



Shetland Islands Council

Shetland's Partnership Plan - Local Outcomes Improvement Plan

Strategic Environmental Assessment Environmental Report

Appendix 4: Environmental Baseline

December 2017

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Introduction

The Environmental Assessment (Scotland) Act 2005 ('the Act') requires that information be provided on the current state of the environment and how it might evolve if the LOIP were not implemented.

Baseline data helps to identify the issues on which the SEA should focus and provides a benchmark against which to assess performance.

The baseline is presented using a topic-based approach, which reflects the issues set out within Schedule 3 of the Act:

1. Climatic factors
2. Air
3. Water
4. Soil
5. Material assets
6. Biodiversity, flora and fauna
7. Landscape and cultural heritage
8. Population and human health

Topic 1: Climatic Factors

Scotland has a temperate maritime climate with generally cool summers, mild winters and rainfall spread throughout the year. There is variation between regions and seasons due to a range of factors, including latitude, distance from the sea, prevailing winds, ocean currents and altitude.

Shetland experiences weather similar to that of the Faroe Islands or Southern Norway. Due to the Gulf Stream it is warmer than areas on similar latitudes. Shetland experiences long cool winters and short mild summers. The general character of the climate is windy and cloudy.

The climate is changing in Scotland and this is likely to continue in the future due to global emissions of greenhouse gases. Over the last 100 years it has become warmer, with drier summers, wetter winters and more frequent heavy rainfall. It is predicted that over the next few decades Scotland and the UK will experience more wilder wetter winters and more hotter drier summers.

Past trends

Historic trends for Scotland show an increase in minimum and maximum temperatures and rainfall and a reduction in the number of days of frost and snow cover.

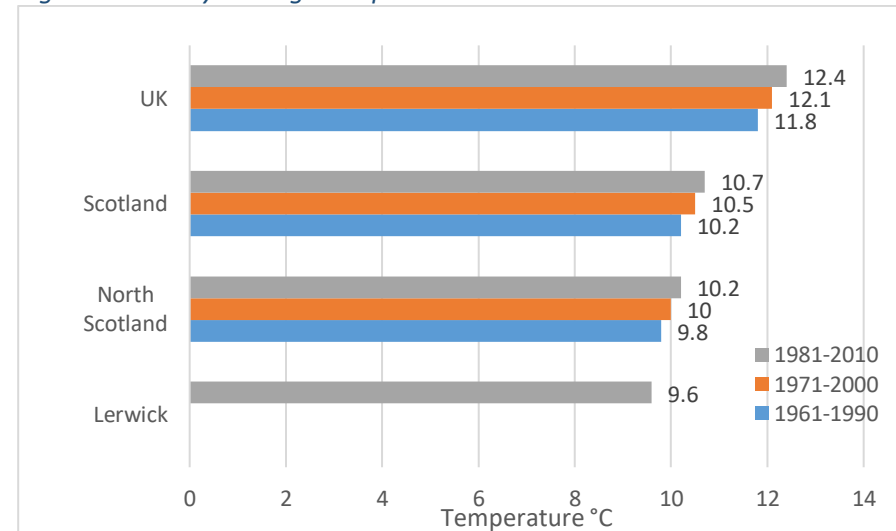
Temperature

In Northern Scotland the northern Outer Hebrides, Shetland and Orkney are warming at a similar level in all seasons, although

Orkney has warmed slightly less in winter and Shetland less in summer.

The average annual temperature in Shetland (Lerwick weather station) is 9.6°C for the period 1981-2010, data for previous time periods is not available at the local level. **Figure 1** below shows yearly average temperatures for Lerwick, North Scotland, Scotland and the UK over different time periods. Average yearly temperatures have increased in all areas over the time period. The highest increase is for the UK average with a rise of 0.6°C since 1961, 0.5°C in Scotland and 0.4°C in North Scotland.

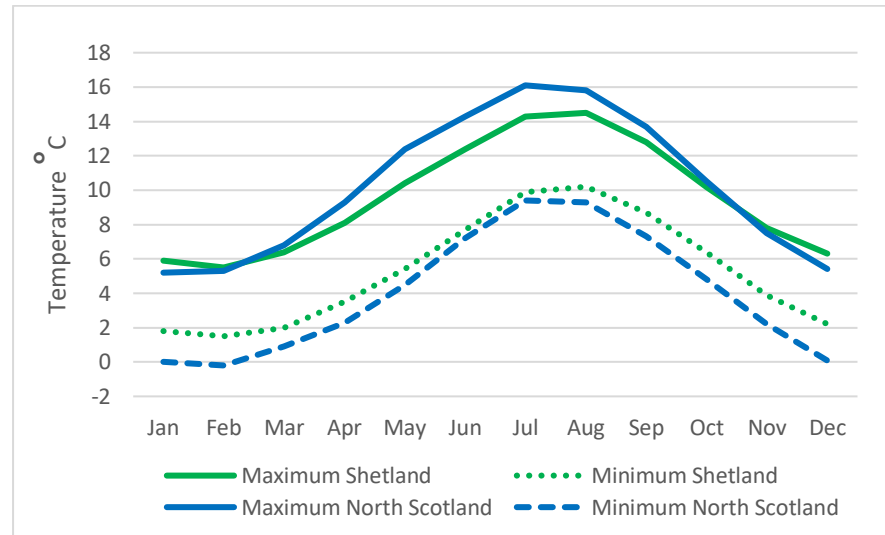
Figure 1 – Yearly average temperatures



Source: MetOffice (Lerwick data only available for 1981-2010)

Figure 2 provides information on average monthly temperatures for Shetland and for North Scotland from 1981-2010.

Figure 2 – Average maximum and minimum monthly temperatures 1981-2010



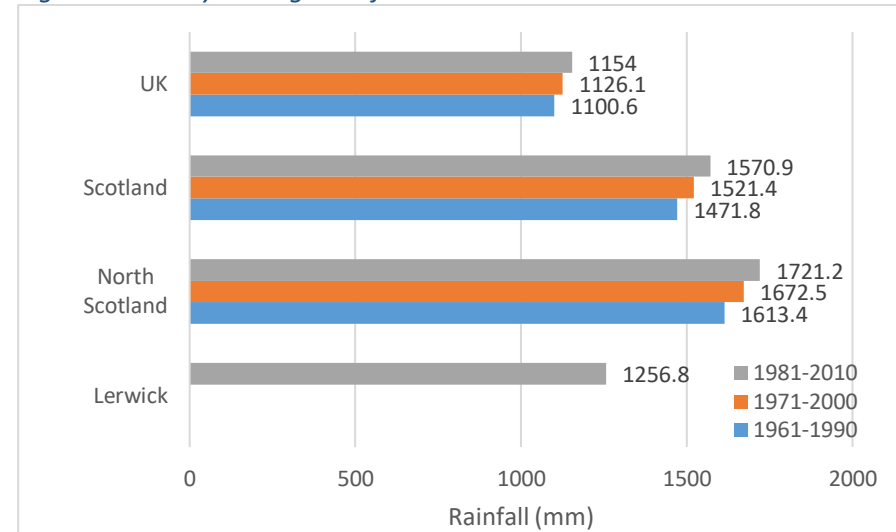
Source: MetOffice Lerwick Weather Station

Precipitation

The average annual rainfall for Shetland (Lerwick weather station) is 1256.8mm for the period 1981-2010; data for previous time periods is not available at the local level. This is lower than the Scottish average. **Figure 3** shows yearly average rainfall for Lerwick, North Scotland, Scotland and the UK over different time periods. Average annual rainfall has increased in all areas over the time period. Scotland and North Scotland have both experienced an increase in rainfall of 6.7% while in the rest of the UK the average increase is 4.9%.

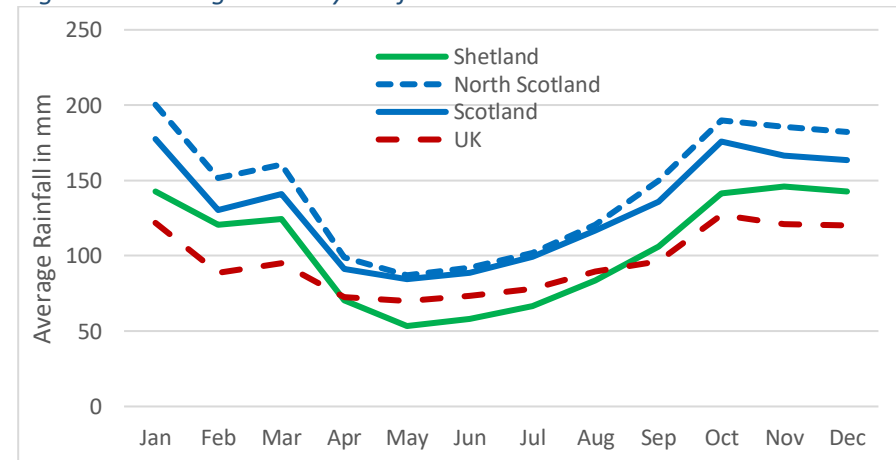
Figure 4 provides information on average monthly rainfall for Shetland, North Scotland, Scotland and the UK from 1981-2010.

Figure 3 – Yearly average rainfall



Source: MetOffice (Lerwick data only available for 1981-2010)

Figure 4 – Average monthly rainfall 1981-2010



Source: MetOffice Lerwick Weather Station

Climate Projections

The [UK Climate Projections website](#) provides data on Climate Change projections for the UK and its regions. The site provides predictions for low, medium and high emissions scenarios.

Estimated climate change projections for the remainder of the 21st Century for North Scotland are:

- a mean temperature increase of 1.6°C in winter and 2°C in summer; and,
- a mean precipitation increase of 13% in winter and a decrease of 11% in summer.

Temperature Predictions

Predicted temperature increases for Shetland are shown in **Table 1** below. In the short to medium term temperatures are predicted to increase by up to 3°C throughout the year. Long-term predictions are that temperatures will increase by up to 5°C with more pronounced increases in the summer.

Table 1 – Predicted temperature increase for Shetland

Timeframe	Predicted Annual Increase	Predicted Summer Increase	Predicted Winter Increase
2010-2039	1-2°C	1-2°C	1-3°C
2030-2059	2-3°C	2-3°C	2-3°C
2070-2099	3-4°C	4-5°C	3-4°C

Source: UK Climate Projections UKCP09, based on medium emissions, Probabilistic Land, 90% Probability

Probabilistic projections for temperature changes based on a medium emission scenario are shown in **Figures 5, 6 and 7** on the following page.

Precipitation Predictions

Predicted precipitation changes for Shetland are shown in **Table 2** below. In the short and medium term precipitation is predicted to increase by up to 10% annually. It is anticipated this will be higher in winter with a 10-20% increase in the short-term and 20-30% medium term. Long-term predictions are that precipitation will increase by up to 20% annually in the short and medium term and as much as 40-50% in the winter in the long term.

Table 2 – Predicted precipitation increase for Shetland

Timeframe	Predicted Annual % increase	Predicted Summer % increase	Predicted Winter % increase
2010-2039	0-10%	0-10%	10-20%
2030-2059	0-10%	0-10%	20-30%
2070-2099	0-20%	0-20%	40-50%

Source: UK Climate Projections UKCP09, based on medium emissions, Probabilistic Land, 90% Probability

Probabilistic projections for precipitation percentage changes in winter based on a medium emission scenario are shown in **Figures 8, 9 and 10** on page 9 of this report.

Figure 5 – Predicted Change in Annual Temperature, 2010-2039



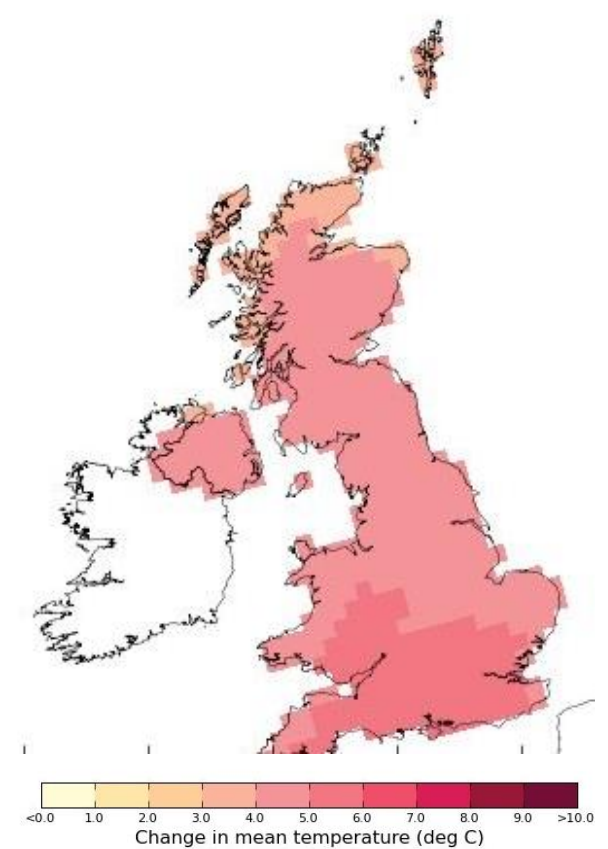
Source: UK Climate Projections UKCPO9, based on medium emissions, Probabilistic Land, 90% Probability

Figure 6 – Predicted Change in Annual Temperature, 2030-2059



Source: UK Climate Projections UKCPO9, based on medium emissions, Probabilistic Land, 90% Probability

Figure 7 – Predicted Change in Annual Temperature, 2070-99



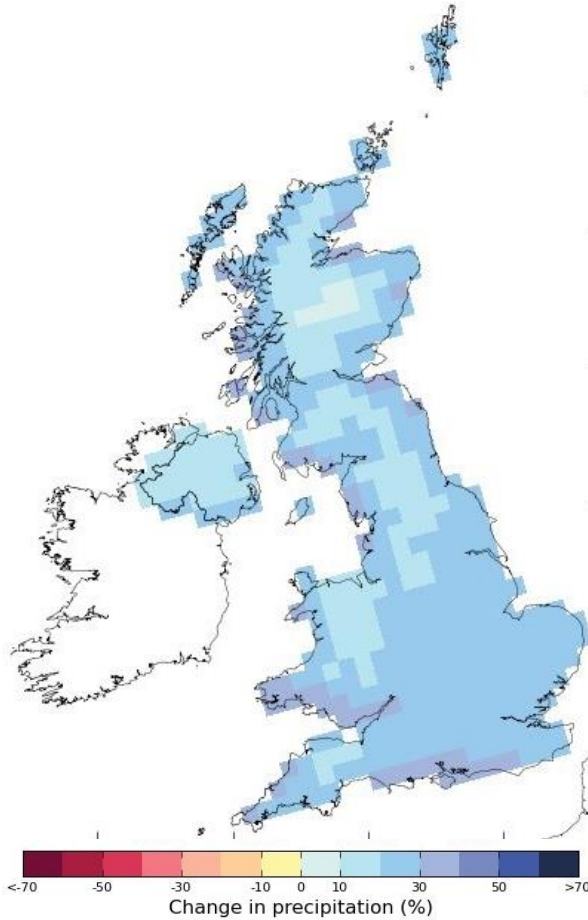
Source: UK Climate Projections UKCPO9, based on medium emissions, Probabilistic Land, 90% Probability

Figure 8 – Predicted % Change in Winter Precipitation, 2010-2039



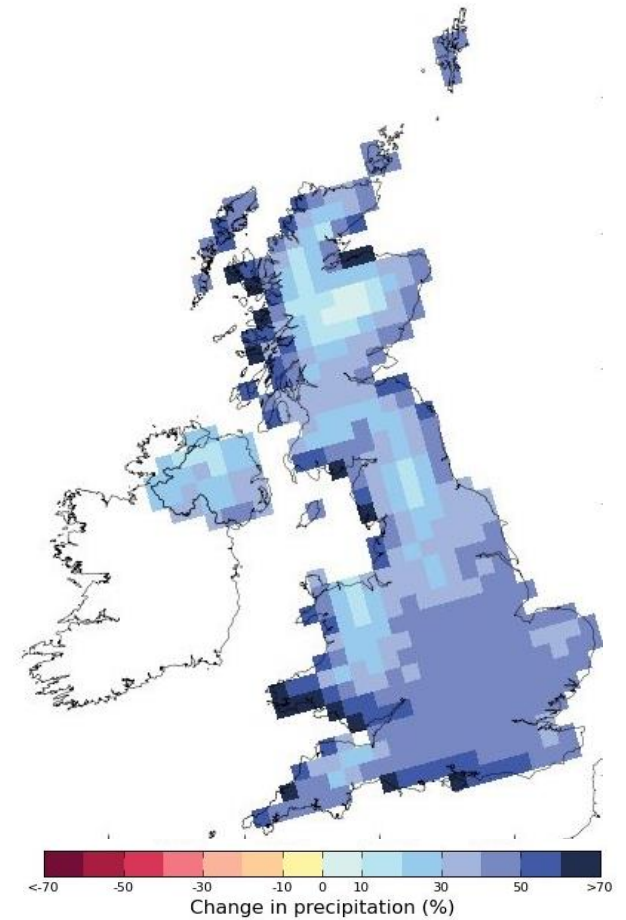
Source: UK Climate Projections UKCP09, based on medium emissions, Probabilistic Land, 90% Probability

Figure 9 – Predicted % Change in Winter Precipitation, 2030-2059



Source: UK Climate Projections UKCP09, based on medium emissions, Probabilistic Land, 90% Probability

Figure 10 – Predicted % Change in Winter Precipitation, 2070-2099



Source: UK Climate Projections UKCP09, based on medium emissions, Probabilistic Land, 90% Probability

Greenhouse Gas Emissions

Climate change is a global issue with a strong global consensus that greenhouse gases (GHG) must be reduced in order to avoid significant adverse effects. The Climate Change (Scotland) Act 2009 introduced a statutory target to reduce Scotland's greenhouse gas emissions by at least 80% by 2050. An interim target of 42% lower than the baseline was also set.

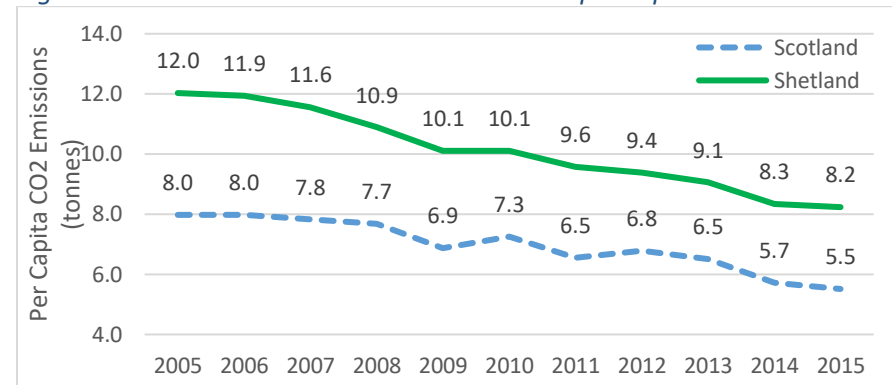
In recent years, increasing emphasis has been placed on the role of regional bodies and local government in contributing to energy efficiency improvements, and hence reductions in carbon dioxide emissions. Scottish Ministers set year on year targets to facilitate a year on year reduction. The Shetland Islands Council (SIC) Corporate Plan sets a target of reducing Shetland's CO2 emissions by 30% by 2020.

Carbon dioxide emissions contribute the greatest proportion of total greenhouse gas emissions in the UK, accounting for around 82% in 2014 (Department for Energy and Climate Change, 2016). Estimates of carbon dioxide emissions are available for Local Authority areas from the Department for Energy and Climate Change.

Carbon Dioxide (CO2) emissions per capita (tonnes) for Shetland is estimated to be 49% higher than that of Scotland - 8.2 for Shetland compared to 5.5 for Scotland. Emissions for both Scotland and Shetland have been decreasing over the past decade. With both decreasing at a similar rate but with no closure of the gap between them. Scottish emissions have reduced by 32% and Shetland

emissions by 31%. CO2 Emissions per Capita for Shetland and Scotland from 2005 to 2015 can be seen in **Figure 11**.

Figure 11 – Scotland & Shetland CO2 Emissions per capita 2005-2015



Source: UK local authority and regional estimates of carbon dioxide emissions national statistics: 2005-2015

Estimated emissions are broken down into key sectors:

- **Industry and Commercial emissions** including industry and commercial electricity/gas/other fuels and large industrial installations
- **Domestic** including domestic electricity/gas/other fuels
- **Transport** including Road Transport on A roads/Minor roads and Other Transport

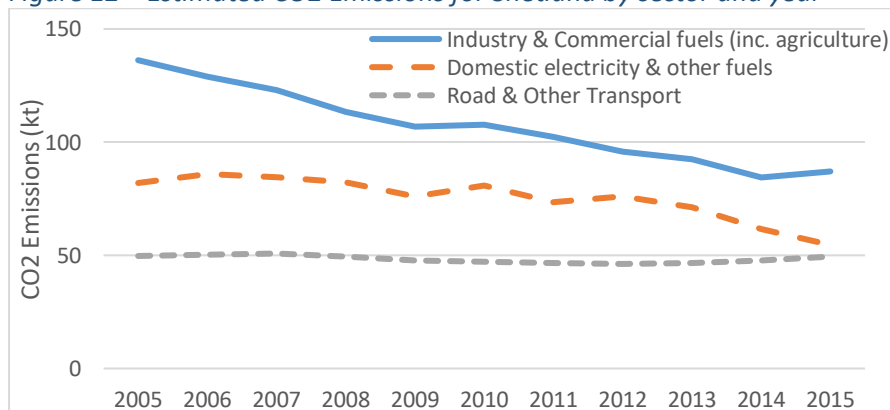
The Shetland data does not include commercial and domestic gas as there is none available in Shetland as appropriate to this measure. This is also the case for large installations. There are no motorways or railways in Shetland and as such transport figures do not include these. Estimated CO2 Emissions for the three sectors from 2005-2015 in Shetland is shown in **Table 3** and **Figure 12**.

Table 3 – Estimated CO2 Emissions for Shetland by year

Year	Industry & Commercial (kt CO2)	Domestic (kt CO2)	Transport (kt CO2)	TOTAL (kt CO2)	Population (mid-year estimates)	Per Capita Emissions (t)
2005	136.2	81.9	49.6	267.6	22300	12.0
2006	129.0	85.9	50.3	265.2	22200	11.9
2007	123.1	84.5	50.8	258.4	22400	11.6
2008	113.3	82.2	49.3	244.7	22500	10.9
2009	106.8	75.9	47.6	230.3	22800	10.1
2010	107.8	80.9	47.3	236.1	23100	10.2
2011	102.4	73.4	46.6	222.5	23200	9.6
2012	95.8	75.9	46.2	217.8	23200	9.4
2013	92.3	71.2	46.6	210.0	23200	9.1
2014	84.4	61.6	47.8	193.8	23200	8.3
2015	87.0	54.6	49.4	191.0	23200	8.2

Source: UK local authority and regional estimates of carbon dioxide emissions national statistics: 2005-2015

Figure 12 – Estimated CO2 Emissions for Shetland by sector and year

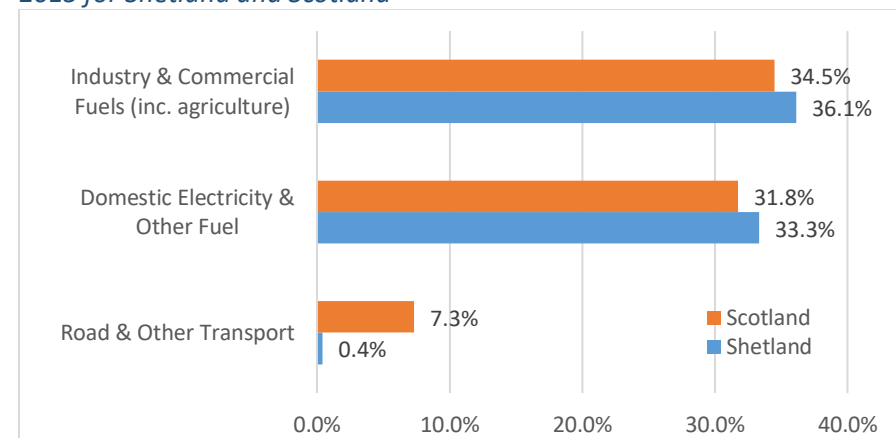


Source: UK local authority and regional estimates of carbon dioxide emissions national statistics: 2005-2015

Figure 13 shows the percentage reduction in emissions for each sector from 2005 to 2015 for both Scotland and Shetland. For both Scotland and Shetland the greatest reductions in emissions has been in 'Industry and Commercial fuels' and 'Domestic Electricity and other fuels'. Reductions from transport are falling at a much slower rate.

Shetland emissions for 'Industry and Commercial fuels' and 'Domestic Electricity and other fuels' are decreasing at a faster rate than the rest of Scotland. Due to the geography of Shetland there is a heavy reliance on private cars, ferry and air travel. As a result, emissions from road and other transport in Shetland remains relatively static with only 0.4% reduction in emissions from 2005 to 2015. The rest of Scotland has seen a 7.3% reduction in emissions from transport in the same time period.

Figure 13 – Reductions in estimated CO2 Emissions by sector for 2005-2015 for Shetland and Scotland



Source: UK local authority and regional estimates of carbon dioxide emissions national statistics: 2005-201

Key Messages

Climate Change projections for the UK predict a 2.4°C increase in the mean annual temperature by the end of the 21st Century..

The climate in Shetland is both warmer and wetter than it was 50 years ago and this trend is predicted to continue.

Shetland is estimated to have much higher Carbon Dioxide Emissions than the rest of Scotland – estimates show that these emissions have been falling at a similar rate to Scotland over the last decade.

