P360 Cantick Head

Wintering Greenland Barnacle Goose Report

Prepared by Aquatera Ltd

P360- November 2012

This report was completed by:

Aquatera Ltd
Stromness Business Centre
Stromness
Orkney
KW16 3AW

Contact: Jude Hamilton
Tel: 01856 850 088
Fax: 01856 850 089
Email: jude.hamilton@aquatera.co.uk

Revision Number	Issue Date	Revision Details
Rev1	2 Nov 2012	First draft sent to Jen Geraghty (SSER)

Contents

1 Introduction

Cantick Head Tidal Development Ltd. (CHTDL) is in the process of identifying suitable locations for the onshore supporting infrastructure required for their proposed tidal energy array at their 'Cantick Head' site off the south coast of Hoy and South Walls, Orkney.

Five potential substation development sites have been identified through the optioneering process; three in South Hoy (Melsetter, Witter Quarry and Green Hill) and two in South Walls (Bu of Aith and Gallow Tuag).

On 4th September 2012, a consultation meeting was held in Kirkwall, Orkney to discuss the project with Orkney Islands Council (OIC) and Scottish Natural Heritage (SNH) with regard to Environmental Impact Assessment (EIA) and planning regulations. The issue of wintering Greenland barnacle geese (*Branta leucopsis*) in South Walls was raised by SNH as a matter requiring further consideration with respect to the sites in South Walls. The sites in South Hoy are unaffected by this issue as wintering Greenland barnacle geese are not present in South Hoy.

As the Greenland barnacle geese in South Walls are from the nearby Switha Special Protection Area (SPA) this issue was identified as one that required further consideration in terms of assessing the potential impact of the proposed development on a qualifying species of an internationally important designated site.

This report summarises the findings of a desk-based assessment to collate historical data on the abundance and distribution of wintering Greenland barnacle geese in South Walls. The findings of this assessment will help to inform the site selection process to identify the preferred locations for the onshore supporting infrastructure. The findings will also inform the EIA for the proposed development and will be used to assess the potential impacts of the South Walls potential development options and associated cable route and landfall options on the SPA population.

2 Historical data

2.1 Switha SPA

South Walls is approximately 2km west of Switha SPA, a small uninhabited island designated for its internationally important wintering population of Greenland barnacle goose (Table 1). South Walls is an important foraging area for the geese which leave their overnight roost on Switha to forage outwith the SPA during the day in intensively managed grassland fields and oat and barley stubble fields in the surrounding area in South Walls.

Table 1 SPA citation for Switha SPA

Site	Number	% of wintering GB population
Switha SPA	1,120 (Peak counts from the winters of 1993/94 to 1997/98)	4%

Barnacle geese are present at their wintering grounds between the months of October and April. The islands off the west and north coasts of Scotland and Ireland (as well as several mainland sites) support the entire Greenland barnacle goose population during the winter. Switha is one

of only seven sites in Scotland that hold the majority of the Greenland barnacle goose population, with most birds wintering on Islay. Ringing studies have shown that Greenland barnacle geese are very faithful to specific wintering sites, with 70% of birds returning to the same site during the following winter.

2.2 Abundance and distribution of Greenland barnacle geese in South Walls

The number and distribution of Greenland barnacle geese using the South Walls area is monitored annually by SNH during monthly counts as part of the South Walls Goose Management Scheme. This scheme aims to minimise losses to farmers as a result of geese damaging crops or grass by providing payments towards the maintenance of disturbance free feeding areas while encouraging the scaring of geese on other parts of the holding. A summary of the Greenland barnacle goose numbers for South Walls in recent years can be found in Table 2.

Table 2 Peak numbers of Greenland barnacle geese in South Walls 2006/07-2011/12[1]

Winter	Peak number
2011/12	1,932
2010/11	1,861
2009/10	1,600
2007/08	1,874
2006/07	1,710

The number of Greenland barnacle geese present in South Walls has been relatively stable over recent years, with a small increase overall since winter 2006/07. Counts are substantially higher than those throughout the 1990s (an increase of approximately 60%). The Scottish wintering population as a whole has undergone a sustained increase up to 2006/07, with counts in the following three winters indicating an apparent decrease in the size of the Scottish wintering population compared to the peak year, followed by a slight increase again in winters 2010/11 and 2011/12. The decrease over the period 2007/08 to 2009/10 has been attributed to a combination of low breeding success over the last ten years and increased mortality due to hunting at breeding grounds in Iceland. In addition, in recent years, the Scottish Government has allowed the introduction of licences to shoot around 1,000 geese per annum on Islay. It is thought that reasonable breeding success in 2010 and 2011 has helped to reverse this recent decline.

