



Appendix F.1: Report on Ornithological Surveys



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North Connect

Report on Ornithological Surveys

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NORTH CONNECT TECHNICAL REPORT

Introduction

This report describes the methods and data results from the ornithological surveys completed by Natural Research (Projects) Ltd at the North Connect survey area near Boddam, for Affric Ltd.

The cliffs are international designated for their breeding seabird assemblage, being part of the Buchan Ness to Collieston Coast Special Protection Area (SPA) which extends approximately 15 km along the coast and 2km into the marine environment from the cliff face. The area of SPA which is affected by the proposal includes the Bullers of Buchan coast which is also nationally designated as a Site of Special Scientific Interest (SSSI) for its ornithological interest (Figure 1).

Qualifying species for SPAs are afforded the highest level of protection, and therefore any development which occurs in or near to an area designated as such, must show that the objectives and features of the SPA will not be compromised during the construction or operation of the development.

The SPA qualifying species are breeding Northern fulmar (*Fulmarus glacialis*) (“fulmar”), European shag (*Phalacrocorax aristotelis*) (“shag”), common murre (*Uria aalge*) (“guillemot”), black-legged kittiwake (*Rissa tridactyla*) (“kittiwake”) and European herring gull (*Larus argentatus*) (“herring gull”).

The objectives of the SPA are: to avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

The surveys were commissioned to gain an understanding of the bird life utilising the area around the proposed landfall for an undersea cable route from Norway, to enable an assessment of potential disturbance.

The survey area comprised the preferred landfall area plus a buffer of 500m to either side. As the breeding distribution of these species along the 15 km length of the SPA is uneven, surveys will serve to map the locations which contain concentrations of breeding species and therefore allow for avoidance of these areas. The survey area comprises mainly cliffs and wave cut rock platforms with small stacks and skerries.

Surveys commenced in February 2016 and continued for 12 months until January 2017.

Methods

Colonial seabird count

The aim was to perform monthly counts along the coastline of the survey area. The main target species of the surveys were fulmar, shag, razorbill (*Alca torda*), guillemot, kittiwake and herring gull, all of which are known to regularly breed in the survey area. Surveyors also recorded other breeding species which were present such as common eider (*Somateria mollissima*) (“eider”), Atlantic puffin (*Fratercula arctica*) (“puffin”), black guillemot (*Cephus grylle*), lesser black-backed gull (*Larus fuscus*), great black-backed gull (*Larus marinus*), and peregrine falcon (*Falco peregrinus*) (“peregrine”).

The cliff area had been previously surveyed and divided into 47 named sections (although one section appeared to be unnamed, therefore for the purposes of this survey it was given the name 2Z). These sections were therefore used for these counts to allow for comparison with previous survey data (Figure 2).

On each visit a surveyor systematically examined each count section from the cliff tops and recorded:

- The numbers of birds present and whether these are at breeding or loafing sites;
- Where possible, adult and immature birds were counted separately based on plumage, and breeding birds were distinguished from non-breeding birds based on behaviour;
- During the breeding season, where possible, the numbers of apparently occupied nests (AON) or apparently occupied breeding sites (AOS) were estimated.

The recording units of AON and AOS are the preferred units stated in seabird monitoring handbook (Walsh *et. al.* 1995), where for shag, kittiwake and herring gull, estimates of apparently occupied nests (AON) are suggested, whilst for fulmar apparently occupied breeding sites (AOS). For the other species especially razorbill and guillemot, the total count of individual birds was used to estimate use of each section of the survey area.

Attention was paid to cover all parts of each count section, which meant that some sections were observed from a few locations and totals derived by summing the counts. In such cases the limits of each partial section already counted was noted on the map by the observer to avoid double counts. Care was also taken to avoid disturbing breeding birds.

Information on disturbance such as the birds’ response to potential disturbance stimuli, such as passing walkers or vessels was noted, if seen during field visits. Information on meteorological conditions was recorded, in particular sea state (using the Douglas Sea State numeric scale), wind speed (using the Beaufort Wind Force numeric scale) and direction, and visibility. Section counts were generally done under dry conditions with good visibility. During the section counts sea state ranged from 1 to 4 and sea swell from 0.25 m to 1.5 m. Wind conditions ranged between Beaufort Force 1 to 5.

Vantage Point Watches

Two vantage points (VPs) were identified (Figure 1b) which allowed all parts of the coastal waters within 2km of the coast to be observed from at least one VP. The VPs were located (one at the north

of the site (VPN) and one at the south (VPS)) to minimise overlap and therefore the possibility of double counting.

VP watches aimed to quantify the numbers and distribution of seabirds on the sea out to 2 km from the coast. This was achieved by systematically and steadily scanning the area using a spotting scope fitted with an inclinometer. This allowed for detection of birds that may be temporally obscured from view by wave crests or when diving.

During each VP scan, individual birds or group of birds were identified, counted, their location (in a distance band on a compass bearing) recorded, and behaviour (e.g. foraging, loafing, preening, flying etc.) noted. Marine mammals were also recorded, and as for the colonial section counts information on meteorological conditions was recorded. Surveys were generally done under dry conditions with good visibility. During VP counts sea state ranged from 0 to 4 and sea swell from 0 to 1.5 m. Wind conditions ranged from Beaufort Force 1 to 5.

Common Bird Census

This survey was carried out along the proposed onshore cable corridor plus a 500m buffer, so the survey area comprised parts of the farmland behind the cliffs (Figure 2). A route was devised that ensured the surveyor approached all parts to within 200 m and visited habitat features such as trees and walls.

Four visits were made between April and July; with the aim of recording species as they arrived in the area and presence during subsequent visits. Birds' locations and behaviour were recorded on a map for each visit, and then data for species of conservation concern were analysed to produce a summary map for the season with nominal territory centres identified.

The location and activity of birds were mapped onto enlarged 1:25000 scale Ordnance Survey maps using standard codes (Marchant 1983). The position of each bird was mapped at the point of first detection and flight lines recorded. At the end of each visit, a summary map was compiled showing the locations of each identified territory or breeding pair. The following evidence was considered diagnostic of breeding:

- song, courtship or territorial display;
- territorial dispute;
- nest building and hole excavation;
- agitated behaviour by adult bird(s) indicative of the presence of a nearby nest or young (e.g. repetitive alarm calling, distraction display);
- adult(s) carrying food; presence of newly fledged young;
- adult(s) removing faecal sac.

Where a number of breeding individuals were present and it was not possible to determine the exact number of breeding pairs, a method was devised to allow the number of discrete territories to be estimated. Registrations of individual birds were deemed to represent discrete breeding territories / pairs if the distance between them was more than 250 m (200 m for small passerines). Whilst it is recognised that these distances are arbitrary and the territory size varies both inter- and intra-specifically, this approach produces a standardised index of abundance based on the distance that

members of a breeding pair are likely to move during the survey period. In cases where two individuals were considered to constitute a pair of birds, the location of the pair was placed centrally by convention.

Population estimates were derived by comparing the summary maps for the four survey visits. Again a method was devised whereby discrete territories could be estimated. Territories plotted during each visit were considered to be separate from one another if they were located more than 1000 m apart (500 m for snipe and skylark, 300 m for other small passerines). These distances were chosen to reflect the distances birds could plausibly move between survey dates. The locations of territories mapped in more than one survey period were plotted centrally.

Surveys were not undertaken in conditions considered likely to affect bird detection, for example, strong winds (greater than Beaufort Force 5), persistent precipitation, poor visibility (less than 300m) or in unusually hot or cold temperatures.

Two additional visits were made between October and November with the aim of recording migrating birds, principally geese and wader species.

Peregrine falcon

Surveys for breeding peregrine falcon were undertaken during the seabird colony counts. Surveyors were suitably licenced, and every effort was made to minimise disturbance. The location and sex of any peregrines seen was noted, together with information on likely nest sites.

Results

Colonial seabird count

For shag, kittiwake and herring gull, estimates of apparently occupied nests (AON) were utilised whilst for fulmar apparently occupied breeding sites (AOS) was recorded; therefore, these data are presented along with total counts. For other species, razorbill and guillemot, the total count of individual birds is used to estimate use of each section of the survey area.

Northern Fulmar

Adult birds were recorded in the survey area throughout most of the year, although fewer birds were present between August and November with none recorded in October (Table 1). A maximum of 292 AOSs was recorded in April 2016, corresponding with the largest count of individual breeding adults (450). The number of adults counted dropped in August, although juveniles were present on the cliffs (Table 1).