The LOIP may have an effect on Greenhouse Gas Emissions through its ambitions for:

- economic growth in key sectors (including energy);
- an increase in the working age population leading to overall population growth; and,
- reducing household bills (including travel and heating bills).

Inter-relationships with other SEA topics

- Topic 2: Air
- Topic 3: Water
- Topic 4: Soils
- Topic 5: Material Assets
- Topic 6: Biodiversity, Fauna and Flora
- Topic 7: Landscape & Cultural Heritage
- Topic 8: Population and Human Health

Topic 2: Air

Air Pollution

Air pollution results from the introduction of a range of substances into the atmosphere from a wide variety of sources, including industry, transport and power generation. Even domestic activities such as driving, heating and cooking contribute, as do natural sources like sea salt, wildfires, volcanic activity, soil erosion and farming (Scottish Government, 2015).

Air pollution can have short and long-term effects on:

- health, particularly for people with pre-existing health conditions;
- the environment causing acidification of soils and water, damaging plant and animal life in forests, lochs and rivers;
- biodiversity through nutrients being added to the soil; and,
- the fabric of buildings and historic monuments.

The main industrial area in the islands is the Gremista and Green Head Industrial Estate to the north of Lerwick. There is a high concentration of regulated activity in this area including a landfill site, energy recovery plant and an oil-fired power station. The Sullom Voe oil terminal handles around 25 million tonnes of oil each year and also contains a power station that supplies some of the island's electricity. Other industrial processes include quarrying, mineral processes and fish processing activities.

Air Pollution sources in Shetland are identified in **Table 4**.

Table 4 – Air Pollution sources in Shetland

Source	Description
Road Traffic	Traffic density is very low in comparison to motorway and city traffic. There are very few roads and junctions where traffic is in excess of 5,000 and 10,000 vehicles per day.
Other Transport	There are air and seaports but no trains in Shetland. The main airports are Sumburgh & Scatsta and the main seaports are Lerwick, Scalloway and Sullom Voe.
Industrial	The key industry sectors in Shetland are Fisheries, Oil Production Operations and Agriculture. A (small) major fuel storage depot is located in Lerwick.

Source: Local Air Quality Monitoring Report, Shetland Islands Council 2014

Air Quality

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland provides a framework for air quality control through air quality management and air quality standards. The aim of the Strategy is to set out air quality objectives and policy options to further improve air quality in the UK from today into the long term. As well as direct benefits to public health, these options are intended to provide important benefits to quality of life and help to protect our environment.

The Air Quality (Scotland) Regulations 2000 (and the 2002 and 2016 amendments) set out a series of air quality objectives for key pollutants. These include:

- Benzene
- 1,3-Butadiene

- Carbon Monoxide
- Lead
- Nitrogen Dioxide
- Particles (PM10 and PM25)
- Sulphur Dioxide

Where air quality objectives are not being met, Local Authorities have a duty under the Environment Act 1995 to review and assess the air quality within their geographical areas. The process is designed to identify any exceedances of the UK Air Quality Strategy Objectives. Where a local authority identifies an area where these are exceeded they are required to develop and implement a plan (with stakeholders) to improve air quality within the area. These areas are called Air Quality Management Areas (AQMA).

There are no existing air quality constraints or significant areas of pollution in Shetland. At present there are no AQMAs in Shetland, the nearest being in Aberdeen and Inverness.

The Local Air Quality Management (LAQM) process requires local authorities to provide progress reports in the intervening years between the three-yearly Updating and Screening Assessment reports. The latest LAQM Progress Report for Shetland was in 2014 and provides information on developments and air quality monitoring. The Report concludes that there are no predicted exceedances of Air Quality objectives in Shetland.

Key Messages

Air pollution in Shetland is low with no Air Quality Management Areas at present and none anticipated in the near future.

The LOIP is unlikely to have an impact on Air Quality in Shetland and as such has been scoped out of the SEA process.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 3: Water
- Topic 4: Soil
- Topic 6: Biodiversity, Fauna and Flora
- Topic 8: Population and Human Health

Topic 3: Water

“Water plays a significant role in the landscape of Orkney and Shetland. A clean water environment is important to key industries such as wildlife and heritage tourism, beef and dairy farming, fisheries, aquaculture, and production of hill lambs. In the last 30 years, the oil industry has formed a vital part of the economies of Orkney and Shetland and has been carefully monitored and regulated.

More recently, the development of wave and tidal renewable energy has grown in significance, with test sites in several coastal water areas.” (*Improving the quality of Scotland's water environment, Orkney and Shetland area management plan 2010–2015*)

Water Quality

‘Improving the quality of Scotland's water environment, Orkney and Shetland area management plan 2010–2015’ is a supplementary plan to the Scotland River Basin Management Plan. The purpose of the plan is to maintain and improve the ecological status of the rivers, lochs, estuaries, coastal waters and groundwater areas in Orkney and Shetland. The plan supplements the River basin management plan for the Scotland river basin district, and helps to deliver EU Water Framework Directive requirements. It focuses on local actions for Orkney and Shetland and highlights the opportunities for partnership working to ensure that we all benefit from improvements to the water environment.

The main water quality issues for Shetland are identified in the plan as:

- diffuse source pollution linked to sewage disposal, farming and marine transport;
- point source pollution from sewage treatment, predominantly affecting coastal waters;
- alterations to beds and banks, primarily relating to agriculture; and,
- water abstraction and flow regulation for drinking water.

SEPA are the responsible authority for monitoring water quality in Scotland to the requirements set out by the Water Framework Directive. The Directive requires all water features in a category (i.e. rivers, lochs, transitional waters, coastal waters and groundwater) above a certain size threshold to be defined as water bodies. 87 waterbodies in Shetland fall into these categories and are monitored.

The conditions of Scottish rivers has improved significantly over the last 25 years and nearly half of our rivers are in good or high condition (*environment.gov.scot*). 77% of lochs and rivers in Shetland are in a high or good condition (*SEPA*). 97% of Scotland's coastal waters are in good or excellent condition (*environment.gov.scot*). In Shetland 100% of our coastal waters are in good condition with none in excellent condition (*SEPA*). **Table 5** provides a summary of the current quality of water in Shetland.

Table 5 – Summary of the current quality of surface waters in Shetland

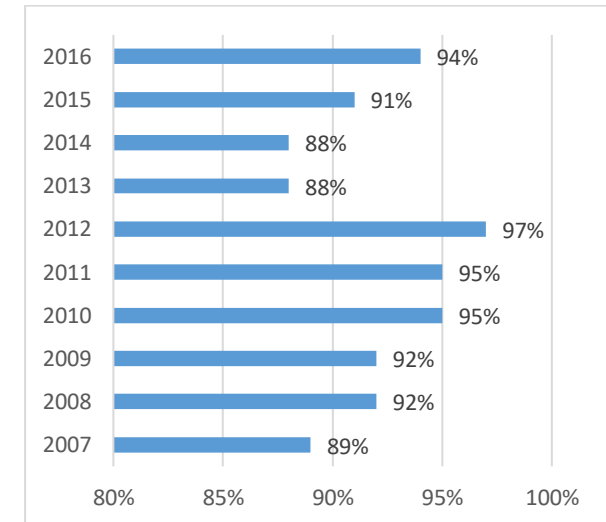
Water Type	Total Number	Total Length / Area	2016 Water Classification Status				
			High	Good	Moderate	Poor	Bad
Lochs	5	4.21 Km ²	<ul style="list-style-type: none"> • 3 lochs • 60% of total number • 2.19km² • 52% of total area 	None	<ul style="list-style-type: none"> • 2 lochs • 40% of total number • 2.02 km² • 48% of total area 	None	None
Rivers/ Burns	17	108.22 Km	<ul style="list-style-type: none"> • 2 Rivers • 12% of total number • 13.73kms • 13% of total length 	<ul style="list-style-type: none"> • 12 Rivers • 71% of total number • 73.29kms • 78% of total length 	<ul style="list-style-type: none"> • 3 Rivers • 20% of total number • 21.24kms • 18% of total area 	None	None
Coastal Waters	65	3,580.06 Km ²	None	<ul style="list-style-type: none"> • 65 Areas • 100% of total number • 3580km² • 100% of total area 	None	None	None

Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Water quality has been improving in recent years with a total of 94% of waterbodies in Shetland (rivers, lochs and coastal) classified as being in good or high condition. This is lower, however, than the rate in 2012 which saw a high of 97%. **Figure 14** provides an overview of these rates from 2007-2016.

The figures on the following page also provide an overview of water quality status across all categories. The overall status of all waterbodies in Shetland is shown in **Figure 15**. Since 2007 the number of waterbodies in good condition has risen but the number in High condition has decreased.

Figure 14 – % of waterbodies in Shetland classified as being in good or high condition 2007-2016



Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Figure 16 shows the overall status of Lochs in Shetland. The number of lochs in high condition has improved, with none now in poor or bad condition. The number in moderate rather than good condition, however, has increased. **Figure 17** shows the overall status of Coastal waters around Shetland. All waters are classified as being in a good condition. Over 40% were classified as high in 2007 and 2009 with none classified as High for the past 4 years.

Figure 15 – Overall Status of All Water Bodies in Shetland

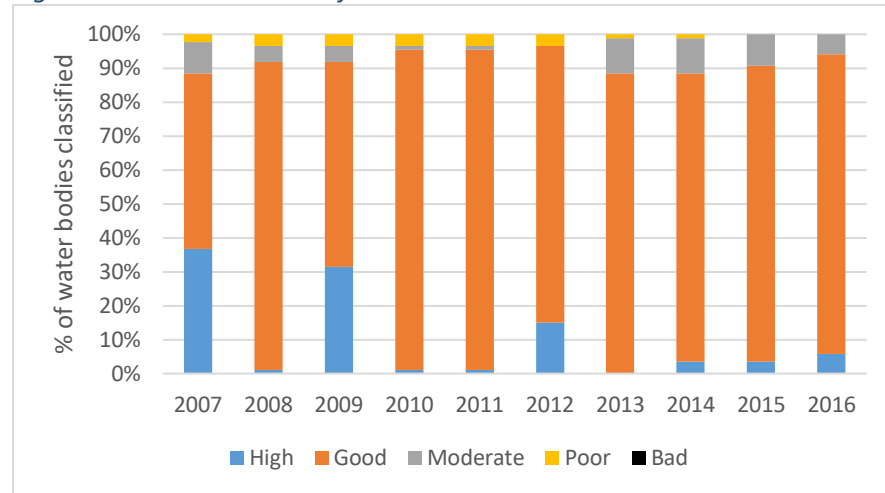
Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Figure 16 – Overall Status of Lochs in Shetland

Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Figure 17 – Overall Status of Coastal Waters in Shetland

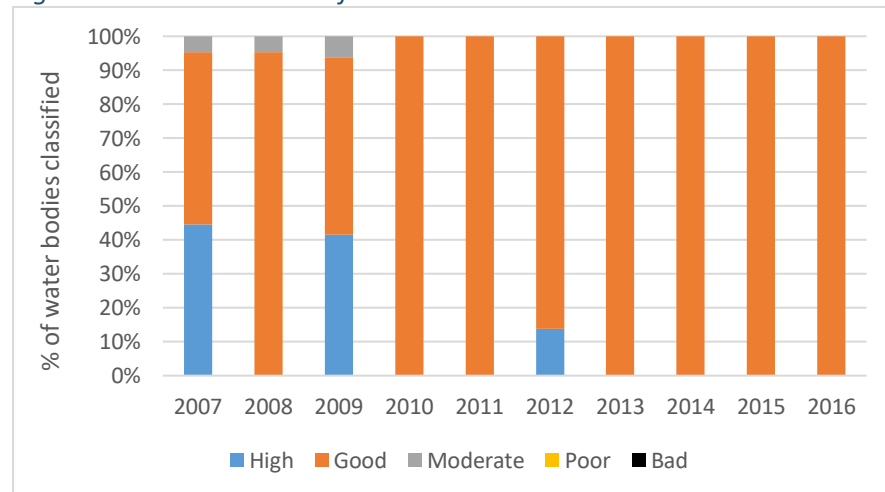
Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Figure 18 – Overall Status of Rivers in Shetland

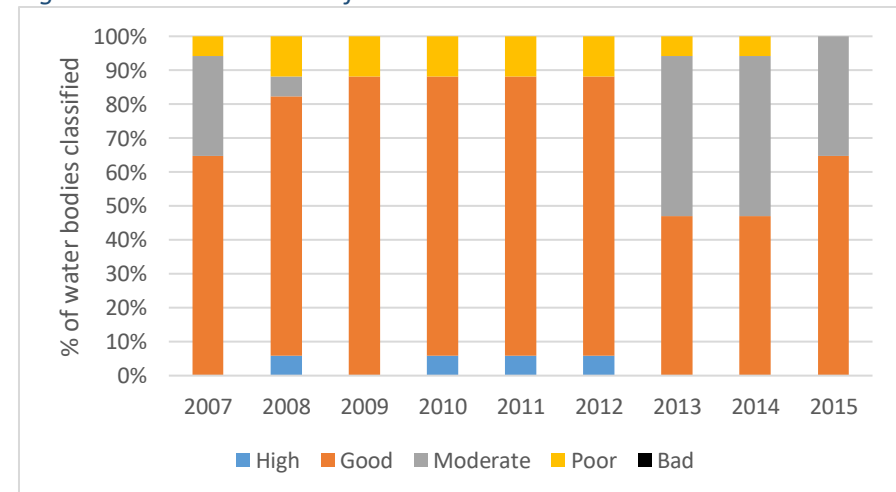
Source: <https://www.sepa.org.uk/data-visualisation/water-classification-hub>

Figure 18 shows the overall status of rivers in Shetland. The number of rivers in a good or high condition has decreased since 2007 although there has been some improvement in recent years in the number of rivers classified as good. The number of rivers in a poor condition has now decreased to none.

Public Water Supply

The public water supply is extracted from 24 lochs and burns and piped to one of 21 treatment works. In addition, seven water supply zones have a total of 17 service reservoirs.

Table 6 lists the water bodies used as sources and **Table 7** gives details of the treatment works and their use. This information was compiled in 2001 and at present is the most up to date available.

Table 6 - Water sources in Shetland

Water Bodies used as sources	Water available per day	Associated Water Treatment Works
Arthur's Loch	0.10	West Burrafirth
Bu Water	0.20	Whalsay
Burn of Channerwick	0.30	Sandwick
Burn of Geosetter	0.10	Bigton
Burn of Greystanes	0.20	Sandwick
Burn of Laxdale	0.20	Cunningsburgh
Eela Water	2.50	Sullom Voe II
Gorda Water	0.20	Papa Stour
Helliers Water	0.50	Unst
Laxo Burn	0.60	Mid Yell
Loch of Brindister	1.20	Lerwick
Loch of Brough	0.70	Bressay
Loch of Brough	0.50	Cullivoe
Loch of Brow	0.40	Sumburgh
Loch of Huesbreck	0.50	Sumburgh
Loch of Huxter	1.50	Whalsay
Loch of Kettlester	1.22	South Yell
Loch of Watlee	1.00	Unst
Roer Water	4.55	Sullom Voe II
Sandy Loch	6.20	Lerwick
Skerries Reservoir	0.03	Skerries
Skutes Water	0.70	Fetlar
Springs Burn	0.06	Foula
Vaadal Burn	0.06	Fair Isle
TOTAL	23.52	<i>M lpd - million litres per day</i>

Source: Report of survey for the Shetland Structure Plan 2001-2016

Table 7 – Water Treatment and Usage in Shetland (2001)

Water treatment Works	Population Served	Average Water Consumption (M lpd)	Average Daily Demand as % of Capacity
Bigton	170	0.06	60
Bressay	330	0.10	67
Cullivoe	260	0.06	60
Cunningsburgh	450	0.13	87
Fair Isle	70	0.02	33
Fetlar	100	0.04	40
Foula	50	0.01	20
Lerwick	9,000	5.32	78
Mid Yell	550	0.25	50
Papa Stour	40	0.05	100
Sandness*	150	0.04	80
Sandwick	840	0.24	48
Skeld and Reawick*	400	0.10	50
Skerries	90	0.02	67
South Yell	300	0.10	83
Sullom Voe II	3,600	3.30	55
Sumburgh	1,500	0.47	78
Unst	1,000	0.46	92
Walls*	400	0.12	80
West Burrafirth	30	0.02	67
Whalsay	1,020	0.27	54
TOTAL	20,350	11.18	1,349

*These works will be abandoned when the West Mainland Water Scheme is completed

Source: Report of survey for the Shetland Structure Plan 2001-2016

Flooding

The 2011 Strategic Flood Risk Assessment for Shetland identified that the most common occurrences of flooding within Shetland can be categorised as:

- coastal flooding;
- fluvial flooding, flooding originating from a watercourse; and,
- drainage flooding, surcharging of manmade drainage systems.

Analysis of the historical reported incidents of flooding illustrate that the most common source of flooding was inundation by the sea. Analysis of the reported incidents in the current period illustrates that coastal inundation is still an issue, however, the majority of incidents are the result of a combination of heavy rainfall and insufficient or poorly maintained drainage infrastructure.

Vulnerability to the Effects of Climate Change

The UK Climate Projections Briefing Report 2010 states that sea level around the UK has risen by about 1 millimetre per year in the 20th century; the rate of rise in the 1990s and 2000s has been higher than this.

The UK Climate Projections report on Marine and Coastal projections 2009 identifies the following sea-level projections:

- UK coastal absolute sea level rise (not including land movement) for 2095 of approximately 12–76 cm based on a medium emissions scenario;
- taking vertical land movement into account, slightly larger sea level rise projections in the more southern parts of the UK where land is subsiding, and lower increases in relative sea level for the north; and,
- the shelf sea areas around the UK are projected to be 1.5 to 4°C warmer by the end of the 21st Century and have lower salinity.

Although the relative significance of rainfall-related flooding events has increased, coastal-related flooding is still a highly significant issue and again, climate change is predicted to cause further problems. Shetland is thought to be sinking at a rate of approximately 2 to 3 millimetres (mm) per year and sea level rise over the next century is predicted to be between 12-76cm. At present, storm hazard on Shetland is potentially greater than anywhere else in the UK and maximum wave heights around Shetland have been rising in recent decades.

Increases in the frequency and severity of storms are predicted, with coastal water extreme levels forecasted to become 5 to 10 times more likely by the 2050. The combination of the above factors will extend the inward limit of storm driven water and whilst this is not a problem for many areas of Shetland's rocky coastlines, voe heads could be significantly affected due to the funnelling of storm surges.

Online Flood Maps developed by SEPA indicate that the main risk of flooding in Shetland is coastal. Existing coastal defences will need to be replaced or modified to adapt to the effects of climate change. A study entitled *Climate Change: Flooding Occurrences Review* (Scottish Executive Central Research Unit 2002) found that within the next century, the effects of climate change could make most of Scotland's coasts below the 5 metre contour more vulnerable to flood risk.

Erosion of beaches from rising sea levels and increased wave action is a current problem which is predicted to become more significant in coming years. Offshore sediment supplies are finite and the potential for natural recharging of these beaches is therefore limited. Human activity such as provision of coastal defences and other physical structures can cause additional erosion.

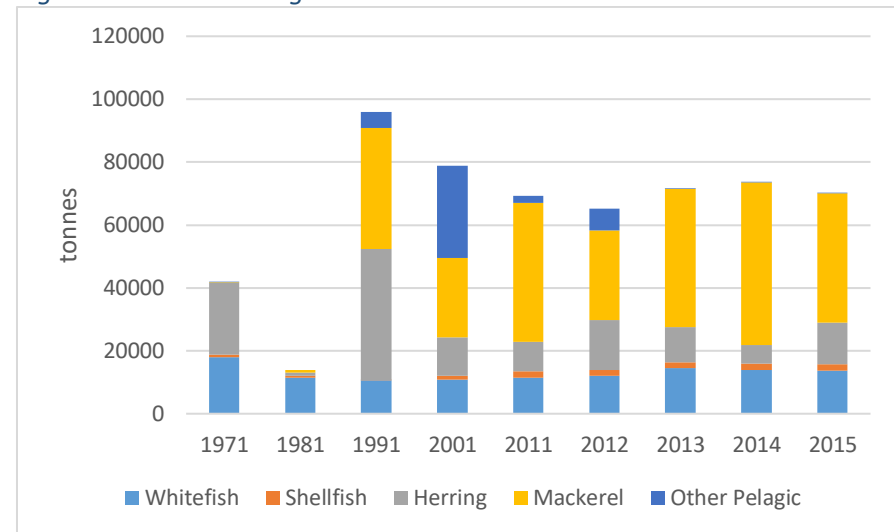
Fishing and Aquaculture industries

In 2015, a total of 68,334 tonnes of wet fish was landed in Shetland to a value of £56,766,851. **Figure 19** shows the fish landings in Shetland over previous decades. The fishing industry is supported by the following species:

- pelagic fishery – mackerel, herring, blue whiting;
- white fishery – haddock, cod, anglerfish, nephrops; and,
- inshore fishery – scallops, crabs, lobsters, nephrops.

Fish farms occupy many of the suitable voes and produce salmon, sea-trout, char, halibut, cod and shellfish. Mussels are the most commonly farmed seafood in the voes.

Figure 19 – Fish Landings in Shetland 1971-2015



Source: Shetland in Statistics, SIC

Scotland's Aquaculture provides details of aquaculture sites registered since 1900 in Scotland. In Shetland:

- there are 262 Sites for production of Aquaculture registered since 1900;
- there are 201 sites that have produced/are new in the last 3 years;
- 65% of these sites are for Shellfish;
- 35% of these sites are for fish; and,
- 98% of sites are seawater rather than freshwater.

Table 8 provides details of the type of aquaculture being undertaken by these sites.

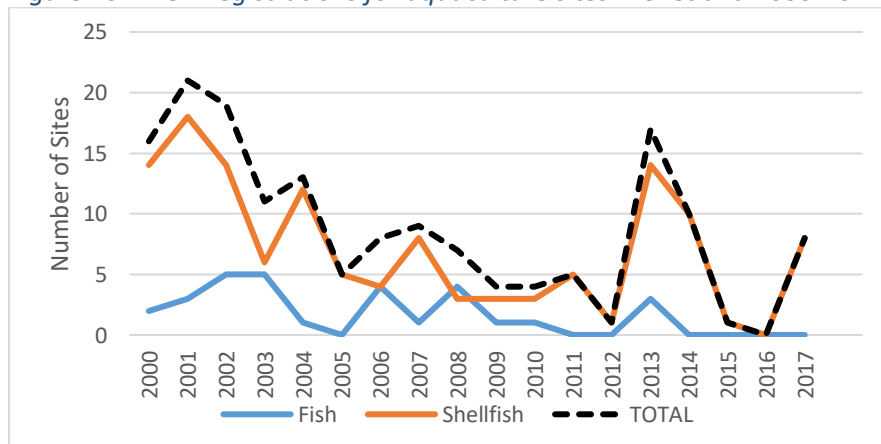
Table 8 – Current Aquaculture Sites in Shetland

Aquaculture Type	Number of Current Sites
Common Mussel	130
Atlantic Salmon	69
Lumpsucker	56
Wrasse	17
Pacific Oyster	2
Brown Trout and Sea Trout	0
Marine Hatchery/various	1

Source: http://aquaculture.scotland.gov.uk/data/site_details.aspx

Figure 20 provides an overview of the number of registrations for Aquaculture for both fish and shellfish since 2000.

Figure 20 – New registrations for aquaculture sites in Shetland 2000-2017



Source: http://aquaculture.scotland.gov.uk/data/site_details.aspx

Marine Designations

Shellfish Water Protected Areas

The European Community Shellfish Waters Directive 79/923/EEC, was adopted in 1979 to protect and, where necessary, improve the quality of waters where shellfish grow and to contribute to the high quality of directly edible shellfish products. In response to the requirements of the Shellfish Waters Directive SEPA has developed Pollution Reduction Plans for designated shellfish waters in Scotland. There are 22 designated Shellfish Waters around Shetland, the location of these are shown in **Figure 21** on the following page.

Marine Consultation Areas

Marine Consultation Areas are identified by Scottish Natural Heritage as deserving particular distinction in respect of the quality and sensitivity of the marine environment within them. Their selection encourages coastal communities and management bodies to be aware of marine conservation issues in the area. There are 4 Marine Consultation Areas in Shetland shown in **Figure 21** on the following page.

Nature Conservation Marine Protected Areas

There are 2 Nature Conservation Marine Protected Areas in Shetland's inshore waters. These are shown in **Figure 21** on the following page. A range of other designated sites fall within the Marine Protected Areas network including Special Areas of Conservation, Special Protected Areas (birds) and Sites of Scientific Interest, these are covered in more detail in **Topic 6** (Biodiversity, Flora and Fauna).

Demonstration and Research Marine Protected Area

The Demonstration and Research Marine Protected Area around Fair Isle is the only one in Scotland at present. This will investigate the factors affecting seabird populations on Fair Isle and demonstrate the socio-economic benefits of the marine environment and the additional benefits that MPA designation can bring to the community.

Marine Region

Under the Marine (Scotland) Act 2010, Scottish Ministers were given the power to identify the boundaries of Scottish Marine Regions (SMRs). 11 Marine Regions have been created in Scotland which cover sea areas extending out to 12 nautical miles. One of these areas covers Shetland and along with the Clyde Marine Region it is one of the first regions to be directed to take forward Marine Planning.