The local SNH office in Kirkwall was contacted to obtain data from the South Walls Goose Management Scheme on the usage of fields by foraging Greenland barnacle geese in South Walls. The fields used by flocks of foraging Greenland barnacle geese within South Walls have been mapped for the period 2007 – 2012 (Figure 1). The majority of fields regularly used by flocks of Greenland barnacle geese are located in the east of South Walls with a small area in the southwest, to the west of Green Hill also regularly used. Fields occasionally used by Greenland barnacle geese are located across South Walls.

[1] Wildfowl and Wetlands Trust (WWT) website: http://monitoring.wwt.org.uk/species/2012/greenland_barnacle_latest2012.php#2011/12

2.3 Factors affecting distribution of Greenland barnacle geese

The suitability of foraging habitat and therefore the distribution of geese present from year to year and throughout a season are greatly influenced by how the land is in use at that time. Geese select the most favourable food sources available and aim to maximise grazing efficiency; therefore favoured foraging fields can vary from year to year and also throughout the course of a season. In autumn, the Greenland barnacle geese often feed on crop residues or grass until these food supplies are exhausted before moving on to feed on winter and spring cereals, winter vegetable crops, feed crops and the first new growth of grass in spring. The distribution of geese in an area is also dependent on other factors for example; the presence of standing water in fields may attract geese whereas the presence of livestock in fields can deter geese. Bird scaring devices are also often used by landowners to protect vulnerable crops by creating visual or auditory signals to deter geese. Geese are cautious birds and prefer to graze in fields free from disturbance, away from roads and buildings. The presence of people and dogs and the movement of agricultural vehicles in an area will all further influence the abundance and distribution of geese in an area.

3 Identification of potential impacts

The potential impacts from this proposed development on the wintering Greenland barnacle goose population in South Walls are:

- Habitat loss through construction of the substation and associated supporting infrastructure;
- Disturbance and displacement from regularly used foraging areas due to noise/visual disturbance from the presence of the substation; and
- Disturbance and displacement from regularly used foraging areas due to noise/visual disturbance from construction activities.

4 Overview of development options

Each development option has been assessed in terms of potential impacts to foraging Greenland barnacle geese. A summary is provided in Table 3.

4.1 Habitat loss

The Bu of Aith and Gallow Tuag substation development site options and both cable route and landfall options are located outwith any of the fields regularly or occasionally used by foraging Greenland barnacle geese in recent years (Figure 1). Therefore, there would be no direct loss of foraging habitat for Greenland barnacle geese as a result of the construction of the substation or associated supporting infrastructure.

4.2 Disturbance due to presence of the substation

Both potential substation development site options are close to the main road, an existing source of disturbance to foraging Greenland barnacle geese, therefore the presence of the substation is unlikely to cause any additional disturbance to foraging Greenland barnacle geese.

4.3 Disturbance due to construction activities

4.3.1 Bu of Aith and Gallow Tuag substation options

Both of these substation development options are within 1km of the group of fields in the southwest of South Walls that have been regularly used by foraging Greenland barnacle geese in recent years (Figure 1). At its closest point, the Bu of Aith development site option is within approximately 50m of a regularly used foraging field and Gallow Tuag is within approximately 200m of a regularly used foraging field. Construction activities at either of these development site options are likely to result in noise and visual disturbance to foraging Greenland barnacle geese in this area, particularly those in fields closest to the development site options.

4.3.2 The Ayre landfall site and cable route option

The Ayre landfall site option is approximately 500m away from the nearest field regularly used by foraging Greenland barnacle geese. The Ayre landfall site is at a beach regularly used by dog walkers and other recreational users and is therefore likely to be a source of existing disturbance to foraging Greenland barnacle geese. The cable route option from The Ayre to both substation options follows a route alongside the main road therefore construction disturbance would be contained within an area currently subject to some disturbance from passing vehicles and other human disturbance.