Between March and August 2016 fulmar were recorded present and nesting in 38 of the 47 sections. The maximum numbers recorded were in section 2P with 80 AOSs (103 birds) in April 2016 (Tables 2 & 3). This section always had the largest monthly counts for AOSs and individual birds (Table 2) and correspondingly the largest number of juveniles (Table 4). Around the proposed cable corridor: sections 2R, 2S, 2T, 2U and 2V had 21, 17, 6, 4 and 3 AOSs respectively, sections 2W, 2X, 2Y, 2Z and 3A had 0, 0, 0, 8 and 1 AOSs recorded in them (Table 2, Figure 3).

In the non-breeding season (September to February) fulmar were recorded in 33 sections, when birds were occupying/prospecting nest sites. The maximum numbers recorded were 153 birds at 95 potential nest sites recorded in section 2P in January 2017 (Tables 2 & 3). Close to the proposed

cable corridor, sections 2R, 2S, 2T, 2U, 2V and 2Z had maximums of 27, 12, 6, 7, 1 and 3 potential nest sites in use respectively, whilst no nest sites were noted as in use or being prospected in sections 2W, 2X, 2Y and 3A (Table 2, Figure 4).

European Shag

Adult shags were recorded on the survey area mainly between March and August. The number of breeding birds increased each month from March with a maximum numbers of 120 in June and 125 in July (Table 5). Thereafter, numbers dropped and in September only three adult birds were present, and no further birds were observed until one in January 2017. The number of AONs showed a similar pattern peaking in June (80 nests) and after September no birds were recorded at nest sites (Table 5).

Breeding birds were recorded in 30 sections and AONs were recorded in 26 of these (Tables 6 & 7). The maximum number of AONs recorded was 14 in section 3B in June and the maximum number of breeding adults was 20, recorded in section 3P in June (Tables 6 & 7). Close to the cable corridor, sections 2S and 2U had 3 AONs each whilst sections 2R, 2T, 2V, 2W, 2X, 2Y, 2Z and 3A had no nesting birds recorded (Table 6, Figure 5). Juvenile shags were recorded in June, July and August with the largest count in June (90) and the maximum section count (20) on 3B in June (Tables 5 & 8).

Razorbill

Adult razorbills were recorded on the survey area between March and August. The number of individual birds increased from March with a maximum of 1,148 in July. In August the majority of birds had left the cliffs returning to the sea with the juveniles and hence only two adults were recorded (Table 9).

Birds were recorded in 44 of the 47 sections, showing a fairly wide distribution amongst the sections, with 132 the maximum number recorded on section 2P in July (Table 10). Around the cable corridor sections 2R, 2S, 2T, 2T, 2U and 2V had maximum counts of 1, 24, 15, 40 and 49 respectively. Sections 2W, 2X, 2Y, 2Z and 3A had maximum counts of 19, 9, 5, 0 and 35 respectively (Table 10, Figure 6).

Razorbill were absent from the survey area in February 2016 and between September 2016 and January 2017 (Table 9& 10). Two adults were recorded close in on the sea in November (Table 9).

Common Murre
Adult birds were recorded in the survey area between March and August and again in December and January 2017 but not February 2016. The maximum number of individuals present during the breeding season was 6,219 in March. Between April and July numbers ranged between 4,541 and 5,264. In August only nine birds were recorded, as this species returns to the sea with their juveniles during July. No birds were recorded on the cliff sections until December (64) with a high number (3,091) present on the survey day in January 2017 (perhaps due to the weather conditions) (Table 11).

Between March and August breeding birds were recorded in 33 sections with 2,550 the maximum number recorded in section 2P. During the breeding months section 2P always had the highest individual monthly counts. Around the cable corridor, sections 2S, 2T 2U and 2V had maximum counts of 160, 35, 100 and 1,075 respectively. Sections 2R, 2W, 2X and 2Y had no breeding adults recorded on them and section 3A had a maximum of 12 breeding adults recorded (Table 12, Figure 7).

In December 2016 all 64 birds recorded in the survey area were in section 2P and in January 2017, of the 3,091 birds recorded, 1,804 (58%) were in section 2P (Table 12, Figure 8).

Black-legged kittiwake

Adult birds were recorded in the survey area between March and September (Table 13). The number of breeding adults increased from March (1,523 birds) with a maximum of 4,211 individuals recorded in July and a large number of adults still present in August (3,481). The data suggest that estimates of the seabird monitoring manual preferred unit of AONs were less easy to make accurately presumably due to the large numbers of birds present (Table 13). Therefore the counts of all individuals have been divided by two (as per the National Census Data Parameters) to provide an adjusted estimate of AONs for this species in the breeding season. This results in a maximum of adjusted AONs of 2179 in July.

Between March and August breeding birds were recorded in 43 sections (Tables 14 & 15). The maximum number of adjusted AONs (515) was recorded in section 2P in May (Table 14). Around the cable corridor sections 2R, 2S, 2T, 2U, and 2V maximum adjusted AON counts were 36, 15, 27, 71 and 13 respectively. For sections 2W, 2X, 2Y, 2Z and 3A the maximum number of adjusted AONs recorded were respectively 75, 108, 0, 0 and 19 (Table 14, Figure 9). A total of 1,687 juvenile birds were recorded in August (Table 13) with maximum counts of 287 in section 2P (Table 16).

During the non-breeding months three nest sites were in use in September but thereafter, up to January 2017, and also in February 2016, no birds were recorded on the survey area (Table 13).

European Herring gull

Adult herring gulls were recorded in the survey area throughout the year with most present between February and August (Table 17). Maximums of 232 and 230 AONs were estimated in March and June respectively with 546 and 562 breeding birds recorded in June and July respectively (Table 17).

During the breeding season individual birds were noted in 43 sections whilst AON were recorded in 40 sections. The maximum numbers of AONs (45) and breeding birds (93) were recorded in section 2P in June (Tables 18 & 19). Around the proposed cable corridor, sections 2R, 2S, 2T, 2U and 2V had maximums of 7, 7, 4, 17 and 33 AONs respectively and sections 2W, 2X, 2Y, 2Z and 3A had respectively maximums of AONs of 4, 0, 22, 4, 0 and 5 (Table 18, Figure 10). Juvenile birds were recorded in June, July and August with maximum numbers in June of 32 and 33 on sections 2P and 3B respectively (Table 20).

During the non-breeding months individual herring gulls were recorded in 23 sections. In thirteen of these sections, birds were recorded apparently occupying / prospecting nest sites during February (Table 18). Fewer birds were present between September 2016 and January 2017 (Table 17). The maximum numbers of individuals (43) and potential nest sites (29) were recorded in section 2P in February 2016 (Tables 18 & 19). Around the cable corridor section 2V had a maximum 21 birds, whilst in all the other sections 2R, 2S, 2T, 2U, 2W, 2X, 2Y, 2Z and 3A only four (2U, 2W, 2Y, 2Z) had any individuals noted during the non-breeding season surveys. (Table 18, Figure 11).

Other Breeding Species

Great cormorant: Birds were recorded in all months except November. A single breeding adult, five immature birds and 44 non-breeding adults, 22 of them in October, were recorded on the survey

area. A single adult was recorded in flight in March and January, and five adults were recorded on the sea close to shore during July and August (Table 21).

Atlantic puffin: Breeding adults were recorded on the survey area between April and July. The maximum number of definite nest burrows was 19, recorded in June. The numbers of breeding birds recorded increased each month, with a maximum count of 71 in July (Table 21). Apparently active nest burrows were recorded in 11 sections, with a maximum count of five in section 2P. Around the cable corridor, sections 2S and 2T had maximum counts of AONs of 3 and 1 respectively; no AONs were recorded on any of the other sections (2R, 2U, 2V, 2W, 2X, 2Y, 2Z and 3A). Breeding birds were recorded in 14 sections, with maximum counts on sections 3F and 3G of 18 & 17 respectively in July. Section 3C was the only section with breeding birds present in all four months when puffins were counted on the study site. Around the cable corridor, sections 2S and 2T had maximum counts of 3 and 1 breeding birds respectively.

Great black-backed gull: Small numbers of adults were recorded on the survey area throughout most of the year. A maximum of five nest sites were prospected in March, and three juveniles were recorded in August (Table 21).