Marine Pollution

Marine pollution arises from various different sources including domestic sewage, industrial waste, naturally occurring nutrients and ballast discharged offshore by oil tankers. Other forms of pollution are those caused by noise and light; these are especially relevant in terms of aquaculture. Eutrophication, the enrichment of water, is the consequence of high levels of pollution from too many sewage outfalls and badly positioned septic tanks (SIC, Air Quality in Shetland 2007). Marine pollution can also occur in the event of an oil spill or marine dumping. Increasing levels of plastic and marine litter in the oceans is a global issue.

Figure 21 – Marine Designations in Shetland



Key Messages

The quality of both freshwater and coastal waters is relatively high in Shetland. Flooding related to Climate change including sea-level rise and extreme weather is an increasing issue which may have implications for Shetland both in the short and longer term.

Fishing and aquaculture is a key industry in Shetland and it is likely the LOIP will look to build on this in an effort to attract people to live, work, study and invest in Shetland.

The marine environment in Shetland has a number of designations in place to protect its special qualities. The new Marine Region Plan will be a key element in managing both the development of industry and in the protection and enhancement of the marine environment.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 4: Soil
- Topic 5: Material Assets
- Topic 6: Biodiversity, Fauna and Flora
- Topic 7: Landscape & Cultural Heritage
- Topic 8: Population and Human Health

Topic 4: Soil

Scotland's Soils

Our soils are vital for growing food, protecting our water quality and as a carbon store. Our soils vary depending on their geology, make-up, climate, location and management.

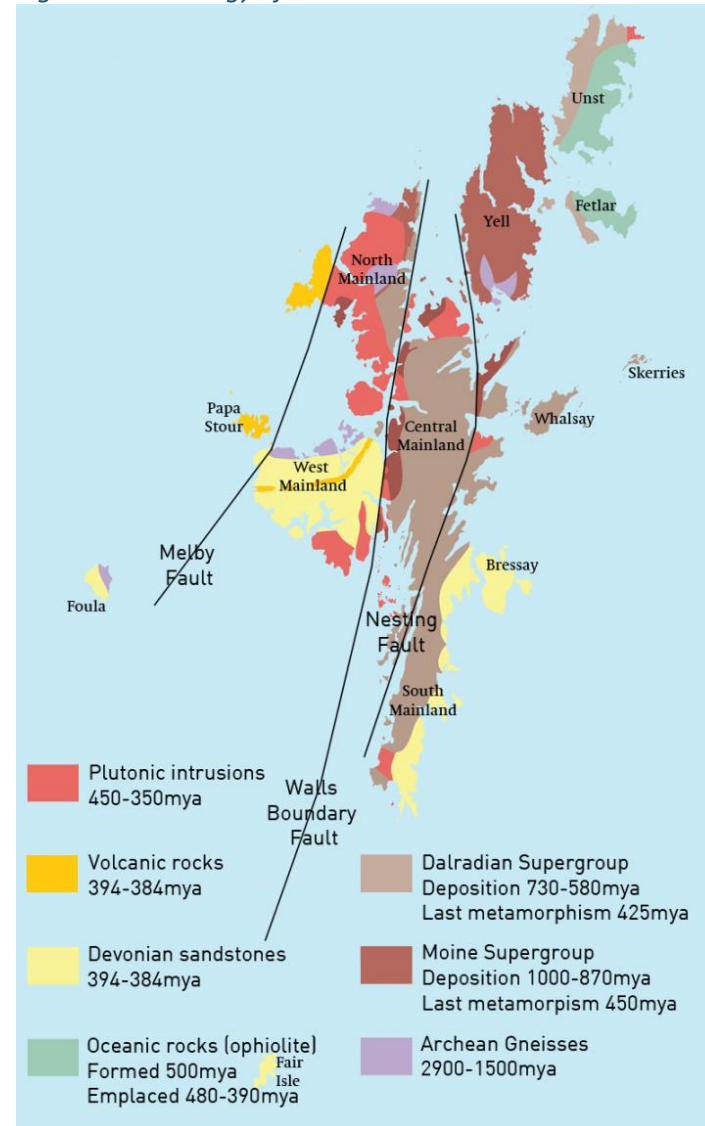
Scotland's soils website states that most of the soils in Scotland have formed since the end of the last ice age, so they are relatively young compared with soils in other parts of the world.

Soil in Scotland contains a lot of organic matter, living and dead material from plants and animals most of which is organic carbon. This makes our soil a significant carbon store. The high level of carbon matter in our soils is due to our cold and wet climate. This slows down the process by which the organic matter breaks down. The wet climate also washes a lot of elements from the soil leaving them acid rich and nutrient poor.

Geology of Shetland

The whole of Shetland was established as a UNESCO Geopark in 2009 due to its outstanding geological heritage. The majority of the rocks of Shetland are part of an old, deeply eroded mountain chain called the Caledonian Orogenic Belt which was raised up as a mountain block between 400 and 600 million years ago. The key geological features of Shetland can be seen in **Figure 22**.

Figure 22 – Geology of Shetland



Source: Shetland Amenity Trust

Soils of Shetland

The soils of Shetland are a product of both its geology and climate as well as a number of other factors.

Peat

Over half the area of Shetland is covered in peat which has been accumulating at a rate of about 1mm a year for at least 3000 years (Shetland Amenity Trust). The SNH 2014 scoping report 'Managing and restoring blanket bog to benefit biodiversity and carbon balance' estimates that the total blanket peat resource is 56,063ha (SNH, 2014), only 11% of which is under designation.

SNH identify Shetland as one of 12 priority assessment areas for peat with 77% of the peat area showing dominant erosion features. They attribute much of the erosion to sheep grazing and to a much smaller extent domestic peat cutting. Bare peat and channels within it increase the likelihood of erosion both through runoff and to a lesser extent drying out and wind erosion.

The benefits of blanket bog peat include:

- a habitat for wildlife;
- carbon sequestration and storage; and,
- regulating water flow and purifying water.

The Shetland Amenity Trust is currently undertaking a Peatland restoration project and opportunities for restoration arise from major construction projects and schemes such as the Environmentally Sensitive Areas Scheme.

Vegetation

Shetland's vegetation is dominated by peatland, heather moorland and Montane habitats. Improved rough grassland is concentrated along the coast, around the voes and in the valleys. The best agricultural land available in Shetland, improved grassland and good rough grassland, can be found in the valleys of the central Mainland; along the south and east coasts of the southern Mainland; in eastern regions of Unst and Fetlar; and along the Walls boundary fault. These are the areas of greatest agricultural production.

Shetland's flora is impoverished in comparison to that of mainland Britain. This is largely due to the climate and the islands' isolation. Shetland has the highest average humidity in Britain. This, combined with its salt-laden atmosphere, limits the botanical diversity and the scope for crop growing in the Islands.

Shetland is predominantly treeless. There is plantation woodland at Kergord in the Weisdale valley and small patches of trees are scattered throughout Shetland in various sheltered locations. Although these are the most visible trees in Shetland, they are mainly non-native species. There are a large number of remaining native trees, particularly in the north, west and central Mainland which are of greater ecological importance. These are generally small and occur singly or occasionally in small groups, often in exposed situations, on cliff ledges, in ravines and on holms in lochs which are inaccessible to grazing animals.

Land Capability for Agriculture

It is estimated that Agriculture contributed about £688 million to the Scottish economy in 2014 (Scottish Government, 2015). It is difficult, however, to value the direct financial contribution that healthy soils make to our economy. It is now widely acknowledged that the sustainable management of soils, and the protection of soils' ability to deliver a wide range of environmental and ecological services, is essential to achieving sustainable economic growth.

Land Capability Classification for Agriculture mapping provides detailed information on soil, climate and relief for those involved in the management of land use and resources. The classification ranks land from 1 to 7 on the basis of its potential productivity and cropping flexibility determined by the extent to which its physical characteristics (soil, climate and relief) impose long-term restrictions on its agricultural use. Land classified from 1 to 3.1 is considered to be prime agricultural land, while land classified as 3.2 to 7 is considered to be non-prime (Soil Survey of Scotland Staff, 1981).

There are no areas of prime agricultural land in Shetland. The percentage of land classified for other land use classes include:

- 3% for mixed agriculture
- 23% improved grassland
- 71% rough grazing

In recent years there has been a decline in agricultural activity. The total land used for tillage in Shetland was almost 437 hectares in 2001. This figure fell to 400 by 2003. **Table 9** provides information

on Agricultural Land Use in Shetland. Intensive sheep farming has increased its dominance of the agricultural economy, particularly over the past 30 years. Crofting comprises a small percentage of the farmed land on Shetland and is used mainly for rough grazing for sheep, although small scale crofting activities have been widely recognised as having an important role in the care and enhancement of the environment and wildlife habitats.

Table 9 – Agricultural Land Use in Shetland

Agricultural Land Use Practice	Hectares
Vegetables for human consumption	17.35
Other crops	2.31
Bare fallow	131.59
Total tillage	436.51
Grass under 5 years old	2,580.61
Arable	3,017.12
Total crops and grass	22,016.11

Source: Environmental Report: SEA of the Shetland Regional Transport Strategy, SIC, 2006

The amount of land suitable for agriculture in Shetland is limited and as such, fertilisation and reseeding of moorland has been used to increase agricultural productivity. The amount classed as improved or good grassland is also somewhat limited. Farmers have been encouraged to manage land in a more environmentally sensitive manner since Shetland was designated an Environmentally Sensitive Area (under the Agriculture Act 1986) in 1993.

Key Messages

Shetland does not contain any mapped areas of Prime Agricultural Land. Over half of the soils are peat which perform important ecosystem services, particularly as a carbon sink. Soil erosion from grazing and natural erosion have left over 70% of blanket bog damaged in Shetland.

It is unlikely that the LOIP will have any effect on soils.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 3: Water
- Topic 5: Material Assets
- Topic 6: Biodiversity, Fauna and Flora
- Topic 7: Landscape & Cultural Heritage

Topic 5: Material Assets

Material assets in SEA covers a wide variety of assets and resources both built and natural. Many can be scoped out of the SEA for the LOIP in Shetland and others are covered under other topics (e.g. agricultural land is covered under *Topic 4: Soils*). The issues covered within this section are:

- energy;
- waste;
- transport infrastructure;
- telecommunications infrastructure; and,
- Minerals.

Energy

The Scottish Government have produced a 'heatmap' to identify heat demand and potential supply across Scotland. Over 50% of energy used in Scotland goes on heating and cooling buildings and processes. The Heat Policy Statement (2015) sets out the Scottish Government approach to decarbonising our heat system, diversifying our sources of heat, reducing pressure on household energy bills and maximising economic opportunity of the transition to a low carbon heat sector. **Table 10** outlines the key findings of the *heatmap* for Shetland in Giga Watts per hour/year.

Table 10 – Shetland heatmap findings

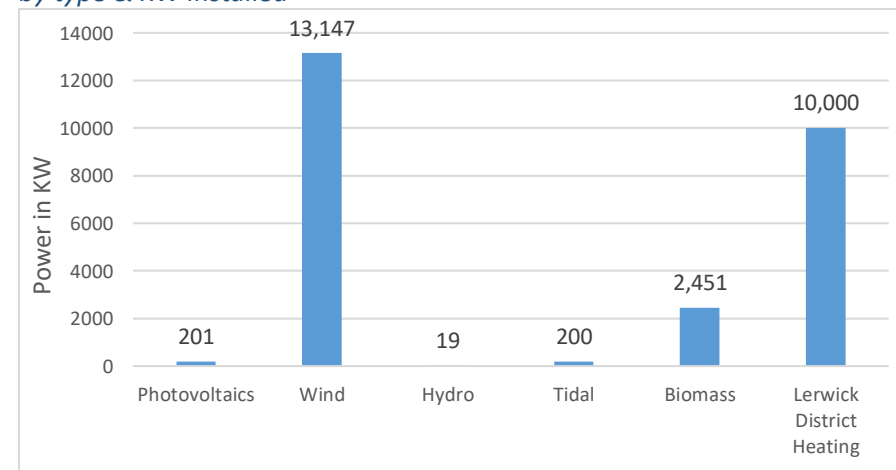
Total Heat Demand (GWh/yr)	218
Public Heat Demand (GWh/yr)	3
Number of Energy Sources	22

Source: <http://heatmap.scotland.gov.uk/>

Shetland is not currently connected to the National Grid and there is no mains gas. It has two power stations, one in Lerwick which is the principal source of electrical energy for Shetland, and a further power station at the Sullom Voe Oil Terminal.

The Lerwick power station is coming to the end of its useful life and it is proposed that it be replaced with a sub-sea cable connecting Shetland to the mainland and National Grid. If this were in place Shetland may no longer be required to produce all of its energy needs. If the cable were two way and high capacity it could create further opportunities for Renewable Energy initiatives that could sell power into the National Grid. At present wind power is limited to individual turbines. In addition, Government subsidies for wind power have just been extended to the islands. **Figure 23** shows renewable energy generation in Shetland by type and kw installed.

Figure 23 – Renewable Energy generation and District Heating in Shetland by type & KW installed



Source: Shetland in Statistics, SIC

There is currently a District Heating system in Lerwick serving approximately 1,000 customers. The system generates heat through a Waste Energy Plant which burns municipal refuse, waste material from offshore and refuse from Orkney. New legislation on waste management may impact the system in terms of materials available to burn.

Oil & Gas

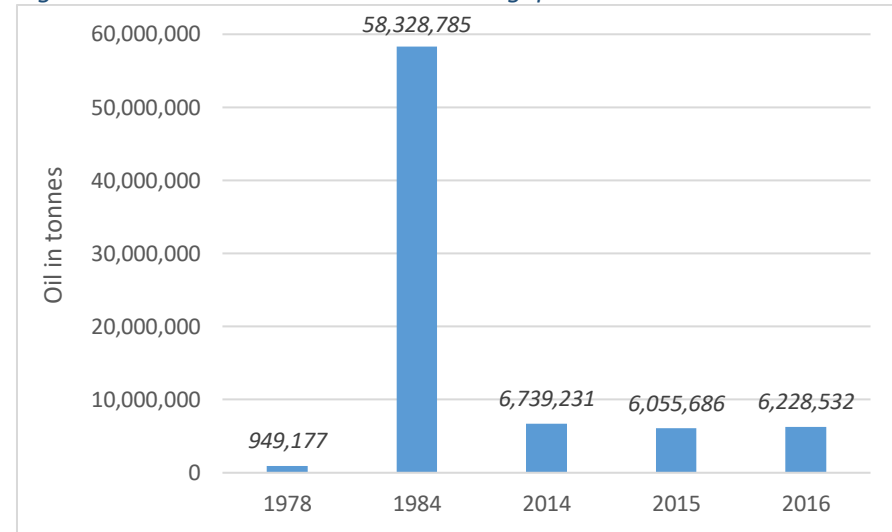
Oil and gas extraction in the north sea and west of Shetland remains a key industry and employer in the islands. 56% of businesses rely to a greater or lesser extent on this.

Sullom Voe Terminal is the largest oil and liquefied gas terminal in Europe. Situated 46kms north of Lerwick on the shores of Sullom Voe, it covers a site of approximately 400 hectares. Construction work started in 1974 with the first oil brought ashore in 1978.

The terminal was built to handle oil production from the Brent and Ninian oil fields in the north sea. Oil is piped from these fields to the terminal in two 36 inch pipes. The terminal has a throughput design capacity of 1.2million barrels of crude oil per day. It reached its peak in 1984 with a total receipt of 439,434,656 barrels (53,328,785 tonnes).

Throughput has declined in recent years but the terminal remains strategically important for the UK oil and gas industry and has potential to handle output from new oilfields developing west of Shetland. 75 oil tankers used the port in 2016. Oil throughput at the terminal is shown in **Figure 24**.

Figure 24 – Sullom Voe Terminal oil throughput in tonnes



Source: Sullom Voe Terminal

Shetland Gas Plant sits on the shores of Sullom Voe adjacent to the oil terminal on a site of 54 hectares. Gas fields west of Shetland are linked to the Plant by an 18 inch pipe and work is underway to link more gas fields to this pipe. The gas plant has a throughput design capacity of 500 million standard cubic feet of gas per day.

Construction of the plant began in October 2011 and the first gas was delivered to the plant in 2016. Processed gas is exported from the gas plant to St. Fergus on the UK mainland by pipeline.

Waste

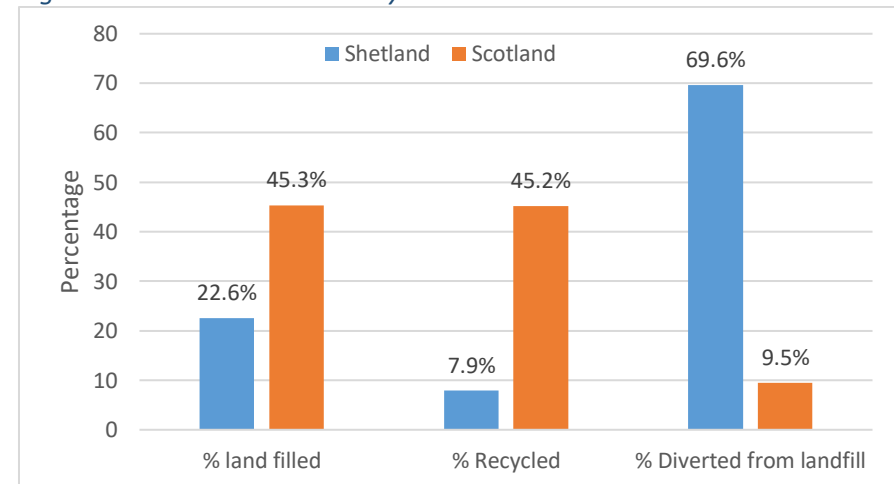
Recycling in Shetland is limited by its remote location. Waste is currently collected weekly from households. Households wishing to recycle glass, cans and plastics can do so at central recycling points. Materials such as paper and card are not currently recycled. This approach is due to change in 2018 as new legislation comes in.

At present much of the waste for landfill is diverted to other sources, including fuel for the District Heating system in Lerwick. Any materials for recycling in Shetland have to be transported to mainland Scotland by boat and onwards by road, the environmental and financial costs of which are high.

SEPA compiles annual data on household waste estimates. The proportion of household waste that is recycled, goes to landfill and is diverted from landfill is shown in **Figure 25** for both Shetland and Scotland.

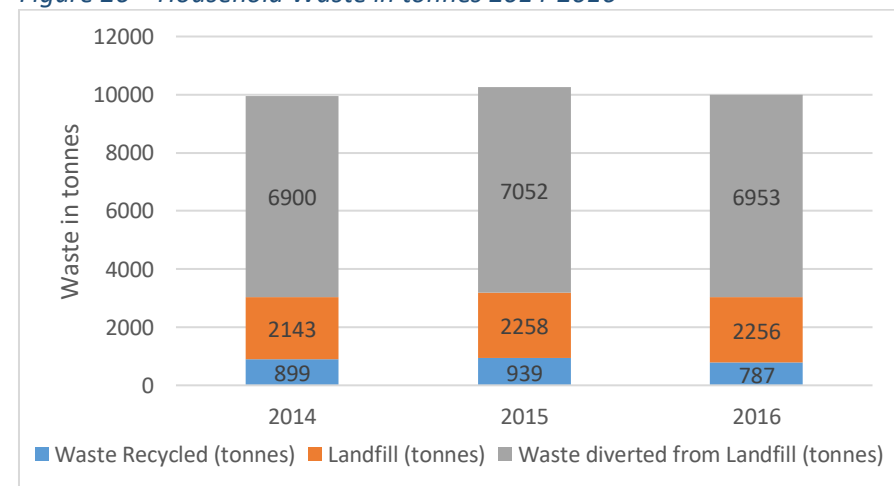
Shetland has one of the lowest recycling rates in the country and yet has a much lower percentage of waste going to landfill due to the District Heating Scheme. **Figure 26** shows the proportion of waste recycled, sent to landfill or diverted from landfill from 2014-2016. The amount of waste generated overall has increased and the proportion of the waste recycled has decreased.

Figure 25 – Household Waste by destination



Source: <https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/>

Figure 26 – Household Waste in tonnes 2014-2016



Source: <https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/>

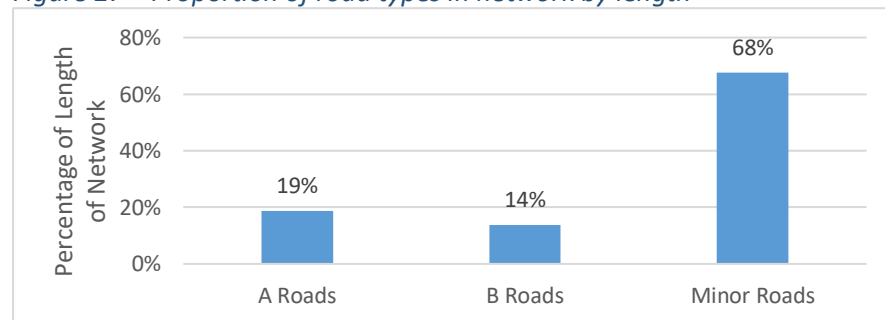
Transport Infrastructure

The Scottish Index of Multiple Deprivation (SIMD) gives an indication of the accessibility faced by the whole of Shetland and more specifically on its more remote islands. All areas of Shetland fall within the Index's most deprived 10% in terms of geographic access to services.

Road

Shetland has 723 miles of road network, the majority of which are minor roads. **Figure 27** provides a break down of the network by road type. Shetland has a higher proportion of households with access to a car than the Scottish average. This is shown in **Figure 28**. This reflects the heavy reliance on the private car in Shetland due to remote and rural nature of the island group.

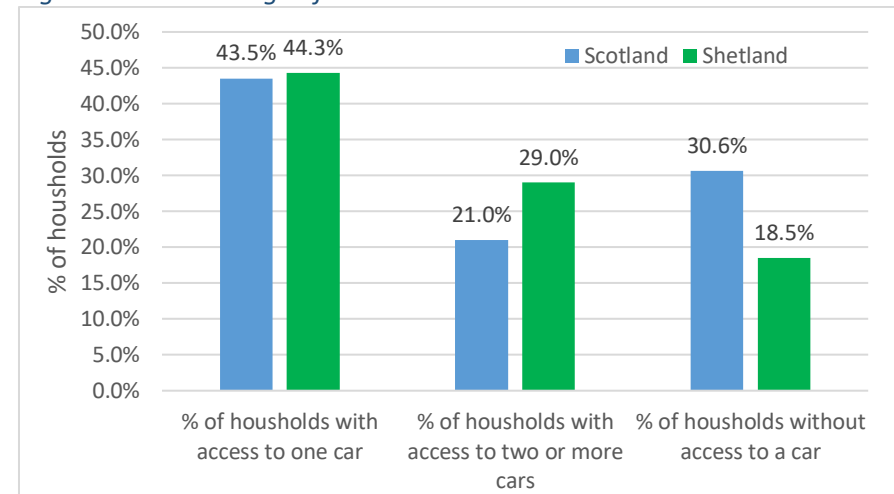
Figure 27 – Proportion of road types in network by length



Source: SIC

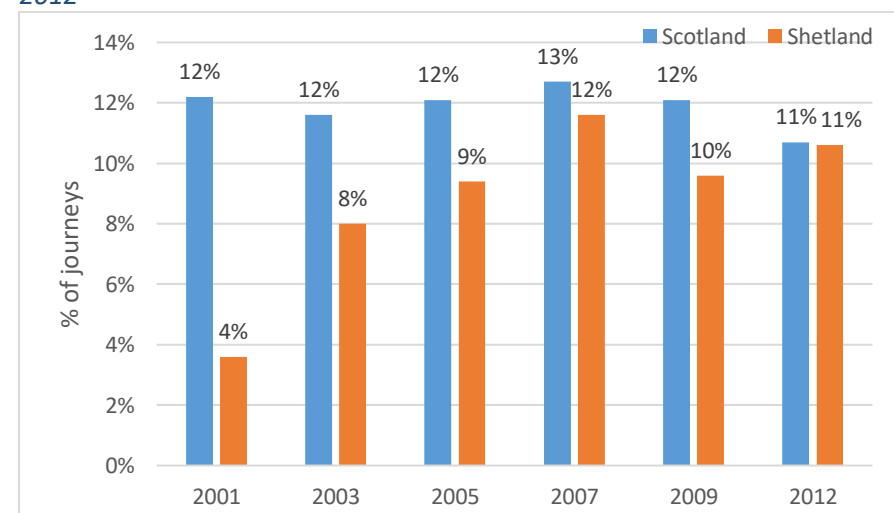
The percentage of journeys in Shetland taken by bus has almost doubled over the last decade bringing it in line with the national average. **Figure 29** shows the percentage of journeys by bus from 2001 to 2012.

Figure 28 – Percentage of households with access to a car



Source: Scottish Household Survey 2012

Figure 29 – Percentage of journeys by bus, Shetland and Scotland 2001 to 2012



Source: Scottish Household Survey 2012

Air

The main airport in Shetland is at Sumburgh; in 2016 it dealt with 130,160 (HIAL) passengers, a small decrease on the previous year. Sumburgh airport connects directly to Kirkwall, Inverness, Aberdeen, Glasgow, Edinburgh, Manchester and Bergen (summer only). £6.5million has been invested in the airport over the last three years to improve facilities and services. The Scottish Government's Air Discount Scheme provides a 50% reduction on airfares for residents.

The Shetland Islands Council operate inter-island air services from Tingwall airport to the outer islands of Shetland including Fair Isle, Foula, Papa Stour and Skerries. Flights to Fair Isle operate 6 days a week in the summer, 5 days in winter. Flights to Foula operate 4 days a week in both summer and winter, and flights to Papa Stour operate 1 day a week year round. Flights to these outer islands are often subject to disruption due to the weather.