4.3.3 The Clevies landfall site and cable route option

The east side of 'The Clevies' landfall option and the cable route to this site are immediately adjacent to a field that has been regularly used by foraging Greenland barnacle geese in recent years. Construction activities at The Clevies landfall site and along the cable route are likely to result in noise and visual disturbance to Greenland barnacle geese foraging in fields closest to this development site option.

Table 3 Summary of potential impacts

Development option	Likelihood of Potential Impact		
	Habitat loss	**Likelihood of disturbance – presence of substation**	**Likelihood of disturbance – construction activities**
Bu of Aith	None	Low	High
Gallow Tuag	None	Low	High
The Ayre	None	N/A	Low
The Clevies	None	N/A	High
The Ayre cable route option	None	N/A	Low
The Clevies cable route option	None	N/A	High

4.4 Discussion

Construction activities timed to avoid the wintering season (October to April) would eliminate any potential impacts such as noise or visual disturbance to wintering Greenland barnacle geese.

Construction activities during the months of October to April at either of the substation development site options or at The Clevies landfall site and cable route option have the potential to cause noise and visual disturbance to Greenland barnacle geese foraging in nearby fields, particularly to geese in fields closest to these development site options. The majority of fields regularly or occasionally used by flocks of Greenland barnacle geese are more than 2km to the east of both of the development site options, well away from any potential construction disturbance. As there are numerous alternative foraging areas within the wider area in South Walls that would be free from disturbance from this development, construction disturbance affecting a small number of regularly used fields in the immediate vicinity of the development site is considered to be of relatively low importance.

The provision of alternative feeding areas or sacrificial crops elsewhere in South Walls could be used to mitigate any impact of construction disturbance by providing alternative foraging areas free from disturbance.

The use of any one particular field by flocks of Greenland barnacle geese is likely to be temporary during the course of a winter as the geese are likely to move around utilising the best available food sources at the time. Any potential disturbance due to construction activities is therefore likely to affect Greenland barnacle geese for a limited time rather than for the entire duration of a wintering season.

The distribution of Greenland barnacle geese in South Walls varies from year to year and throughout a season. If construction activities were to commence before the arrival of the Greenland barnacle geese in October, any noise and visual disturbance from the construction activities would influence the choice of foraging fields at the beginning of the season and may influence the preferred foraging fields for the rest of the season. Construction disturbance will involve the movement of vehicles and people and is therefore not too dissimilar to disturbance experienced by Greenland barnacle geese in any other wintering season. If construction activities cannot be timed to occur before the Greenland barnacle geese arrive in October, bird scaring devices could be used to deter birds from using the fields most likely to be affected by construction disturbance. Alternative feeding areas or sacrificial crops could also be used in combination with bird scaring devices to reduce the likelihood of Greenland barnacle geese using fields that could potentially be subject to disturbance from construction activities.

It is also possible that Greenland barnacle geese foraging in the vicinity of the substation development site and The Clevies landfall site and cable route option would habituate to visual or noise disturbance from construction activities, particularly if the construction activities were out of the direct line of sight of the foraging geese. Geese are known to quickly habituate to sources of disturbance if the disturbance is not associated with any actual threat, sometimes in less than two weeks.

4.5 Summary of possible mitigation measures

A number of possible mitigation measures that could potentially be used to minimise the impact of construction disturbance to wintering Greenland barnacle geese have been identified:

- Construction activities timed to avoid the wintering season (October to April) would eliminate any potential impacts such as noise or visual disturbance to wintering Greenland barnacle geese;
- The construction activities could be timed to commence before the Greenland barnacle geese arrive in October so that the geese are more likely to select foraging fields elsewhere in South Walls;
- If construction activities cannot be timed to occur before the Greenland barnacle geese arrive in October, bird scaring devices could be used to deter birds from using the fields most likely to be affected by construction disturbance;
- The provision of alternative feeding areas or sacrificial crops elsewhere in South Walls could be used to mitigate any impact of construction disturbance by providing alternative foraging areas free from disturbance; and
- Provision of alternative feeding areas or sacrificial crops elsewhere in South Walls could be used in combination with bird scaring devices to keep Greenland barnacle geese away from areas that could potentially be subject to disturbance from construction activities.