Vantage Point Watches

A total of 13 seabird species were recorded from the two VPs. The main target species (fulmar, shag, razorbill, guillemot, kittiwake, and herring gull) were the most frequently recorded species, the remaining species included: cormorant, eider, red-throated loon (*Gavia stellata*) (“red-throated diver”), northern gannet (*Morus bassanus*), puffin, lesser black-backed gull and great black-backed gull (Table VP1). With the exception of red-throated diver, all other species were recorded from both VPs.

The most numerous species was guillemot, which were recorded from at least one vantage point in all 12 survey months. Overall, more birds were observed from the south VP than from the north VP, but this was influenced by the high number of birds (668) seen from the south VP in July. The largest combined monthly count was in July, and the lowest combined count was in August (Table VP1).

Kittiwake was the second most numerous species recorded on the sea from the VPs, and they were only recorded between March and September (although none were seen in May). More birds were observed from the south VP, and only in August was the count greater from the north VP. The largest count was in April (Table VP1)

Herring gull was the third most numerous species. Herring gulls were recorded during eight monthly counts, and consistently between April and July. The largest combined monthly total was in July (Table VP1).

Razorbill was the next most numerous species. Most razorbills were seen on the water between April and September, although none were recorded in August. Overall more razorbills were recorded from the south VP, although this was probably due to the large counts from this VP in July and September (Table VP1).

Fulmar was recorded from the VPs in all months, except October and November. The highest combined counts were in December and January. More birds were recorded from the north VP,

although the large counts in December and January contributed greatly to this difference (Table VP1).

Shag was less numerous than the other main target species but were recorded on the sea in all months except May. Overall more birds were recorded from the south VP, which had higher counts in eight of the eleven months when birds were seen.

The remaining species had few records: gannet was recorded by four of the monthly counts; puffin was recorded consistently from April to August and was absent from all other monthly counts; great black-backed gull was recorded in six of the monthly counts. Species' total annual counts were of less than ten individuals for: eider, red-throated diver, cormorant and lesser black-backed gull (Table VP1).

Common Bird Census

A total of four Northern lapwing (*Vanellus vanellus*) ("lapwing") and two common snipe (*Gallinago gallinago*) ("snipe") territories were recorded in the CBC survey area (Figure 12). Passerine species territories recorded included Eurasian skylark (*Alauda arvensis*) ("skylark"), song thrush (*Turdus philomelos*), dunnoek (*Prunella modularis*), common linnet (*Linaria cannabina*) ("linnet"), yellowhammer (*Emberiza citrinella*) and common reed bunting (*Emberiza schoeniclus*) ("reed bunting") (Table CBC1, Figure 13).

No geese or wading birds were recorded during the October visit in the CBC survey area, but in November a flock of 45 pink-footed geese (*Anser brachyrhynchus*) was observed in the far north of the area and a flock of 13 Eurasian curlew (*Numenius arquata*) ("curlew") was recorded feeding in the southern end with a second flock of 20 nearby.

Peregrine falcon

Adults were recorded at the breeding site in February (confidential location available on request, approximately 380 m to 480 m from the edge of the cable corridor). An adult sitting on 4 eggs was recorded in April. Three small chicks were recorded in May, three juveniles in June and 3 fledged juveniles in July.

Marine mammals

During section counts: grey seal (*Halichoerus grypus*) was recorded in every month, with 64 recorded in total, the largest number observed was 30 individuals that had hauled out along section 3M in January 2017; a single common seal (*Phoca vitulina*) was recorded in the water in section 3N in May and in section 3R in August; a single harbour porpoise (*Phocoena phocoena*) was recorded in February swimming about 100m offshore from section 3I (Table M1)

During the monthly VP surveys: grey seal was recorded in March, May July, December and January with a combined total of nine sightings and a single harbour porpoise was recorded in both the February and September watches (Table M1).

Selected other records made during colonial seabird counts

Eider: No birds were recorded breeding on the study area. Most adults were recorded on the sea including one female with seven ducklings recorded in July. Ten non-breeding adults were recorded in May and eight adults were recorded in flight in January 2017 (Table 21).

Manx shearwater (*Puffinus puffinus*): A single adult was seen in flight in May (Table 21).

Gannet: Three adults were seen in flight in March (Table 21).

*Eurasian Oystercatcher (*Haematopus ostralegus*)*: A single breeding adult was seen in May. Most records were of non-breeding adults (Table 22).

Curlew: Two non-breeding adults were seen in September and 28 in December (Table 22).

*Common redshank (*Tringa totanus*)*: Non-breeding adult birds were seen in October (one individual) and November (two individuals) (Table 22).

*Great skua (*Stercorarius skua*)*: A single adult was seen on the sea in August (Table 21).

*Black-headed gull (*Chroicocephalus ridibundus*)*: A single immature bird was recorded in July (Table 21).

Lesser black-backed gull: A single adult was recorded in July (Table 21).

*Northern Raven (*Corvus corax*)*: A nest was recorded in section 2H, a possible nest was recorded in 4C and an old nest was recorded in 2R (Table 22).

Disturbance Instances

Fishing boats were noted during most months. There was one occasion during July when a boat was seen to disturb birds from the surface of the sea within the watch area of the south VP.

No other instances of disturbance were noted whilst observers were on site during surveys.

Report Conclusions

A full twelve months of ornithological observations were completed within the survey area.

As expected during the breeding season SPA interest species were the most common species present on the cliffs.

The distribution of these species was not regular along the length of the cliff, with apparent clusters noted in a number of areas.

If possible the project should avoid completely these areas. However if this is not feasible due to other constraints the project should certainly avoid working in these areas and a buffer of 500m around them during the breeding season (March to August) to avoid disturbance of the protected breeding birds.

The number of breeding birds and apparently occupied nests for the SPA species which may be affected by any development will be relatively small when looked at with respect to the overall SPA population sizes.

The route of the cable corridor onshore away from the cliff nesting species is not utilised by many species, and only a few of conservation concern.

Disturbance of nesting birds is prohibited in law therefore if construction is to occur during this time mitigation will be necessary to avoid this.

References

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Glossary

Special Protection Area	(SPA)
Site of Special Scientific Interest	(SSSI)
Apparently Occupied Nest	(AON)
Apparently Occupied breeding Site	(AOS)
Vantage Point	(VP)
Common Bird Census	(CBC)
British Ornithologists' Union	(BOU)
Birds of Conservation Concern	(BOCC)
Wildlife & Countryside Act	(WCA)

List of Bird Species

BOU International name Order*	Latin name	Vernacular name	Conservation status
Pink-footed goose	<i>Anser brachyrhynchus</i>		EU Annex 2 Amber list BOCC**
Common eider	<i>Somateria mollissima</i>	eider	EU Annex 2 Amber list BOCC
Red-throated loon	<i>Gavia stellata</i>	red-throated diver	EU Annex 1 WCA Schedule 1
Northern fulmar	<i>Fulmarus glacialis</i>	fulmar	Buchan Ness to Collieston Coast SPA Amber list BOCC
Manx shearwater	<i>Puffinus puffinus</i>		Amber list BOCC
Northern gannet	<i>Morus bassanus</i>		Amber list BOCC
Great cormorant			
European shag	<i>Phalacrocorax aristotelis</i>	shag	Buchan Ness to Collieston Coast SPA Red list BOCC
Common buzzard	<i>Buteo buteo</i>	buzzard	
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>		EU Annex 2 Amber list BOCC
Northern lapwing	<i>Vanellus vanellus</i>	lapwing	EU Annex 2 Red list BOCC
Eurasian curlew	<i>Numenius arquata</i>	curlew	EU Annex 2 Red list BOCC
Common redshank	<i>Tringa totanus</i>		EU Annex 2 Amber list BOCC
Common snipe	<i>Gallinago gallinago</i>	snipe	EU Annex 2 Amber list BOCC
Great skua	<i>Stercorarius skua</i>		Amber list BOCC
Atlantic puffin	<i>Fratercula arctica</i>	puffin	Red list BOCC
Black guillemot	<i>Cephus grylle</i>		Amber list BOCC
Razorbill	<i>Alca torda</i>		Amber list BOCC
Common murre	<i>Uria aalge</i>	guillemot	Buchan Ness to Collieston Coast SPA