Sea

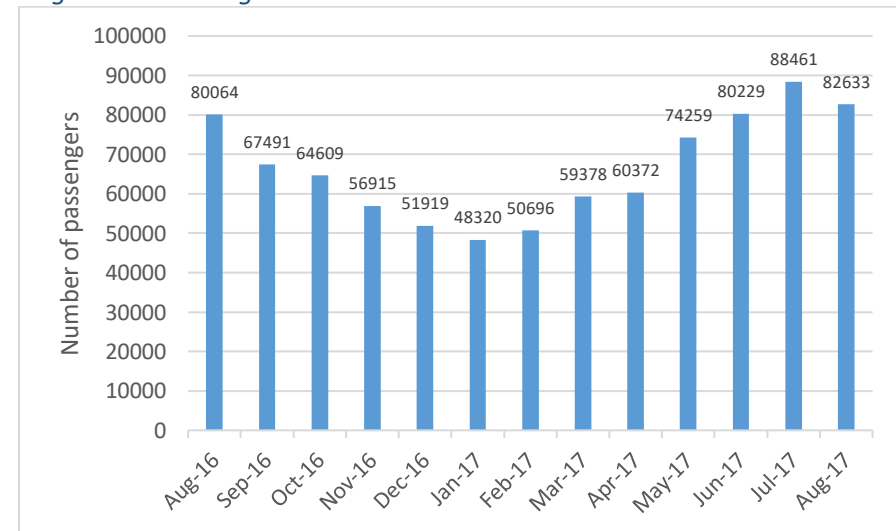
The Northlink ferry connecting Shetland to Orkney and mainland Scotland is estimated to serve approximately 133,000 passengers per year. There is an overnight sailing 7 days a week throughout the year. In addition there are a number of freight services operating serving industry and bringing essential supplies to Shetland.

The majority of Shetland's food and drink is brought to the islands by sea. Lerwick Port handles around 900,000 tonnes of cargo annually. In addition, there is a major oil port at Sullom Voe which

was built initially for production from North Sea oil and gas and now also handles oil from west of Shetland.

There is also a network of seven inter-island ferry services. **Figure 30** shows the total number of passengers carried on inter-islands ferry services over the past year. It shows that usage peaks in the summer months and appears to be increasing with over 2,500 more passengers in August 2017 than in August 2016.

Figure 30 – Total number of ferry passengers using inter-island services August 2016 to August 2017



Source: Shetland Islands Council

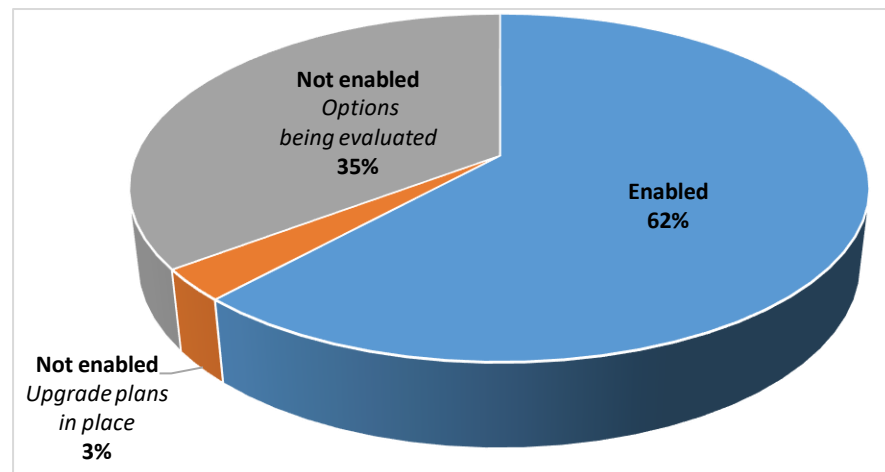
Telecommunications Infrastructure

Broadband

The Highlands and Islands Enterprise Local Authority update on digital rollout for Shetland states that in 2013 there was no access to fibre broadband in Shetland. By April 2017 this had increased to 80%. Through the rollout more than 9,000 Shetland premises have now been drawn into the fibre network with 51 new cabinets across the Islands.

Figure 31 shows the percentage of exchanges in Shetland enabled for fibre broadband, those that are planned for upgrade and those where no option has yet been identified. Where an exchange has been enabled for fibre, this does not guarantee that it will be available to everyone in that area.

Figure 31 – Percentage of exchanges in Shetland enabled for fibre broadband



Source: <https://www.scotlandsuperfast.com/where-when>

Mobile Voice and Broadband

Mobile phone coverage (2G) and mobile broadband coverage (3G/4G) is patchy in Shetland. Between the main networks, most of Shetland has 2G coverage although there are key gaps and *NotSpots* in the network. Again, between the main networks, much of Shetland now has 3G coverage but with notable exceptions in the northern and outer Isles and a large number of *NotSpots*. 4G is increasingly available from some of the main networks for much of mainland Shetland.

Geodiversity

Geodiversity can be defined as, “The variety of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes which form and alter them” (Bruneau et al. 2011, p.3).

Geodiversity is of scientific, cultural and economic importance as a source of energy and materials and as visitor attractions through landscape. Shetland is a designated Geopark in recognition of its outstanding and diverse geology and there are 33 Geological and 7 Geomorphology SSSIs. There is a strong link between the geology of Shetland and its soils and habitats and therefore its biodiversity.

Mineral Extraction

There are 75 people in Shetland employed in quarrying and mining (Shetland in Statistics, SIC). The SIC Interim Planning Policy Minerals Technical Report in 2009 provides background information on the current quarrying situation. There are 13 active private quarries operating in Shetland and 3 undertaking temporary

extraction for specific projects. A further 15 quarries are inactive. Quarried materials include aggregates, talc, sandstone and peat.

Until 2005 the local industry were subsidised for the export of minerals including aggregates and talc. The withdrawal of the subsidy and the subsequent aggregate levy has meant that export rates have reduced.

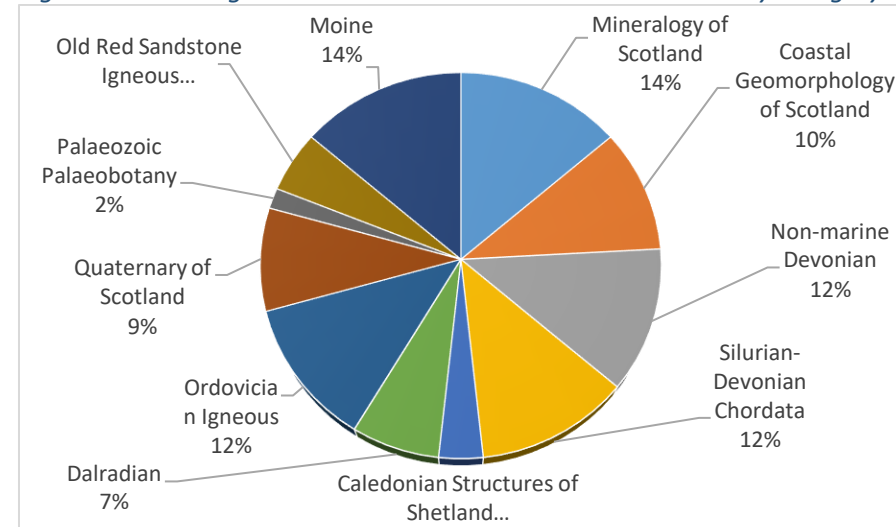
The geography of Shetland means that remote islands tend to be self-sufficient in aggregate supplies although concrete for road work is routinely transported between islands. It is estimated that Shetland Islands Council extracts the largest amount of aggregate in Shetland and that aggregate reserves held by private operators and SIC appear sufficient to meet current demand levels for over 10 years.

Sand is imported and also extracted from beaches but it is recognised that this is damaging and unsustainable. Interim Planning Policy recognises the need to safeguard current resources. It recommends safeguarding of Peat, sand and shingle and requires proposals to consider use of secondary and recycled materials.

Geological Conservation Review Sites

There are 58 Geological Conservation Review (GCR) Sites in Shetland. These sites contain features of national and international importance that are considered to qualify for designation in Sites of Special Scientific Interest. GCR sites by category can be viewed in **Figure 32** and by location in **Figure 33** on the following page.

Figure 32 – Geological Conservation Review Sites in Shetland by category



Source: SNH

Key Messages

Material Assets cover a wide range of environmental concerns. Shetland currently generates all of its own electricity needs with a combination of a power station, district heating and a low level of renewables. The power station is due to close when a new sub-sea cable connects Shetland to the National Grid paving the way for increased renewables. Oil and gas extraction remains a key industry.

Shetland has a very low recycling rate due to challenges related to its remote location. It also has low levels of waste going to landfill due to the District Heating scheme. Given new legislation this will change. More waste will be recycled but will require to be shipped

out of Shetland and less landfill waste will be directed to the District Heating Scheme.

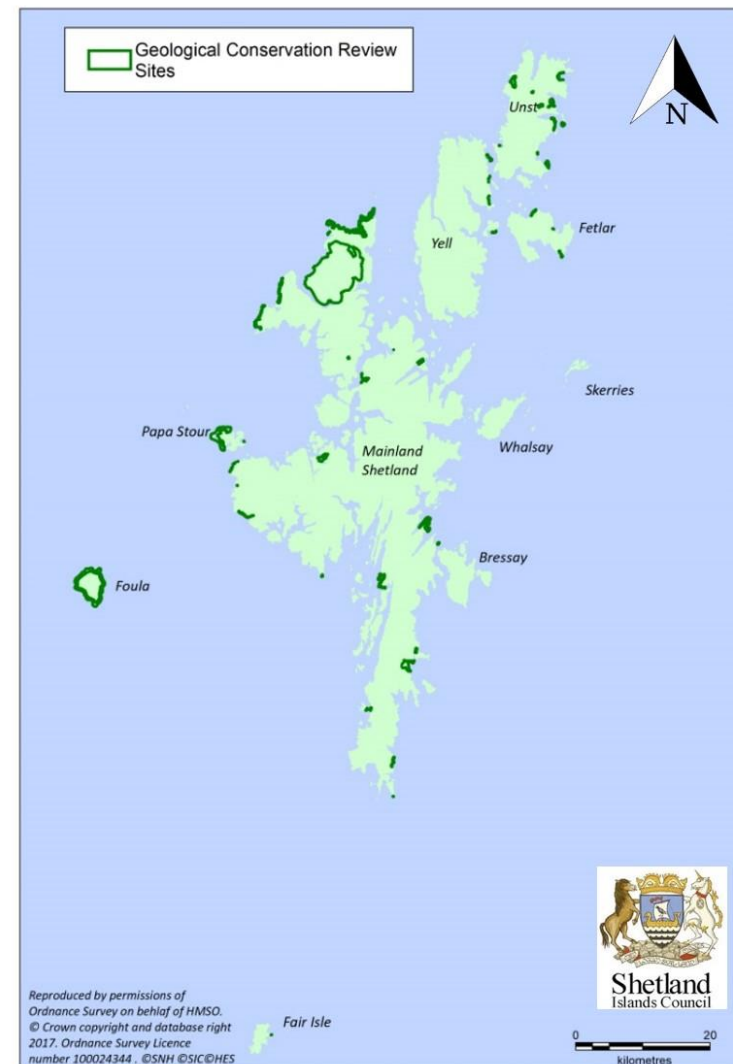
Given the geography of Shetland there is a heavy reliance on the private car, air and sea transport. Mobile voice and mobile broadband capability are improving with plans for further rollout but NotSpots remain. Fibre Broadband rollout now covers the majority of mainland Shetland but there are no current rollout plans for the North and outer islands, over a third of exchanges.

The LOIP is likely to have an impact on material assets given the ambition to grow the population as well as growing key industries. This will have a direct impact on demand for infrastructure and services.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 2: Air
- Topic 3: Water
- Topic 4: Soil
- Topic 6: Biodiversity, Fauna and Flora
- Topic 7: Landscape & Cultural Heritage
- Topic 8: Population and Human Health

Figure 33 – Geological Conservation Review Sites by location



Source: SNH

Topic 6: Biodiversity, flora and fauna

Shetland's geographic location, its hugely diverse geology and the pervasive influence of the sea have combined to create richness in flora and fauna within a relatively confined area. The islands' geological journey has resulted in a landscape dominated by low hills and deep inlets where no spot is more than 3 miles from the sea.

Seabirds and sea mammals play a relatively dominant part in the biodiversity of the islands. Shetland is home to one tenth of the total seabird population of Britain, in excess of 1 million birds from 22 species. The waters around Shetland are home to a diverse range of fish, shellfish and mammals.

Protected Areas

Protected areas represent the very best of Scotland's landscapes, plants and animals, rocks, fossils and landforms. Their protection and management will help to ensure that they remain in good health for all to enjoy, both now and for future generations. Shetland is home to a number of areas designated to meet the needs of international directives and treaties, national legislation and policies as well as more local needs and interests.

National Designations

National designations cover a range of different types of protected area, including Natural Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI), both of which are located within the Shetland. Shetland is also home to a number of non-statutory

protected sites, such as the RSPB reserves at Sumburgh head, Mousa, Fetlar and Loch of Spiggie.

National Nature Reserves (NNRs)

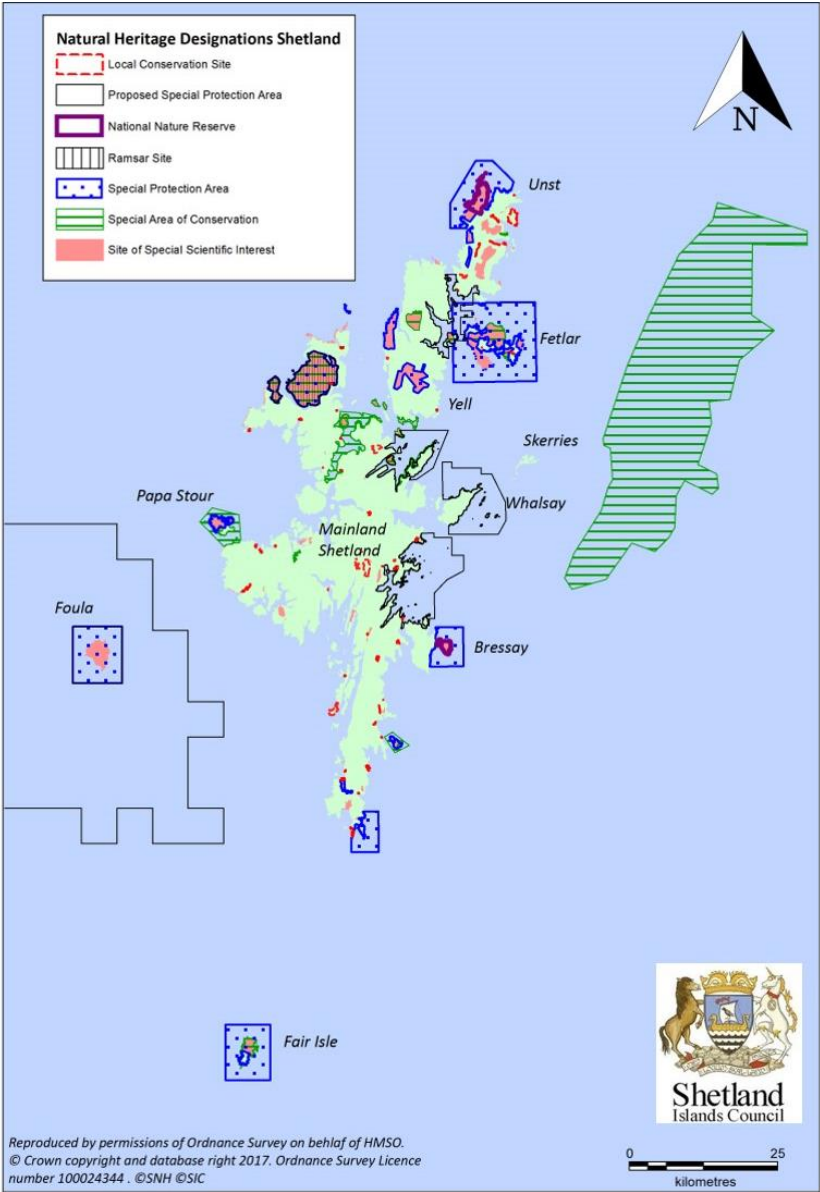
NNRs are statutory nature reserves designed under Part III of the National Parks and Access to the Countryside Act 1949. Most reserves have habitats and species that are nationally or internationally important so the wildlife is managed very carefully. People are encouraged to enjoy NNRs and so many have some form of visitor facilities that are designed to ensure recreational activities are not pursued without heed for the wildlife and habitat that exists there.

Shetland is home to 2 NNRs which cover a combined area of around 13.1km². Noss NNR covers the entire islands of Noss to the east of Bressay, an area of 344 hectares. It is accessed by boat and has a visitor centre which is open seasonally. Hermaness NNR is at the very north top of Shetland (and Scotland) on the Island of Unst an area of 965 hectares and is managed for cliff and moorland nesting bird species. The location of the NNRs can be viewed in **Figure 32**.

Sites of Special Scientific Interest (SSSI)

SSSIs are designated under the Nature Conservation (Scotland) Act 2004 as those areas of land and water that SNH considers to best represent Scotland's natural heritage - its diversity of plants, animals and habitats, rocks and landforms, or a combinations of such natural features, many are also designated as Natura 2000 sites. The condition of SSSIs located in Shetland is shown in **Table 11**.

Figure 34 – Map of Natural Heritage Designations in Shetland



Source: SNH

Table 11 – SSSIs in Shetland

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
10240	<u>Aith Meadows and Burn of Aith</u>	Fen Meadow	25.17	Lowland grassland	Favourable	No pro-active management	01/07/2009
		Lowland neutral grassland		Lowland grassland	Favourable	No pro-active management	25/06/2014
		Quaternary of Scotland		Earth sciences	Favourable	Flood defence/coastal defence works	05/09/2007
144	<u>Balta</u>	Coastal Geomorphology	16.23	Earth sciences	Favourable	No negative pressures	17/13/2017
256	<u>Breckon</u>	Bog orchid (<i>Hammarbya paludosa</i>)	58.75	Vascular plants	Favourable	No negative pressures	15/08/2017
		Eutrophic loch		Freshwater habitats	Favourable	No negative pressures	10/08/2010
		Machair		Coast	Favourable	No negative pressures	19/07/2016
		Maritime cliff		Coast	Favourable	No negative pressures	19/07/2016
		Sand dunes		Coast	Favourable	No negative pressures	19/07/2016
276	<u>Burn of Lunklet</u>	Vascular Plant Assemblage	1.42	Vascular plants	Favourable	Over-grazing	05/08/2002
277	<u>Burn of Valayre</u>	Scrub	5.49	Woodland	Unfavourable	Over-grazing	26/09/2013
347	<u>Catfirth</u>	Scrub	0.13	Woodland	Favourable	None noted	20/09/2006
367	<u>Clothister Hill Quarry</u>	Mineralogy	6.84	Earth Sciences	Favourable	No negative pressures	11/02/2003
475	<u>Crussa Field and the Heogs</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	468.97	Birds	Unfavourable	No negative pressures	31/07/2012
		Breeding bird assemblage		Birds	Favourable	No negative pressures	31/07/2012
		Calaminarian grassland and serpentine heath		Upland Habitat	Favourable	Mineral Extraction	05/07/2014
		Mineralogy of Scotland		Earth Sciences	Favourable	Water Management	03/02/2004
		Vascular plant assemblage		Vascular Plants	Unfavourable	No negative pressures	15/09/2014
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Birds	Unfavourable	No negative pressures	21/07/2012
481	<u>Culswick Marsh</u>	Valley Fen	6.45	Wetlands	Favourable	No negative pressures	13/07/2017
486	<u>Dales Voe</u>	Saltmarsh	5.63	Coast	Favourable	Grazing	11/09/2012

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
492	<u>Dalsetter</u>	Arctic Tern (breeding)	33.88	Birds	Unfavourable	No negative pressures	19/06/2012
		Subalpine dry heath		Upland Habitat	Favourable	No negative pressures	19/06/2012
587	<u>East Mires and Lumbister</u>	Blanket Bog	620.32	Upland Habitat	Favourable	No negative pressures	20/09/2012
		Breeding bird assemblage		Birds	Favourable	No negative pressures	24/07/2009
590	<u>Easter Loch</u>	Whooper Swan, non-breeding	5.82	Birds	Unfavourable	No negative pressures	02/12/2012
592	<u>Easter Rova Head</u>	Non-marine Devonian	3.35	Earth Sciences	Favourable	No negative pressures	16/08/2002
615	<u>Eshanness Coast</u>	Old Red Sandstone Uigneous	43.08	Earth Sciences	Favourable	No negative pressures	31/08/2000
620	<u>Fair Isle</u>	Arctic skua (Stercorarius parasiticus), breeding	561.34	Birds	Unfavourable	Invasive Species	01/06/2016
		Fulmar (Fulmarus glacialis), breeding		Birds	Favourable	No negative pressures	01/06/2016
		Great skua (Stercorarius skua), breeding		Birds	Favourable	Game/fisheries management	01/06/2016
		Guillemot (Uria aalge), breeding		Birds	Unfavourable	No negative pressures	01/06/2016
		Kittiwake (Rissa tridactyla), breeding		Birds	Unfavourable	Invasive Species	01/06/2016
		Moorland juniper		Upland habitat	Favourable	No negative pressures	25/09/2007
		Palaeozoic Palaeobotany		Earth sciences	Favourable	Other	05/04/2004
		Razorbill (Alca torda), breeding		Birds	Unfavourable	No negative pressures	01/06/2015
		Seabird colony, breeding		Birds	Unfavourable	No negative pressures	01/06/2016
		Shag (Phalacrocorax aristotelis), breeding		Birds	Unfavourable	No negative pressures	01/06/2013
633 655	<u>Fidlar Geo to Watsness</u>	Non-marine Devonian	18.42	Earth sciences	Favourable	No negative pressures	22/06/2004
	<u>Foula</u>	Arctic skua (Stercorarius parasiticus), breeding	1322.3	Birds	Unfavourable	Overgrazing, trampling	01/06/2015
		Blanket bog		Upland habitat	Unfavourable	No negative pressures	16/09/2012
		Fulmar (Fulmarus glacialis), breeding		Birds	Unfavourable	No negative pressures	24/06/2015
		Great skua (Stercorarius skua), breeding		Birds	Favourable	No negative pressures	05/06/2015
		Guillemot (Uria aalge), breeding		Birds	Unfavourable	No negative pressures	24/06/2015
		Kittiwake (Rissa tridactyla), breeding		Birds	Unfavourable	Other	24/06/2015

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
		Leach's petrel (<i>Oceanodroma leucorhoa</i>), breeding		Birds	Unfavourable	No negative pressures	23/06/2003
		Puffin (<i>Fratercula arctica</i>), breeding		Birds	Unfavourable	No negative pressures	06/05/2016
		Razorbill (<i>Alca torda</i>), breeding		Birds	Unfavourable	No negative pressures	24/06/2015
		Seabird colony, breeding		Birds	Unfavourable	No negative pressures	01/06/2016
		Shag (<i>Phalacrocorax aristotelis</i>), breeding		Birds	Unfavourable	No negative pressures	24/06/2015
		Storm petrel (<i>Hydrobates pelagicus</i>), breeding		Birds	Unfavourable	Other	23/09/2001
656	<u>Foula Coast</u>	Coastal Geomorphology	223.32	Earth Sciences	Favourable	No negative pressures	07/04/2004
661	<u>Fugla Ness - North Roe</u>	Quaternary of Scotland	0.56	Earth Sciences	Favourable	Natural Event	11/03/2008
663	<u>Funzie</u>	Caledonian Structures of Shetland	6.02	Earth Sciences	Favourable	No negative pressures	31/08/2000
8110	<u>Graveland</u>	Red-throated diver (<i>Gavia stellata</i>), breeding	853.09	Birds	Favourable	No negative pressures	31/07/2006
755	<u>Gutcher</u>	Moine	1.53	Earth Sciences	Favourable	Development with plannign permission, other activity	08/01/2003
759	<u>Ham Ness</u>	Ordovician Igneous	30.66	Earth Sciences	Favourable	No negative pressures	19/05/2015
767	<u>Hascosay</u>	Blanket bog	164.92	Upland habitat	Favourable	Dumong/spreading/storage of materials	02/09/2009
		Dunlin (<i>Calidris alpina schinzii</i>), breeding		Birds	Favourable	No negative pressures	29/06/2002
		Moine		Earth sciences	Favourable	No negative pressures	02/09/2009
776	<u>Hermaness</u>	Fulmar (<i>Fulmarus glacialis</i>), breeding	978.3	Birds	Favourable	No negative pressures	25/06/2016
		Gannet (<i>Morus bassanus</i>), breeding		Birds	Favourable	No negative pressures	24/07/2014
		Great skua (<i>Stercorarius skua</i>), breeding		Birds	Favourable	No negative pressures	25/06/2013
		Guillemot (<i>Uria aalge</i>), breeding		Birds	Unfavourable	No negative pressures	15/06/2015
		Mineralogy of Scotland		Earth sciences	Favourable	No negative pressures	18/07/2012
		Puffin (<i>Fratercula arctica</i>), breeding		Birds	Favourable	No negative pressures	30/06/2002
		Seabird colony, breeding		Birds	Unfavourable	Other	05/06/2000
782		Arctic sandwort (<i>Arenaria norvegica</i>)	809.18	Vascular plants	Favourable	No negative pressures	17/10/2014

