Shetland Islands Council

Strategic Flood Risk Assessment

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1 Introduction

The Shetland Local Plan, which was adopted in 2004, is being reviewed in line with the Planning etc. (Scotland) Act 2006 and replaced by the Shetland Local Development Plan (LDP).
The LDP will assist with both the delivery of sustainable economic growth and the preservation of the natural and built environment of Shetland.
The monitoring statement of the Main Issues Report consultation, which was carried out as part of the review, identified the need for a Strategic Flood Risk Assessment (SFRA) to highlight areas susceptible to flooding and assists the planning decision making process.

The Shetland Islands consist of over 100 islands, of which 16 are inhabited, covering a total area of 1,450km2 with a coastline length of 2702km.

As part of the national flood risk assessment produced under the Flood Risk Management (Scotland) Act 2009 there were 3 potentially vulnerable areas identified within the Shetland local plan district. Within these 3 potentially vulnerable areas the national flood risk assessment has identified approximately 60 residential properties and 30 non-residential properties at risk of flooding, which equates to approximately 1 in 167 of all residential properties and 1 in 47 of all non-residential properties.

2 Objectives

2.1 Definition

Shetland Islands Council's SFRA is designed for the purposes of informing the development planning process, primarily to avoid increasing overall flood risk by discouraging development in areas of flood hazard. It constitutes a strategic overview of flood risk of the development plan area and involves the collection, analysis and presentation of all existing available and readily derivable information on flood risk from all sources.

2.2 Objectives

The Shetland SFRA has been produced to assist the development planning process to promote development in areas of lowest flood risk.

In order to provide a strategic overview of flood risk of the development plan area, information from all known flooding sources has been collected, analysed and presented within this document.

In addition to the information provided within this SFRA other site specific information may be required in order to fully assess a development proposal.

3 Data Collection

The information provided within this document has been gathered from a number of sources in order to capture a representative view of flood risk within the LDP area. The main sources of reference are

3.1 The National Flood Risk Assessment

The National Flood Risk Assessment takes account of all sources of flooding, the likelihood of such flooding occurring and the estimated impact on people, the economy and the environment. It has been used to identify potentially vulnerable areas within Shetland where the impacts from flooding are greatest and help focus efforts in managing the future risks to people and property.

3.2 SEPA's Indicative River and coastal flood map (Scotland)

SEPA's Indicative River and Coastal Flood Map (Scotland) shows indicative fluvial and coastal flood risk areas and helps provide a national picture of areas at risk from flooding. The flood map primarily focuses on those areas estimated to have a 0.5% (1 in 200) or greater chance of flooding each year.

3.3 Local flooding groups

Local Plan District Partnerships

Local Plan District Partnerships have been formed in each one of the 14 districts identified by the National Flood Risk Assessment.
The partnerships have been established between the relevant local authorities, SEPA and Scottish Water to help produce the Flood Risk Management Strategy and Local Flood Risk Management Plan.

Local advisory groups

Local advisory groups provide an opportunity for local communities and stakeholders to be involved in the production of Flood Risk Management Strategies and Local Flood Risk Management Plans. They offer a local perspective on the identification of Flood Risk Management objectives and the sustainable actions to reduce risk.

3.4 Public Consultation

All 18 Community Councils were contacted and asked to report any known areas prone to flooding or any individual incidents of flooding. Each reported area was then surveyed and assessed for flood risk.

3.5 Historical records including Biennial Flood Reports

A number of historical aerial photographs were examined against present day photographic records to ascertain any changes in coastal alignment.
A large number of photographic records of previous flooding events around Shetland were also examined to establish patterns and help identify local 'hotspots'.

Shetland Islands Council published flood prevention reports every 2 years under The Flood Prevention (Scotland) Act 1961 as amended by the Flood Prevention and Land Drainage (Scotland) Act 1997.

This legislation has been repealed under The Flood Risk Management (Scotland) Act 2009.

The reports detailed all occurrences of flooding since the publication of the previous report, the measures considered necessary to prevent or mitigate the flooding of non-agricultural land and the measures actually taken to prevent or mitigate the flooding.

Together with current issues, all recorded historic flooding episodes have been plotted and recorded on a Geographical Information System (GIS) layer for future development planning reference.

3.6 Surveys of existing infrastructure

Initial desk based assessments were carried out on all proposed development sites brought forward from the call for proposed development sites process. The sites were assessed using a combination of aerial photography and Ordnance Survey contours to determine their initial suitability and proximity to both watercourses and bodies of water.

All existing culverts, road cross drains and roadside ditches are inspected as part of the roads inspectors' routine safety inspections and more frequently after unduly severe weather/storm conditions. When a new cross drain, culvert or bridge is installed, the watercourse in which it is to be placed is assessed to ensure that the infrastructure is designed to be fit for purpose.

3.7 Proudman Oceanographic Laboratory

Tidal levels have been recorded in Lerwick since 1956. The Proudman Oceanographic Laboratory records and monitors levels at 15-minute intervals using 2 full-tide and one mid-tide measuring systems which are housed in a GRP building above the harbour wall at the entrance to the small boat harbour, Lerwick.

3.8 UK Climate Projections

The United Kingdom Climate Projections (UKCP09) released by the United Kingdom Climate Impacts Programme contains information on observed and future climate change based on the latest scientific understanding. It reflects scientists' best understanding of how the climate system operates, how it might change in the future, and allows a measure of the uncertainty in future climate projections. As part of the projections, data is available on relative sea level rise around the UK with the results combining absolute sea level rise and isostatic land movement.

For the purpose of this flood risk assessment the *medium emissions figure* will be used throughout.

4 Strategic Flood Risk Assessment

4.1 Overview

The most common occurrences of flooding within Shetland can be categorised as

- Coastal flooding,
- Fluvial flooding, flooding originating from a watercourse,
- 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.

4.2 Potential sources of flooding

This guidance covers all other potential sources of flooding. In fulfilling their flood risk management responsibilities, SEPA and the responsible authorities should focus on the sources of greatest risk, which should include the following primary sources of flooding.

River (Fluvial) flooding - this occurs when the water draining from the surrounding land exceeds the capacity of the watercourse, burn or river.

Coastal flooding – a combination of high tides and stormy conditions can result in overtopping. If low atmospheric pressure coincides with a high tide, a tidal surge may cause serious flooding.

Surface water (pluvial) flooding – is caused when rainfall water (or snowmelt) ponds or flows over the ground before it enters a watercourse, drainage system or public sewer, or when it cannot enter the drainage system because the system is already full to capacity.

Sewer flooding - this occurs when combined sewers are overwhelmed by heavy rainfall. Sewer flooding is often closely linked to surface water flooding, and may contain untreated foul water.

Groundwater flooding - this occurs when water levels below the surface of the ground and in direct contact with the ground or subsoil rise above surface levels.

Reservoir flooding and flooding from other infrastructure – Although unlikely, failure of infrastructure such as dams, could result in a large volume of water being released very quickly. SEPA have a duty under the Reservoirs (Scotland) Act 2011 to ensure reservoirs are monitored, inspected and maintained accordingly. Qualified engineers employed by the reservoir manager will conduct the actual monitoring and inspections.

4.3 Climate Change Impacts

The three available UKCP09 scenarios were run on grid cell id 2180, centred on the location of the Lerwick tide gauge: Latitude 60.154, Longitude -1.140.

Taking the figure for 50% probability the 3 emissions scenarios show relative sea level rises by 2100 of

Low emissions	0.437m
Medium emissions	0.513m
High emissions	0.606m

It is now widely accepted that climate change will result in wetter winters and drier summers and the frequency and impact of storms is predicted to be greater.

Advice suggests that infrastructure that would once have been designed to withstand a 1 in 100 year event should henceforth be designed to withstand a 1 in 200 year event (i.e. an event with a 0.5% chance of being equalled or exceeded in any year). This will result in infrastructure better suited to future requirements and increase its "design life" or functionality.

4.4 Rainfall Data

A basic review of rainfall data from the Met Office shows variability in rainfall patterns. If a trend line is taken across the available data from 1930 – 2010, a steady growth is apparent showing an increase from 950mm to 1300mm in average annual rainfall. Appendix 1 shows the trend in graphical form

4.5 Strategic Flood Defences

There are a number of strategic flood defences located around the shoreline of Shetland. Due to the coastal location of Shetland's road network they mostly take the form of rock armour protection or seawalls along or adjacent to the road edge.

4.6 Historical Extreme Recorded Rainfall Event

On the 19th September 2003, an exceptionally severe, but highly localised rain storm affected the south Cunningsburgh and Sandwick areas. Halcrow Group Ltd were commissioned by the SIC to investigate the causes of the associated landslide event and a report of their findings was published in November 2004.

The south mainland of Shetland again suffered a relatively major flooding incident in August 2004. On this occasion the worst affected settlement was Cunningsburgh where the Burn of Laxdale overflowed onto the main road and flooded several nearby properties. As a result of this, Halcrow Group Ltd was commissioned to monitor three burns in the south mainland, Burn of Laxdale and the Burn of Mail in Cunningsburgh and Channerwick Burn. In late summer 2005 a rain gauge was installed in the Burn of Laxdale.