			Amber list BOCC
Black-legged kittiwake	<i>Rissa tridactyla</i>	kittiwake	Buchan Ness to Collieston Coast SPA Red list BOCC
Black-headed gull	<i>Chroicocephalus ridibundus</i>		EU Annex 2 Amber list BOCC
Lesser black-backed gull	<i>Larus fuscus</i>		EU Annex 2 Amber list BOCC
European herring gull	<i>Larus argentatus</i>	herring gull	Buchan Ness to Collieston Coast SPA EU Annex 2 Red list BOCC
Great black-backed gull	<i>Larus marinus</i>		EU Annex 2 Amber list BOCC
Common kestrel	<i>Falco tinnunculus</i>	kestrel	Amber list BOCC
Peregrine falcon	<i>Falco peregrinus</i>	peregrine	EU Annex 1 WCA Schedule 1
Northern Raven	<i>Corvus corax</i>	raven	EU Annex 2
Eurasian skylark	<i>Alauda arvensis</i>	skylark	Red list BOCC
Song thrush	<i>Turdus philomelos</i>		EU Annex 2 Red list BOCC
Dunnock	<i>Prunella modularis</i>		Amber list BOCC
Common linnet	<i>Linaria cannabina</i>	linnet	Red list BOCC
Yellowhammer	<i>Emberiza citrinella</i>		Red list BOCC
Common reed bunting	<i>Emberiza schoeniclus</i>	reed bunting	Amber list BOCC

*British Ornithologists Union

** Eaton et al (2015) Birds of Conservation Concern

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Note: For shag, kittiwake and herring gull estimates of apparently occupied nests (AON) were utilised whilst for fulmar apparently occupied breeding sites (AOS) was recorded. For other species, guillemot and razorbill, the total count of individual birds is used to estimate use of each section of the survey area.

In addition birds which were counted on sites which could not be defined as nest locations were differentiated into: Other = other perch location; on sea = bird seen sitting on sea (often loafing or preening). Flying birds close into the cliff face were also recorded.

Table 1. Fulmar monthly section count totals

Month	Apparently Occupied Sites (AOS)	Adult Breeding	Adult other	Adult on sea	Adult fly	Immature on land	Immature on sea	Immature fly	Juvenile
Feb	122	198	3		8				
Mar	234	352							
Apr	292	450		7	4				
May	212	268							
Jun	256	331			9				
Jul	130	275							
Aug	49	64							46
Sep	22	37			16	1			
Oct	0	0							
Nov	6	11							
Dec	144	221			33				
Jan	278	436			19				

Table 2. Fulmar AOSs between February 2016 and January 2017

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z	
Feb	6	6			2	3			3				3	2	1	42	9				2	1					3
Mar	8	3		1	2	15	1		11				3	18	2	53	8	13	12		4	2					3
Apr	16	8		4	6	17		5	7	3				14	11	80		21	17	6		3					6
May	9	4	1		9	8	2	3	4	2			4	8	11	50	2	10	9	4	1	2					4
Jun	9	9	5	4	3	14			2				4	23		57	12	16	10	5	2						5
Jul	13	4		3	7	10	1	6	4	1			5	11			5	13	6	5							8
Aug				3	1			3					2	5	1	18		2	5	2	1						1
Sep	2			1								1				10			1	2							
Oct																											
Nov	6																										
Dec	3	5				8			10				3	10		65		21	7								1
Jan	6	5		5	4	12	1		6				2	33	3	95		27	12	6	7	1					

	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C
Feb			5	4	1				1		1		3	2		7		3		8	4
Mar			6	2	4	1			2			15	2	3	5	3		1	2	20	9
Apr	1		9	9	4			2	1		1		8	2	6			5	1	13	6
May			2	1	1	1			2		2		12	1	10	8			3	10	12
Jun			5	4	4	3			2		2	6	6	2	11	2				16	13
Jul			4	4	5	3					4		6	2							
Aug											1					2				2	
Sep				1									1			1				2	
Oct																					
Nov																					
Dec				1		2									3	4				1	
Jan			3	4	3	5						5	10					16			7

Table 3. Count of adult fulmars in each section February 2016 and January 2017

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
Feb	8	9			3	5			4				4	4	2	70	15				3	2				4
Mar	13	4		1	3	23	2		17				4	28	3	85	12	22	18		6	4				4
Apr	28	13		8	10	29		7	10	5				22	24	103		35	24	10		5				10
May	9	5	1		13	8	3	3	5	4			5	10	18	59	4	11	14	5	2	2				7
Jun	11	10	7	5	4	18			3				4	30		73	22	22	14	6	2					6
Jul	17	5		3	10	11	1	7	6	1			6	17	2	60	7	16	6	7						10
Aug				4				1					2	8	2	30		2	5	2						2
Sep	4			1								2				16			2	5						
Oct																										
Nov	11																									
Dec	4	8				12			9				4	15		105		34	10							1
Jan	8	8		10	5	18	2		9				2	55	6	153		39	19	10	12	1				
	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C					
Feb			9	6	2				2		2		6	4		12		5		11	6					
Mar			7	3	7	1			3			20	4	5	7	6		1	4	23	12					
Apr	2		14	13	6			4	2		2		13	3	8			7	2	21	10					
May			2	1	1	1			3		3		13	1	12	12			4	12	15					
Jun			6	5	6	4			2		2	7	8	4	12	3				18	17					
Jul			5	5	6	5			2		4	1	9	3	11	5		1		13	13					
Aug											1					3					2					
Sep				2									2			1					2					
Oct																										
Nov																										
Dec				2		2									6	7					2					

Jul	2	11	9	5		3								5			15	11	3	1	11	
Aug		3				2								3			6			2	1	
Sep																	2			1		
Oct																						
Nov																						
Dec																						
Jan																						

Table 8. Count of Shag juveniles in each section

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
Jun	2	3						10						7		1			3		6					
Jul								12	2																	
Aug		5				1			1					2												
	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C					
Jun		20	11	4		6						3			4	5				5						
Jul																										
Aug						1									2				2							

Table 9. Razorbill monthly section count totals

Month	Adult Breeding	Adult other	Adult on sea	Adult fly	Immature on land	Immature on sea	Immature fly	Juvenile
Feb								
Mar	334		170					
Apr	649		237					
May	954	72	60					
Jun	1139	26	50					
Jul	1148	30	63					1
Aug	2							1
Sep								
Oct								
Nov			2					
Dec								
Jan								

Table 10. Count of adult razorbills in each section between February 2016 and January 2017

Month	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
-------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Table 12. Count of adult guillemots in each section between February 2016 and January 2017

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
Feb																										
Mar	80	60	30	60	35	140			100	20		20		400	36	1900			100		100	1075				
Apr	45	60	30		18	105			20	10		10		100	150	1350			40	2	70	725				
May	53	55		22	20	140			35	10		8		200	75	2000			110	31	60	950				
Jun	74	67	35	20	27	133			80	14	30	12		260	56	2550			110	17	60	950				
Jul	61	52	19	23	26	121			75	11		9		250	63	1710			160	35	64	960				
Aug																2			2							
Sep																										
Oct																										
Nov																										
Dec																64										
Jan		6				25								53	58	1804			88	38	10	520				
	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C					
Feb																										
Mar	12	400		20		300		290		20		30				50	1	90	150	700						
Apr	12	512		20		190	1	200		14			70			2		135	150	500						
May	10	342		23		225		240		30			40			25	3	60	100	400	4					
Jun		422		24		270	2	180		27		60	11			2	3	55	100	440						
Jul	11	471		17	3	231	2	108		26			60			5	6	135	100	450						
Aug		2				1		1													1					
Sep																										
Oct																										
Nov																										
Dec																										
Jan		230				17	12	60						20		25	5	120								

Table 13. Kittiwake monthly section count totals

Month	Apparently Occupied Nests (AON)	Adult Breeding	Adult other	Adjusted AON (Adult breeding + Adult other / 2)	Adult on sea	Adult fly	Immature on land	Immature on sea	Immature fly	Juvenile
Feb			2					1	5	
Mar	51	1523	44	783	120		9			
Apr	45	2397	6	1186	110			2		

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
Feb																										
Mar	86	61	20	60	78	27		4	50	50	3	60	3	80	89	350		15	40		4	35	6	44		
Apr	200	109	35	162	105	46		27	80	150		90	5	150	140	550		29	49	4	22	65	15	100		
May	174	80		110	175	50		25	105	150		85	3	270	180	1000		25	71	29	32	55	19	125		
Jun	200	129	137	82	120	20		10	78	133	10	89		260	160	870		30	60	30	34	131		150		
Jul	185	179	38	210	176	60		34	152	140		109	3	233	168	875		36	72	30	43	141	20	116		
Aug	216	206	50	149	169	54		29	149	125		101		180	139	675		29	66	13	53	115	14	108		
Sep																3										
Oct																										
Nov																										
Dec																										
Jan																										

