

6.0 – ECOLOGY AND NATURE CONSERVATION

Figure 6.1 – Phase 1 Habitat Plan

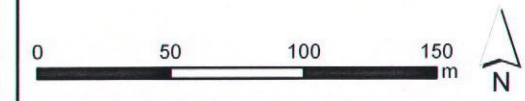
Figure 6.2 – Local Natural Heritage Designations

Appendix 6.1 – Ecological Surveys

Appendix 6.2 – Gazetteer of Photographs



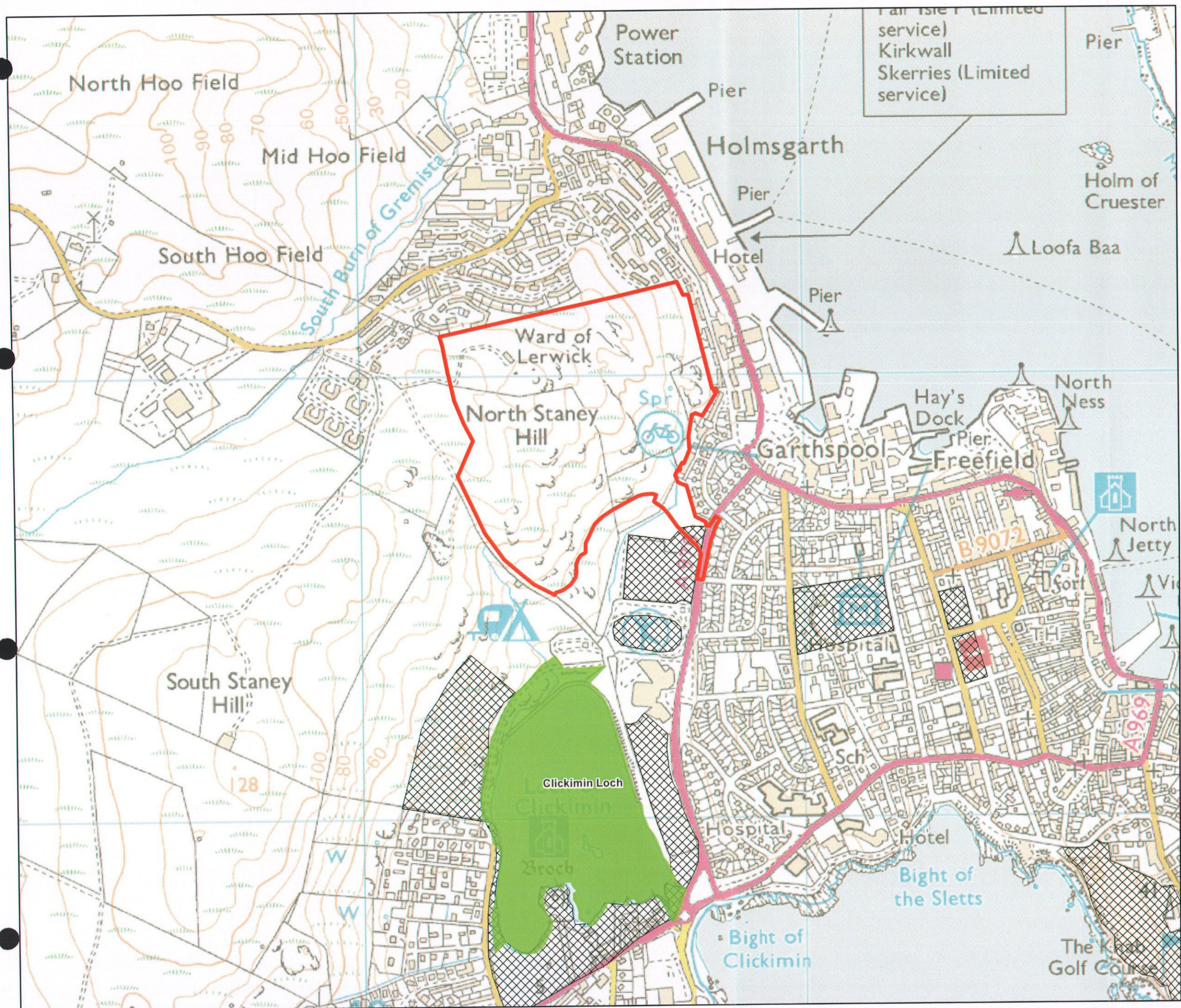
- Key:**
- Proposed Site Boundary
 - Target Note
- Phase 1 Habitats:**
- Dry Heath
 - Acid Grassland
 - Dry Heath/Acid Grassland
 - Active Blanket Bog
 - Scattered Trees
 - Woodland
 - Bare Ground