4.7 Historical Extreme Recorded Tidal Event

Analysis of the data recorded at the Lerwick tide gauge shows the highest recorded tide in Lerwick as 2.059m Above Ordnance Datum (AOD) Newlyn. This occurred at 12:30pm on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

4.8 1 in 200 Year Tide Level

As part of the Main Issues Report consultation 1 in 200 year return period coastal flood levels were obtained for 14 areas around Shetland's coastline. The flood levels are extreme still water levels with no specific account taken for storm surge, wave action or climate change.
Appendix 2 shows the levels relative to Ordnance Datum Lerwick and also relative to Ordnance Datum Newlyn after addition of the necessary adjustment confirmed by Ordnance Survey OSGM02.

New methodology for estimation of extreme sea levels was released in 2011and it was deemed that coastal flood boundary data could not be derived for the Shetland coastline with an acceptable level of confidence, except at Lerwick. The resultant extreme sea

levels for annual exceedance probability ranging from 100 to 0.01 percent (one to 10,000 year return periods) are provided in Appendix 3.

The coastal flood boundary output for Lerwick was shown to have good correlation with the existing data held for Lerwick and as such there is confidence that existing data at 14 locations around Shetland remains fit for purpose.

4.9 Development Management Flood Layers

Scottish Planning Policy

To assist with development management a number of GIS layers have been created to highlight areas deemed at risk of flooding.

- Historical Flooding Events
- Existing drainage infrastructure
- Burn Buffer Strips
- 5m contour
- 1:50000 Watercourses
- Coastal 100
- Coastal 200
- Coastal 1000
- Fluvial 100
- Fluvial 200
- Fluvial 1000

If a development proposal is submitted within the boundary of any of these areas then a detailed flood risk assessment is required in order to establish the extent of the functional floodplain and to inform those areas that need to be avoided, or can be developed and the type of development that would be appropriate.
This could include developments directly related to harbour activities or other types of development that need to be located next to the water environment for operational reasons.

Avoidance is the most sustainable form of mitigation in areas at risk of flooding, however in brownfield areas mitigation could take the form of raising land (with appropriate compensatory storage).

Some essential civil infrastructure such as hospitals, fire stations and schools would need additional consideration in terms of flood risk (1:1000)

5 Assessments of Areas of Best Fit

Areas of best fit have been identified to provide a focus for growth within localities. The following 8 Areas of Best Fit were identified –

5.1 Aith
5.2 Baltasound
5.3 Brae
5.4 Lerwick
5.5 Mid Yell

5.6 Sandwick
5.7 Scalloway
5.8 Symbister

Within the Areas of Best Fit amenities such as schools, shops, employment and essential infrastructure are all readily available through a range of transport options; and the area will support large, medium and small scale developments.

For the purpose of the strategic Flood Risk Assessment it was important to assess the suitability of each area of best fit for development against the following factors

1 in 200 coastal flood levels
Climate Change Impacts
SEPA Indicative Flood Maps
Assessment of existing infrastructure

The maps in appendix 4.1 to 4.8 identify area of best fit where suitable development may be possible after the flood risk factors mentioned above are taken into consideration. Because of the variability in the factors from one site to another, for the purpose of assessing flood risk the boundaries are indicative rather than definite and more detailed information may be requested at a planning application stage.

5.1 Aith

The settlement of Aith is located within Potentially Vulnerable Area 04/02 and is located in the west mainland of Shetland

The area of best fit borders the shoreline of Aith Voe and a proportion lies below the 5-metre contour. According to the detailed flood map for this area, a proportion of the village is at risk from tidal flooding. The area of best fit is further sub divided into 3 smaller areas by 2 major watercourses that appear on the 1:50000 scale map; Whirlie Burn and Mill Burn.

Roads related drainage infrastructure located within the area includes a number of individual headwalled crossdrains, roadside ditches and two large culverts on the watercourses.

Several existing residential properties are located within identifiable flood risk areas and are at risk from coastal flooding. Existing strategically placed sea defences help to reduce the flood risk from high to medium to low.

5.2 Baltasound

Baltasound is the main settlement on the Island of Unst. It is predominantly located around the coastline with the main settlement located around the head of the Voe.

There are a number of large watercourses that appear on the 1:50000 scale maps flowing through Baltasound discharging to the sea and the area of best fit is segmented by three of these, which drain to the head of the voe.

The Millburn Park housing estate is located within close proximity to one of these watercourses and is also shown to be in a location that is at medium to high risk of coastal flooding.

The road network in and around the area of best fit contains a number of small road culverts of mixed size and construction. Several of these are old stone built crossdrains and are running at full capacity during periods of extended intense rainfall and therefore act as a restricting factor on the watercourse.

5.3 Brae

The settlement of Brae is located within Potentially Vulnerable Area 04/01 and is located in the north mainland. To the south the area of best fit is bordered by Busta Voe and to the north Sullom Voe. To the East a number of large watercourses flow from the adjacent Gallow Hill and two of these, Gallow Burn and the Burn of Brae, flow directly through the middle of the area of best fit and into the head of Busta Voe.

The area at the head of the voe is a recognised floodplain and is regularly maintained to ensure floodwaters are free to discharge to the sea.

There are a number of locations within the area of best fit that have historically been prone to either fluvial and/or coastal flooding. This includes a number of private dwellings adjacent to the Moorfield Ring Road and the Skelladale housing estate.

There are several small watercourses within the area of best fit and development directly adjacent to these would not normally be acceptable without a further detailed assessment.

5.4 Lerwick

Located within Potentially Vulnerable Area 04/03, Lerwick is the main settlement within Shetland. The area of best fit covers 2.86km^2 and for the purpose of this report Lerwick is assessed according to the electoral wards, i.e. Lerwick North and Lerwick South.

5.4.1 Lerwick North

The area of best fit within the Lerwick North ward is bordered to the north by the South burn of Gremista. The South Burn of Gremista flows through 2 culverts that are very undersized and present a flood risk substantially greater than the 1 in 200 year minimum period considered under PPG7 (current estimates put the existing risk at about 1 in 15 years). One of the shops in the adjacent industrial estate reported flooding in 2005 after a prolonged heavy rainfall event.

As there is an existing flood risk, developments on previously undeveloped land would not be recommended in this catchment unless they included a drainage design with SUDS devices to reduce the peak surface flow rate to no more than would occur from the undeveloped site.

There have been a number of reported incidents of flooding within the lanes area of Lerwick that can generally be traced to insufficient and poorly maintained household guttering, downpipes and drains.

5.4.2 Lerwick South

The low lying area of Clickimin Loch, Westerloch and Lochside divides the area of best fit located within Lerwick South. This area is protected from coastal flooding by a large rock armour sea defence

The Burn of Sound further subdivides the southernmost section, which runs from the Sandy Loch Reservoir spillway to the Voe of Sound.

In recent years there has been considerable development around the area of the burn with a number of properties constructed in close proximity to the reservoir dam wall. This has led to concern being raised about the possibility of peat slides within the area of the loch or indeed failure of the dam wall and the catastrophic consequences that may result downstream from such an event. Historical records show several flooding events being registered within the area of best fit to the south of Clickimin however these can be attributed to restrictions within existing infrastructure and were classed as small, localised events.

5.5 Mid Yell

The Mid Yell area of best fit is bordered on the north by Mid Yell Voe. The existing settlement pattern extends along the foreshore with a number of properties located below the 5-metre contour. Several of these buildings, including the Isleshaven Care Centre, the Bellevue housing scheme and the crab processing factory are shown to be at risk of coastal flooding on SEPA's Indicative Flood Maps.

The area of best fit is also at risk from fluvial flooding from the Burn of Reafirth, which merges with the Burn of Midisi halfway through the upstream catchment. The adjacent area to the burn has been known to flood, however there are currently no properties in the vicinity affected by this type of flooding.

5.6 Sandwick

The township of Sandwick is located in the south mainland of Shetland, 13 miles south of Lerwick. The area of best fit encompasses several existing housing settlements and amongst other amenities Sandwick Junior High School, a bakery and a swimming pool. The Burn of Hoswick and the Burn of Whirlie both flow into the Burn of Setter, which runs adjacent to the area of best fit and discharges to the sea at Hoswick.

There are no recognised flood risks within the area of best fit and SEPA does not highlight any on its Indicative Flood Maps
There are several small road culverts that are of mixed size and construction within the area.

5.7 Scalloway

The second largest town and the 17th Century capital of Shetland, the village of Scalloway is situated on the west coast of Shetland 6 miles from Lerwick. A large proportion of the developed coastline in Scalloway is below the 5m contour with most waterfront properties less than 3m above sea level. Located within Potentially Vulnerable Area 04/03 Scalloway shorefront is shown to be at risk of coastal flooding on SEPA's Indicative Flood Map.

Low-lying areas of the village are liable to tidal flooding and a number of the buildings within this area are at high risk of flooding during a 1 in 200 year tidal event. The

properties affected include public toilets, a Hotel, grocery shops, shipbuilding and repair yard and several residential properties.

The shorefront around Scalloway has a variety of existing sea defences that have been constructed over time by individual property owners to limit coastal flooding of their own properties during periods of high tides combined with strong prevailing winds. Due to this piecemeal approach there is no continuous protection resulting in large storm surges simply washing around existing flood defences and flooding adjacent areas.