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
	<u>Hill of Colvadale and Sobul</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding		Birds	Unfavourable	No negative pressures	26/06/2015
		Breeding bird assemblage		Birds	Favourable	No negative pressures	30/06/2007
		Calaminarian grassland and serpentine heath		Upland habitat	Favourable	Development	19/08/2006
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Birds	Unfavourable	No negative pressures	30/06/2007
827	<u>Keen of Hamar</u>	Calaminarian grassland and serpentine heath	49.65	Upland habitat	Favourable	No proactive management	24/07/2014
		Mineralogy of Scotland		Earth sciences	Favourable	No negative pressures	29/07/2003
		Vascular plant assemblage		Vascular plants	Favourable	To be identified	05/08/2014
901	<u>Lamb Hoga</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	800.93	Birds	Unfavourable	Inter-specific competition	21/06/2017
		Breeding bird assemblage		Birds	Favourable	No negative pressures	11/07/2013
		Great skua (<i>Stercorarius skua</i>), breeding		Birds	Favourable	No negative pressures	21/06/2017
		Manx shearwater (<i>Puffinus puffinus</i>), breeding		Birds	Favourable	No negative pressures	08/08/2003
		Storm petrel (<i>Hydrobates pelagicus</i>), breeding		Birds	Favourable	No negative pressures	08/08/2003
913	<u>Laxo Burn</u>	Vascular plant assemblage	0.57	Vascular plants	Favourable	Invasive Species	27/06/2012
1028	<u>Loch of Clousta</u>	Tall herb ledge	47.25	Upland habitat	Favourable	Over-grazing	07/08/2012
1030	<u>Loch of Girsta</u>	Arctic charr (<i>Salvelinus alpinus</i>)	99.23	Fish	Favourable	No negative pressures	18/07/2008
		Mesotrophic loch		Freshwater habitats	Favourable	Water Management	25/10/2007
1084	<u>Lochs of Kirkigarth and Bardister</u>	Mesotrophic loch	16.42	Freshwater habitats	Favourable	Trampling and water management	01/08/2004
1085	<u>Lochs of Spiggie and Brow</u>	Basin fen	141.49	Wetlands	Unfavourable	Invasive Species, under-grazing	05/09/2013
		Eutrophic loch		Freshwater habitats	Favourable	No negative pressures	20/08/2012

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
		Whooper swan (<i>Cygnus cygnus</i>), non-breeding		Birds	Unfavourable	No negative pressures	04/02/2016
1086	<u>Lochs of Tingwall and Asta</u>	Mesotrophic loch	65.27	Freshwater habitats	Favourable	Water Quality	21/08/2016
1111	<u>Lunda Wick</u>	Mineralogy of Scotland	1.13	Earth sciences	Favourable	No negative pressures	11/03/2014
1146	<u>Melby</u>	Non-marine Devonian	6.81	Earth sciences	Favourable	No negative pressures	18/04/2014
		Silurian - Devonian Chordata		Earth sciences	Favourable	No negative pressures	18/04/2014
1204	<u>Mousa</u>	Arctic tern (<i>Sterna paradisaea</i>), breeding	197.97	Birds	Unfavourable	Recreation/disturbance	01/06/2015
		Black guillemot (<i>Cepphus grylle</i>), breeding		Birds	Unfavourable	Climate Change, Natural Event, Other	01/05/2017
		Harbour seal (<i>Phoca vitulina</i>)		Marine (including marine mammals)	Unfavourable	No negative pressures	18/08/2009
		Storm petrel (<i>Hydrobates pelagicus</i>), breeding		Birds	Favourable	No negative pressures	25/07/2008
1208	<u>Muckle Roe Meadows</u>	Lowland neutral grassland	2.36	Lowland grassland	Favourable	Under-grazing	28/07/2004
		Vascular plant assemblage		Vascular plants	Favourable	No negative pressures	28/07/2004
1216	<u>Ness of Clousta - The Briggs</u>	Old Red Sandstone Igneous	69.37	Earth sciences	Favourable	No negative pressures	13/12/2012
1217	<u>Ness of Cullivoe</u>	Moine	11.07	Earth sciences	Favourable	No negative pressures	15/01/2013
1234	<u>North Fetlar</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	1637.04	Birds	Unfavourable	Inter-specific competition	21/06/2017
		Arctic tern (<i>Sterna paradisaea</i>), breeding		Birds	Unfavourable	No negative pressures	02/07/2010
		Breeding bird assemblage		Birds	Favourable	No negative pressures	24/07/2009
		Calaminarian grassland and serpentine heath		Upland habitat	Favourable	No negative pressures	04/10/2012
		Great skua (<i>Stercorarius skua</i>), breeding		Birds	Favourable	No negative pressures	21/06/2017

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
		Grey seal (<i>Halichoerus grypus</i>)		Marine (including marine mammals)	Unfavourable	No negative pressures	10/11/2010
		Harbour seal (<i>Phoca vitulina</i>)		Marine (including marine mammals)	Unfavourable	No negative pressures	13/08/2009
		Red-necked phalarope (<i>Phalaropus lobatus</i>), breeding		Birds	Favourable	No negative pressures	31/07/2014
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Birds	Unfavourable	Inter-specific competition	12/06/2007
1239	<u>North Roe Meadow</u>	Vascular plant assemblage	1.24	Vascular plants	Unfavourable	Agricultural Operations, over-grazing, under-grazing	13/08/2013
1242	<u>North Sandwick</u>	Moine	6.07	Earth sciences	Favourable	No negative pressures	15/01/2013
1247	<u>Norwick</u>	Caledonian Structures of Shetland	5.8	Earth sciences	Favourable	No negative pressures	23/03/2017
1248	<u>Norwick Meadows</u>	Sand dunes	24.72	Coast	Favourable	Invasive species, under-grazing	29/07/2016
		Valley fen		Wetlands	Recovering	Invasive species, over-grazing	06/10/2008
1249	<u>Noss</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	343.83	Birds	Unfavourable	Game/fisheries management, inter-specific competition, natural event	02/09/2014
		Gannet (<i>Morus bassanus</i>), breeding		Birds	Favourable	No negative pressures	30/06/2014
		Great skua (<i>Stercorarius skua</i>), breeding		Birds	Favourable	No negative pressures	13/08/2013
		Guillemot (<i>Uria aalge</i>), breeding		Birds	Unfavourable	No negative pressures	23/06/2015
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Birds	Unfavourable	Climate Change	23/06/2015
		Seabird colony, breeding		Birds	Favourable	No negative pressures	23/06/2001
8109	<u>Otterswick</u>	Red-throated diver (<i>Gavia stellata</i>), breeding	1388.32	Birds	Favourable	Over-grazing	24/07/2006
1267	<u>Papa Stour</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	629.48	Birds	Unfavourable	No negative pressures	19/06/2015

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
		Arctic tern (<i>Sterna paradisaea</i>), breeding		Birds	Unfavourable	No negative pressures	19/06/2015
		Coastal Geomorphology of Scotland		Earth sciences	Favourable	No negative pressures	26/06/2013
		Maritime cliff		Coast	Recovering	Over-grazing	01/08/2002
		Ringed plover (<i>Charadrius hiaticula</i>), breeding		Birds	Favourable	No negative pressures	30/05/2007
		Rocky shore		Marine (including marine mammals)	Favourable	Other	15/08/2003
		Silurian - Devonian Chordata		Earth sciences	Favourable	No negative pressures	26/06/2013
1302	<u>Pool of Virkie</u>	Mudflats	22.96	Marine (including marine mammals)	Favourable	Water Quality	05/10/2006
1318	<u>Quendale</u>	Machair	142.76	Coast	Unfavourable	Invasive species, over-grazing	14/07/2010
		Machair loch		Freshwater habitats	Unfavourable	Water Quality	12/08/2010
		Sand dunes		Coast	Unfavourable	Invasive species, over-grazing, trampling	14/07/2010
1319	<u>Qui Ness to Pund Stacks</u>	Ordovician Igneous	2.12	Earth sciences	Favourable	No negative pressures	27/10/2004
1323	<u>Quoys of Garth</u>	Quaternary of Scotland	0.04	Earth sciences	Favourable	Water management	27/10/2004
1328	<u>Ramna Stacks and Gruney</u>	Guillemot (<i>Uria aalge</i>), breeding	11.67	Birds	Unfavourable	Other	24/06/2001
		Leach's petrel (<i>Oceanodroma leucorhoa</i>), breeding		Birds	Favourable	No negative pressures	08/06/2004
		Seabird colony, breeding		Birds	Unfavourable	No negative pressures	24/06/2001
1370	<u>Ronas Hill - North Roe</u>	Arctic water flea (<i>Eurycercus glacialis</i>)	4900.94	Invertebrates	Favourable	No negative pressures	16/08/2016
		Blanket bog		Upland habitat	Favourable	Over-grazing	06/09/2007
		Breeding bird assemblage		Birds	Favourable	Over-grazing	05/09/2002
		Montane assemblage		Upland habitat	Favourable	No negative pressures	21/08/2006
		Quaternary of Scotland		Earth sciences	Favourable	Recreation/disturbance	13/05/2015

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
		Red-throated diver (<i>Gavia stellata</i>), breeding		Birds	Favourable	Over-grazing	05/06/2014
		Scrub		Woodland	Favourable	No negative pressures	28/09/2016
1684	<u>Sandness Coast</u>	Rocky shore	11.1	Marine (including marine mammals)	Favourable	No negative pressures	13/08/2003
1406	<u>Sandwater</u>	Mesotrophic loch	36.8	Freshwater Habitats	Favourable	Over-grazing	04/08/2004
		Open water transition fen		Wetlands	Favourable	No negative pressures	26/07/2004
1408	<u>Saxa Vord</u>	Fulmar (<i>Fulmarus glacialis</i>), breeding	55.47	Birds	Favourable	No negative pressures	20/07/2016
		Guillemot (<i>Uria aalge</i>), breeding		Birds	Unfavourable	No negative pressures	15/06/1999
		Seabird colony, breeding		Birds	Favourable	No negative pressures	29/05/2002
1415	<u>Sel Ayre</u>	Quaternary of Scotland	0.94	Earth sciences	Favourable	No negative pressures	22/06/2004
1434	<u>Skelda Ness</u>	Mineralogy of Scotland	2.93	Earth sciences	Favourable	Extraction	27/02/2007
1437	<u>Skeo Taing to Clugan</u>	Ordovician Igneous	12.97	Earth sciences	Favourable	No negative pressures	17/03/2017
1458	<u>South Whiteness</u>	Saltmarsh	81.87	Coast	Favourable	No negative pressures	08/10/2013
		Shetland mouse-ear-hawkweed (<i>Pilosella flagellaris</i> ssp <i>bicapitata</i>)		Vascular plants	Favourable	Over-grazing	05/07/2004
1475	<u>St Ninian's Tombolo</u>	Coastal Geomorphology of Scotland	12.36	Earth sciences	Favourable	Agricultural Operations, over-grazing, other	22/07/2002
1508	<u>Sumburgh Head</u>	Guillemot (<i>Uria aalge</i>), breeding	39.03	Birds	Unfavourable	No negative pressures	06/06/2007
		Puffin (<i>Fratercula arctica</i>), breeding		Birds	Favourable	Natural Event	22/05/2007
		Seabird colony, breeding		Birds	Favourable	Other	10/06/2001
		Shag (<i>Phalacrocorax aristotelis</i>), breeding		Birds	Favourable	No negative pressures	29/05/2007
		Silurian - Devonian Chordata		Earth sciences	Favourable	No negative pressures	16/07/2006
1528	<u>The Ayres of Swinister</u>	Coastal Geomorphology of Scotland	27.08	Earth sciences	Favourable	Dumping/spreading/storage of materials	12/12/2006
1530	<u>The Cletts, Exnaboe</u>	Non-marine Devonian	13.27	Earth sciences	Favourable	Other	05/09/2007
		Silurian - Devonian Chordata		Earth sciences	Favourable	Other	05/09/2007

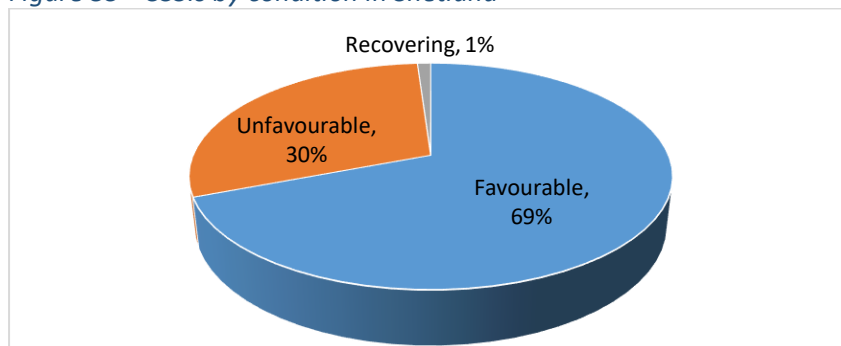
Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
1315	<u>The Punds to Wick of Hagdale</u>	Ordovician Igneous	8.27	Earth sciences	Favourable	No negative pressures	26/06/2003
1679	<u>The Vadills</u>	Egg wrack (<i>Ascophyllum nodosum</i> <i>ecad mackaii</i>)	19.69	Non-vascular plants	Favourable	No negative pressures	14/08/2003
		Saline lagoon		Marine (including marine mammals)	Favourable	No negative pressures	14/08/2003
		Tidal rapids		Marine (including marine mammals)	Favourable	No negative pressures	14/08/2003
1539	<u>Tingon</u>	Blanket bog	569.3	Upland habitat	Favourable	No negative pressures	25/07/2001
		Breeding bird assemblage		Birds	Favourable	No negative pressures	20/05/2009
		Red-throated diver (<i>Gavia stellata</i>), breeding		Birds	Favourable	Other	09/06/2014
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Birds	Unfavourable	No negative pressures	24/05/2013
1563	<u>Tressa Ness to Colbinstoft</u>	Ordovician Igneous	13.41	Earth sciences	Favourable	No negative pressures	23/11/2006
1564	<u>Trona Mires</u>	Arctic tern (<i>Sterna paradisaea</i>), breeding	151.94	Birds	Unfavourable	No negative pressures	10/06/2016
		Basin fen		Wetlands	Favourable	No negative pressures	05/09/2012
		Breeding bird assemblage		Birds	Favourable	No negative pressures	09/07/2015
		Maritime cliff		Coast	Favourable	No negative pressures	05/09/2012
		Red-necked phalarope (<i>Phalaropus lobatus</i>), breeding		Birds	Favourable	No negative pressures	31/07/2014
1586	<u>Uyea - North Roe Coast</u>	Moine	247.77	Earth sciences	Favourable	Other	13/12/2006
8108	<u>Valla Field</u>	Great skua (<i>Stercorarius skua</i>), breeding	629.2	Birds	Favourable	No negative pressures	11/06/2013
		Mineralogy of Scotland		Earth sciences	Favourable	No negative pressures	21/01/2007
		Red-throated diver (<i>Gavia stellata</i>), breeding		Birds	Favourable	No negative pressures	02/07/2013

Site Code	Name	Feature	Total Area (ha)	Interest	Summary Condition	Pressures	Visit Date
1589	<u>Villians of Hamnavoe</u>	Coastal Geomorphology of Scotland	54.4	Earth sciences	Favourable	No negative pressures	23/01/2013
1590	<u>Virva</u>	Ordovician Igneous	1.17	Earth sciences	Favourable	No negative pressures	31/08/2000
1591	<u>Voxter Voe and Valayre Quarry</u>	Moine	23.67	Earth sciences	Favourable	No negative pressures	11/02/2002
1594	<u>Ward of Culswick</u>	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	151.39	Birds	Unfavourable	No negative pressures	03/06/2016
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Birds	Unfavourable	No pro-active management	02/06/2004
1686	<u>Yell Sound Coast</u>	Otter (<i>Lutra lutra</i>)	868.79	Mammals (except marine)	Unfavourable	Game/fisheries management	05/06/2012

Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

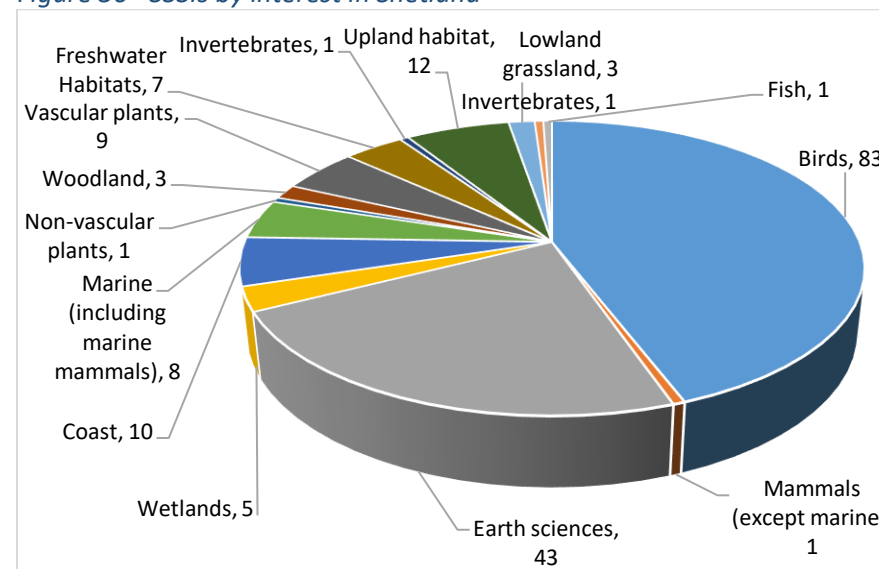
There are 78 SSSIs in Shetland covering a total of 19,930.5 hectares, 13.6% of the land area of Shetland. The location of these can be viewed in **Figure 32** on page 36. **Figure 33** shows the SSSIs by condition, **Figure 34** by interest and **Figure 35** by pressures on those interests.

Figure 35 – SSSIs by condition in Shetland



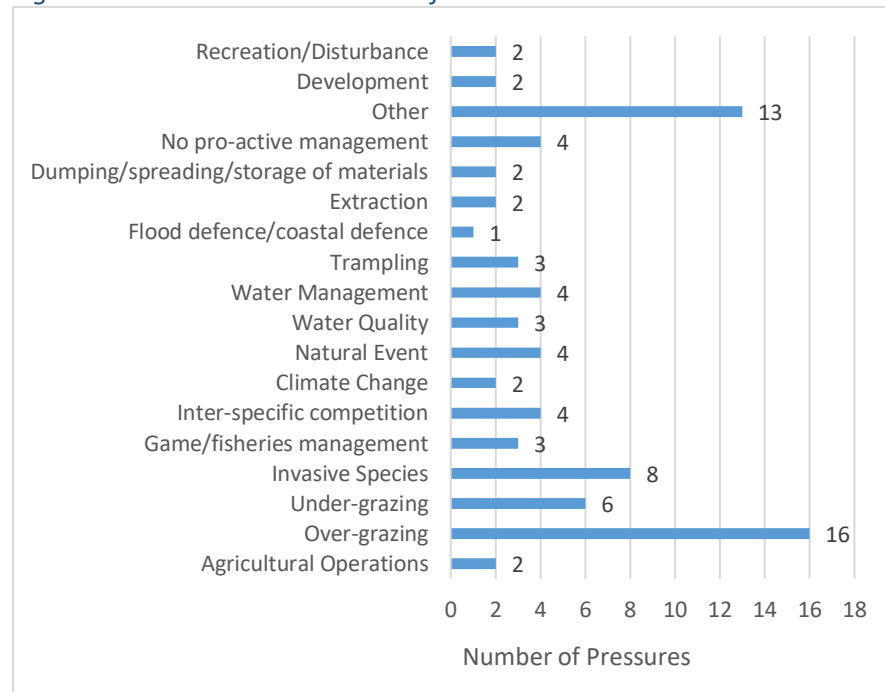
Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 36 - SSSIs by interest in Shetland



Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 37 – Pressures on interests of SSSIs in Shetland



Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

International Designations

Natura 2000 Network

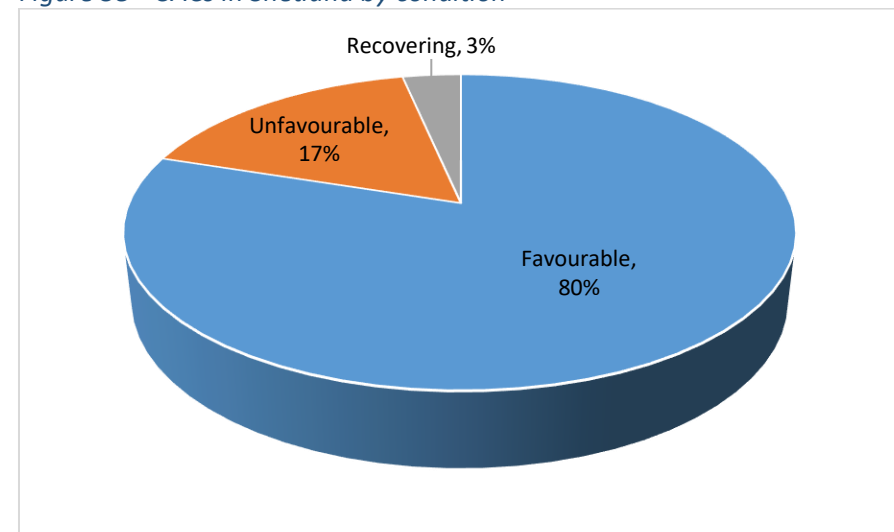
The Natura 2000 network is a network of sites which are considered the best for wildlife in Europe. There are two types of Natura 2000 site in Shetland, namely Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

SACs are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Directive requires the establishment of a

European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).

There are 12 SACs in Shetland covering a total of 15,345.11 hectares. The location of these can be viewed in **Figure 32** on page 36. The SACs, their name, qualifying feature and condition are listed in **Table 12**. **Figure 36** shows the SACs by condition, **Figure 37** by feature and **Figure 38** by pressures on those features.

Figure 38 – SACs in Shetland by condition



Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 39 – SACs in Shetland by Feature Category

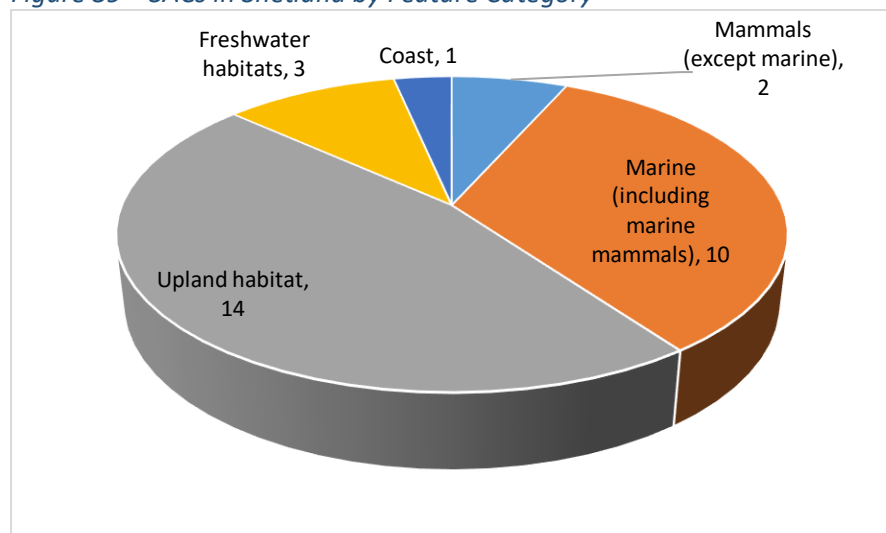
Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 40 – Pressures on interests of SACs in Shetland

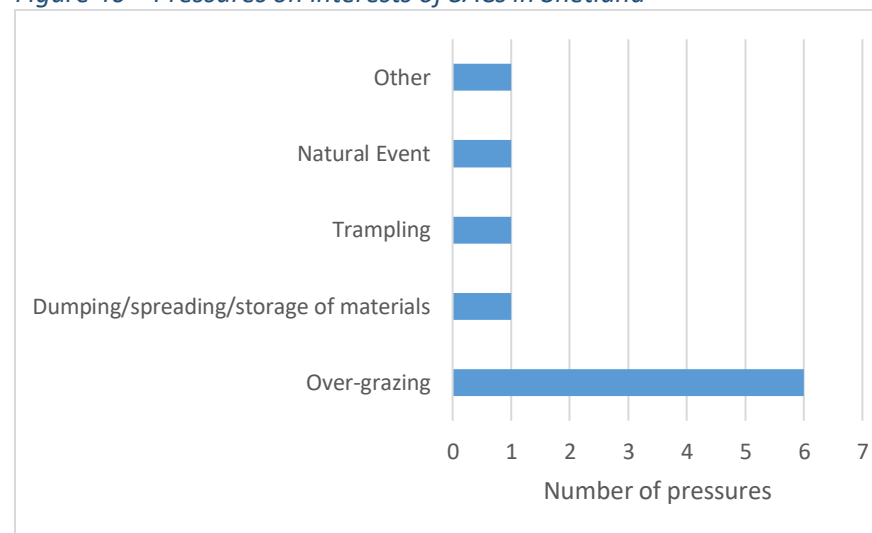
Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Table 12 – Special Areas of Conservation in Shetland

Site Code	Name	Qualifying Feature	Feature Category	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8249	<u>East Mires and Lumbister</u>	Blanket bog	Upland habitat	619.54	Favourable	None identified	20/09/2012
8253	<u>Fair Isle</u>	Dry heaths	Upland habitat	561.05	Favourable	Over-grazing	30/07/2014
		Vegetated sea cliffs	Coast		Favourable		30/07/2014
8270	<u>Hascosay</u>	Blanket bog	Upland habitat	164.19	Favourable	Dumping/spreading/storage of materials	02/09/2009
		Otter (<i>Lutra lutra</i>)	Mammals (except marine)		Unfavourable		07/06/2012
8279	<u>Keen of Hamar</u>	Base-rich scree	Upland habitat	39.87	Favourable	None identified	24/07/2014
		Dry heaths	Upland habitat		Favourable		07/10/2010
		Grasslands on soils rich in heavy metals	Upland habitat		Favourable		24/07/2014