North Stoney Hill
PPP

Figure 6.1: Phase 1 Habitat Plan

Drawn: TB	Revision: 1	Checked: AS	Date: 10/06/2014
--------------	----------------	----------------	---------------------



Key:

- Proposed Site Boundary

Local Natural Heritage Designations:

- Local Nature Conservation Site (LNCS)
- Local Protection Area (LPA)

0 100 200 300 400 500 m

N

North Stoney Hill

PPP

Figure 6.2:
Local Natural Heritage Designations

Drawn: TB	Revision: 1	Checked: AS	Date: 10/06/2014
--------------	----------------	----------------	---------------------

natural CAPITAL

© Crown copyright and database rights
2014 Ordnance Survey 100054309

Appendix 6.1:

Ecological Surveys

1 Introduction

Shetland Biological Records centre was contracted to undertake a series of surveys to inform a proposed housing development at Staney Hill, Lerwick. These included a Phase 1 habitat survey, a survey for GWDTEs (Ground Water Dependent Terrestrial Ecosystems), a breeding bird survey and a survey for signs of EPS (notably Otters).

2 Methods

2.1 Phase 1 Survey

A Phase 1 survey was undertaken by Paul Harvey and James Mackenzie on 15th April 2014. The whole site was covered and habitats mapped using the established Phase 1 classifications. It should be noted, however, that the habitat types identified in this survey were based on the appearance of the surface vegetation rather than other factors. This is most relevant in terms of defining blanket bog where Phase 1 methodology would typically record anything with a peat depth of greater than 0.5 metres as some form of blanket bog. The colours used to display the habitats in Figure 1 were selected to facilitate viewing rather than conform to the typical Phase 1 colour code.

Target notes were recorded where a habitat type was too small to map, or where something of interest was located. Where grid references are given these were recorded using GPS software on an Iphone. During this survey a close watch was kept for GWDTEs and any of ecological significance recorded.

2.2 Breeding Bird Survey

Surveys were undertaken using a modification of the methodology developed by Brown & Shepherd (1993). In order to provide a more reliable estimate of the breeding population both surveys commenced before 0800 and were completed by 1000. Brown & Shepherd recommend a start time of 0900 but in Shetland, territorial activity of birds is much diminished by midday.

Surveys were undertaken on days when the wind was force 4 or less, visibility was good and there was no precipitation. On such days territorial activity of birds is greater and detectability rates of the observer are higher. The survey area was covered twice. The first visit took place on the 7th May with the second on 6th June.

All bird species were recorded using software on a smartphone with GPS capabilities (Great Britain Outdoors). This enabled the observer to locate themselves on the base map and then estimate the angle and distance to

the bird showing the requisite behaviour, the position of which was then registered on a field map. Those birds showing signs of territorial activity were placed in a circle. If in flight, the path of the bird(s) was marked using an arrow to record the direction.

Courtship or territorial behaviour was defined as follows:-

- Courtship or territorial display
- Singing
- Territorial disputes
- Nest building
- Agitated behaviour or alarming
- Carrying food
- Presence of young

Surveyors did their best to try and follow the flight lines of territorial birds to try and establish how many individuals were concerned. Registrations of what was considered to be the same individual, or two individuals from the same pair, were linked by a line on the field map, whereas those where individuals were known to be different (i.e. two individuals singing at the same time) were linked with a broken line.