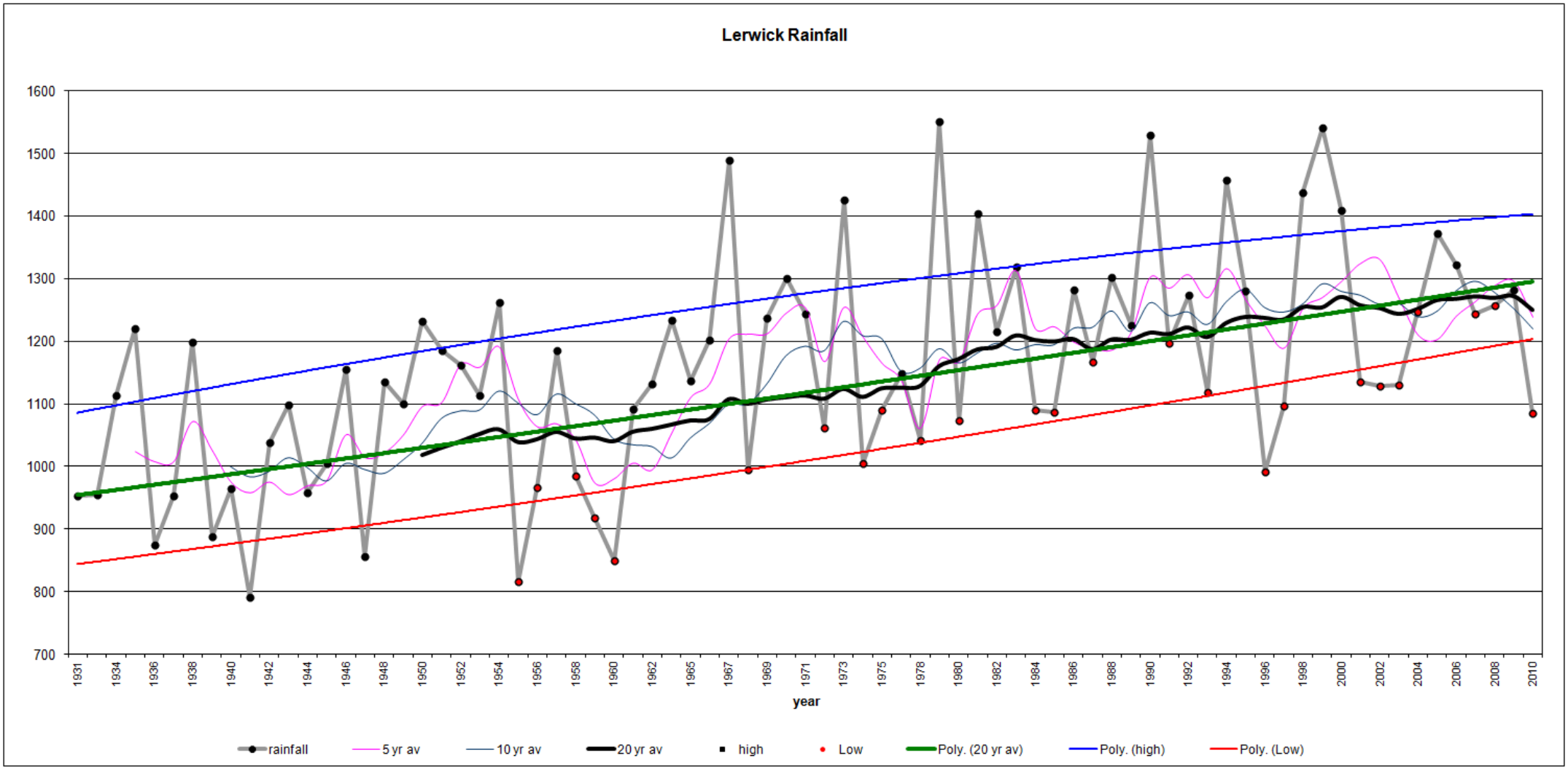
6 Assessment of Sites with Development Potential

Of the sites put forward for development during the Council's "Call for Sites" exercise initial assessment has identified the following 22 sites with development potential as having manageable flood risk.

Appendix	Ref	Site
5.1	BR002	Ham, Bressay
5.2	CL003	Strand Greenwell, Gott
5.3	CL004	Veensgarth, Gott
5.4	LK004	Gremista, Lerwick
5.5	LK006	Port Business Park/ Black Hill Industrial Estate, Lerwick
5.6	LK007	Port Business Park, Lerwick
5.7	LK008	Oxlee, Lerwick
5.8	LK010	Seafield, Lerwick
5.9	LK019	North Greenhead, Lerwick
5.10	LK020	North Greenhead, Lerwick
5.11	LK021	Dales Voe, Lerwick
5.12	NI001	Ulsta, Yell
5.13	NM001	The Houllands, Weathersta, Brae
5.14	NM004	Scatsta Airport, Brae
5.15	NM011	Mossbank and Firth
5.16	NM012	Mossbank and Firth
5.17	NM017	Stucca, Hillswick
5.18	NM020	Sellaness, Scasta, Brae
5.19	SM019	Scatness, Virkie
5.20	WM002	Hellister, Weisdale
5.21	WM008	Opposite Aith Hall
5.22	WM012	Gronnack, Whiteness

As part of the initial assessment process all allocations were also assessed for both coastal and fluvial flood risk by SEPA. The results of this assessment relating to the above named sites with development potential are provided in Appendix 5.23.

Appendix 1: Lerwick Rainfall Trend



Appendix 2

1 in 200 coastal flood levels

Area	mAOD (Lerwick)
Sumburgh (Grutness Voe)	1.98
Lerwick	1.87
Dury Voe	1.85
Outer Skerries	1.93
Toft Pier	1.96
Burra Voe (Yell Sound)	1.99
Mid Yell	2.08
Balta Sound	2.06
Burra Firth	2.05
Bluemull Sound	2.04
Sullom Voe	2.02
Hillswick	2.08
Scalloway	2.16
Bay of Quendale	1.98

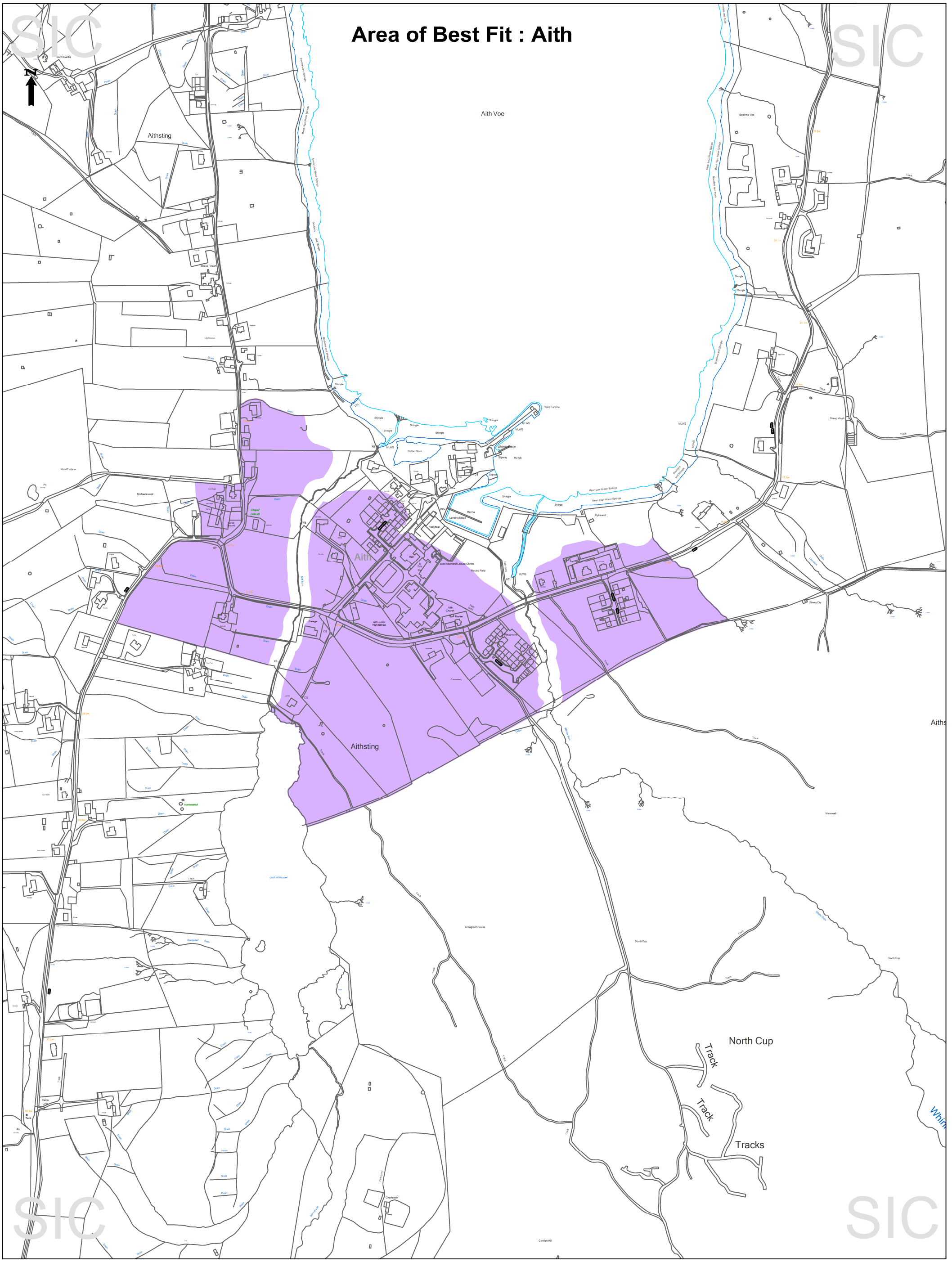
Area	mAOD (Newlyn)
Sumburgh (Grutness Voe)	2.22
Lerwick	2.11
Dury Voe	2.09
Outer Skerries	2.17
Toft Pier	2.20
Burra Voe (Yell Sound)	2.23
Mid Yell	2.32
Balta Sound	2.30
Burra Firth	2.29
Bluemull Sound	2.28
Sullom Voe	2.26
Hillswick	2.32
Scalloway	2.40
Bay of Quendale	2.22