Site Code	Name	Qualifying Feature	Feature Category	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8333	<u>Mousa</u>	Harbour seal (<i>Phoca vitulina</i>)	Marine (including marine mammals)	529.74	Unfavourable	None identified	18/08/2009
		Reefs	Marine (including marine mammals)		Favourable		20/08/2008
		Sea caves	Marine (including marine mammals)		Favourable		18/08/2008
8338	<u>North Fetlar</u>	Base-rich fens	Upland habitat	1585.18	Favourable	None identified	04/10/2012
		Dry heaths	Upland habitat		Favourable		02/09/2005
8345	<u>Papa Stour</u>	Reefs	Marine (including marine mammals)	2072.9	Favourable	None identified	15/08/2003
		Sea caves	Marine (including marine mammals)		Favourable		07/08/2003
8370	<u>Ronas Hill - North Roe</u>	Acid peat-stained lakes and ponds	Freshwater habitats	4903.57	Favourable	Trampling, Natural Event, Over-grazing	03/08/2004
		Acidic scree	Upland habitat		Favourable		27/07/2015
		Alpine and subalpine heaths	Upland habitat		Favourable		27/07/2015
		Blanket bog	Upland habitat		Unfavourable		12/09/2012
		Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	Freshwater habitats		Favourable		03/08/2004
		Dry heaths	Upland habitat		Recovering		21/08/2006
		Wet heathland with cross-leaved heath	Upland habitat		Favourable		21/08/2006
8388	<u>Sullom Voe</u>	Lagoons Reefs Shallow inlets and bays	Marine (including marine mammals)	2691.43	Favourable	None identified	17/09/2004
			Marine (including marine mammals)		Favourable		19/09/2004
			Marine (including marine mammals)		Favourable		19/09/2004

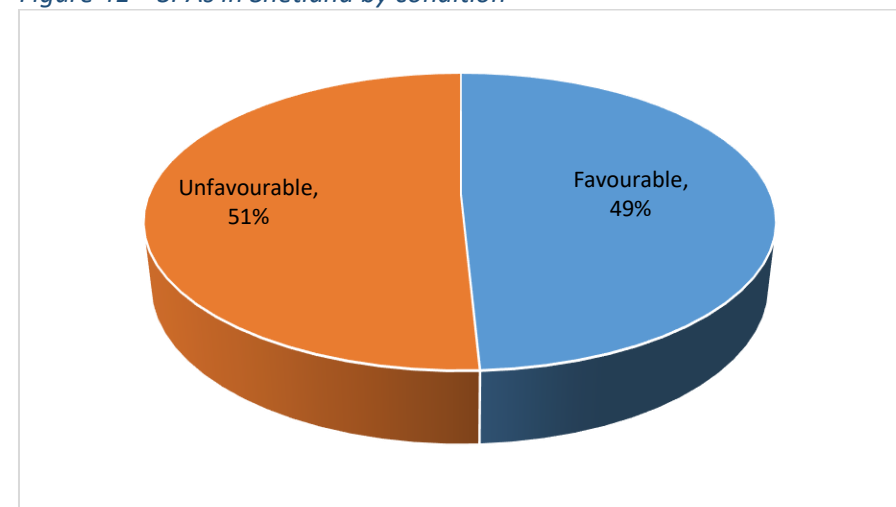
Site Code	Name	Qualifying Feature	Feature Category	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8393	The Vadills	Lagoons	Marine (including marine mammals)	62.42	Favourable	None identified	14/08/2003
8395	Tingon	Acid peat-stained lakes and ponds	Freshwater habitats	570.78	Favourable	None identified	08/08/2010
		Blanket bog	Upland habitat		Favourable		25/07/2001
8409	Yell Sound Coast	Harbour seal (<i>Phoca vitulina</i>)	Marine (including marine mammals)	1544.44	Unfavourable	Other	18/08/2009
		Otter (<i>Lutra lutra</i>)	Mammals (except marine)		Unfavourable		05/06/2012

Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

SPAs are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species. 11 of these Annex I species nest in Shetland, with a number of other species occurring as migrant or wintering birds.

There are 12 SPAs in Shetland covering a total of 53,057.64 hectares. There are three further proposed SPAs. The location of these can be viewed in **Figure 32** on page 36. The SPAs, their name, qualifying feature and condition are listed in **Table 13**. **Figure 39** shows the SPAs by condition, **Figure 40** by qualifying feature and **Figure 41** by pressures on those features.

Figure 41 – SPAs in Shetland by condition



Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 42 – SPAs in Shetland by Feature Category

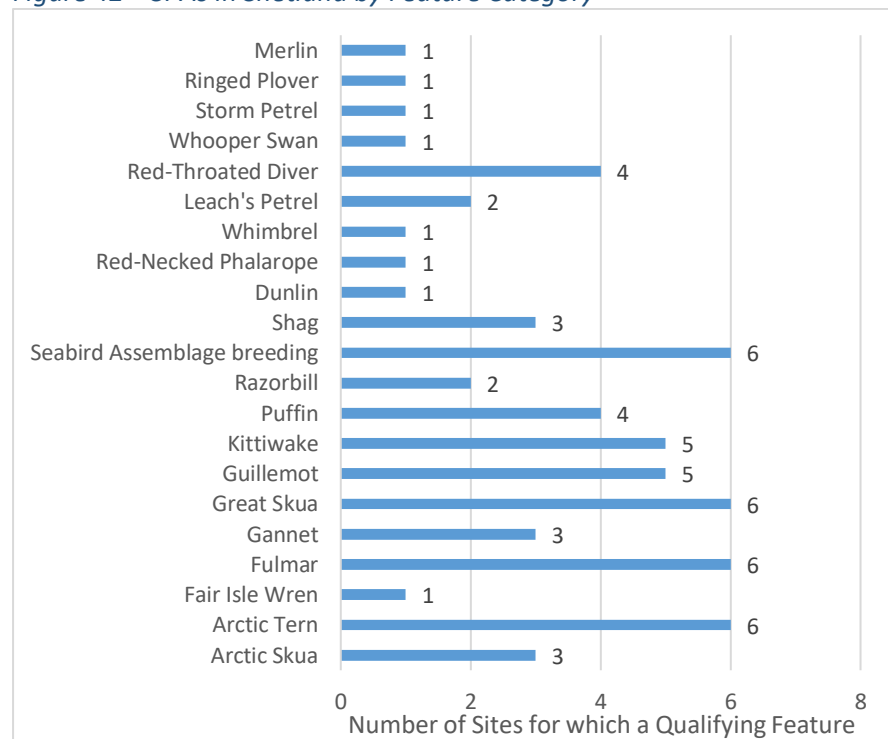
Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Figure 43 – Pressures on interests of SPAs in Shetland

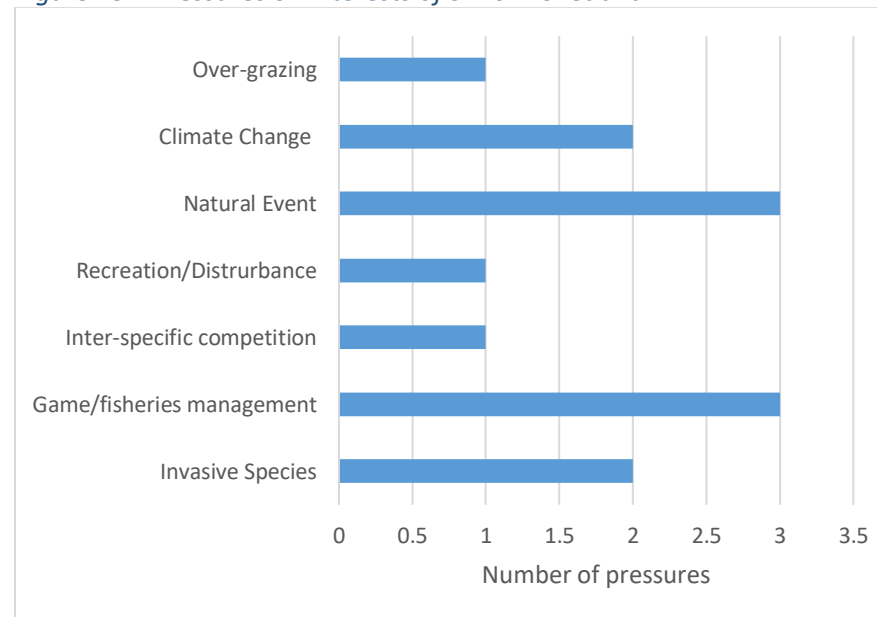
Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Table 13 – Special Protection Areas in Shetland

Site Code	Name	Qualifying Feature	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8496	Fair Isle	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	6825.1	Unfavourable	Invasive Species, Game/fisheries management	01/06/2016
		Arctic tern (<i>Sterna paradisaea</i>), breeding		Unfavourable		01/06/2016
		Fair Isle wren (<i>Troglodytes troglodytes fridariensis</i>), breeding		Favourable		30/06/2012
		Fulmar (<i>Fulmarus glacialis</i>), breeding		Favourable		01/06/2016
		Gannet (<i>Morus bassanus</i>), breeding		Favourable		01/06/2014

Site Code	Name	Qualifying Feature	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
		Great skua (<i>Stercorarius skua</i>), breeding		Favourable		01/06/2016
		Guillemot (<i>Uria aalge</i>), breeding		Unfavourable		01/06/2016
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Unfavourable		01/06/2016
		Puffin (<i>Fratercula arctica</i>), breeding		Unfavourable		01/04/2015
		Razorbill (<i>Alca torda</i>), breeding		Unfavourable		01/06/2015
		Seabird assemblage, breeding		Unfavourable		01/06/2016
		Shag (<i>Phalacrocorax aristotelis</i>), breeding		Unfavourable		01/06/2013
8498	Fetlar	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	16964.69	Unfavourable	Inter-specific competition	21/06/2017
		Arctic tern (<i>Sterna paradisaea</i>), breeding		Favourable		30/06/2002
		Dunlin (<i>Calidris alpina schinzii</i>), breeding		Favourable		30/06/2003
		Fulmar (<i>Fulmarus glacialis</i>), breeding		Unfavourable		26/06/2016
		Great skua (<i>Stercorarius skua</i>), breeding		Favourable		21/06/2017
		Red-necked phalarope (<i>Phalaropus lobatus</i>), breeding		Favourable		31/07/2014
		Seabird assemblage, breeding		Favourable		30/06/2002
		Whimbrel (<i>Numenius phaeopus</i>), breeding		Favourable		30/06/2002
8504	Foula	Arctic skua (<i>Stercorarius parasiticus</i>), breeding	7985.49	Unfavourable	Game/fisheries management, Natural Event	01/06/2015
		Arctic tern (<i>Sterna paradisaea</i>), breeding		Unfavourable		22/07/2016
		Fulmar (<i>Fulmarus glacialis</i>), breeding		Unfavourable		24/06/2015
		Great skua (<i>Stercorarius skua</i>), breeding		Favourable		05/06/2015
		Guillemot (<i>Uria aalge</i>), breeding		Unfavourable		24/06/2015
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Unfavourable		24/06/2015
		Leach's petrel (<i>Oceanodroma leucorhoa</i>), breeding		Unfavourable		22/09/2001
		Puffin (<i>Fratercula arctica</i>), breeding		Unfavourable		06/05/2016
		Razorbill (<i>Alca torda</i>), breeding		Unfavourable		24/06/2015

Site Code	Name	Qualifying Feature	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
		Red-throated diver (<i>Gavia stellata</i>), breeding		Favourable		28/08/2013
		Seabird assemblage, breeding		Unfavourable		01/06/2016
		Shag (<i>Phalacrocorax aristotelis</i>), breeding		Unfavourable		24/06/2015
8512	<u>Hermaness, Saxa Vord and Valla Field</u>	Fulmar (<i>Fulmarus glacialis</i>), breeding	6832.36	Favourable	None	20/07/2016
		Gannet (<i>Morus bassanus</i>), breeding		Favourable		24/10/2014
		Great skua (<i>Stercorarius skua</i>), breeding		Favourable		25/06/2013
		Guillemot (<i>Uria aalge</i>), breeding		Favourable		20/06/2000
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Unfavourable		26/06/2009
		Puffin (<i>Fratercula arctica</i>), breeding		Favourable		30/06/2002
		Red-throated diver (<i>Gavia stellata</i>), breeding		Unfavourable		02/07/2013
		Seabird assemblage, breeding		Favourable		24/06/2004
		Shag (<i>Phalacrocorax aristotelis</i>), breeding		Unfavourable		30/06/2002
8543	<u>Lochs of Spiggie and Brow</u>	Whooper swan (<i>Cygnus cygnus</i>), non-breeding	140.66	Unfavourable	None	04/02/2016
8551	<u>Mousa</u>	Arctic tern (<i>Sterna paradisaea</i>), breeding	196.85	Unfavourable	Recreation/Disturbance, Natural Event	01/06/2015
		Storm petrel (<i>Hydrobates pelagicus</i>), breeding		Favourable		25/07/2008
8561	<u>Noss</u>	Fulmar (<i>Fulmarus glacialis</i>), breeding	3338.38	Favourable	Climate Change, Natural Event	26/06/2016
		Gannet (<i>Morus bassanus</i>), breeding		Favourable		01/06/2014
		Great skua (<i>Stercorarius skua</i>), breeding		Favourable		13/08/2013
		Guillemot (<i>Uria aalge</i>), breeding		Unfavourable		23/06/2015
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Unfavourable		23/06/2015
		Puffin (<i>Fratercula arctica</i>), breeding		Unfavourable		27/05/2007
		Seabird assemblage, breeding		Favourable		23/06/2001

Site Code	Name	Qualifying Feature	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8563	<u>Otterswick and Graveland</u>	Red-throated diver (<i>Gavia stellata</i>), breeding	2239.59	Favourable	None	30/06/2006
8564	<u>Papa Stour</u>	Arctic tern (<i>Sterna paradisaea</i>), breeding	569.6	Unfavourable	None	19/06/2015
		Ringed plover (<i>Charadrius hiaticula</i>), breeding		Favourable		19/06/2015
8568	<u>Ramna Stacks and Gruney</u>	Leach's petrel (<i>Oceanodroma leucorhoa</i>), breeding	11.66	Favourable	None	08/06/2004
8572	<u>Ronas Hill - North Roe and Tingon</u>	Great skua (<i>Stercorarius skua</i>), breeding	5474.35	Favourable	Over-grazing	14/06/2017
		Merlin (<i>Falco columbarius</i>), breeding		Favourable		08/05/2014
		Red-throated diver (<i>Gavia stellata</i>), breeding		Favourable		05/06/2014
8582	<u>Sumburgh Head</u>	Arctic tern (<i>Sterna paradisaea</i>), breeding	2478.91	Unfavourable	Natural Event, Game/fisheries management	10/06/2001
		Fulmar (<i>Fulmarus glacialis</i>), breeding		Favourable		14/06/2017
		Guillemot (<i>Uria aalge</i>), breeding		Unfavourable		06/06/2007
		Kittiwake (<i>Rissa tridactyla</i>), breeding		Unfavourable		07/06/2007
		Seabird assemblage, breeding		Favourable		27/06/2001

Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Marine Protected Areas

Marine Protected Areas (MPAs) are recognised globally as one way to support our marine environment. A well-managed network of MPAs will protect important marine habitats and species, deliver benefits for our marine environments, support coastal communities, help sustain marine industries, and provide for recreational uses. Developing a network of MPAs in Scotland is part of a wider strategy to achieve the Government's commitment to a 'clean, healthy, safe, productive and biologically diverse marine and coastal environment that meets the long term needs of people and nature'.

There are two nature conservation MPAs in Shetland covering an area of 22,900 hectares and one Research and Demonstration MPA around Fair Isle. The location of these can be viewed in **Figure 21** on page 22. The MPAs, their name and features are listed in **Table 14**.

Shetland also has 4 Marine Consultation Areas (MCAs) again shown in **Figure 21**. These Areas are identified by Scottish Natural Heritage as deserving particular distinction in respect of the quality and sensitivity of the marine environment within them. MCAs are listed in **Table 15**.

Table 14 – Marine Protected Areas in Shetland

Site Code	Name	Type	Feature Category	Feature	Total Area (ha)	Summary Condition	Pressures
10409	Fetlar to Haroldswick	Nature Conservation MPA	Birds - aggregations of breeding birds	Black guillemot	21600	Not listed	Not listed
			Geomorphology	Marine Geomorphology of the Scottish Shelf Seabed			
			Inshore sublittoral sediment (Marine)	Circlittoral sand and coarse sediment communities			
			Inshore sublittoral sediment (Marine)	Horse mussel beds			
			Inshore sublittoral sediment (Marine)	Kelp and seaweed communities on sublittoral sediment			
			Inshore sublittoral sediment (Marine)	Maerl beds			
			Inshore sublittoral sediment (Marine)	Shallow tide-swept coarse sands with burrowing bivalves			
10410	Mousa to Boddam	Nature Conservation MPA	Fish	Sandeels	1300	Not listed	Not listed
			Geomorphology	Marine Geomorphology of the Scottish Shelf Seabed			
10499	Fair Isle	Demonstration & Research MPA	Not listed	Not listed	Not listed	Not listed	Not listed

Source: <http://gateway.snh.gov.uk/sitelink/index.jsp>

Table 15 – Marine Consultation Areas in Shetland

Site	Description
Brindister Voe and the Vadills	Brindister Voe includes communities representative of Shetland voes in general. The Vadills comprises the most complex and least disturbed lagoon system in Shetland, unique in the British Isles
Swinister Voe and the Houb of Fora Ness	Swinister Voe is included because of its rich lower shore fauna and flora. The Houb contains communities characteristic of shallow, submerged, extremely sheltered conditions. The gravel rapids community is probably the best such example in Shetland
The Houb, Fugla Ness	The site contains extensive areas of sediment shores, (unusual in Shetland), as well as more widespread boulder/shingle shores
Whiteness Voe	The bay at the head of the Voe is of high scientific interest because it contains the best-developed bed of eel grass in Shetland and because the rich sediments include both widely occurring and rare communities and species

Ramsar Convention

Shetland is home to one site that has been designated under the 'Convention on Wetlands and Waders of International Importance' in 1971 in Ramsar, Iran. The designation recognises the fundamental ecological functions of this area as well as its economic, cultural, scientific, and recreational value. The location of the site can be viewed in **Figure 31** on page 35 and details can be found in **Table 16**.

Table 16 – Shetland Ramsar Site

Site Code	Name	Qualifying Feature	Total Area (ha)	Summary Condition	Pressures	Last Visit Date
8453	Ronas Hill – North Roe and Tington	Blanket Bog	5470.3	Unfavourable	Natural Event, Over-grazing and Trampling	12/09/2012

Source: <http://gateway.snh.gov.uk/sitelink/index.js>

Tree Preservation Orders

Under the Town and Country Planning (Scotland) Act 1997, Shetland Islands Council must be given prior notification of intended works to protected trees. There are 4 Tree Preservation Orders (TPOs) in Shetland. The majority of these are in built up areas in Lerwick or Scalloway. The TPOs are shown in **Table 17**.

Table 17 – Shetland Tree Preservation Orders

Location	Description	Year
Westerloch, Lerwick	10 individual, 1 area and 8 groups of trees, comprising Sycamore, Alder and Willow	1997
Montfield, Lerwick	18 individual trees comprising Sycamore, Hawthorn and Ash	2001
Ingaville House, Scalloway	18 individual and 2 groups of trees comprising Sycamore, Ash, Wych Elm and Swedish Whitebeam (includes a Sycamore Avenue)	2006
Smiddy Closs, Scalloway	14 individual Sycamore trees	2010

Source: SIC

Summary of Designated Sites

Table 18 summarises the designated sites in Shetland and its surrounding waters as detailed above. It should be noted that all NNRs and Ramsar sites and the terrestrial parts of most SPAs and SACs are also notified as SSSIs.

Table 18 – Summary of Designated Sites in Shetland

Designation	Total No.	Area Hectares
Marine Consultation Area	4	No data
National Nature Reserves	2	1,309 ha
Nature Conservation Marine Protected Areas	2	22,900 ha
Ramsar Site	1	5,470.3 ha
Research & Demonstration Marine Protected Area	1	Not listed
Site of Special Scientific Interest	78	19,930.5 ha
Special Protection Areas	12	53,057.64 ha
Special Areas of Conservation	12	15,345.11 ha
Tree Preservation Orders	4	No data
TOTAL	112	118,013 ha

Non-Statutory Designations

Shetland has a number of non-statutory designations including RSPB reserves and Local Nature Conservation Sites.

The RSPB manages 4 Nature Reserves in Shetland at Sumburgh Head, Mousa, Fetlar and Loch of Spiggie. These all encompass areas of statutory designation, with Sumburgh Head designated as a SPA and SSSI, Mousa a SPA, SAC and SSSI, Fetlar a SPA and Loch of Spiggie a SPA and SSSI.

All of the reserves are known for their outstanding bird life and in particular Sumburgh Head for its seabird colonies, Mousa for its Storm Petrels, Fetlar for the Red necked phalarope and Loch of Spiggie for Whooper Swans.

Local Nature Conservation Sites (LNCS) are non-statutory sites, selected at the local level for biodiversity and/or geodiversity features of interest. LNCS are not statutory designations but are recognised by planning policy.

Table 19 lists the LNCS in Shetland. LNCS should:

- recognise places of substantive importance for biodiversity and/or geodiversity;
- contribute to the quality of the local environment;
- provide opportunities for local people to find out about, and take pride in their local biodiversity and geodiversity;
- be an area where biodiversity and/or geodiversity can be conserved; and
- provide opportunities for informal recreation.

Table 19 – Local Nature Conservation Sites

No.	Site Name
1	Scousburgh Beach
2	Scatness
3	Burn of Laxdale
4	Loch of Voe
5	Boddam Voe
6	Ocraquoy
7	Levenwick Marshes
8	Burn of Northdale
9	Long Ayre & The Wadill
10	Ollaberry Meadow
11	Semblister

12	Baltasound
13	Burn of Mailand
14	Haroldswick Mires
15	Loch of Bordastubble & Stourhoull
16	Skeo Taing
17	Burn of Setter
18	Voe of Snarraness
19	West Burrafirth
20	Clickimin Loch
21	Loch of Kirkabister
22	Leebitten Intertidal
23	Kettlaness
24	Ladies Hole
25	Stenness
26	Wick of Skaw
27	Belmont Quarry
28	West Sandwick
29	Haggrister Quarry
30	Meal Beach
31	Rerwick Reed Bed
32	Lang Lochs
33	Loch of Benston

Source: Local Nature Conservation Sites in Shetland: Tranche 1 Report, SIC, 2014

Important Species and Habitats

Protected Species

It will be important to consider the effects of any proposals on European and nationally protected species in the area. European species are given a high level of protection under Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora. This is transposed into UK law by The Conservation (Natural Habitats &c) Regulations 1994.

These species include otter and cetaceans, both of which occur on Shetland or its surrounding sea. Since 1980, eighteen species of cetacean have been recorded along the coast or in nearshore waters (within 60 km of the coast). Of these, eight species (29% of the UK cetacean fauna) are either present throughout the year or recorded annually as seasonal visitors, these include the humpback whale (*Megaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata*), long-finned pilot whale (*Globicephala melas*), killer whale (*Orcinus orca*), risso's dolphin (*Grampus griseus*), white-beaked dolphin (*Lagenorhynchus albirostris*), atlantic white-sided dolphin (*Lagenorhynchus acutus*) and harbour porpoise (*Phocoena phocoena*).

Disturbance to any of these species requires a license from the Scottish Government and demonstration that no reasonable alternative exists and that proposals would not affect the conservation status of the species.

A number of animal and plant species are protected under the Wildlife and Countryside Act 1981 as amended by the Nature Conservation (Scotland) Act 2004. Species protected under the

Wildlife and Countryside Act 1981 which occur in Shetland are shown in **Table 20**. Although not all of these species occur across Shetland, some, such as otter have been recorded on a regular basis.

The EU Birds Directive also requires steps to be taken to protect birds out with designated sites. Article 4.4 requires Member States to strive to avoid pollution or deterioration of the habitat of species listed in Annex 1 of the Directive. **Table 21** lists Annex 1 species known to nest in Shetland. Several other Annex 1 species occur as migrant or wintering birds.

Table 20 – Protected Species occurring in Shetland

Wildlife & Countryside Act 1981 – Schedule	Name
Schedule 1 – Breeding Birds	<ul style="list-style-type: none"> • Red-throated diver • Black-tailed godwit • Greenshank • Merlin • Peregrine • Leach's petrel • Red-necked phalarope • Whooper swan • Whimbrel
Schedule 5 - other animals	<ul style="list-style-type: none"> • Cetaceans • Otter • Freshwater pearl mussel
Schedule 8 - plants	<ul style="list-style-type: none"> • <i>Arenaria norvegicus</i> (Norwegian sandwort) • <i>Hieracium attenuatifolium</i> (Weak-leaved hawkweed) • <i>Hieracium northroense</i> (North Roe hawkweed) • <i>Hieracium zetlandicum</i> (Shetland Hawkweed)

Table 21 – EU Birds Directive Annex 1 Species nesting in Shetland

Annex 1 Species nesting in Shetland	
• Red-throated diver	• Storm petrel
• Whooper swan	• Peregrine
• Red-necked phalarope	• Arctic tern
• Manx shearwater	• Golden plover
• Merlin	• Leach's Petrel
• Common tern	

Priority Habitats and Species

The Nature Conservation (Scotland) Act 2004 places an obligation on all public bodies to further the conservation of biodiversity, particularly in respect of habitats and species listed in 'Scotland's Biodiversity Strategy – 2020 Challenge for Scotland's Biodiversity'. The Scottish Biodiversity List is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation. The list includes many species and habitats, both terrestrial and marine, which occur in Shetland.