When both surveys were completed the registrations from each survey were plotted onto single species maps for the site. Registrations considered to relate to the same territorial pair were linked and the centre of the territory marked to give an overall picture of the number of territories present for each species. The grid reference of the territory centre was then recorded in a spreadsheet.

There are two key things to note. Firstly territories do not necessarily relate to breeding attempts. It would require a huge additional effort to establish whether each territorial pair attempted to breed. Secondly, the registrations on the final maps are an estimate of the territory centre, they do not indicate where the nest is.

3 Results

3.1 Vegetation – Phase 1 Survey, Staney Hill, Lerwick

3.1.1 General Description. (Figures 1 & 2)

The area lies on mid-Devonian sandstone and is in essence a south-east facing hill. Much of the site has not been subject to heavy grazing and/or agricultural intensification and as such shows a much better cover of dry hummocky *Calluna* heathland than the immediately surrounding areas. There are several outcrops of bedrock and loose boulders at the surface and the peat depth across the site is very uneven and generally shallow

(20-80 cm) although it occasionally extends to a depth of greater than one metre.

Areas of deeper peat tend to be damper and in such places *Eriophorum* (cotton grass) becomes more evident among the heather. A series of shallow valleys run north-west to south-east down slope and have some wetter, blanket bog (mire) type of vegetation in their upper reaches, although the peat depth in these rarely exceeds 1 metre. The presence of underwater watercourses (peat pipes?), means that the vegetation lower down these valleys is drier and more akin to acid grassland. There is one fresh water pool that may be permanent in some years and several smaller hollows that are seasonal pools – most of these are dominated by *Sphagnum cuspidatum*.

The steeper south-east facing slopes give way to either an acid grassland, or a mosaic of acid grassland/dry heathland and it appears that some of these have been more heavily grazed in the past thus removing heather cover. There is quite a bit of 'flushing' along these lower slopes often leading to patches of *Juncus effusus* or bryophyte dominated areas, but none of these are of ecological significance.

In the east of the site is a small area of planted trees and shrubs and adjacent to this a more expansive area with widely dispersed Lodgepole Pines. These form a corridor with shrubs planted in the back gardens of many of the houses that run north along the eastern boundary – most of which have considerable shrub cover.

A relatively new shed, and access track, is situated in the north-west of the site and old wartime bunkers lay below this. Both have resulted in considerable modification to the vegetation in their proximity.

3.1.2 Dry Heathland.

This habitat is extensive across the site notably on the higher south-east facing slopes and on the hill top, frequently forming a mosaic with acid grassland. *Calluna vulgaris* is dominant but damper areas have varying proportions of *Eriophorum* (usually *angustifolium*) among the heather and *Sphagnum capillifolium* and occasionally *S. papillosum* also sometimes present. These damper areas could perhaps be termed as modified blanket bog but in a Shetland context are best treated as dry heath.

The heather is quite leggy and hummocky by Shetland standards and the heathland relatively herb poor but with an abundant cover of hypnoid mosses – notably *Hylocomium splendens*, *Pleurozium schereberi*, *Rhytidiadelphus loreus* and *Rhytidiadelphus squarrosus*.

Nardus stricta, *Juncus squarrosus* and *Festuca vivipara* occur commonly in places and *Empetrum nigrum* is rare to frequent. *Thymus polytrichus* occurs where the soil is shallow due to bedrock lying near the surface.

A series of lichen-covered boulders are found among the heather and acid grassland on the steeper slopes, with some ferns (young *Dryopteris dilatata*) under some boulders.