Appendix 3

Extreme sea levels for annual exceedance probability ranging from 100 to 0.01 percent (one to 10,000 year return periods)

	Return period levels at Lerwick															
Period (year)	1	2	5	10	20	25	50	75	100	150	200	250	300	500	1,000	10,000
mAOD (Lerwick)	1.52	1.57	1.64	1.69	1.73	1.75	1.79	1.81	1.83	1.85	1.87	1.88	1.89	1.92	1.95	2.06

Area of Best Fit : Aith



Scale 1:6000 Date 04/05/2012

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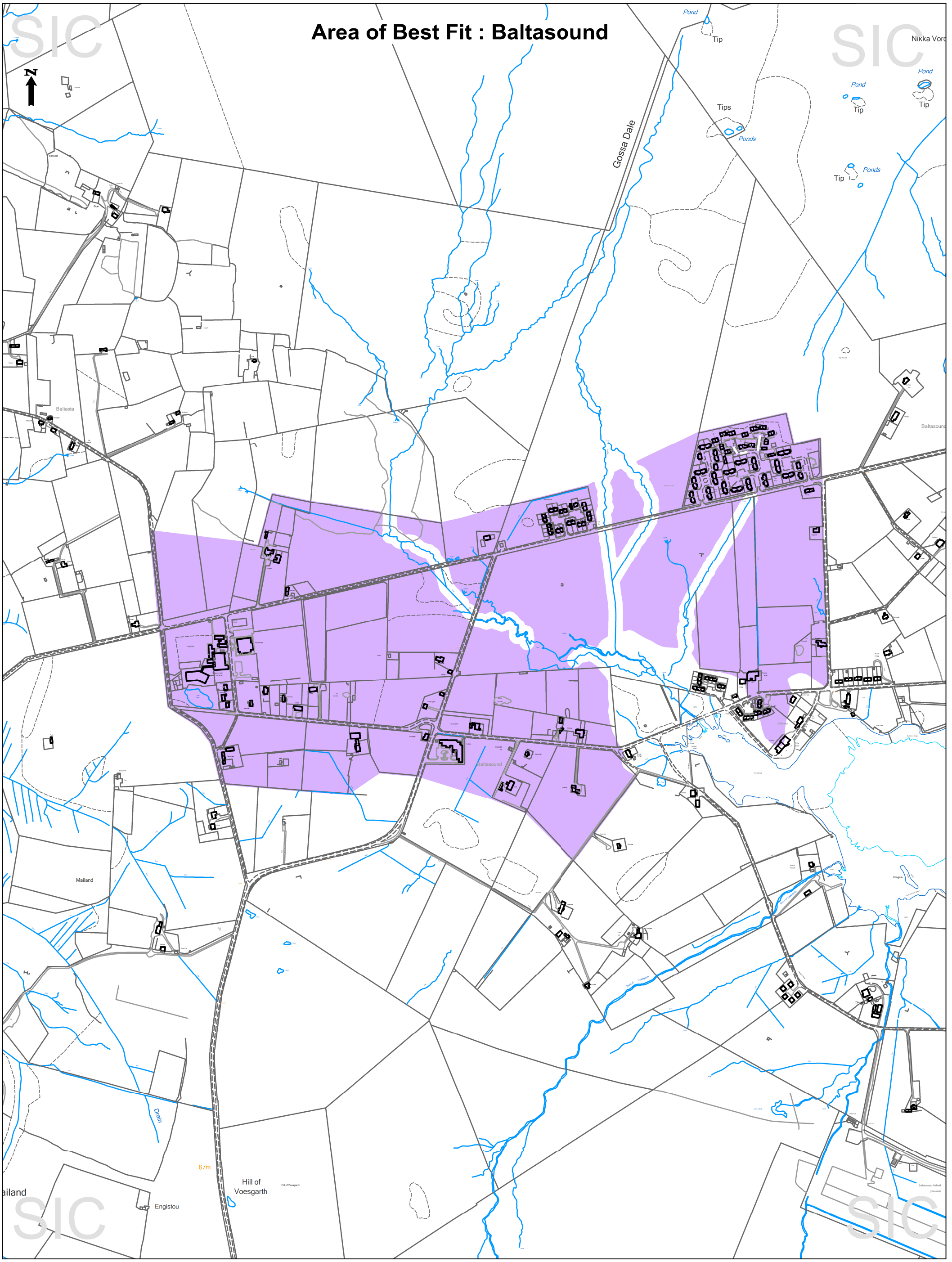
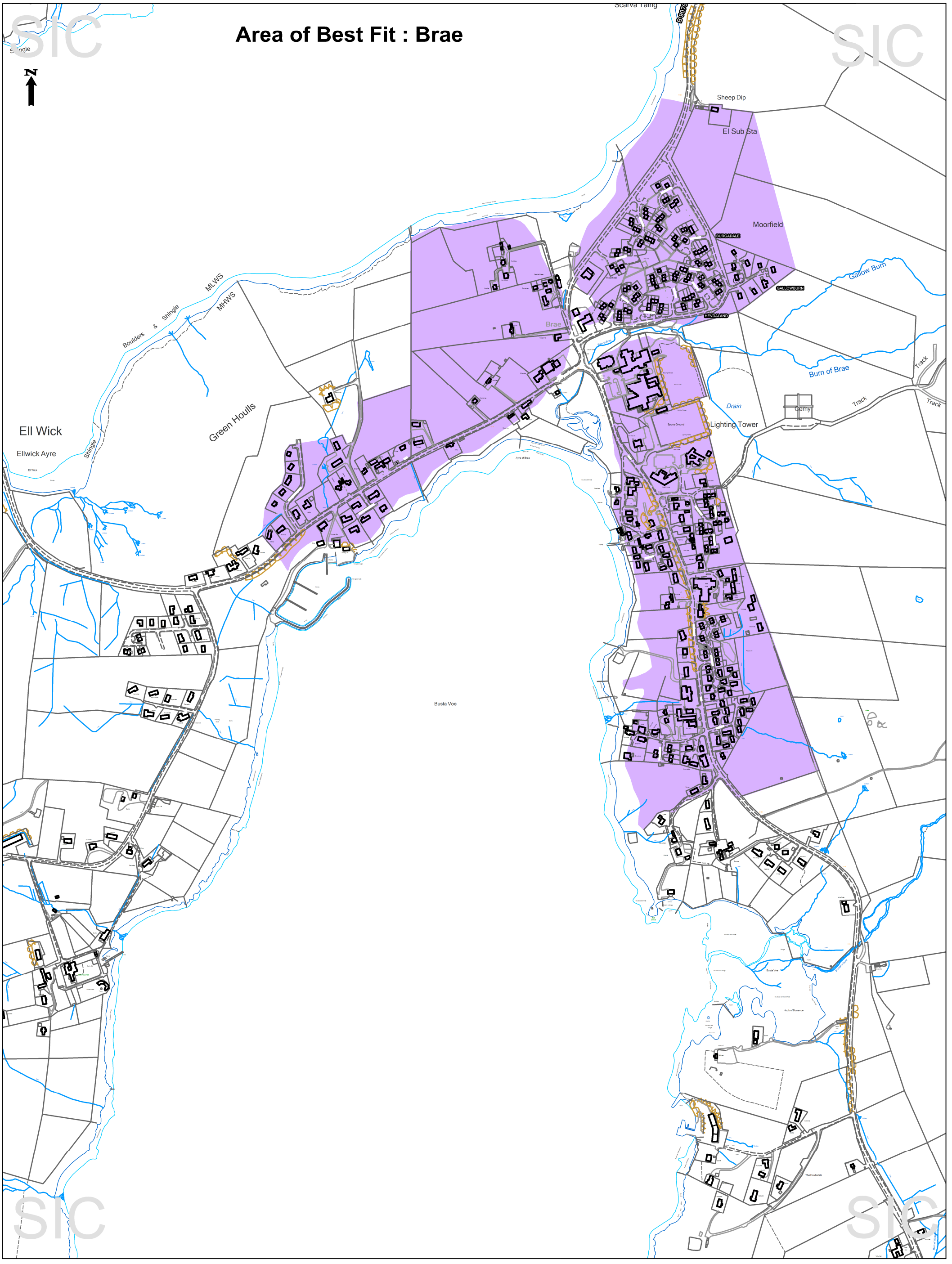
Area of Best Fit : Baltasound