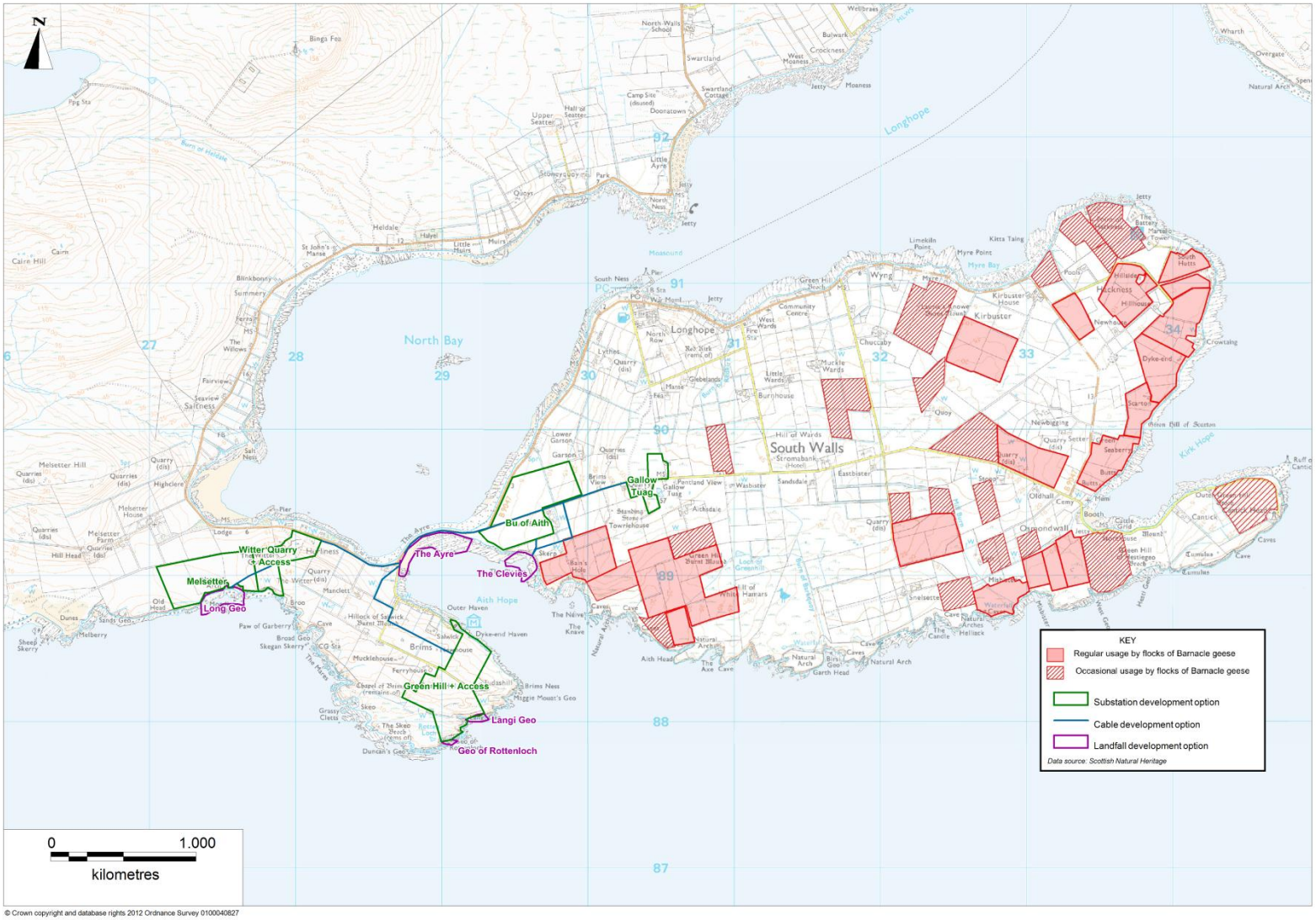

Figure 1 Fields in South Walls used by Greenland barnacle geese 2007-2012 and location of development site options