3.1.3 Acid Grassland.

Acid grassland occurs in patches throughout the site, generally where the soil is shallow or the slope steep, but some of that along the south-eastern face of the hill may be a result of heavy grazing in the past removing heather cover. In some areas – notably along the south-eastern slopes it is quite wet in parts, due to flushing and/or water courses (peat pipes?) emerging at the surface. These 'flushed' areas are often characterised by patches of *Juncus effusus* or dense cushions of bryophytes. In some areas the acid grassland forms a mosaic with dry heath.

Much of the acid grassland has frequent *Nardus stricta*, *Juncus squarrosus* with *Anthoxanthum odoratum* and *Agrostis* sp. Large, damper areas have good hummocky bryophyte cover with *Hylocomium splendens*, *Rhizidiadelphus squarrosus* and *Polytrichum commune* often abundant, and Sphagnum hummocks in places.

3.1.4 Blanket Bog (mire)

Several small areas of blanket bog (mire) vegetation occur across the site – the majority on flatter areas at the top of the shallow valleys running north-west to south-east down the slope. The most extensive area though, borders the housing development on the north side of the site. These areas are generally dominated by *Eriophorum* or more typically *Eriophorum* and *Calluna*. *Sphagnum cuspidatum* carpets occur in some areas where the water table lies at the surface, and *S. papillosum* and *S. capillifolium* also occur.

Some of these areas of mire vegetation merge into acid grassland as they move downslope as it appears that underground water courses (peat pipes?) take water away from the surface.

3.1.5 Amenity Plantings

A number of Lodgepole Pines have been planted within a fenced off area in the extreme east of the site and these link with a further, more densely planted area, to the south. These areas could potentially form a useful 'wildlife corridor' along with the back gardens of the adjacent housing, to the

new proposed Anderson High School Development and beyond to Clikimin Loch.

3.1.6 Target Notes (Figure 1)

1. (HU 4635 4159) A little bit of flushing or seepage – *Cirsium palustre* and several bryophytes including *Aulacomnium palustre*, *Dicranum scoparium*.
2. (HU 4627 4176) Damper patch of heathland which could almost be described as blanket bog. Much more *Eriophorum* and *Sphagnum*, frequent *Empetrum nigrum* and less *Calluna* than surrounding area. Occasional hollows/pools with *Sphagnum cuspidatum*.
3. (HU 4623 4199) and to south-east. Wet mire area near top of slope. *Eriophorum* abundant, occasional *Juncus effusus* and quite *Sphagnum* rich, inc. *S. papillosum*.
4. (HU 4625 4207). Damp area with a lot of *Eriophorum*, with *Calluna* and frequent *Sphagnum capillifolium*. Also some large *Racomitrium lanuginosum* cushions especially around outcrops of bedrock. A single *Huperzia selago* present and *Carex panicea*(?) possibly indicating flushing. Looks as if peat was cut from area 100 metres or so east north-east from here.
5. (No GR). Wet mire area to west of shed – water table at surface on this visit. Small *Sphagnum cuspidatum* carpets form part of this. Abundant *Eriophorum*. Peat depth 80 – 100 cm, but just a few feet away shallower at 30cm. The damp area extends downslope as a narrow band of blanket bog with much *Eriophorum* and *Sphagnum* and occasional *Empetrum nigrum* until it becomes a dryer acid grassland where a water course (peat pipe) transports the water away from the surface.
6. (HU 4648 4166). Patch of *Juncus effusus* where some water from under water peat pipe emerges at surface? Further 'flushing/seepage' downslope.
7. (HU 4647 4156). Pool with *Sphagnum cuspidatum* carpet. Abundant *Eriophorum* and other bryophyte species.
8. (No GR). Area of blanket bog, *Eriophorum angustifolium* and *Calluna vulgaris* co-dominant. Occasional *Empetrum nigrum*. Peat depth from 70 cm to 100+ cm.
9. (HU 4651 4191). Patch of *Juncus effusus* where water coming to surface.

10. (HU 4657 4205). Active blanket bog. Lots of *Sphagnum cuspidatum* and *Eriophorum*, with little *Calluna*. Peat depth 60-90 cm.