Scale 1:8000 Date 04/05/2012

PB:

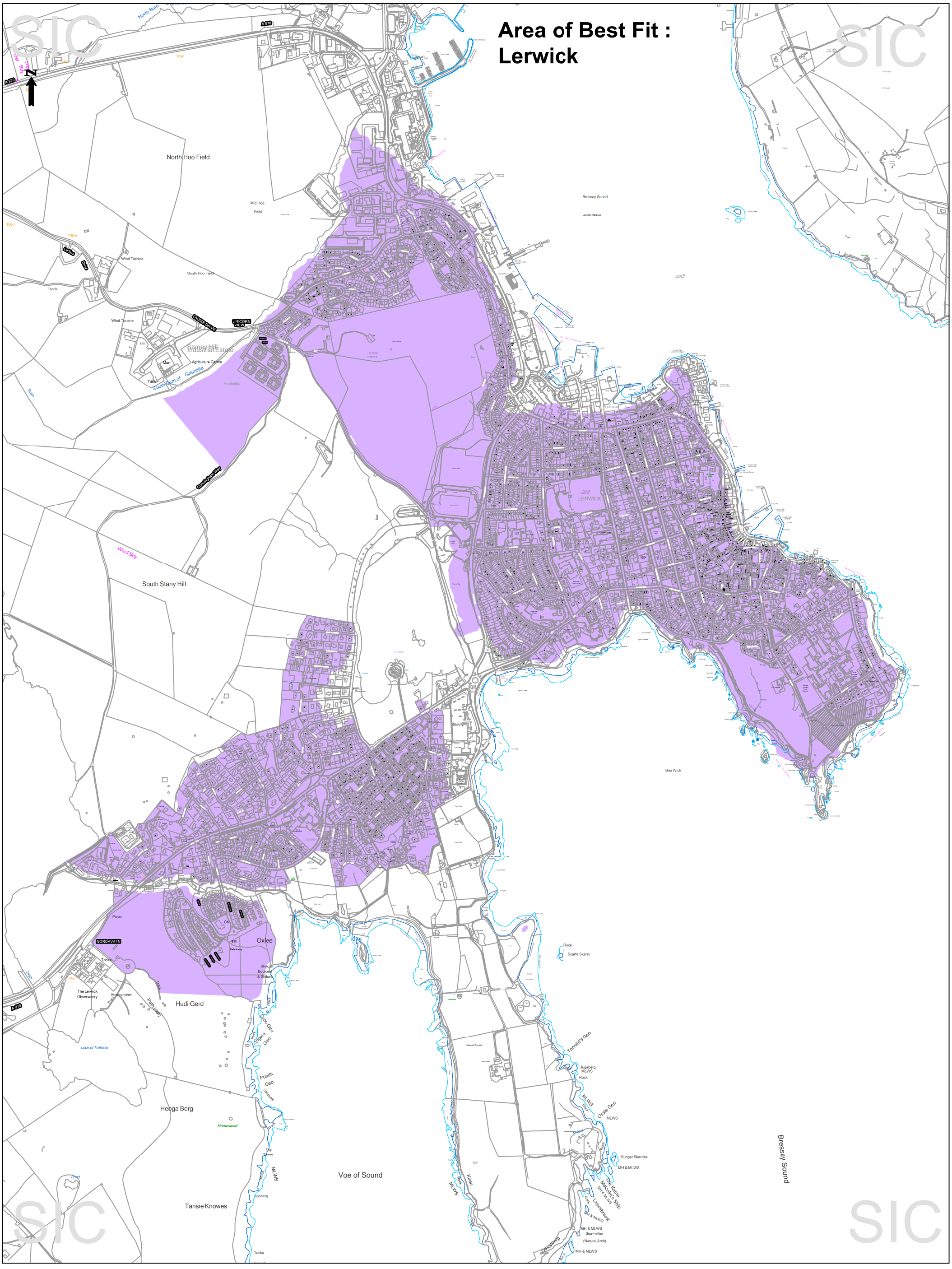
Area of Best Fit : Brae



Scale 1:8000 Date 04/05/2012

PB:

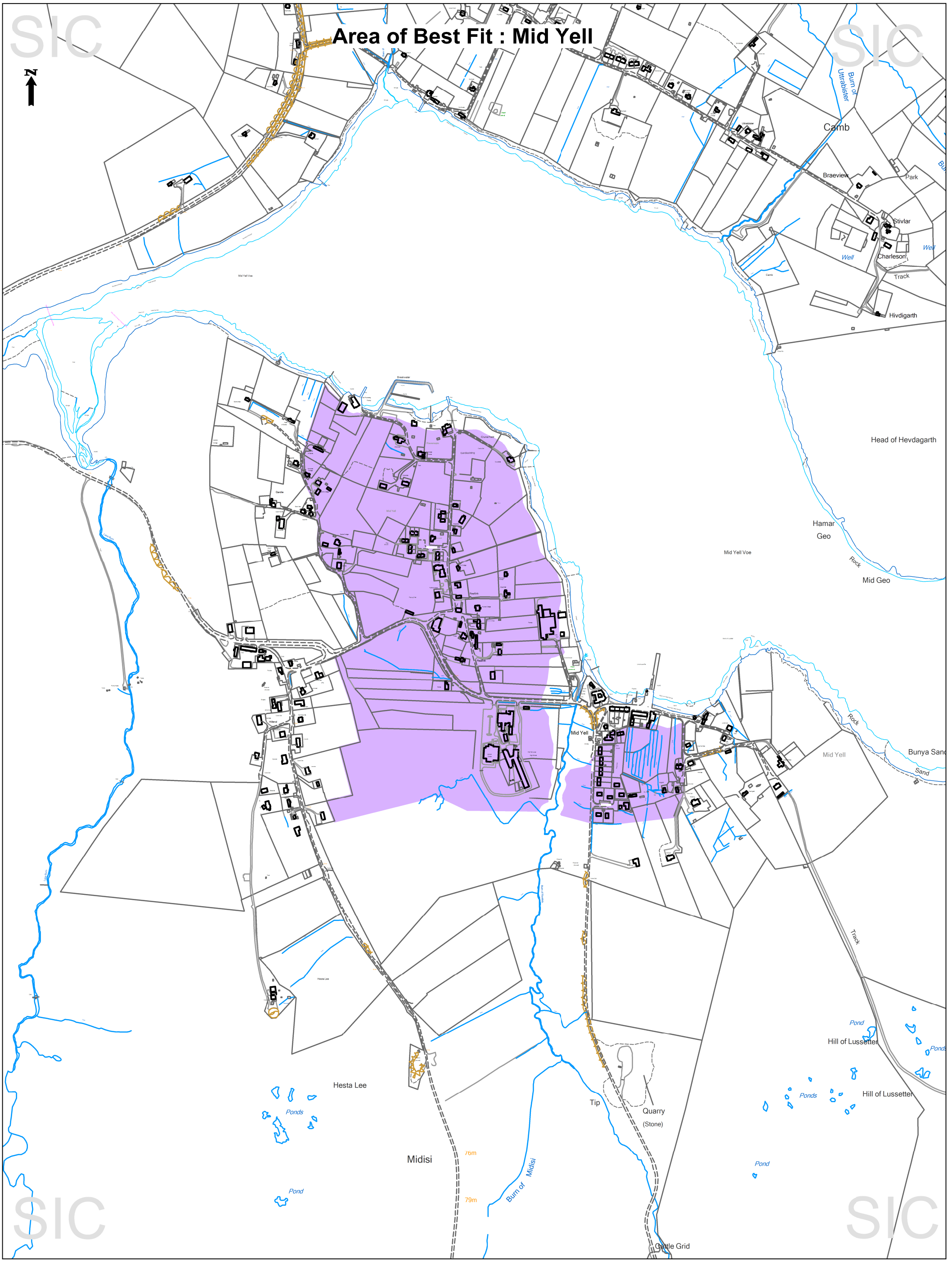
Area of Best Fit : Lerwick



Scale 1:12500 Date 04/05/2012

PB:

