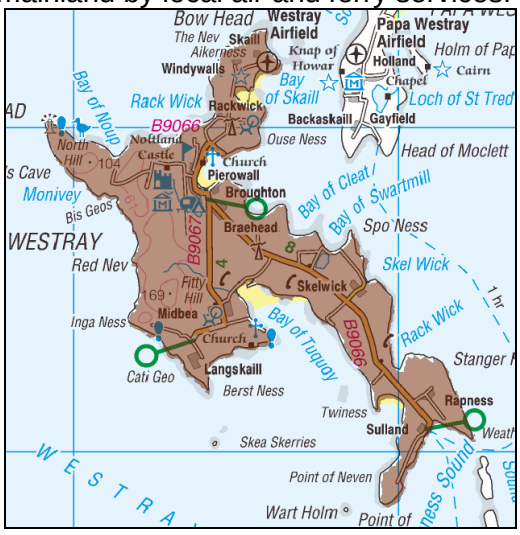
Orkney	Orkney Islands Council	Orkney Islands coastal

Background

This candidate Potentially Vulnerable Area covers the island of Westray (shown below). It is approximately 47km^2.

Westray is the most densely populated of all the outlying Northern Isles in Orkney and is connected to the mainland by local air and ferry services.



Pierowall is the hub of the island, with a vibrant community comprising several businesses, community facilities and homes. The village has a history of flooding due to the combined affects of high sea levels and wave action.

There are approximately 40 residential and 20 non-residential properties at risk of flooding. The Annual Average Damages are £90,000 with the majority caused by coastal flooding (Figure 1).

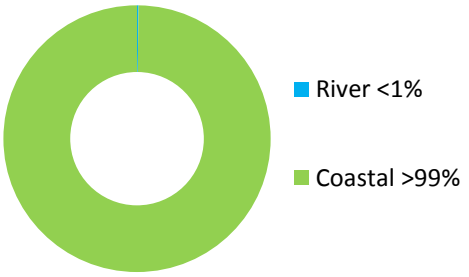


Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Coastal flood risk in this area is focused around Pierowall and on the access routes to and from the town and the airport.

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.

A number of roads are at risk of flooding, particularly at Pierowall, Skelwick and at the Bay of Tuquoy. The major access roads to the ferry port and airport are affected by flooding and there are no alternative access routes.

Four designated cultural heritage sites and a small area of the West Westray Special Protection Area and Site of Special Scientific Interest are also at risk.

The damages associated with floods of different likelihood are shown in Figure 2. Roads and residential properties experience the greatest economic impact. Note that cultural heritage and environmental sites are not included in the estimation 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 300)	10	40	40
Non-residential properties (total 110)	<10	20	20
People	10	90	90
Community facilities	0	0	0
Utilities assets	0	0	0
Transport links (excluding minor roads)	Roads at 20 locations	Roads at 30 locations	Roads at 30 locations
Environmental designated areas (km^2)	0	<0.1	<0.1
Designated cultural heritage sites	4	4	5
Agricultural land (km^2)	<0.1	0.5	0.6

Table 1: Summary of flooding impacts[1]

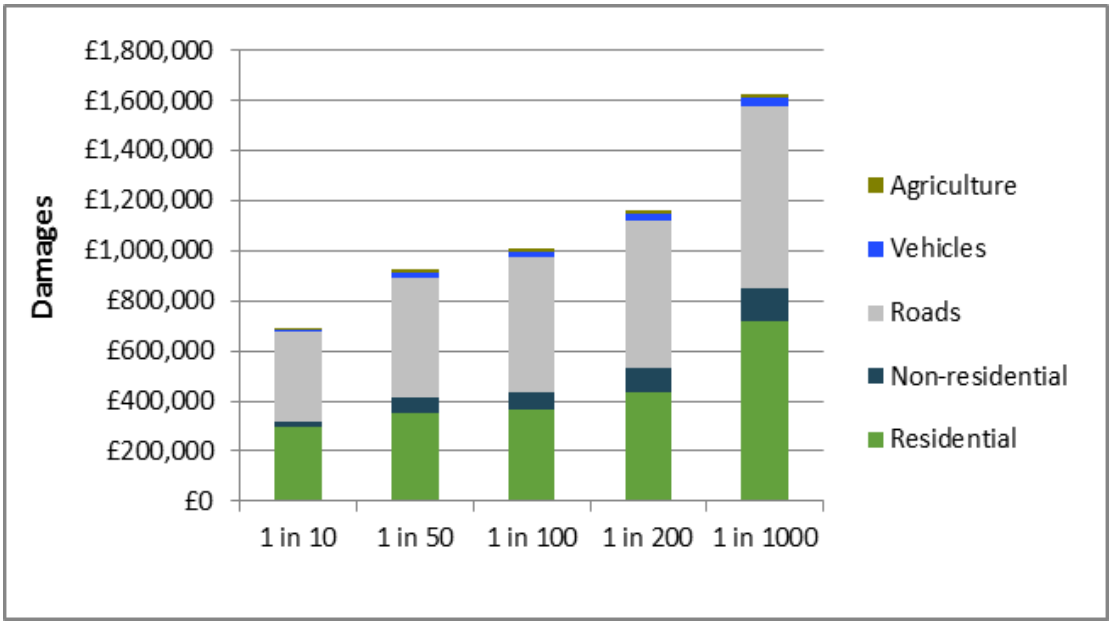


Figure 2: Damages by flood likelihood

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

Figure 3: Impacts of flooding

History of flooding

Westray has a history of coastal and surface water flooding. Between 1997 and 2009 Pierowall was affected by several coastal floods, as well as flooding due to seaweed blocking culverts and causing surface water to back up. In particular, flooding of the B9066, the major road across the island, affected the majority of residents.