Figure 1

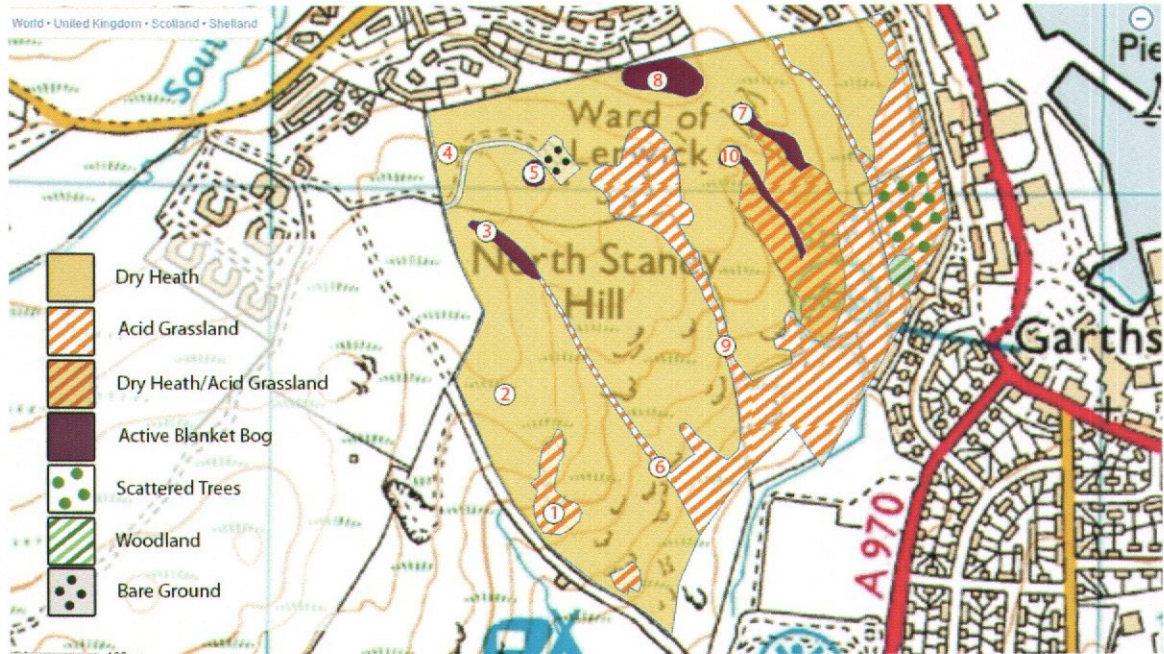


Figure 2

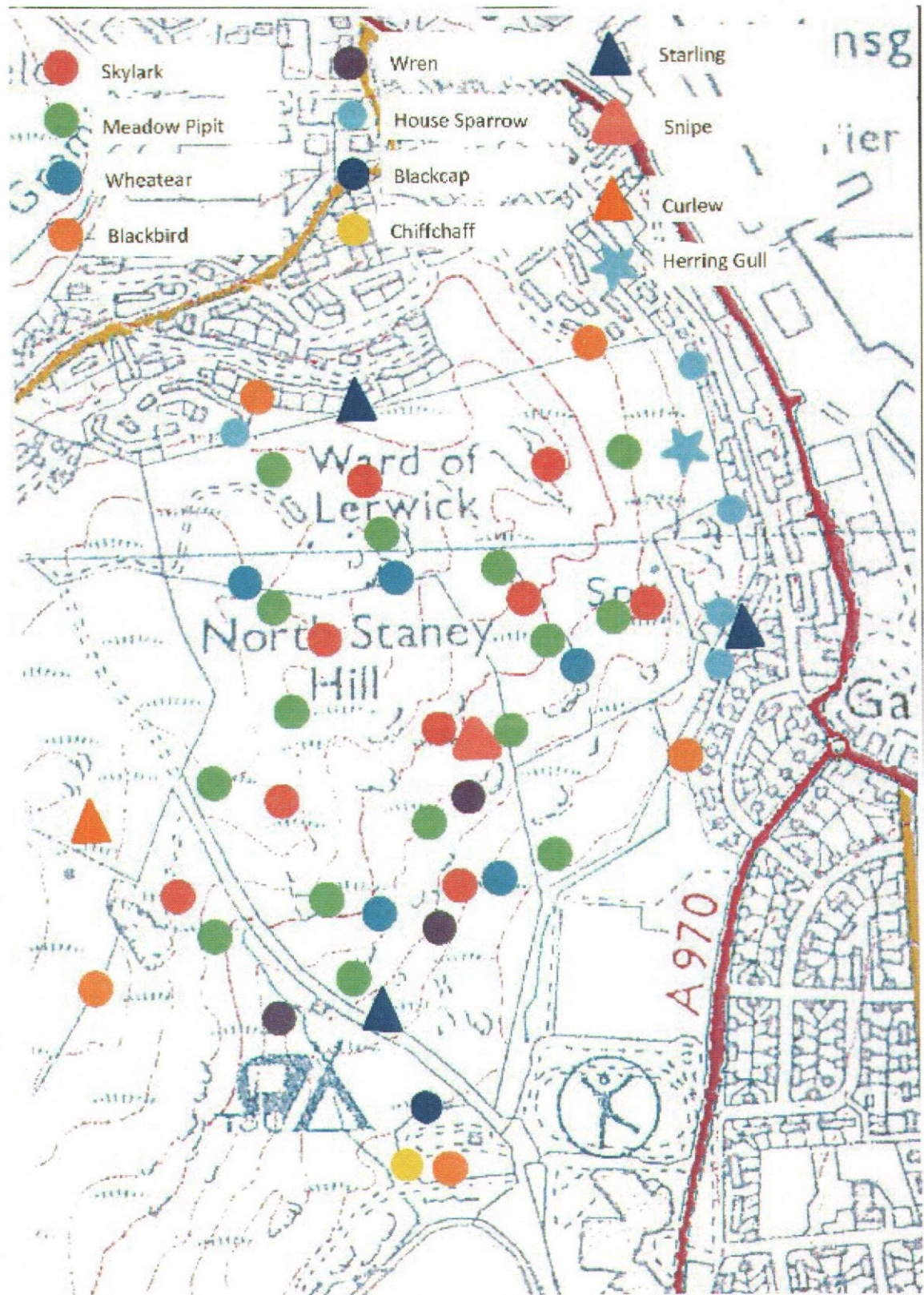


3.2 Breeding Bird Survey

Both surveys were undertaken by Paul Harvey. On 7th May, between 0740 and 0920, when the weather was overcast, dry and with no wind; and on 6th June, between 0800 and 0920, when the weather was overcast with a force 2-3 easterly wind. The distribution of breeding birds is shown in Figure 3.

In addition to those species recorded as showing signs of breeding, Hooded Crow and Raven were also recorded.

Figure 3 – The distribution of Birds showing signs of breeding



Meadow Pipits and Skylarks are common breeders on site with 14 and 8 pairs respectively. These densities are quite high and are possibly a result of the very light grazing resulting in good vertical diversity in the heather. Wheatears prefer more heavily grazed areas; although the map suggests that 5 pairs may be present only two of these were recorded on the second visit so it is possible some of those on May 7th were just singing migrants. Two pairs of wrens were recorded – they favour gullies with associated rocks and leggy heather. The Blackcap and Chiffchaff were only recorded on the first visit so were probably migrants stopping off in suitable habitat and singing for a few days. House Sparrows and Starlings were breeding in peripheral areas – associated with buildings or dykes. The Snipe recorded on May 7th was the only evidence of breeding waders on the site. The Herring Gull was incubating a clutch of eggs on 6th June.