Area of Best Fit : Mid Yell



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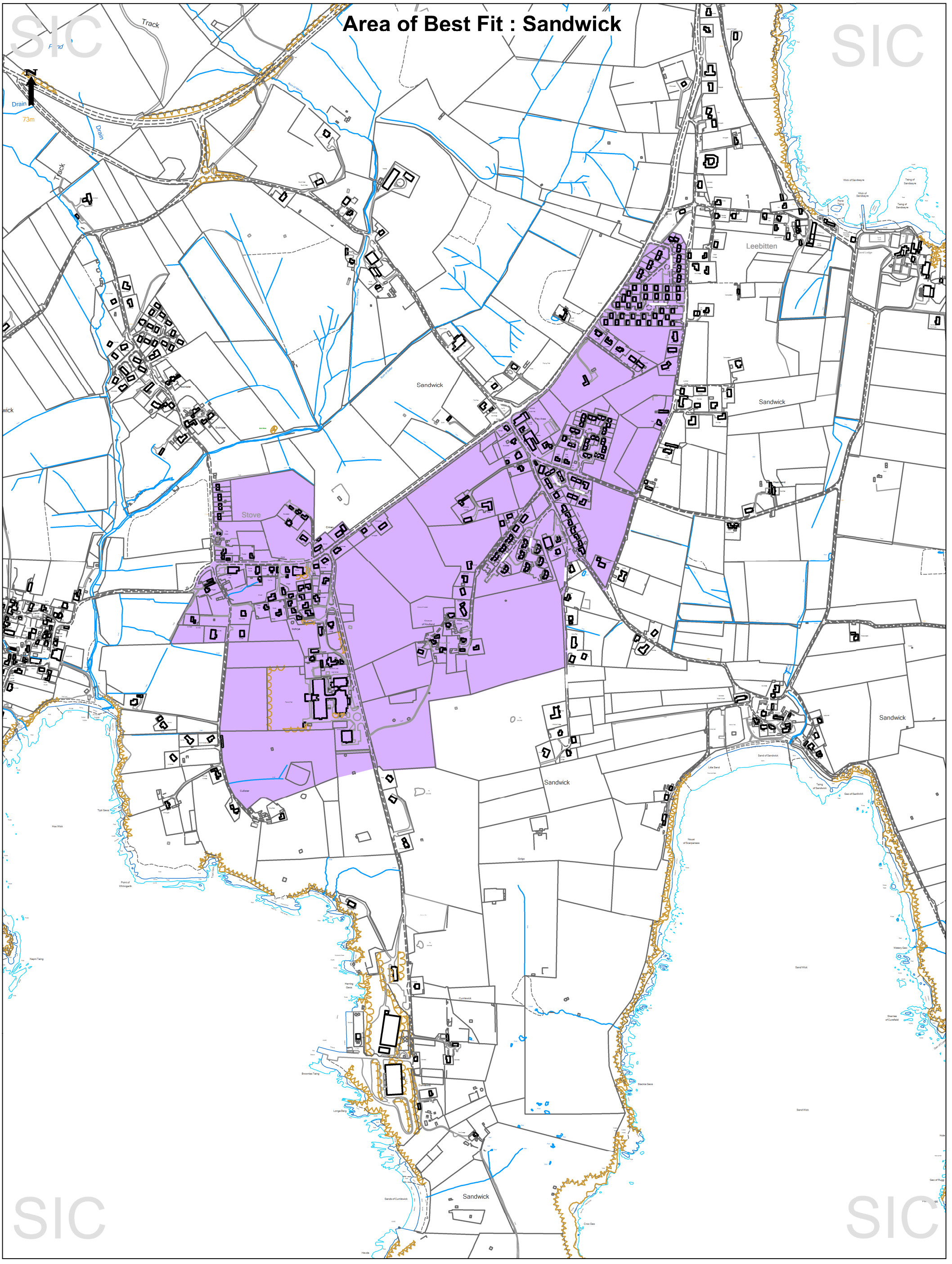
Area of Best Fit : Sandwick



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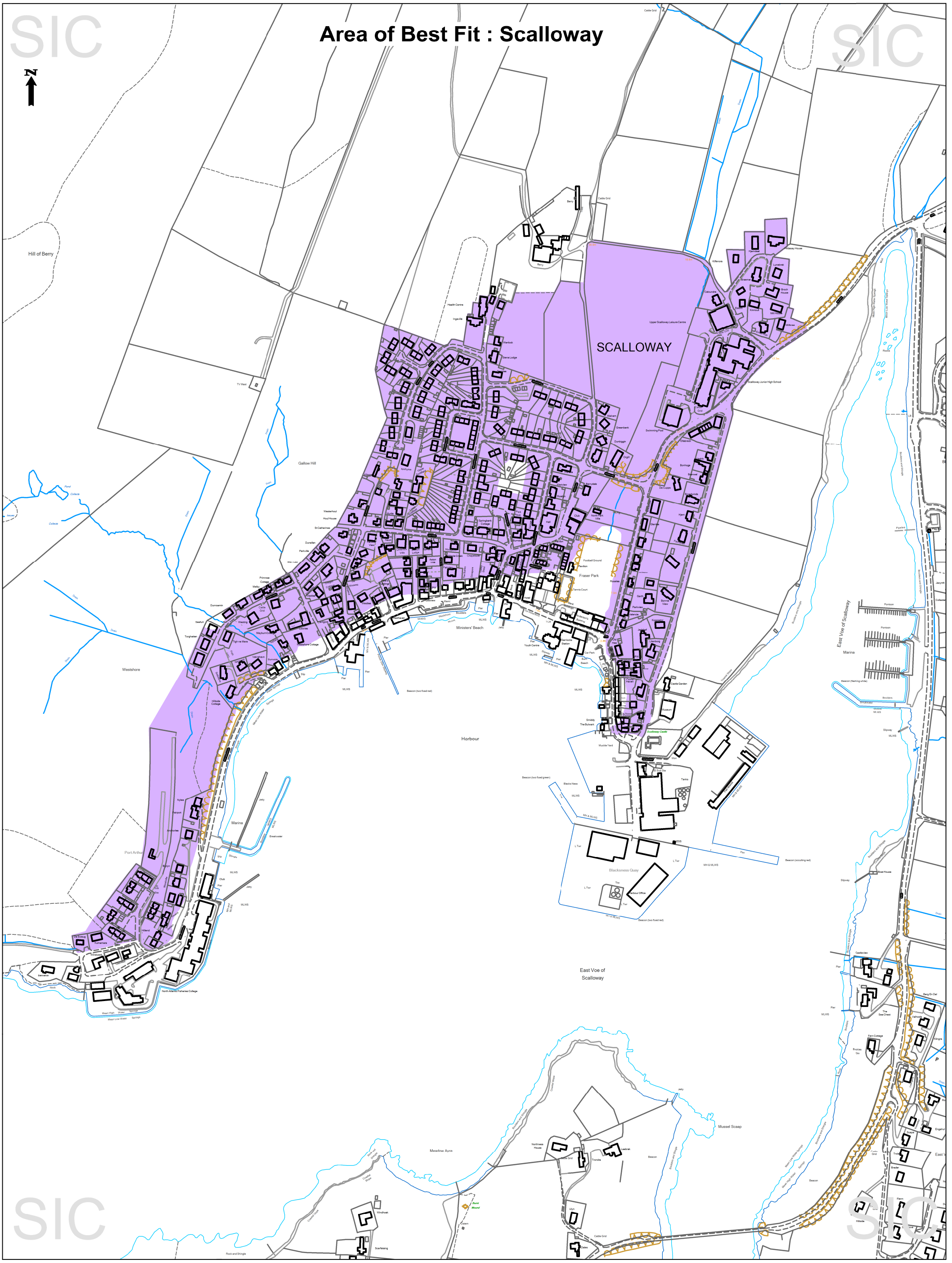
Area of Best Fit : Scalloway



Scale 1:5000 Date 04/05/2012

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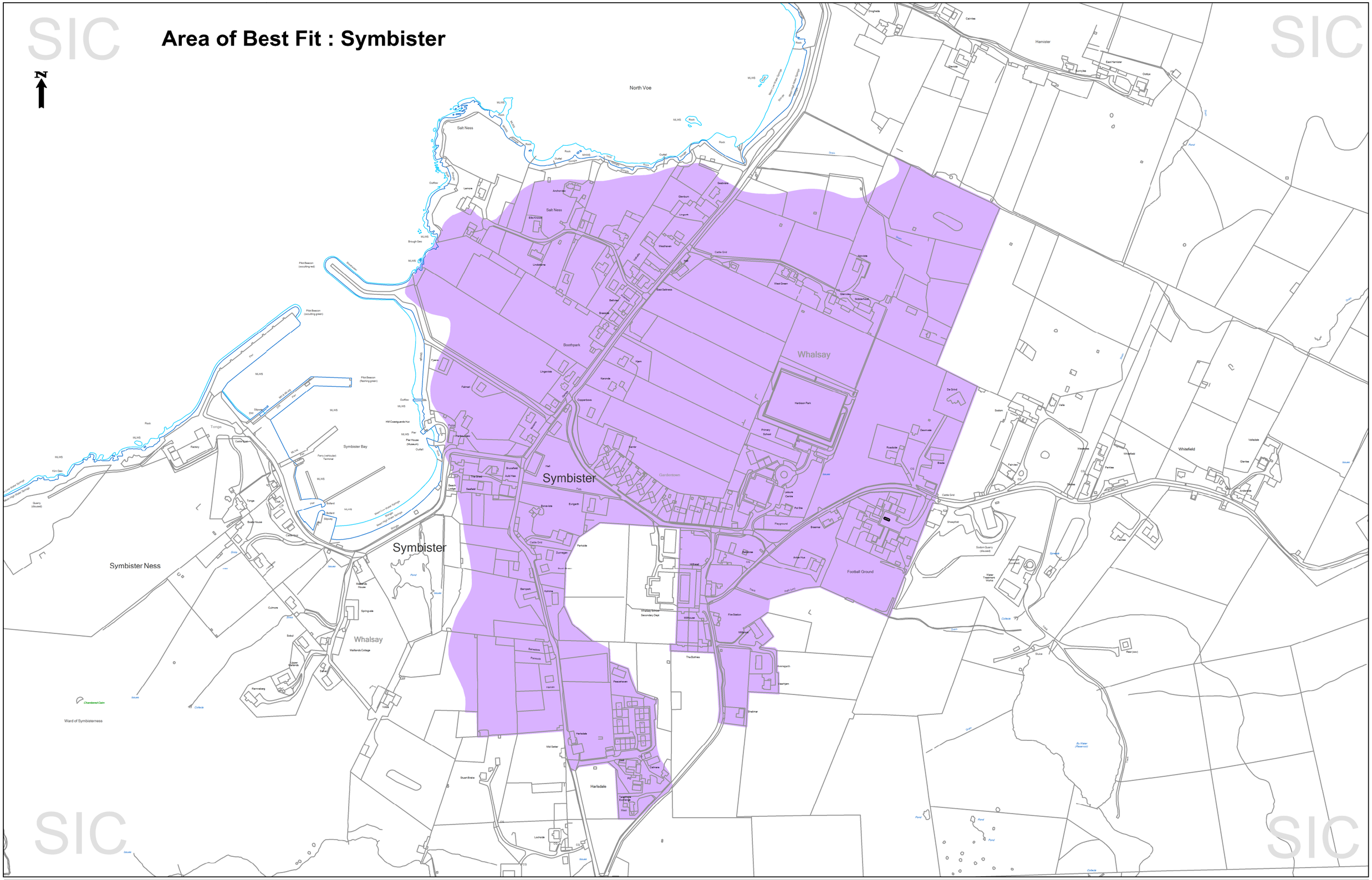
Area of Best Fit : Symbister