	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C	
Feb																						
Mar	22	57	2	73	14	42	8	4	5			24						45	22	40		
Apr	18	35	7	100	7	91		1					2					1		2		
May	32	120	50	150	17	175	8	5	45	20	11		110		17			130	61	70		
Jun	26	24	80	188	46	200	56	17	47	20	11	48	117		9			120	73	156		
Jul	37	147	45	180	22	220	20	13	39	6	9		120		10			96	52	175		
Aug	14	118	34	110		147			29		6		93		8			91	48	143		
Sep																						
Oct																						
Nov																						
Dec																						
Jan																						

Table 16. Count of kittiwake juveniles in each section

	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J	2K	2L	2M	2N	2O	2P	2Q	2R	2S	2T	2U	2V	2W	2X	2Y	2Z
Jun																										
Jul																										
Aug	98	85	22	91	71	26		13	119	49	8	39		72	79	287		11	23	2	20	50	10	59		
	3A	3B	3C	3D	3E	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O	3P	3Q	3R	4A	4B	4C					
Jun						1																				
Jul																										
Aug	7	59	12	110	4	74		17	23				47					41	24	35						

Species	VP	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Total
Total					3	3								6
Herring gull	VPN			25	80	76					27	8		216
	VPS	1		2		129	80		131		115	1		459
Total		1		27	80	205	80		131		142	9		675
Great black-backed gull	VPN			2	4						1	2		9
	VPS					1			6		1	2		10
Total				2	4	1			6		2	4		19

Table M1. Marine mammals recorded during monthly section counts and vantage point watches

Species	Month	Section counts		VP watch	
		Hauled out	In sea	Hauled out	In sea
Common seal	May		1		
	Aug		1		
Grey seal	Feb		4		
	Mar		5		3
	Apr		2		
	May		3		1
	Jun		3		
	Jul	3	5		1
	Aug		3		
	Sep		2		
	Oct		2		
	Nov		1		
	Dec		1		3
	Jan	30			1
Porpoise	Feb		1		1
	Sep				1

Table CBC1. Territory centres of selected species recorded during the CBC surveys of the inland corridor route

Species	Territories	
	Confirmed	Probable
Lapwing	4	
Snipe	2	
Skylark	18	
Song thrush	3	

	Territories	
Species	Confirmed	Probable
Dunnock	7	
Linnet	4	1
Yellowhammer	8	
Reed bunting	3	



Key

-  SSSI
-  SPA

Date produced: 15/08/2017
Source: NRP LTD

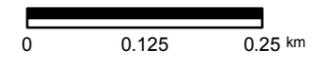


Figure no. 1
Bullers of Buchan Coast SSSI and Buchan Ness to Collieston Coast SPA

North Connect



Key

-  Cable corridor
-  500m buffer
-  Vantage point
-  Camera
-  Section count area

Date produced: 15/08/2017
Source: NRP LTD

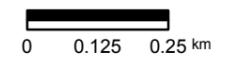
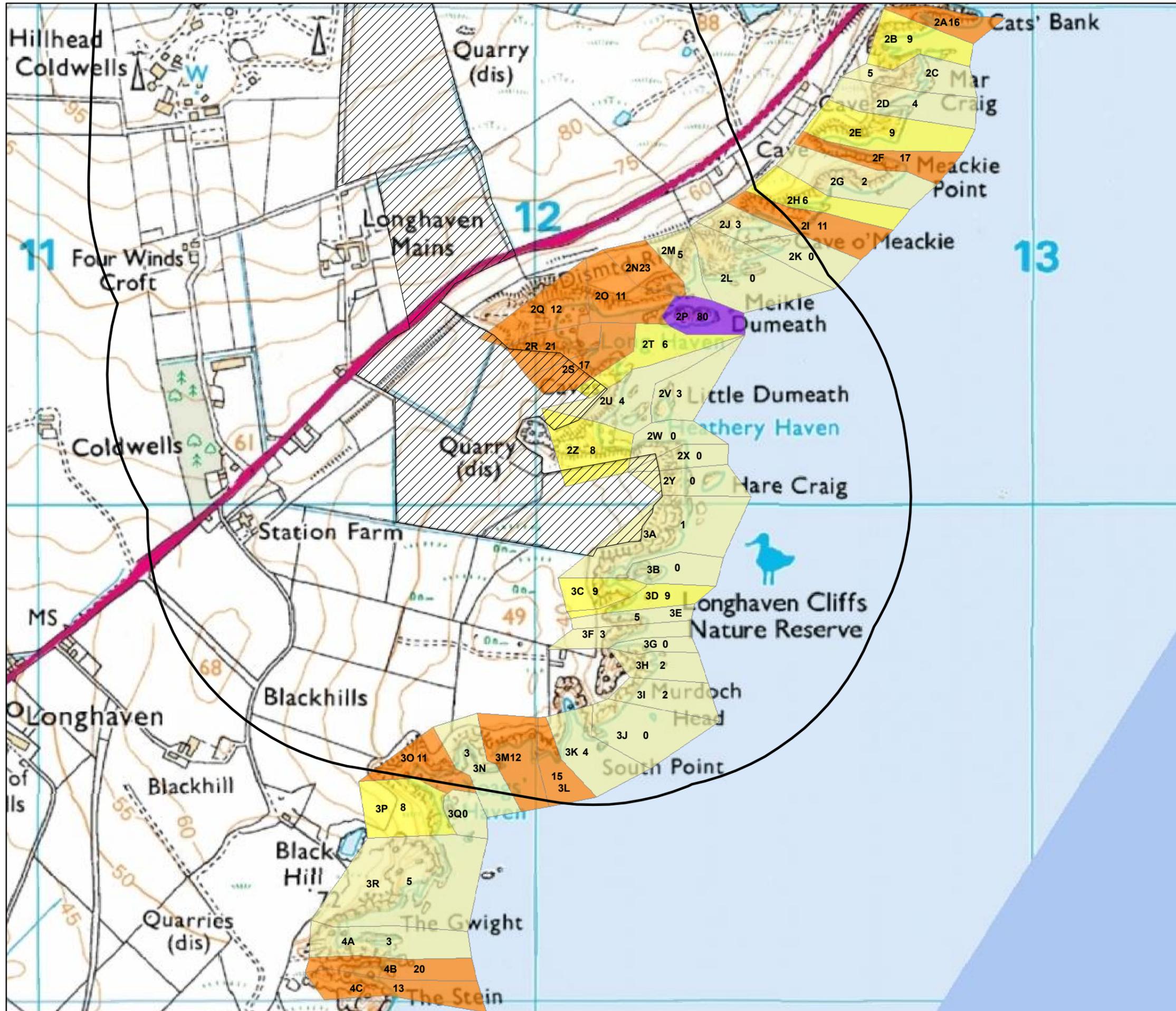


Figure no. 2
**Cable corridor and 500m buffer,
Vantage points, Camera locations
and Section count areas**

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 5

6 - 10

11 - 25

26 - 50

51 - 100

101 - 590

Numbers given in sections are Maximum counts of occupied nests over the breeding season