4 Other Wildlife

Two Buff-tailed Bumblebees (*Bombus terrestris*) were recorded on April 15th – both queens. This species has only just colonised Shetland.

No signs of Otter activity were detected during the survey although this is not surprising given that there are no surface water courses within the survey area and only one small permanent (?) freshwater pool.

5 Summary

No features of significant ecological interest were found during this survey. Much of the area, however, does comprise good quality, lightly grazed, heather moorland which is a scarce habitat around Lerwick and there are a series of smaller areas of active blanket bog – which is a priority habitat in the EC Habitats & Species Directive. In addition there are a series of large lichen-rich boulders scattered over the hill and some amenity plantings along the eastern edge. Some of these could be linked in a circular walk which would be of amenity value to local residents and indeed could be used as an educational tool by the new Anderson High School. In this context I recommend the following.

- The proposed development and associated infrastructure (notably roads) is predominately situated in the north and east of the site. This links it with existing housing developments and would allow for an area of heather moorland to be retained for wildlife and amenity purposes. This area should remain lightly grazed (or ungrazed) to maintain its heather cover – attractive to wildlife and as an amenity.
- A circular walk is developed as amenity and recreational provision for local residents but also for possible use as an educational tool for the AHS. It would be appropriate to discuss this possibility with relevant ANS staff prior to development.

- Existing amenity plantings are safeguarded and a wildlife corridor is established to link these with the Clikimin Loch to the south (via the new AHS) and the gardens to the north-east. Further planting of suitable trees and shrubs would enhance the value of this corridor. This 'corridor' could form part of the proposed circular walk. Shetland Amenity Trust's Woodland Team could offer advice regarding suitable species for planting.

Paul Harvey

6th June 2014.

Appendix 6.2 – Gazetteer of Photographs



Photograph 1

**Looking north east towards
Bressay**
Dry hummocky *Calluna vulgaris*
(heather) heathland



Photograph 2

**Within the site looking north
from one of the dry valleys**
Outcrops of bedrock and loose
boulders found throughout the
site. Good lichen cover on
boulders



Photograph 3

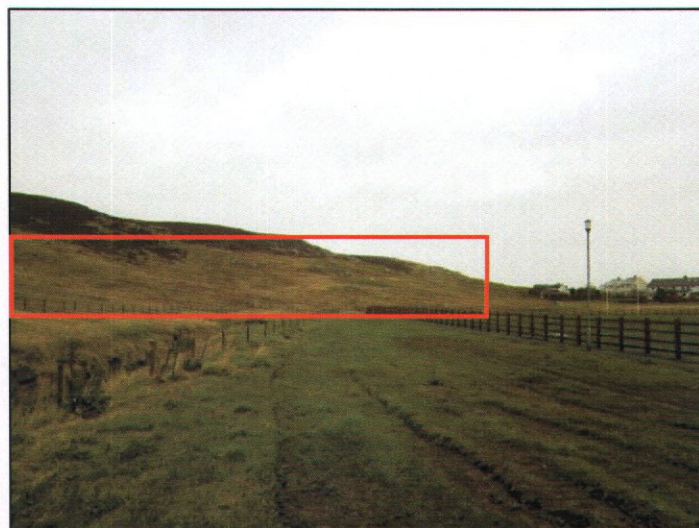
**Looking south west toward
Clickimin Loch**
Shallow valley runs north-west
to south-east down the slope
with some small areas of
blanket bog in the upper
reaches

Appendix 6.2 – Gazetteer of Photographs



Photograph 4

Looking north from the site
Small pool dominated by
Sphagnum cuspidatum



Photograph 5

Looking north east from next to the rugby pitches
South-east facing slope with extensive acid grassland (red box) and mosaic of acid grassland/dry heathland



Photograph 6

Looking east toward Burgess Street from the site
In the east of the site is a small area of planted trees and shrubs (red circle) and adjacent to this a more expansive area with widely dispersed (*Pinus contorta*) lodgepole pine