Scale 1:5000

Date 04/05/2012

PB:TAA

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.1
Log No	BR002
Site Address	Ham Bressay
Survey Date	28/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northwest side of the site is relatively low lying with a proportion below the 5m contour.

There are numerous minor watercourses within the site.

There is a major watercourse (The Burn of Ham) adjacent to the east corner of the site and this is shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one that appears on the OS 1:50000 maps adjacent to the site.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.2
Log No	CL003
Site Address	Strand Greenwell Gott
Survey Date	20/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northwest border of the site is separated from the coastline of Lax Firth by the C-class road that leads to Breiwick and Califf.

This side is relatively low lying with a proportion below the 5m contour. This area is also shown to be prone to flooding on SEPA's Indicative River & Coastal Flood Map

There is a major watercourse shown on the OS 1:50000-scale map located within the northern boundary.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of its recorded data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one major watercourse within the site which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.3
Log No	CL004
Site Address	Veensgarth Tingwall
Survey Date	20/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northwest corner of the site is relatively low lying and borders the 5m contour.

At present the site is undeveloped however the C-class road that leads from Veensgarth to the airstrip borders the site (figure 1)

There is a major watercourse shown on the OS 1:50000-scale map running through the site however there are no visible smaller watercourses located within the boundary.

Figure 1: Site boundary

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are no minor watercourses within the site however there is one major watercourse within the site which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.4
Log No	LK004
Site Address	Gremista Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northeast end of the site is relatively low lying with a proportion below the 5m contour.

There are no major watercourses shown on the OS 1:50000-scale map.

The existing site drainage is provided by a medium sized drainage ditch which discharges through a chute drain into a filter drain at the edge of the path. (Figure 1.1).

Figure 1.1 Chute drain

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of a more suitable drainage arrangement.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there is a medium sized watercourse within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.5
Log No	LK006
Site Address	Port Business Park/Black Hill
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northeast side of the site is relatively low lying with a proportion below the 5m contour.

There are two major watercourses shown on the OS 1:50000-scale map and they discharge to a culvert that leads under the A970 Gremista Road.

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of the crossdrain. This may result in replacement of the existing crossdrain or prove the necessity of a suitable SUDS scheme.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and two that appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.6
Log No	LK007
Site Address	Port Business Park
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The north end of the site is relatively low lying with approximately half below the 5m contour.

There are no major watercourses shown on the OS 1:50000-scale map, however the main burn from the Gremista catchment borders the west of the site.

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of the crossdrain. This may result in replacement of the existing crossdrain.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Councils Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are no minor watercourses within the site and none that appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.7
Log No	LK008
Site Address	Oxlee, Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The east side of the site is relatively low lying with a proportion below the 5m contour.

There are a number of minor watercourses within the site and there is a major watercourse located in the northeast end of the site which shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.8
Log No	LK010
Site Address	Seafield Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

Both the northeast and southeast side of the site is relatively low lying with a proportion below the 5m contour.

There are no major watercourses shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are no minor watercourses within the site and none which appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.9
Log No	LK019
Site Address	North Greenhead Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

Both the east and south side of the site is relatively low lying with the majority of the south end below the 5m contour.

There is a major watercourse shown on the OS 1:50000-scale map which also runs through the south end of the site. The watercourse is a continuation from further up the hill and is fed under the road via a steel crossdrain (Figure 1) this in turn drains to the sea.

Figure 1 Crossdrain outfall

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of the crossdrain. This may result in replacement of the existing crossdrain and construction of suitable headwalls.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one major one which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.10
Log No	LK020
Site Address	North Greenhead Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The whole of the site is low lying with the majority below the 5m contour.

The majority of the site is shown to be prone to flooding on SEPA's Indicative River & Coastal Flood Map.

At present the site is partially developed with rock armour placed along the shoreline of the reclaimed proportion of the site

There are no major watercourses shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this

issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are no minor watercourses within the site and none which appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council’s Development Plans and Heritage Service and SEPA’s website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.11
Log No	LK021
Site Address	Dales Voe Lerwick
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The west and north sides of the site are low lying with the sections below the 5m contour.

The north end is shown to be prone to flooding on SEPA's Indicative River & Coastal Flood Map.

There is a major watercourse shown on the OS 1:50000-scale map that borders the southwest corner of the site.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.110m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

3.953 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.453m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one that appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.12
Log No	NI001
Site Address	Ulsta, Yell
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The east side of the site is relatively low lying with a proportion below the 5m contour. The public road leading to the Ulsta inter island ferry terminal separates the site from the Bay of Ulsta (figure 1.1).

At present the site is undeveloped however there is a residential house in the North adjoining site and a commercial development (R.Robertson & Son) in the South adjoining site.

There are no major watercourses shown on the OS 1:50000-scale map.

The existing site drainage is provided by a 300mm diameter cross drain (figure 1.1) which leads under the road and discharges into the marina area.

Figure 1.1 Site Boundaries and Drainage

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of the crossdrain. This may result in replacement of the existing crossdrain.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Burravoe (Yell Sound), with a 1 in 200 year flood level of

2.230m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.230m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.073 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.573m AOD (Newlyn)

3.0 Other Flooding Matters

All drainage works should be carried out to maintain the existing flows in all watercourses.

Examination of the site shows that there are a number of minor watercourses within the site and one major watercourse bordering the site which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.13
Log No	NM001
Site Address	The Houllands, Weathersta, Brae
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The West side of the site borders the coastline of Busta Voe in Brae. This side is relatively low lying with a very small proportion below the 5m contour.

At present the site is undeveloped however there is an existing access road running through the site, which may require drainage design.

There are no major watercourses shown on the OS 1:50000-scale map

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Sullom Voe, with a 1 in 200 year flood level of

2.260m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made.
For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.260m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.103m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.603m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.14
Log No	NM004
Site Address	Scatsta Airport
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The northwest end of the site is bordered by Sullom Voe. This side is relatively low lying with a proportion located below the 5m contour.

At present the only development on the site is hard standing running from north to south with no associated drainage infrastructure.

Although there are several medium sized watercourses within the boundary of the site there are no major watercourses shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Sullom Voe, with a 1 in 200 year flood level of

2.260m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.260m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.103m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.603m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.15
Log No	NM011
Site Address	Bankhead, Mossbank
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The North East side of the site is relatively low lying with a proportion below the 5m contour.
The site is separated from Yell Sound by a private access road leading to 2 private dwelling houses.

At present the site is undeveloped and there are no major watercourses shown on the OS 1:50000-scale map.

Existing site drainage is provided by an old stone built cross drain, approximately 500x500mm (figure 1.1), which leads under the road and discharges via a 580mm internal diameter piped outlet (figure 1.2), onto the shore area.
It is assumed that the outlet has been added as an extension to the existing stone built drain in order to widen the road to provide access to the 2 houses further west.

Figure 1.1 Stone Built inlets

Figure 1.2 580mm internal diameter piped outlet

It is anticipated that any future development of the site would require a catchment based drainage assessment to ascertain the necessary design size of the cross drain. This may result in replacement of the existing cross drain.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Toft Pier, with a 1 in 200 year flood level of

2.200m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.200m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.043m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.543m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and their views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.16
Log No	NM012
Site Address	Hall, Mossbank
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The East side of the site is relatively low lying with a proportion below the 5m contour.

An access road to the Firth, Mossbank septic tank runs parallel to the shoreline on the East side of the site.

At present the site is undeveloped and although there is a medium sized watercourse within the boundary of the site there are no major watercourses shown on the OS 1:50000-scale map.

The only existing drainage infrastructure is a 450mm diameter cross drain (figure 1.1), which leads under the septic tank access road and discharges via a short watercourse to the sea.