As part of the 'Living Shetland draft Local Biodiversity Action Plan', priority habitats and species have been identified. Priority habitats include roadside verges, machair, herb-rich meadows, wet meadows and arable crops. In some cases, habitat action plans have been developed. **Table 22** lists the priority species for which specific action plans have been developed.

Table 22 – Species Action Plans for Shetland

Species Action Plans	Species/Habitats Action Plans
Arable Birds	Arable Plants
Arctic Char	Freshwater
Bumblebee	Hawkweeds
Eider Duck	Oysterplant
Harbour Porpoise	Strandline
Merlin	Ungrazed Areas
Red-necked phalarope	Woodlands
Skylark	

Source: *Living Shetland: Action for Shetland's Biodiversity (2004)*

The presence of some species in Shetland is highly significant in a national context, for example 90% of the UK population of the red-necked phalarope is present in Shetland. Similarly, Shetland is home to approximately 90% of the UK's whimbrel population.

Coastal cliffs provide important nesting sites for breeding seabirds. Shetland is home to one tenth of the total seabird population of Britain; in excess of one million birds from 22 species.

The varied coastline of Shetland supports diverse habitats and species. Voes (inlets/sea lochs) provide shelter and muddy conditions exist at the heads of some of the longer voes, which are inhabited by species such as cockles and lugworms. In deep water, reefs are formed from large horse mussels.

Sandeels, which are an important food source for Shetland's many seabirds, mammals, and commercial fish stocks are supported by finite offshore supplies of sand.

Key Messages

Shetland's coastal waters support diverse marine ecosystems and the land is dominated by moorland, upland heaths and freshwater. Large areas of both land and sea are designated including internationally important sites, particularly for birds.

A large proportion of designated sites are in unfavourable condition due to key pressures. For land based sites the most common among these is over-grazing. For SPAs (sites designated for protection of birds) the most common pressures include natural events, game and fisheries management and climate change. Given the importance of Shetland for seabird populations as well as waders and other birds this is a key concern.

Designated sites with available monitoring information are shown in **Table 23** with the proportion in unfavourable condition and the key pressures on these sites

Table 23 – Summary of designated site condition and pressures

Designation	% in Unfavourable Condition	Main Pressures
SSSI	30%	Over-grazing and invasive species
SACs	17%	Over-grazing
SPAs	51%	Natural events, game and fisheries management and climate change
Ramsar Site	100% (1 site)	Over-grazing, natural event and trampling

A new network of Marine Protection Areas aim to protect species and habitats whilst benefiting the marine environment, supporting coastal communities, sustaining marine industries and recreation.

A number of key species and habitats are identified as priorities within the Living Shetland Local Biodiversity Action Plan. The Plan and many of the associated action plans date back to 2004. The Shetland Amenity Trust, SNH and partners have a number of projects underway to support delivery of some of these plans.

The LOIP is unlikely to have a direct immediate impact on natural heritage. Given the ambition to grow the population as well as growing key industries such as energy, oil and gas, aquaculture, fisheries and tourism, however, it is likely to have a longer term impact.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 2: Air
- Topic 3: Water
- Topic 4: Soil
- Topic 5: Material Assets
- Topic 7: Landscape & Cultural Heritage
- Topic 8: Population and Human Health

Topic 7: Landscape, Seascape & Cultural Heritage

Landscape

SNH publication 'Landscapes of Scotland' provides the following description of the Shetland landscape:

"An elongated group of islands, whose character is accentuated by the north-south trend of the hills and ridges. The dramatic coastlines are highly varied, with fjords, arches, stacks, beaches and tombolos (sand bars). The seas are busy with boat and ferry traffic.

The coast is where most of the settlement is located, including the distinctive capital of Lerwick with its narrow stone-flagged streets.

The islands are mostly tree-less while seabirds throng the coasts and cliffs. Frequent winds sweep over landscapes with long hours of summer light and winter darkness, and a strong sense of Nordic culture.

The landscape is rich in exceptionally well preserved archaeological remains. This includes a high proportion of nationally important sites, such as, at Mousa, the best preserved broch in Scotland, and extensive Norse remains in Unst."

Landform

Gillespie's 1998 Landscape Assessment of Shetland (SNH Review No. 93) describes the landform of Shetland as having:

"...a strong north-south linear quality to the central mainland with a landform of ridges and valleys which in the north turn north-east and south-west. The landform is generally undulating and coastal and other low lying areas, with numerous hillocks and hummocks.

...Broader scale hill masses are also evident, notably Ronas Hill. The north-south band of hills in the south mainland and the north-south ridge along the western edge of Unst.

...The topography and landform, influenced by geological forces and geomorphological processes has also been affected by changing sea level. The characteristic drowned valleys which form many of the voes and sounds are evidence of the rising sea level."

Landscape Character

SNH, in conjunction with partner councils, has undertaken detailed review and classification of the various landscape areas and types in Scotland. The Shetland landscape character assessment identifies seven primary landscape types which are further subdivided into detailed landscape character areas.

Inland landscapes are characterised by rolling hills, heather and rough grassland with historic buildings and features. Historic land use practices, particularly crofting and peat cutting, have helped to create the diverse landscapes. These landscape types are listed below:

- Coastal edge
- Farmed and settled lowlands and coast
- Farmed and settled voes and sounds
- Inland valleys

- Major uplands
- Peatland and moorland
- Undulating moorland with lochs

Landuse and Landcover

As described in Topic 4 (Soil), page 26 of this report, peat dominates the landscape and there are no areas of prime agricultural land in Shetland. The majority of land is used for rough grazing.

The principal form of agriculture on Shetland is crofting. Over the last century sheep rearing expanded leading to improvement in moorland and common grazing, a decline in hay and winter crops and an increase in silage production.

Fish farming and aquaculture are key industries in Shetland (see Topic 3, Water, page 20). It is an important and appropriate development of a traditional industry for Shetland. It does have a significant visual impact which could detract from existing landscape qualities and as such must be carefully designed and sited.

Infrastructure used by the fishing industry and oil and gas also has an impact on the land and sea scape. There are no offshore renewables at present (see Topic 5, Material Assets, page 28) but these too have the potential to impact in the future.

Infrastructure and the landscape

Shetland is sparsely populated with a series of small settlements and houses scattered throughout the landscape. There are a

network of main roads and more minor roads throughout the landscape. Telecommunications masts are increasingly visible across Shetland but coverage is still limited so this may increase in the future. There are a number of small scale airports throughout the islands and a large airport at Sumburgh taking advantage of areas of flat land.

There are larger ports at Lerwick and Sullom Voe with a number of smaller ports throughout the islands. There are numerous slipways, boat shelters and general evidence of marine activity throughout the islands indicating Shetland's long connection with the sea.

The main impact of the oil and gas industry on the Shetland landscape is the Sullom Voe Terminal. It is the largest terminal in Europe and is responsible for extensive light pollution in the area whilst the rest of Shetland benefits from dark skies for much of the year and displays of the northern lights.

Landscape Designations

There are a number of landscape designations in Scotland and a number of these are present in Shetland. This includes a National Scenic area, an area of Wild land and Local Landscape Areas. Shetland does not have any National, Country or Regional Parks. There are also 4 Tree Preservation Orders in the islands.

The landscape designations in Shetland can be viewed in **Figure 42** on the following page.

Figure 44 – Map of Landscape Designations in Shetland



Source: SNH

National Scenic Areas

National Scenic Areas (NSA) are areas of exceptional scenic value and comprise some of the best examples of Scotland's landscapes. Shetland has an outstanding coastline and the Shetland NSA comprises Shetland's scenic highlights and epitomise the range of coastal forms varying across the island group. Some special qualities are generic to all the identified NSA areas, others are specific to each area within the NSA. The seven individual areas of the Shetland NSA are shown in **Table 24**.

The special qualities of the Shetland NSA are identified as:

- the stunning variety of the extensive coastline;
- coastal views both close and distant;
- coastal settlement and fertility within a large hinterland of unsettled moorland and coast;
- the hidden coasts;
- the effects and co-existence of wind and shelter;
- a sense of remoteness, solitude and tranquillity;
- the notable and memorable coastal stacks, promontories and cliffs;
- the distinctive cultural landmarks; and,
- northern light.

Table 24 – Shetland National Scenic Area

Site Code	Site Name	Area (ha)	Areas covered
9148	Shetland NSA	<ul style="list-style-type: none"> • 15,486 land area • 26,347 marine area • 41,833 total area 	<p>1. Fair Isle</p> <p>2. Foula</p> <p>3. South West Mainland - Fitful Head to Weisdale Voe and Skeld including Nurra, Trondra and the islands to the north</p> <p>4. Muckle Roe - western half of the island</p> <p>5. Eshaness - including Hillswick Ness and the intervening coastline</p> <p>6. Fethaland - broad coastal strip from Uyea to Burravoe in Northmavine</p> <p>7. Hermaness - including Muckle Flugga and the western slopes of Saxa Vord</p>

Source: SNH

Wild Land Areas

SNH have identified large areas of Scotland – chiefly in the north and west – which have largely semi-natural landscapes that show minimal signs of human influence. These may be mountains and moorland, undeveloped coastline or peat bog. SNH states that our wild land is:

- is a big part of Scotland's identity;
- brings significant economic benefits – attracting visitors and tourists;
- offers people psychological and spiritual benefit; and,
- provides increasingly important havens for Scotland's wildlife.

SNH undertook work to measure relative wildness of these areas and published a map of wild land areas. These areas represent the most extensive areas of high wildness in Scotland. Surveys have shown widespread support for safeguarding these landscapes. See, for example, the 2012 Public Perception Survey of Wildness in Scotland. The Wild Land Areas identified are considered to be nationally important but are not a statutory designation.

One small area in Shetland has been identified as a Wild Land Area. The Ronas Hill and North Roe area is of relatively limited extent. The area was identified as an area of wild land in particular due to its remote islands location and the absence of other wild land in the area. The location of the Wild Land Area can be viewed in **Figure 41** on page 62. This area also has a number of natural heritage designations including and SPA, SAC, SSSI and Ramsar Site (see Topic 6, Biodiversity, Flora and Fauna on page 34).

Local Landscape Areas

There are 17 proposed Local Landscape Areas in Shetland. These areas were identified through the Shetland Islands Local Landscape Designation Review. Supplementary Guidance for the Local Development Plan identifies these areas to ensure sympathetic siting and design of new development to help protect and enhance Shetland's unique environment. The proposed Local Landscape Areas can be viewed in **Table 25**.

Table 25 – Shetland Proposed Local Landscape Areas

Name	Area (ha)	Characteristics
Ronas Hill	4,238	<ul style="list-style-type: none"> • A Shetland landmark, the highest point of the islands • Distinctive red granite geology is clearly expressed • Largely empty, uninhabited hills and moors • Rocky plateau, steep cliffs, and other rugged features
Nibon and Mangaster	2,508	<ul style="list-style-type: none"> • Rugged landscape of rocky coastal hills interspersed with numerous lochans • Sequence of long views along voes and sudden opening of wide panoramas • Intricate coastal edge with an array of features and colours Panoramic views across St Magnus Bay
Vementry and West Burrafirth	3,602	<ul style="list-style-type: none"> • Distinctive rugged rocky terrain based on Lewisian gneiss • Complex interface between land and sea, intricate pattern of voes, sounds and islands • Isolated pockets of settlement around sheltered voes
Papa Stour and Sandness	1,919	<ul style="list-style-type: none"> • Intact settled coastal landscape with strong crofting-derived pattern • The varied coast of Papa Stour, including high stacks, dramatic caves, and vertical cliffs, as well as sandy bays • Sense of a long history of settlement within a contained and relatively remote part of the Mainland

Name	Area (ha)	Characteristics
Walls and Vaila	1,294	<ul style="list-style-type: none"> Contrasting landscape of gentle and sheltered inner voes and sounds, and a rugged, exposed seaward coast An intact settled area with layers of past settlement and visible time depth Inland, larger scale open areas of moorland provides a wild setting to the more intimate coastal edges
Culswick and Westerwick	1,404	<ul style="list-style-type: none"> Rugged, intricate coastline with tall cliffs, dramatic caves, and rocky coves expressing the granite geology High variety of coastal features Inland topography of gently undulating moorland interspersed with a high concentration of lochs and water courses Intact crofting landscapes
No Ness and Mousa	381	<ul style="list-style-type: none"> An undeveloped headland within the most densely settled part of Shetland Prominent position on the south Mainland coast, with long visual links Important cultural landmarks Jagged rocky foreshores and sandstone strata
Scat Ness and Sumburgh Head	272	<ul style="list-style-type: none"> Dramatic headlands jutting into the open sea Rich historical background represented by world-class archaeological sites The distinctive approach to Sumburgh Airport across the headland An accessible area for viewing scenery, history and wildlife
Aith Ness and Noss	1084	<ul style="list-style-type: none"> Dramatic seascapes: high cliffs; rocky headlands; sheltered bays Landmark cliffs of the Noup of Noss Relict landscapes both ancient and modern

Name	Area (ha)	Characteristics
Weisdale	1125	<ul style="list-style-type: none"> Unique in Shetland as the location of the only substantial woodlands An enclosed valley landscape, opening out to wide voe Panoramic views across Weisdale Voe to the south, taking in an attractive composition of the islands and sea towards Fitful Head
Gletness and Skellister	1077	<ul style="list-style-type: none"> An intact, settled area, whose character has been preserved through a sympathetic approach to development An understated beauty of intricate and generally sheltered coast, rocky islands and ayres Rich in wildlife, a quiet tranquil area
Lunna Ness and Lunning	2161	<ul style="list-style-type: none"> Attractive settlements around Vidlin Voe, with a distinctive pattern and character Long, narrow and remote headland of Lunna Ness Rugged moorland hills around Lunning Historic features and associations at Lunna, including the ancient kirk and Shetland Bus
Haroldswick and Skaw	1869	<ul style="list-style-type: none"> most northerly area of Shetland and Britain Highly visible military defence infrastructure, including active and disused elements Rugged, exposed northern coast, with sheltered sandy bays Rich geology visible at the surface Actively settled area undergoing redevelopment as former military uses decline and new uses are found

Name	Area (ha)	Characteristics
Colvadale and Muness	956	<ul style="list-style-type: none"> Deserted settlement and relict patterns of croft boundaries and empty buildings Backed by the bare, gravelly moors derived from the underlying serpentinite geology An empty landscape, no longer settled but with extensive time depth
Wick of Tresta	504	<ul style="list-style-type: none"> secluded bay, a hidden gem Bright, broad sandy beach Enclosed by soft green cliffs and sinuous profile of Lamb Hoga
Gloup Voe and Bluemull Sound	2161	<ul style="list-style-type: none"> Layers of historic settlement apparent in the many ruined churches and buildings and standing stones Exposed northern coast with enclosed bays and narrow voes Rolling coastal hills and the steeply rising slopes of Valla Field that enclose the area
West Sandwich to Gloup Holm	1844	<ul style="list-style-type: none"> Highly isolated, long stretches of coastline increasing in exposure to the north Impressive wide views of great depth across Yell Sound to the rocky hills of Northmavine An area of limited active settlement, with isolated pockets of historic settlement rich in cultural heritage

Source: Shetland Local Landscape Review, LUC, 2011

Cultural Heritage

Shetland possesses a rich heritage and is home to many sites of historical value including Viking settlements, brochs, standing stones, ancient crofts and ruined chapels. These are all important contributors to Shetland's strong and unique cultural identity. A number of areas and features have been designated due to their historical importance.

Historic Inhabitants

Shetland is thought to have been inhabited by Neolithic farmers as long ago as 3,000BC or possibly earlier. Evidence of earlier inhabitants has yet to be found.

By the time of the Viking invasions in 800AD it is apparent that Shetland was part of a Pictish culture, similar to the rest of Scotland, and Christianity had reached the islands. Place names suggest that Pictish people were forced onto some of the poorer land as the Norse settlers consolidated their position.

Norse rule in Shetland ended in 1468 when Denmark gifted Shetland (and Orkney) to Scotland as part of a marriage treaty. Scandinavian heritage is still strongly apparent in Shetland through place names, archaeological sites, Scandinavian inspired buildings, the Shetland dialect, and cultural events such as Up Helly Aa – a series of fire festivals held annually throughout the winter months.

Historic landscape

The landscape we see today is the endpoint of a long period of evolution, involving a complex interplay of the natural elements of climate, geology, geomorphology, soil development, vegetation

succession and herbivore impact. This has a rich overlay of human elements linked to its historic inhabitants and their settlements, transport, farming, and fishing practices.

There is evidence of historic land use practices throughout the landscape. The *Canmore* database (national record of the historic environment) contains over 3,800 records for Shetland including hundreds of listings of farmsteads, cultivation, field enclosures etc. covering the pre-historic, medieval and modern age.

There are extensive archaeological remains in Shetland including Viking sites, brochs, wheelhouses, standing stones, ancient crofts and ruined chapels. Whilst many of these sites are identified in the Canmore database there is potential for unknown archaeological sites to be affected.

Historic Environment Designations

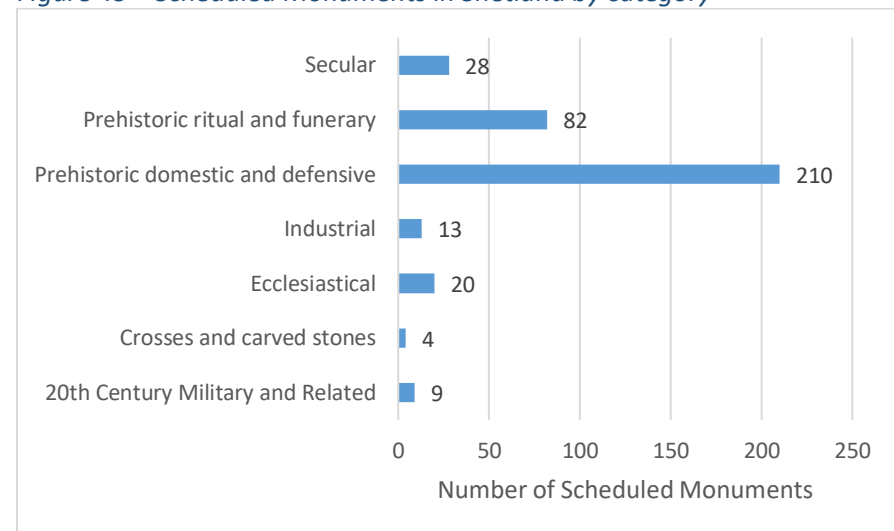
There are a large number of cultural and built heritage designations in Shetland. This includes Scheduled Monuments, Listed Buildings, Conservation Areas, Historic Marine Protection Areas, and Gardens and Designed Landscapes. There are also a number of other key sites including Buildings at Risk and properties in the care of Historic Environment Scotland. There are no designated battlefield in Shetland.

Some of the main historic environment designations in Shetland can be viewed in **Figure 44** on the following page.

Scheduled Monuments

Scheduled Monuments are given legal protection under the Ancient Monuments and Archaeological Areas Act 1979 as they are considered to be of national importance. Shetland currently has 366 scheduled ancient monuments classified in 7 categories as shown in **Figure 43**.

Figure 45 – Scheduled Monuments in Shetland by category

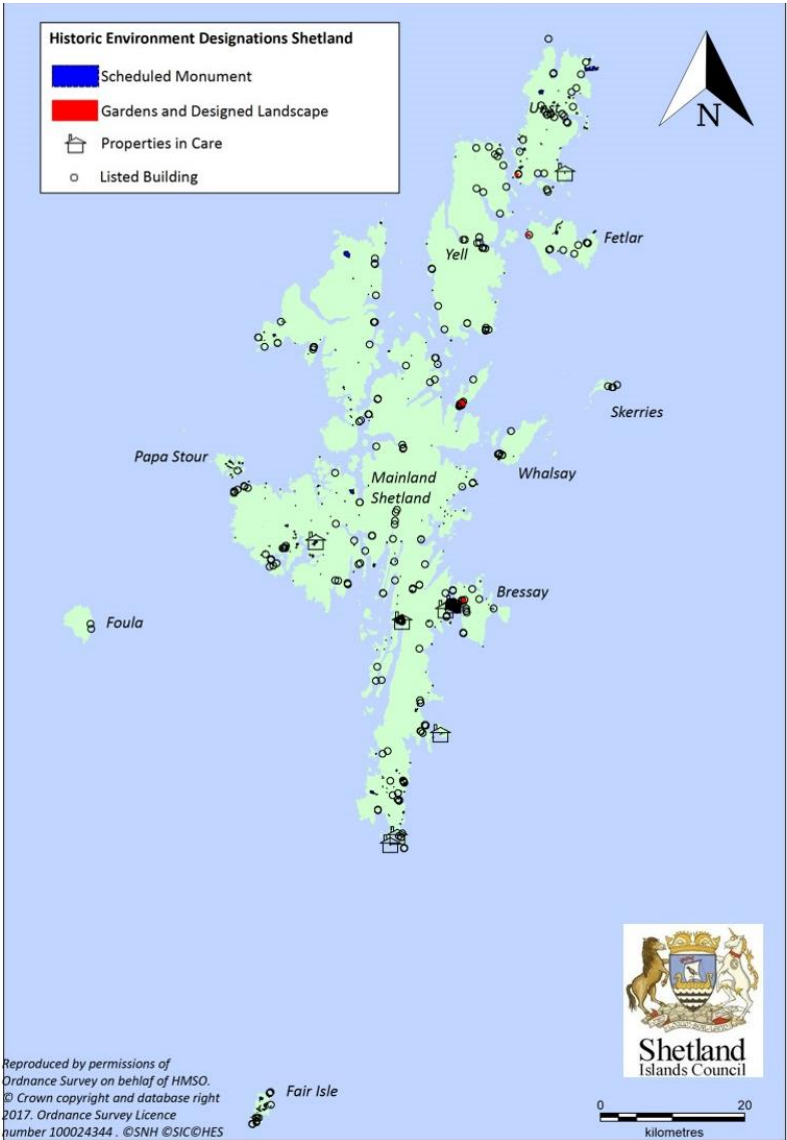


Source: <http://portal.historicenvironment.scot/spatialdownloads>

Conservation Areas

A Conservation Area is 'an area of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance' (Planning (Listed Buildings and Conservation Areas) Act 1990). There are three Conservation Areas in Shetland, two in Lerwick and one in Scalloway.

Figure 46 - Map of Cultural Heritage Designations in Shetland



Source: Historic Environment Scotland

Listed Buildings

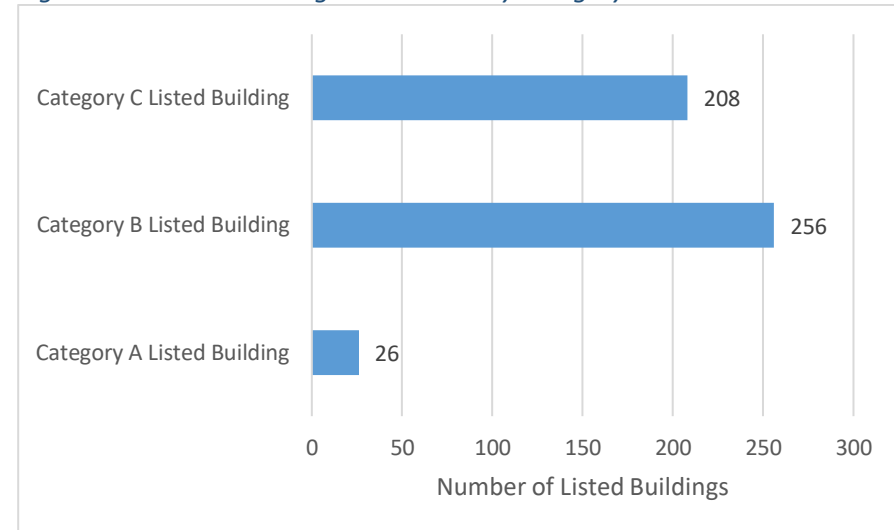
Listed buildings can include structures from great country houses to modest croft houses, tenements to toll houses, and post boxes to primary schools. They can date from the early medieval period up until the 1980s. They need not necessarily be 'buildings' but could be bridges, railings, mileposts or statues. Whether urban, rural, industrial, public or residential they all contribute to their particular area and to Scotland as a whole. They are integral to Scottish culture and provide a unique record of our economic and social history (Historic *(Environment)* Scotland, 2007).

Buildings are listed by Historic Environment Scotland for their special architectural or historic interest. They are assigned to one of three categories depending on relative importance:

- **Category A** - Of national or international importance either historic or architectural, or fine little-altered examples of a particular period, style or building type
- **Category B** - Of regional or more than local importance, or major examples of a particular period, style or building type which may have been altered
- **Category C** - Of local importance, lesser examples of any period, style or building type, as originally constructed or altered; and simple, traditional buildings grouped well with other in categories A and B or part of a planned group such as an estate or industrial complex

There are currently 490 Listed Buildings. **Figure 45** shows the proportion of Listed Buildings in Shetland classified as Category A, B or C.