Date produced: 09/06/2017

Source: NRP LTD

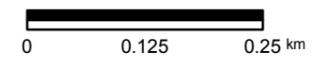
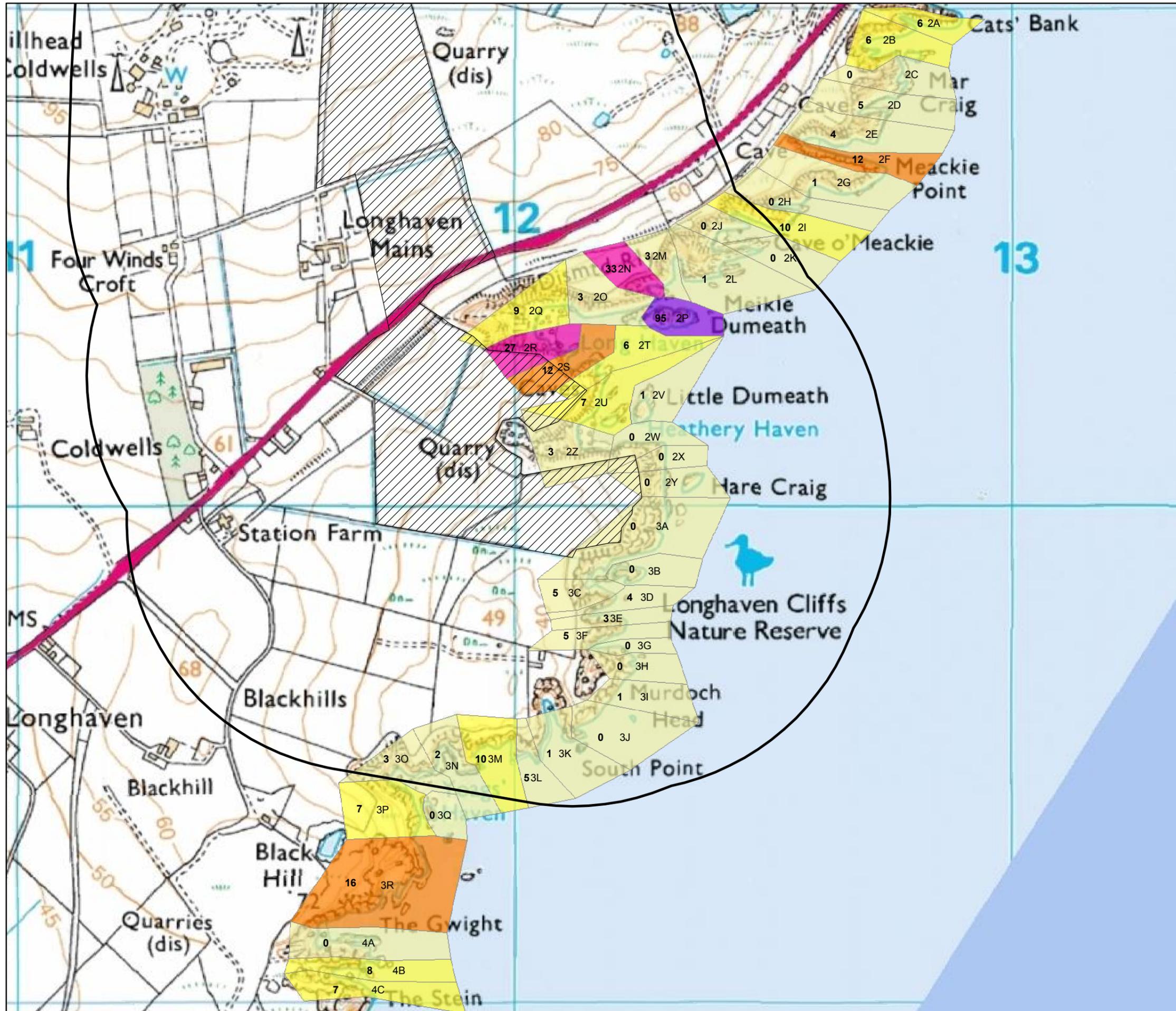


Figure no. 3

Fulmar, section maximum count of occupied nest sites Mar-Aug 2016

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 5

6 - 10

11 - 25

26 - 50

51 - 100

101 - 590

Numbers given in sections are Maximum counts of birds at nest sites over the non-breeding season

Date produced: 15/08/2017

Source: NRP LTD



0 0.125 0.25 km

Figure no. 4

Fulmar, section maximum count of birds at nest sites in non-breeding season

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 5

6 - 10

11 - 25

26 - 50

51 - 100

101 - 590

Numbers given in sections are Maximum counts of occupied nests over the breeding season

Date produced: 15/08/2017

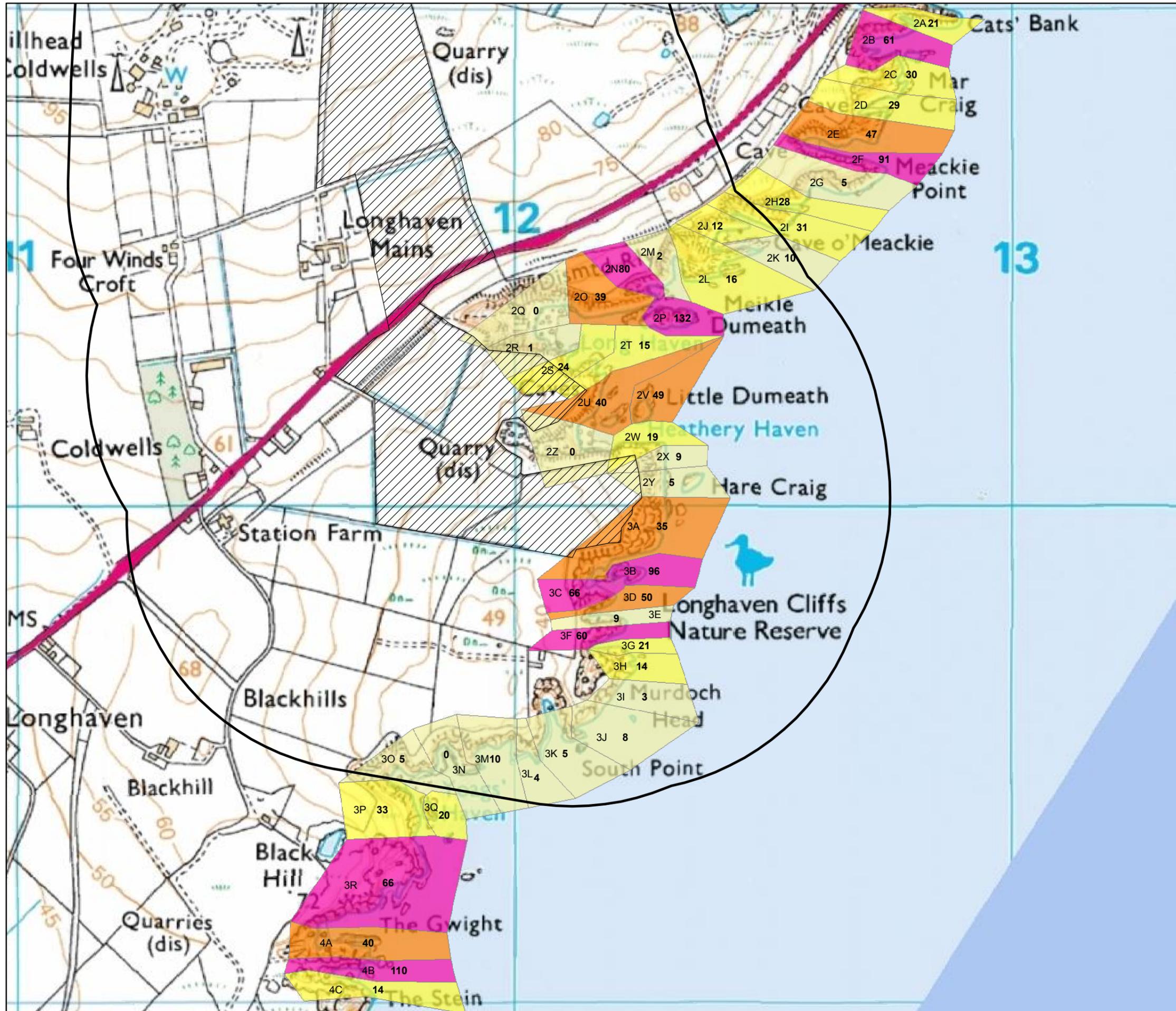
Source: NRP LTD



Figure no. 5

Shag, section maximum count of occupied nest sites Mar-Aug 2016

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 10

11 - 33

34 - 50

51 - 132

133 - 500

501 - 2550

Numbers given in sections are Maximum counts of breeding birds over the breeding season