Figure 1.1 Existing drainage infrastructure

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Toft Pier, with a 1 in 200 year flood level of

2.200m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.200m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.043m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.543m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and their views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.17
Log No	NM017
Site Address	Stucca, Hillswick
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The South to South East side of the site borders the coastline of Urra Firth Voe in Hillswick. This side is relatively low lying with a proportion below the 5m contour.

At present the site is undeveloped however there is an existing access road adjacent to Stucca housing estate and A970 to Hillswick.

There are no major watercourses shown on the OS 1:50000-scale map however there are several small watercourses located within the boundary.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Hillswick, with a 1 in 200 year flood level of

2.320m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.320m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.163m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.663m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.18
Log No	NM020
Site Address	Sellaness Scatsta
Survey Date	13/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The site (a peninsula) is bordered by the Voe of Scatsta on the west side and Garths Voe on the east. This side is relatively low lying with a large proportion located below the 5m contour.

A proportion of the east side of the site is shown to be prone to flooding on SEPA's Indicative River & Coastal Flood Map.

At present the site is fairly well developed and there is an existing public access road to the site and adjacent properties.

There are no major watercourses shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Sullom Voe, with a 1 in 200 year flood level of

2.260m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this

issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.260m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.103m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.603m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps. The site is shown to be prone to flooding on SEPA's Indicative River & Coastal Flood Map.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.19
Log No	SM019
Site Address	Scatness Virkie
Survey Date	27/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The west to north side of the site is relatively low lying with a proportion below the 5m contour.

There are no major watercourses shown on the OS 1:50000-scale map.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for the Bay of Quendale with a 1 in 200 year flood level of

2.220m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.220m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.063 AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.563m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.20
Log No	WM002
Site Address	Hellister Weisdale
Survey Date	17/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The North West side of the site (figure 1) is relatively low lying with a proportion below the 5m contour.

There is an access road running adjacent to the south to the existing properties surrounding the site.

There are no major watercourses shown on the OS 1:50000-scale map however there is fairly large watercourse running from south to north through the middle of the site with a 400mm diameter cross drain under the access road.

Figure 1: North West corner of site.

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Lerwick, with a 1 in 200 year flood level of

2.110m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.400m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.243m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.743m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there is fairly large watercourse within the site however it does not appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.21
Log No	WM008
Site Address	Opposite Aith Hall, Aith
Survey Date	20/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

Both the north and east corners of the site (figure 1) sit below the 5m contour.

At present the site is partially developed (Marthastoon) and there is an existing access road running to the site.

There is a major watercourse shown on the OS 1:50000-scale map running from the Loch of Houster to the shoreline of Aith Voe. This watercourse borders the west and north of the site.

Figure 1: Site looking north

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Sullom Voe, with a 1 in 200 year flood level of

2.260m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.260m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.103m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.603m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site and one major watercourse bordering the site which appears on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Shetland Islands Council

Shetland Local Development Plan

Proposed Development Sites

Flood Risk Assessment

Appendix	5.22
Log No.	WM012
Site Address	Gronnack Whiteness
Survey Date	17/06/2011
Engineer	J A Duncan

Content

1.0 Site Observations

The south side of the site borders the coastline of Whiteness Voe in Brae. This side is low lying with a proportion below the 5m contour.

At present the site is undeveloped (figure 1) however a council housing to the east and several private developments to the north borders the site.

There are no major watercourses shown on the OS 1:50000-scale map however there are several small watercourses located within the boundary. There are also signs of a septic tank in the south area of the site.

Figure 1: undeveloped site looking north

2.0 Tidal Flood Risk

In order to comply with current SIC Planning policy proposals to build below the 5-metre contour will not normally be approved unless the applicant provides a flood risk assessment. The purpose of the assessment is to satisfy the Authority that no flooding will occur in the area of proposed development, which could affect not only the development in question, but also any surrounding development.

Further guidance on the required information is available from Shetland Island Council's Development Plans and Heritage Service.

2.1 1 in 200 coastal flood levels

As part of the Main Issues Report consultation SEPA's Hydrologist provided 1 in 200 year return period coastal flood levels for 14 areas around Shetland's coastline. (SEPA Ref: PCS106418). The closest known flood risk information is for Scalloway, with a 1 in 200 year flood level of

2.400m AOD (Newlyn)

2.2 Climate Change Impact

For the purpose of this flood risk assessment the UK Climate Projections (UKCP09) medium emissions figure shall be used

0.513m

2.3 Storm Surges

Analysis of existing data shows the highest recorded storm surge of 0.83m was recorded at 12:15am on the 11th January 1993 during the period commonly referred to as 'the Braer Storm'.

0.830m

2.4 Freeboard

We generally recommend 0.5m as an allowance for freeboard, but in line with Scottish Planning Policy suggest that applicants take advice from the flood risk authority on this issue when a detailed application is made. For the sake of this flood risk assessment 0.5m will be used.

0.500m

2.5 Resultant Coastal Flooding Level

1 in 200 coastal flood levels	2.400m
Medium emissions	0.513m
Highest Surge	0.830m
Freeboard	0.500m

All of the above information leads to a minimum finished floor level of

4.243m AOD (Newlyn)

With a flood design level (i.e. the level of land below which there is a risk of flooding) of

3.743m AOD (Newlyn)

3.0 Other Flooding Matters

Examination of the site shows that there are a number of minor watercourses within the site however none appear on the OS 1:50000 maps.

All drainage works should be carried out to maintain the existing flows in all watercourses.

A Water Environment (Controlled Activities) (Scotland) Regulations (CAR) authorisation would be required for any watercourse crossing and care should be taken that construction work does not create temporary or permanent change to the direction or volume of existing flows in watercourses, including roadside ditches.

All sources of flooding need to be considered including fluvial flood risk. Developers should design their development appropriately to ensure that it would be sited above the estimated coastal flood design level and outwith the flood plain of any watercourses.

Watercourse crossing design should ensure that the proposals are capable of handling 1 in 200 year watercourse flows: - The crossing capacities themselves may be lower than required for 1 in 200 year flows provided that heavier flows do not create flooding risks, including erosion and overflow effects.

There may be a requirement for temporary SUDS devices to address water quality issues during construction works and guidance is available from Shetland Island Council's Development Plans and Heritage Service and SEPA's website at www.sepa.org.uk.

Water quality is the responsibility of SEPA and its views should be sought on the specific requirements.

Appendix 5.23

SEPA Revised advice on flood risk for sites with development potential.

Allocation number	Known types of flood risk	FRA now carried out?	SEPA's revised advice
BR002	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
CL003	Fluvial	Yes	We not consider it likely that this site is at risk from coastal flooding. We object unless the allocation text indicates that flooding is an issue and any planning application must be supported by a flood risk assessment which demonstrates how development on the functional flood plain will be avoided
CL004	Fluvial	Yes	We not consider it likely that this site is at risk from coastal flooding. We object unless the allocation text indicates that flooding is an issue and any planning application must be supported by a basic flood risk assessment which demonstrates how development on the functional flood plain will be avoided
LK004	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
LK006	Fluvial	Yes	We not consider it likely that this site is at risk from coastal flooding although the watercourse may be influenced by the tide. We object unless the allocation text indicates that flooding is an issue and any planning application must be supported by a basic flood risk assessment which demonstrates how development on the functional flood plain will be avoided
LK007	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
LK008	Fluvial and coastal	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
LK010	Coastal	Yes	We have no objection to this site but the planning authority may wish to highlight that basic flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding
LK019	Fluvial and coastal	Yes	We object unless the allocation highlights that basic coastal flood risk information has already been collected and this should be used to inform a more detailed flood risk assessment which should consider both coastal and fluvial flooding
LK020	Coastal and Fluvial	Yes	We have provided comments on this site in section 2.7 of our letter. We will object to this site in principle unless the site is only for harbour related activities.
LK021	Fluvial and coastal	Yes	We object unless the allocation highlights that basic flood risk information has already been collected and this should be used to inform a more detailed flood risk assessment which should consider both coastal and fluvial flooding
NI001	Coastal	Yes	We have no objection to this site but the planning authority may wish to highlight that basic flood risk information has already been collected for the site and that topographical and site level information should be

			submitted to demonstrate that the site is not at risk from coastal flooding
NM001	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
NM004	Coastal	Yes	We object unless the allocation highlights that basic coastal flood risk information has already been collected and that in the first instance topographical information is required to demonstrate that development will take place above the estimated coastal flood design level and outwith the flood plain of any watercourses
NM011	Fluvial and coastal	Yes	We object unless the allocation highlights that basic flood risk information has already been collected and this should be used to inform a more detailed flood risk assessment which should consider both coastal and fluvial flooding and any overland flow routes from local blocked culverts
NM012	Fluvial and coastal	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
NM017	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
NM020	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
SM019	Coastal only	Yes	We object unless the allocation highlights that basic flood risk information has already been collected and that in the first instance topographical information is required to demonstrate that development will take place above the estimated flood design level
WM002	Coastal and fluvial	Yes	We have no objection to this site but the planning authority may wish to highlight that basic coastal flood risk information has already been collected for the site and that topographical and site level information should be submitted to demonstrate that the site is not at risk from coastal flooding or fluvial flooding from local small watercourse.
WM008		No	No comments submitted
WM012	Coastal	Yes	We object unless the allocation highlights that basic flood risk information has already been collected and that in the first instance topographical information is required to demonstrate that development will take place above the estimated flood design level