Figure 47 – Listed Buildings in Shetland by category



Source: <http://portal.historicenvironment.scot/spatialdownloads>

Buildings at Risk

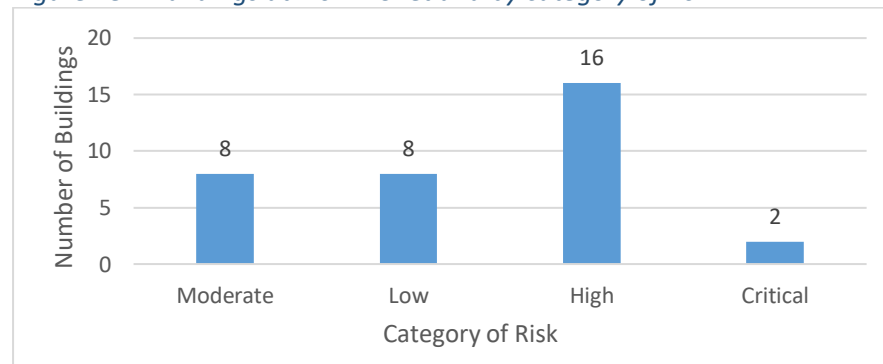
The Buildings at Risk Register (BARR) for Scotland highlights properties of architectural or historic merit throughout the country that are considered to be at risk or under threat. A Building at Risk is usually a listed building, or an unlisted building within a conservation area, that meets one or several of the following criteria:

- Vacant with no identified new use
- Suffering from neglect and/or poor maintenance
- Suffering from structural problems
- Fire damaged
- Unsecured
- Open to the elements, and / or
- Threatened with demolition

To be at risk, a building does not necessarily need to be in poor condition, it may simply be standing empty with no clear future use. Many buildings at risk are in this latter category.

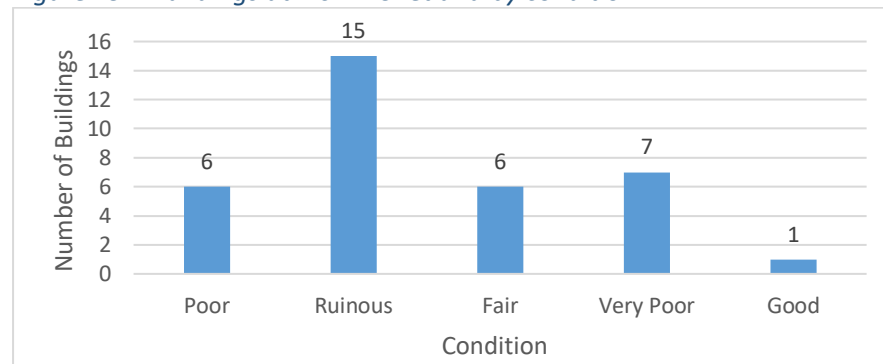
There are currently 33 buildings at risk in Shetland, many of which are old *Haas* (the Laird's House). **Figure 46** shows the level of risk to these buildings and **Figure 47** the current condition.

Figure 48 – Buildings at Risk in Shetland by category of risk



Source: Buildings at risk register for Scotland, <https://www.buildingsatrisk.org.uk/>

Figure 49 – Buildings at Risk in Shetland by condition



Source: Buildings at risk register for Scotland, <https://www.buildingsatrisk.org.uk/>

Properties in Care of Historic Environment Scotland

Properties in Care is a collection of monuments, which define significant aspects of Scotland's history, brought into care for their long term preservation and public benefit. Historic Environment Scotland manage them on behalf of the Scottish Ministers, for the benefit of people living in and visiting Scotland. These monuments range from standing stones to abbeys and castles and all provide an insight into Scottish history and the people who shaped the development of our country.

There are 8 Properties in Care in Shetland as shown in **Table 26**.

Table 26 – Properties in Care in Shetland

Name of Property	Description
Clickimin Broch	A pre-historic and defensive broch in Lerwick with evidence dating from the Bronze Age
Fort Charlotte	A 17 th Century artillery fortification in Lerwick
Jarlshof	A multi-period settlement site at Sumburgh including Norse settlement remains and structural remains from the Neolithic period up until the 17 th Century AD.
Mousa Broch	Iron Age Broch on the Island of Mousa
Muness Castle	Castle built at the end of the 16 th Century on Unst
Ness of Burgi	A pre-historic promontory fort south of Sumburgh
Scalloway Castle	A 17 th Century Castle in Scalloway
Stanydale Temple	Prehistoric megalithic structure

Source: HES, <http://portal.historicenvironment.scot/spatialdownloads>

Gardens and Designed Landscapes

Gardens and designed landscapes – grounds consciously laid out for artistic effect – are an important element of Scotland's historic environment and landscape. Such spaces play a big role in our heritage. There are 2 properties in Shetland that are on the register of Gardens and Designed Landscapes, these are shown in **Table 27** and in **Figure 44** on page 68.

Table 27 – Gardens and Designed Landscapes in Shetland

Site Name	Location
Belmont House	Unst
Brough Lodge	Fetlar

Source: Historic Environment Scotland

Historic Marine Protection Areas

Historic marine protected areas identify marine historic assets of national importance which survive in Scottish territorial waters. These can be wrecks of boats or aircraft or more scattered remains, such as groups of artefacts on the seabed from a submerged prehistoric landscape (historic Environment Scotland 2016).

There are 2 Historic Marine Protection Areas in Shetland. They cover two ship wrecks near Out Skerries. The *Kennermerland* and *Wrangles Palais* lie on the seabed, objects formerly contained in the vessels and deposits or artefacts which evidence previous human activity on board the vessels.

Linguistic Heritage

Language is a key component of Shetland's cultural heritage, evolving with the movement of people and interaction of culture over time. In Shetland both English and Scots are spoken with 48.8% able to speak Scots (Census 2011). Gaelic which was brought to Scotland from Ireland in around AD 500 never reached Shetland. The local dialect has strong Scots and Norse influences.

'Shetland for Wirds' actively promotes the Shetland Dialect. Their website explains that the long winter nights in Shetland are ideally suited for storytelling and in the days before the advent of television the storyteller often teamed up with musicians to provide an evenings entertainment. This created a rich vein of folklore, mythology and tall stories that is now mined by a new generation of storytellers.

The dialect is widely spoken throughout Shetland and organisations such as Shetland for Wirds is actively trying to ensure that this continues and that words in the dialect are not lost.

Key Messages

Shetland has a dramatic coastal landscape impacted by its geology and by man. 7 coastal areas in Shetland are designated as part of the Shetland National Scenic Area and there are a large number of proposed Local Landscape Areas.

Much of the landscape is treeless and heavily grazed and there is evidence of the long-term impact of man all around in the buildings, structures, field systems and fishing ports. There are a wealth of archaeological sites and historic designations dating to Neolithic times. The impact of the Viking invasions and previous Norse rule is apparent in the archaeology, place names, culture, buildings and language of Shetland

The LOIP ambitions to grow the population and key industries - including renewables, tourism, and aquaculture - may have a long term impact on landscape and cultural heritage. The LOIP also aims to empower communities and ensure effective community participation which may have positive impacts for cultural heritage and landscape at a community level.

Inter-relationships with other SEA topics

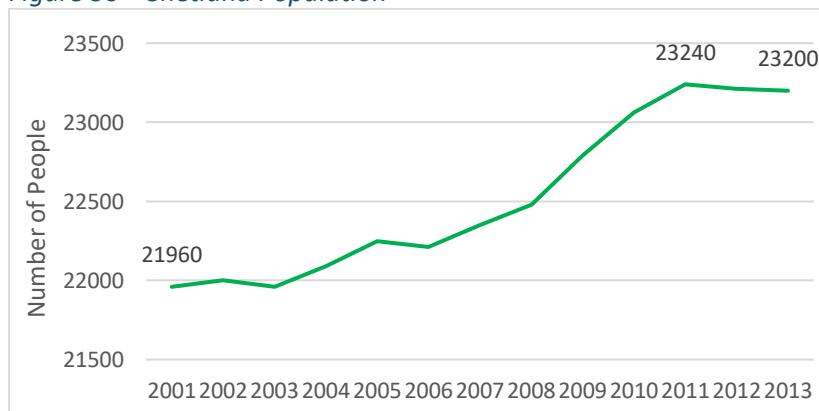
- Topic 1: Climatic Factors
- Topic 3: Water
- Topic 4: Soil
- Topic 5: Material Assets
- Topic 6 Biodiversity, Fauna and Flora
- Topic 8: Population and Human Health

Topic 8: Population and Human Health

Population

The population of Shetland increased from 21,960 people in 2001 to 23,200 in 2013. The population peaked at 23,240 in 2011 and is now showing a small downward trend. Population growth is shown in **Figure 48**. There is a trend towards centralisation of the population towards Lerwick and within 15 to 20 minute commute of Lerwick. Depopulation is most pronounced in the more remote islands. 41% of the population now lives in Lerwick.

Figure 50 – Shetland Population



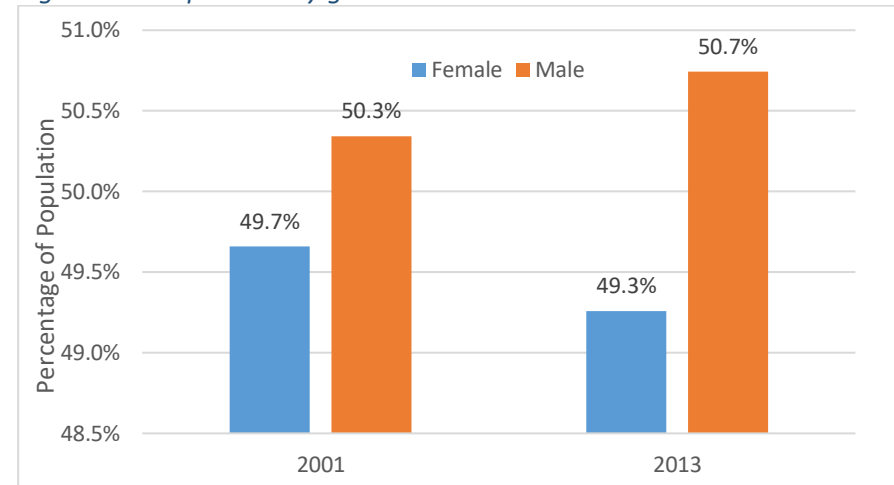
Source: Mid-year Population Estimates, National Record of Statistics

There are slightly more males than females in Shetland which is the opposite of the National trend, see **Figure 49**.

The Shetland population is ageing at a faster rate than the rest of Scotland, see **Figure 50**. Between 2011 and 2013 there was:

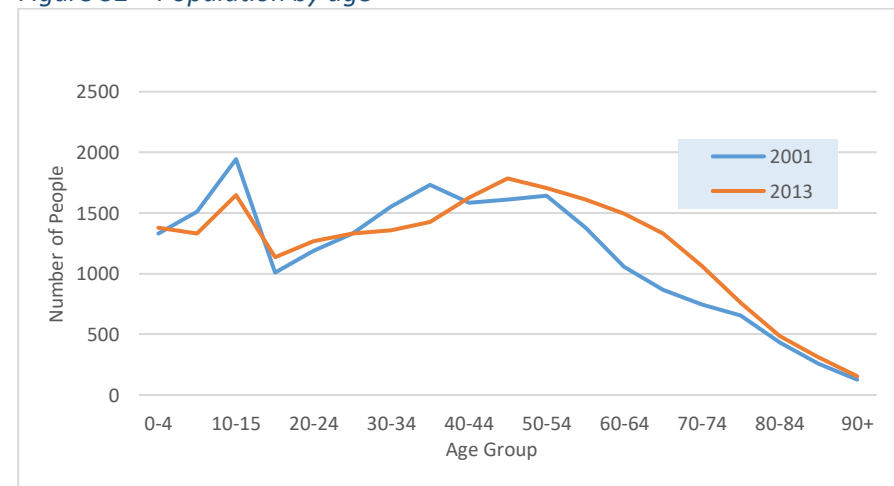
- a 41% increase in those aged 60-64; and,
- a 53% increase in those aged 65-69.

Figure 51 – Population by gender



Source: Mid-year Population Estimates, National Record of Statistics

Figure 52 – Population by age



Source: Mid-year Population Estimates, National Record of Statistics

Housing Deprivation and Health

The relationship between the availability of good quality housing and the health and well-being of people is now well recognised (National Housing Federation, 2014; Parliamentary Office of Science and Technology, 2011).

Children growing up in poor quality housing or insecure accommodation are more likely to be exposed to avoidable health risks such as damp, cold, accidents, community safety concerns etc. Growing older in poor quality, unaffordable or inappropriate housing has a negative impact on quality of life and the maintenance of independence in retirement (The Housing and Ageing Alliance, 2013).

The quality of housing stock in Shetland is generally good but the inclement weather, poor energy efficiency and the high cost of fuel means that a large proportion of households are in fuel poverty. 53% of households in Shetland are in Fuel Poverty, in some areas it is as high as 64%. This is 51% higher than the Scottish average and has increased 23% since 2011-13. This would indicate that houses are not adequately heated.

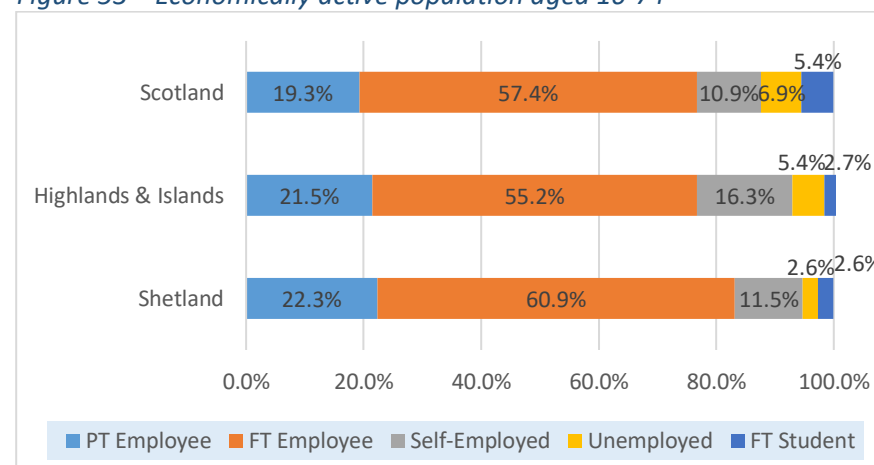
Research shows that housing deprivation and poverty can have an impact on health and the incidence of chronic illness. Fortunately, there is not a high level of housing related deprivation in Shetland or poverty. However, nationalised statistics may be masking problems related to the high cost of living.

Income and Cost of Living

Unemployment is low in Shetland with 97.4% of people in employment or education and training. **Figure 51** shows the percentage of people in full time and part time work, education or unemployed. In Shetland the average median income is higher than the Scottish average but this is not

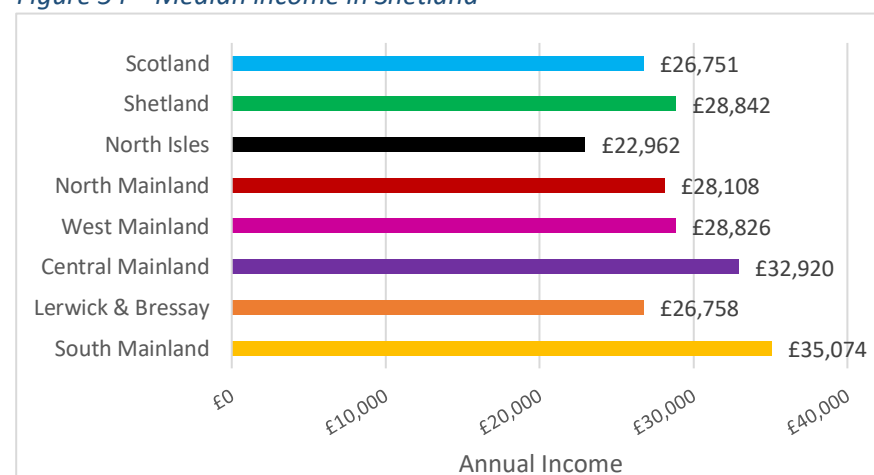
the case for the whole of Shetland. **Figure 52** shows the average median incomes for Scotland, Shetland, and areas within Shetland.

Figure 53 – Economically active population aged 16-74



Source: Census 2011

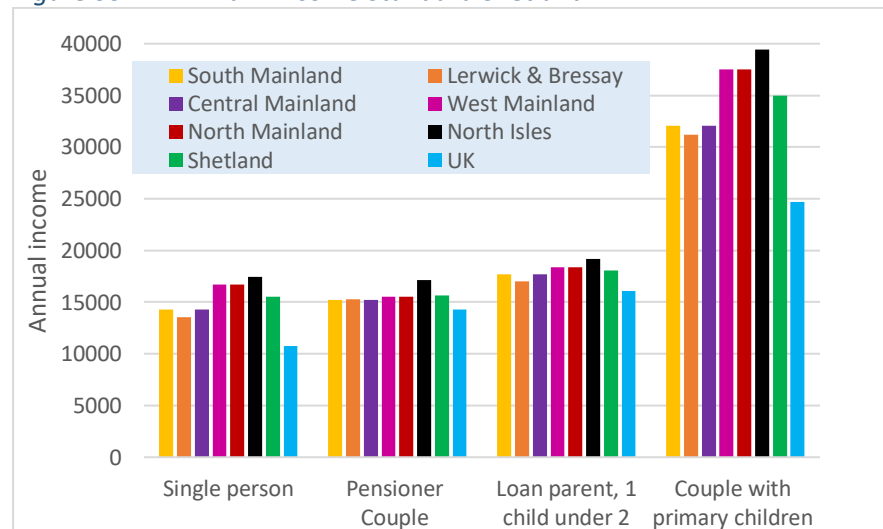
Figure 54 – Median income in Shetland



Source: CACI, 2016

The cost of living is 20-60% higher in Shetland than the rest of the UK, as a result 49% of households do not earn enough to have an acceptable standard of living (Living Well in a High Cost Economy, in-work poverty in Shetland Ipsos Mori, 2016). As such it is likely that more households are experiencing greater levels of poverty than the statistics show. The minimum income standard required for an acceptable standard of living for different household types is shown in **Figure 53**.

Figure 55 – Minimum Income Standard Shetland



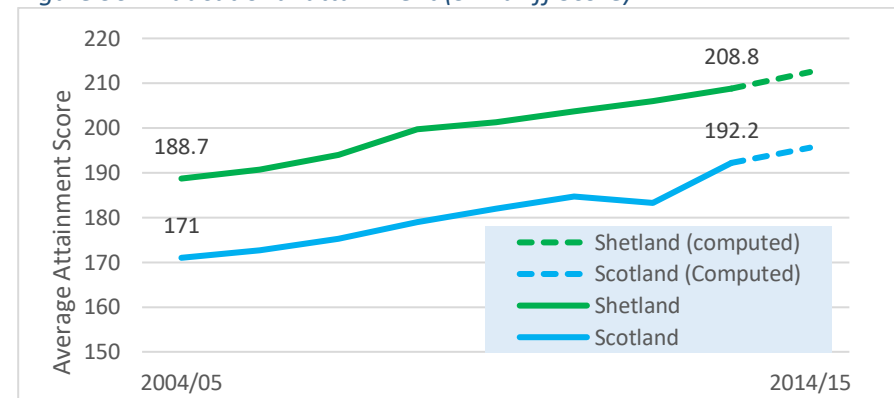
Source: Ipsos Mori 2016

In Shetland the overall child poverty rate is low at 6.6% but there are key datazones where this is much higher. This figure has not improved over the past decade whilst the national figures have fallen. This figure is based on the national average cost of living and the national average income. The real rate of child poverty may be masked by this and could in fact be higher than the rate shows.

Education

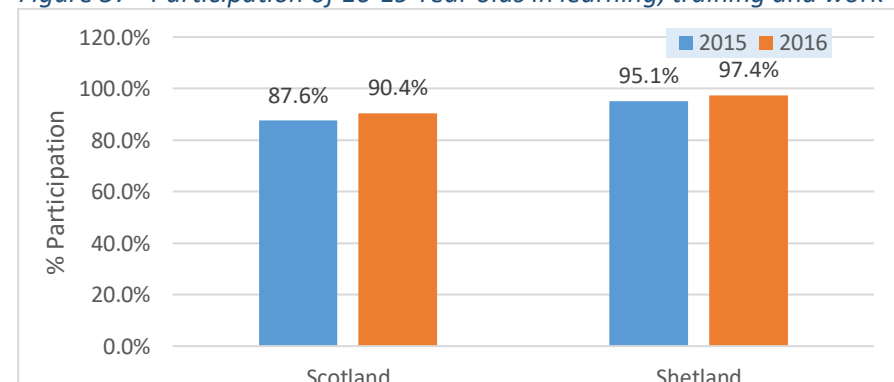
Educational attainment in Shetland is higher than the Scottish average as shown in **Figure 54**. The participation of 16-19 year olds in learning, training or work is also high as shown in **Figure 55**.

Figure 56 – Educational attainment (S4 Tariff Score)



Source: Scottish Government

Figure 57 - Participation of 16-19 Year olds in learning, training and work



Source: Skills Development Scotland 2016

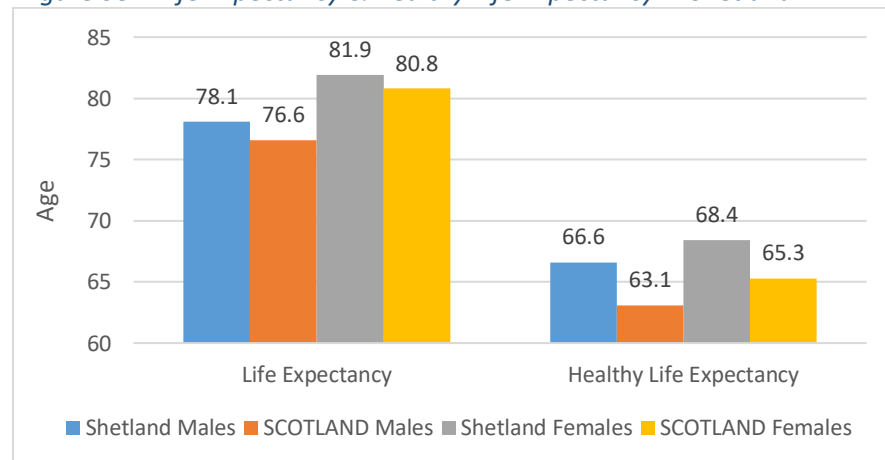
Life Expectancy

Life expectancy in Shetland is higher than the Scottish average for both males and females. Females also have a longer life expectancy than males.

The Healthy Life Expectancy of a person (how long they can expect to live in good health) is also higher in Shetland than the Scottish average and again is higher for women than for men.

Figure 56 shows the Life Expectancy and Healthy Life Expectancy for men and women in Shetland and in Scotland.

Figure 58 – Life Expectancy & Healthy Life Expectancy in Shetland

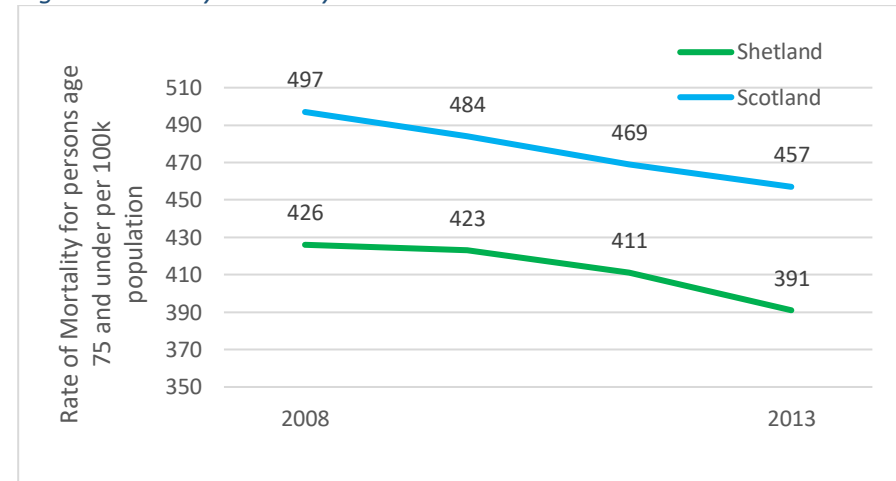


Source: NHS 2016

Early Mortality

Early mortality, the rate of mortality for people age 75 and under in Shetland is lower than that for Scotland as shown in **Figure 57**.

Figure 59 – Early Mortality in Shetland



Source: NHS

Key Messages

The population of Shetland is declining, the majority of this decline is in more rural areas as the population centralises towards the main town of Lerwick. The population is ageing at a faster rate than the rest of Scotland leaving a marked decline in the working age population, again particularly in more rural areas. This trend is set to continue with employment and education opportunities a key factor as well as the high cost of living and limited service availability.

The Shetland Islands Council recently undertook a 'Place Standard' exercise where over 900 people provided feedback on what is positive about where they live and what needs the most improvement. The top 3 priorities requiring most improvement were identified as:

1. public transport;
2. work and local economy; and,
3. housing and community.

In more remote areas the third most important priority for improvement was facilities and amenities.

Rural depopulation and an ageing population makes Shetland increasingly fragile with a high *Old Age Dependency Ratio*. Essential posts such as medics and teachers are increasingly difficult to fill and many other local services are delivered by volunteers as appropriate. This may become more challenging if the population continues to decline and age.

Life expectancy and health are generally positive in Shetland and levels of wellbeing are high. The high cost of living, however, may result in more people living in poverty and associated health impacts of this.

These factors are all key to the purpose of the LOIP which will work to address the declining and ageing population, reduce poverty and inequality, and improve health and wellbeing.

Inter-relationships with other SEA topics

- Topic 1: Climatic Factors
- Topic 3: Water
- Topic 5: Material Assets
- Topic 6 Biodiversity, Fauna and Flora
- Topic 7: Landscape & Cultural Heritage

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