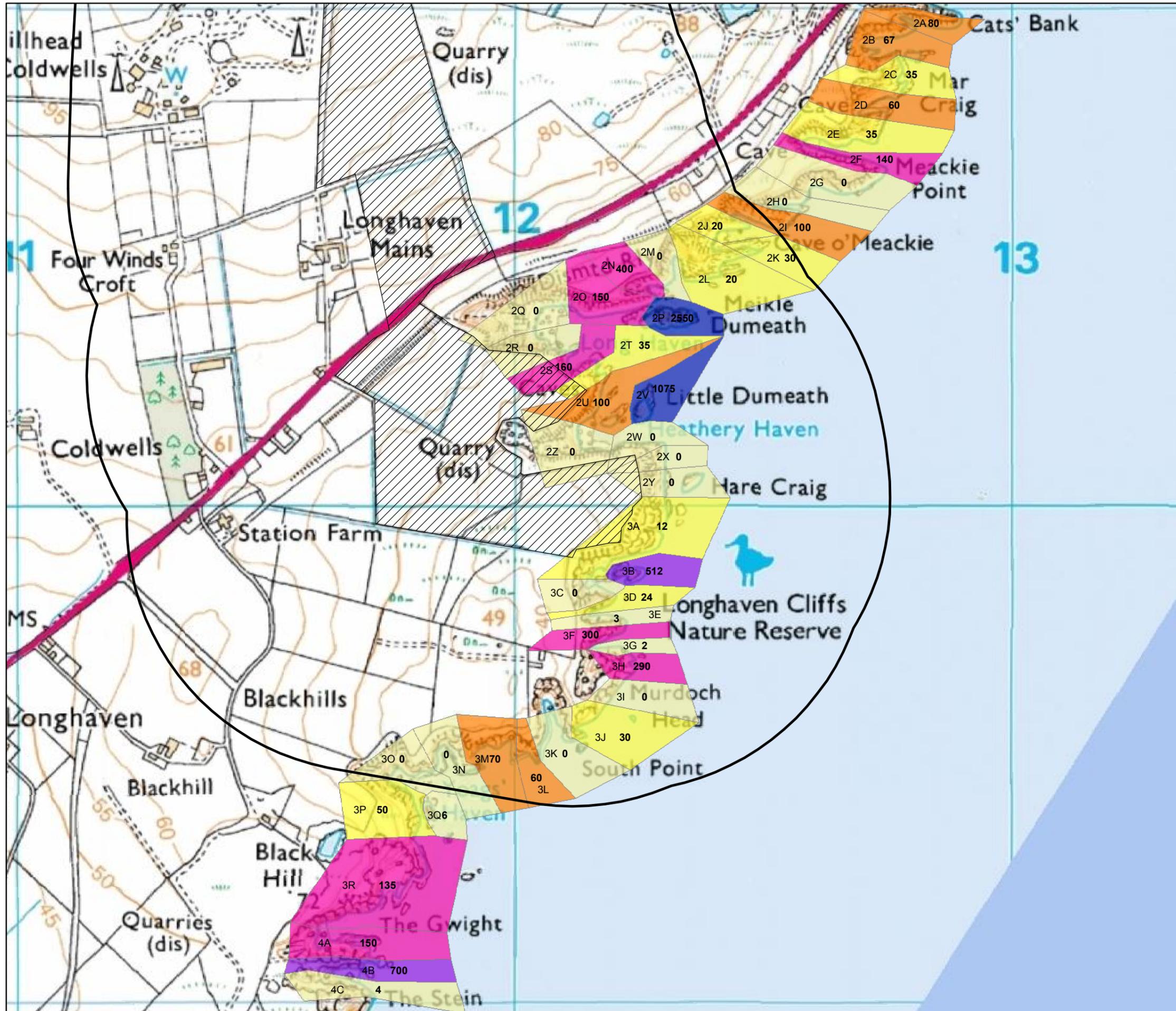
Date produced: 15/08/2017

Source: NRP LTD



Figure no. 6
Razorbill, section maximum count of breeding birds Mar-Aug 2016

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 10

11 - 50

51 - 100

101 - 500

501 - 1000

1001 - 2550

Numbers given in sections are Maximum counts of breeding birds over the breeding season

Date produced: 15/08/2017

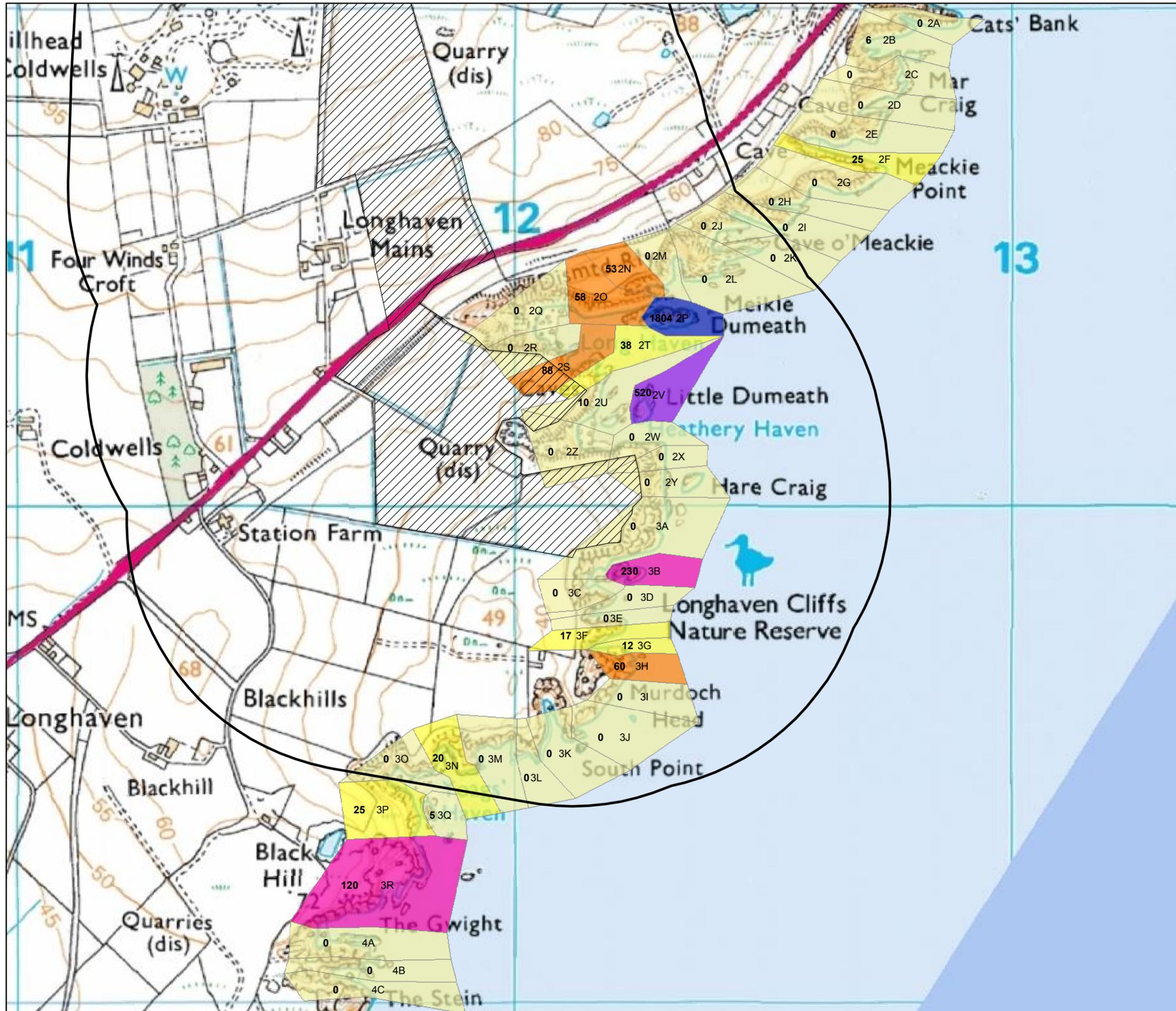
Source: NRP LTD



Figure no. 7

Guillemot, section maximum count of breeding birds Mar-Aug 2016

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 10

11 - 50

51 - 100

101 - 500

501 - 1000

1001 - 2550

Numbers given in sections are Maximum counts of birds over the non-breeding season

Date produced: 15/08/2017

Source: NRP LTD



Figure no. 8

Guillemot, section maximum count of birds at breeding site in non-breeding season

North Connect



Key

- Cable corridor
- 500m buffer
- Section count area

Max count

- 0 - 5
- 5.5 - 10
- 10.5 - 25
- 25.5 - 50
- 50.5 - 100
- 100.5 - 590

Numbers given in sections are Maximum counts of adults seen on land over the breeding season divided by two, as per National Census instructions.