During January 2005, Pierowall was subject to high tides and as a result flooding affected areas of the village. The worst affected area was in the vicinity of Ulva Cottage, where the sea flooded up through the burn and inundated low lying land. The coastal embankments were close to being exceeded at this time.

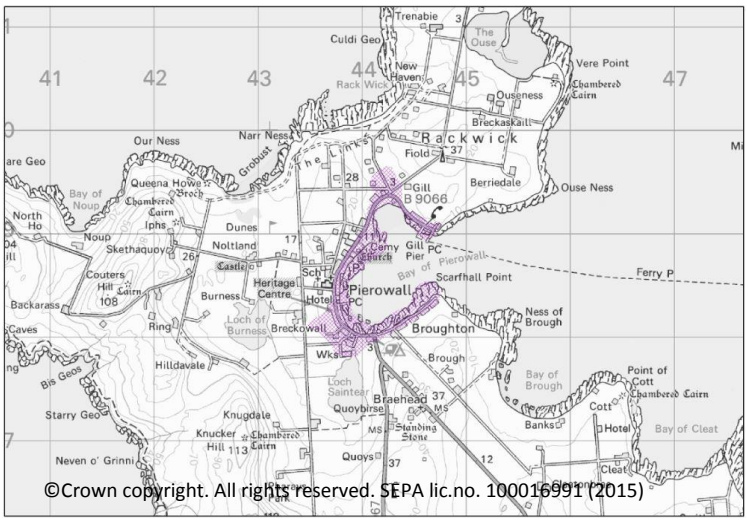
Further information on flood hazard and risk

The national flood maps do not take account of wave overtopping and as a result the damages attributed to this candidate Potentially Vulnerable Area are considered to be significantly underestimated. The number of properties and people at risk has been updated based on evidence provided by Orkney Islands Council. There is however no suitable information available to update the estimated economic damages at his stage.

Objectives to manage flooding in Candidate Potentially Vulnerable Area 03/08c

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 Westray Candidate Potentially Vulnerable Area.

Reduce risk in Pierowall from coastal flooding

Indicators:	Target area:
• 90 people • £49,000 Annual Average Damages from residential properties • B9066 Gill to Scarfhall Point	
Objective ID: 300801	

Target area	Objective	ID	Indicators within PVA
Applies across Orkney Local Plan District	Avoid an overall increase in flood risk	300001	• 40 residential properties • £90,000 Annual Average Damages
Applies across Orkney Local Plan District	Reduce overall flood risk	300002	• 40 residential properties • £90,000 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 Candidate Potentially Vulnerable Area 03/08c

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 Westray Candidate 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):	**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** (3008010005)		
Objective (ID):	Reduce risk in Pierowall from coastal flooding (300801)		
Delivery lead:	Orkney Islands Council		
Priority:	National:	Within local authority:	
	110 of 168	**2 of 6**	
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	A flood protection study is required to consider flood protection works for Pierowall. The study should primarily focus on coastal management actions, direct defences and property level protection, but other actions may also be considered in order to develop the most sustainable range of options. The investigation will assess the impact from wave overtopping to confirm the existing risk and define the height and extent of flood protection works.		

Potential impacts	
Economic:	The study could benefit 40 residential and 20 non-residential properties at risk of flooding in this location, with potential damages avoided of up to £1.5 million.
Social:	The development of flood protection works following the study would potentially reduce risk to 88 people. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. The B9066 could also benefit from reduced flooding, improving access across Pierowall during floods. 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. The study should consider the effects on coastal habitats through any potential increased disruption of natural processes, coastal squeeze and possible increase to coastal erosion risk. The study should also minimise the visual impacts of the actions for the local community. The scheduled monument may benefit depending on the extent of any works.

Action (ID):	**FLOOD FORECASTING** (3000020009)		
Objective (ID):	Reduce overall flood risk (300002)		
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. The Potentially Vulnerable Area is within the 'Orkney' flood alert area.		

Action (ID):	**SELF HELP** (3000020011)		
Objective (ID):	Reduce overall flood risk (300002)		
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** (3000020013)		
Objective (ID):	Reduce overall flood risk (300002)		
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 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.		

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:	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** (3000020014)		
Objective (ID):	Reduce overall flood risk (300002)		
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. 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.		

Action (ID):	**PLANNING POLICIES** (3000010001)		
Objective (ID):	Avoid an overall increase in flood risk (300001)		
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.		