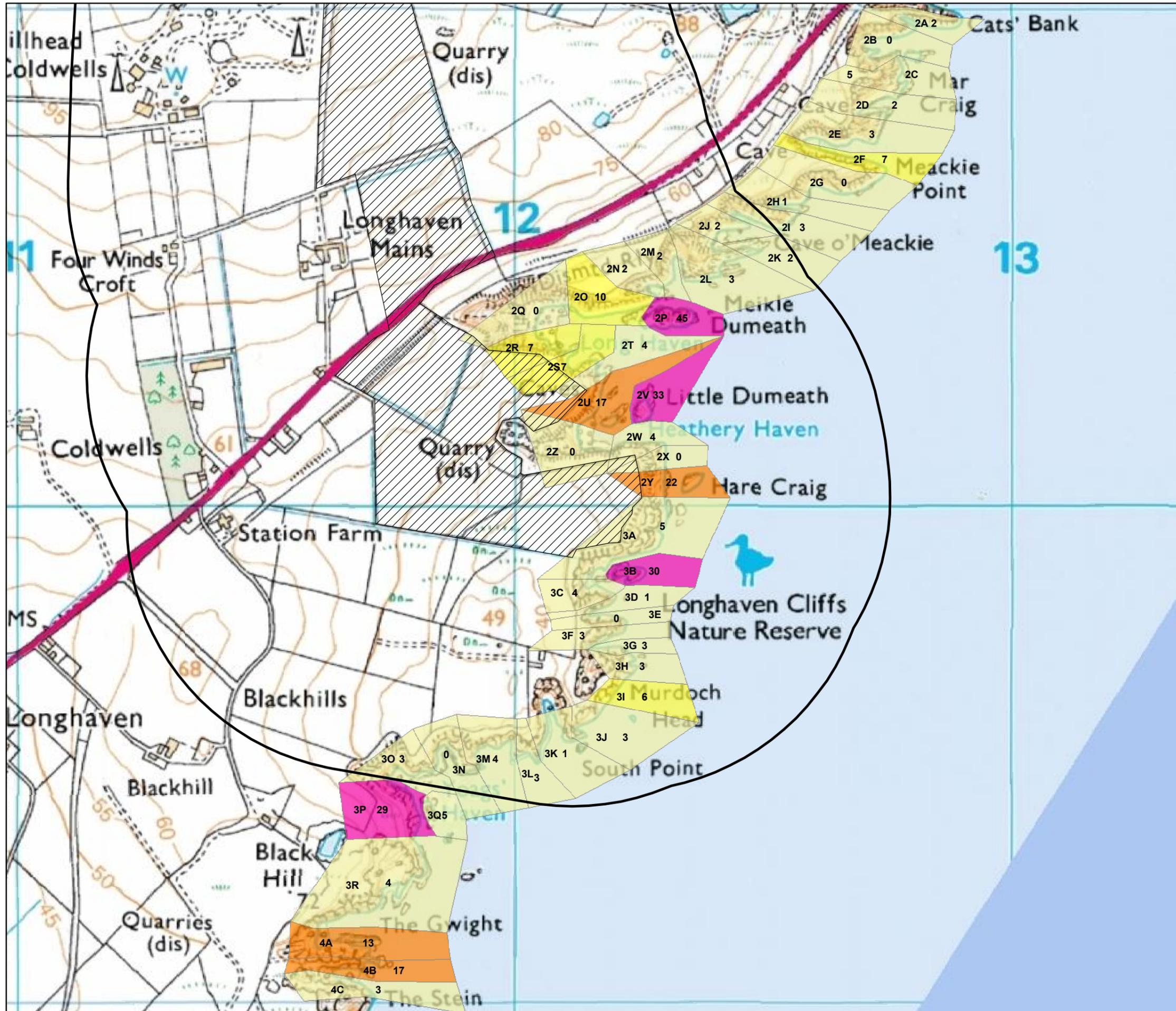
Date produced: 15/08/2017
Source: NRP LTD



Figure no. 9

Kittiwake, section adjusted maximum count of occupied nest sites Mar-Aug 2016

North Connect



Key

Cable corridor

500m buffer

Max count

0 - 5

6 - 10

11 - 25

26 - 50

51 - 100

101 - 590

Numbers given in sections are Maximum counts of occupied nests over the breeding season

Date produced: 15/08/2017

Source: NRP LTD

0 0.125 0.25 km



Figure no. 10
Herring gull, section maximum count of occupied nest sites Mar-Aug 2016

North Connect



Key

-  Cable corridor
-  500m buffer

Max count

-  0 - 5
-  6 - 10
-  11 - 25
-  26 - 50
-  51 - 100
-  101 - 590

Numbers given in sections are Maximum counts of birds at nest sites over the non-breeding season

Date produced: 15/08/2017
Source: NRP LTD



Figure no. 11
Herring gull, section maximum count of birds at nest sites in non-breeding season



Key

Species

- Lapwing
- Snipe
- Cable corridor
- Survey area

Date produced: 26/04/2017
Source: NRP LTD

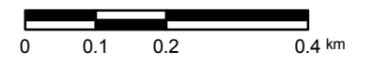
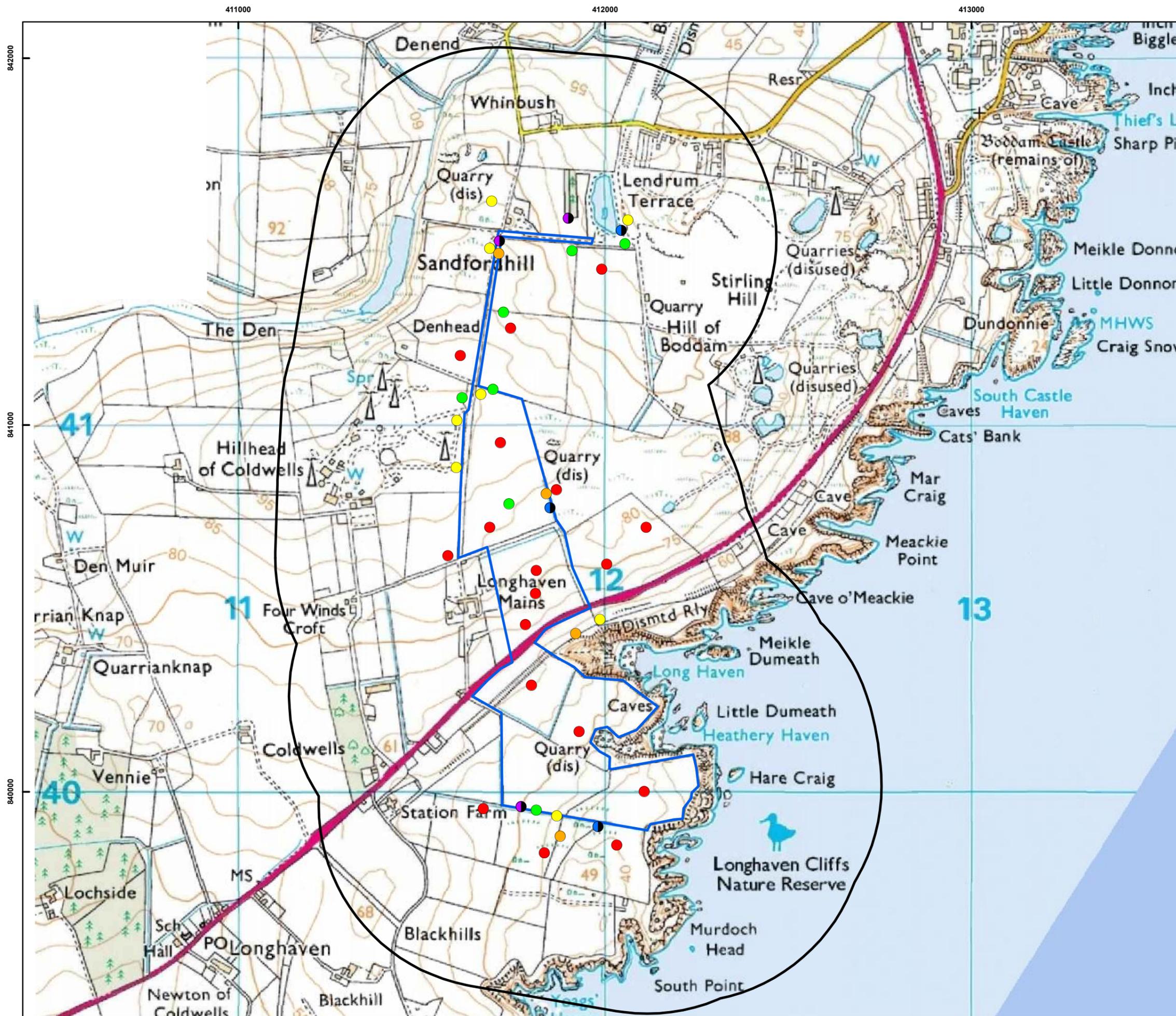


Figure no.12.
Wader territories recorded in common bird survey area

North Connect



Key

Species

- Dunnock
- Linnet
- Reed bunting
- Skylark
- Yellowhammer
- Song thrush
- Cable corridor
- Survey area

Date produced: 26/04/2017
Source: NRP LTD



Figure no.13.
Passerine territories recorded in common bird survey area

North Connect