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FIVE ESTUARIES  
OFFSHORE WIND FARM  
PRELIMINARY ENVIRONMENTAL  
INFORMATION REPORT

VOLUME 5, ANNEX 4.12: NORTH FALLS  
OFFSHORE WIND FARM ONSHORE  
CABLE ROUTE: NON-BREEDING BIRD  
SURVEYS 2021-22

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Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Jun-22	Final for PEIR	MacArthur Green	GoBe	VE OWFL

In general, field survey data used to inform the Five Estuaries Offshore Wind Farm PEIR were gathered specifically for the Project. However, in instances where the North Falls Offshore Wind Farm Project held pertinent survey data and reports, these have been provided to the Five Estuaries Offshore Wind Farm Project for use in the PEIR.

This annex is an example of information that has been provided by the North Falls Offshore Wind Farm Project for use by the Five Estuaries Offshore Wind Farm Project. It should be noted that all relevant technical information is included in the Five Estuaries Offshore Wind Farm Project PEIR, regardless of initial source.



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# North Falls Offshore Wind Farm

## Onshore Cable Route Non-breeding Bird Surveys 2021-22

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## CONTENTS

1	INTRODUCTION .....	1
2	METHODOLOGY .....	1
2.1	Determination of Target Species .....	1
2.2	Scope and Aims .....	2
2.3	Survey Methodology .....	3
3	RESULTS .....	5
3.1	Summary of Results .....	5
3.2	Geese .....	5
3.3	Lapwing .....	9
3.4	Golden Plover .....	9
3.5	Curlew .....	9
3.6	Other Waders .....	9
3.7	Ducks .....	10
3.8	Raptors and Owls .....	10
3.9	Corn Bunting .....	10
3.10	Other Species .....	10
4	DISCUSSION .....	10
ANNEX A.	SURVEY RESULTS .....	12

## 1 INTRODUCTION

A series of surveys (herein the ‘non-breeding season bird surveys’) were undertaken from October 2021 to March 2022 to determine the non-breeding bird assemblage present within the search areas for the onshore transmission infrastructure of the proposed North Falls Offshore Wind Farm (‘the project’) (**Figure 1**), and to identify at an early stage, potential sensitivities associated with construction phase of the project’s onshore cable routes and potential onshore substation locations (herein the ‘onshore project area’). The potential grid connections for the projects, yet to be finalised, may be up to 21km inland, towards the village of Ardleigh within the Tendring peninsula (**Figure 1**).

These surveys compliment the non-breeding season surveys undertaken in 2020-21 and 2021-22 within the cable landfall search area directly to the south, the results of which are reported on separately (MacArthur Green, 2021<sup>1</sup>; 2022<sup>2</sup>).

This report presents details of the survey methodology and results, which will be used to inform the layout and Environmental Impact Assessment (EIA) for the project.

## 2 METHODOLOGY

### 2.1 Determination of Target Species

The non-breeding season bird surveys were designed to cover functionally-linked land for ornithological qualifying features of surrounding designated sites, as well as habitats suitable for other identified target species, within an appropriate survey area (see section 2.2).

The following designated sites<sup>3</sup> with ornithological interests are within what is most likely to be potential connectivity range (c.10km) of the onshore project area:

- Holland Haven Marshes Site of Special Scientific Interest (SSSI) and Holland Haven Local Nature Reserve located within the cable landfall search area to the south of the onshore project area (**Figure 1**). This is an area of reclaimed saltmarsh and freshwater marsh which according to the Natural England SSSI citation<sup>4</sup>, hosts during winter, a range of wader and wildfowl species, including passage migrants, as well as wintering raptors such as hen harrier and short-eared owl.
- Hamford Water Special Protection Area (SPA) and associated Ramsar site and Site of Special Scientific Interest (SSSI) located c.500m northeast of the onshore project area. The SPA supports numbers of European importance of two species listed in Annex I to the EU Birds Directive (breeding little tern and wintering avocet) and seven regularly occurring migratory species of waterbirds (dark-bellied brent goose, shelduck, teal, ringed plover, grey plover, black-tailed godwit and redshank).

<sup>1</sup> MacArthur Green (2021). North Falls Offshore Wind Farm - Onshore Landfall Area : 2020/21 Non-breeding Bird Surveys.

<sup>2</sup> MacArthur Green (2022). North Falls Offshore Wind Farm - Onshore Landfall Area : 2021/22 Non-breeding Bird Surveys.

<sup>3</sup> <https://designatedsites.naturalengland.org.uk>

<sup>4</sup> <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1006349.pdf>

- Stour and Orwell Estuaries SPA with associated Stour and Orwell Estuaries Ramsar site and SSSI, and Cattawade Marshes SSSI, located 1.6km north of the onshore project area. The SPA supports breeding avocet in summer, and during winter supports dark-bellied brent goose, redshank, pintail, grey plover, knot, dunlin and black-tailed godwit, as well as a waterbird assemblage.
- Colne Estuary SPA and associated Ramsar site and SSSI, located c.5.5km southwest of the onshore project area. The SPA is designated for breeding pochard, ringed plover and little tern; and wintering dark-bellied brent goose, hen harrier and redshank as well as its wintering waterfowl assemblage.

The landscape where the onshore project area will be located is predominantly intensively managed agricultural land and based on cable landfall surveys undertaken since 2020, and locations of designated sites, the main impacts are considered most likely to be construction disturbance or displacement to wintering wildfowl and waders utilising the area for feeding or roosting. The target species most likely to be present within the onshore project area during the non-breeding season were therefore considered to be:

- Geese: particularly dark-bellied brent goose associated with designated sites in the wider area, and European white-fronted goose which was found in nationally important numbers during cable landfall surveys in 2020/2021; and
- Waders: particularly any that are qualifying features of nearby designated sites, but also those that are Red-listed Birds of Conservation Concern<sup>5</sup> that are known to utilise inland habitats in winter: primarily lapwing, curlew, and Annex I<sup>6</sup> listed golden plover.

Any other Annex I, Schedule 1 or rare Red-listed species were also considered as target species and recorded during surveys. A tally of all lower conservation value non-target species was also made on each survey, to allow the surveyor to focus on locating target species.

## 2.2 Scope and Aims

Natural England was consulted with on the scope and aims of the survey (27 September 2021), and comments were received (letter dated 8 October 2021). Natural England supported the approach, albeit it was noted that they did not have sight of the survey area at the time of commenting.

Following an initial site reconnaissance visit in September 2021, surveys were undertaken twice each month from October 2021 to March 2022, covering the main ornithology non-breeding season. Surveys were designed to record bird numbers, distribution and activity within the onshore project area and a buffer of up to 400m (the 'survey area') to account for the spatial extent of any potential disturbance impacts to birds utilising any habitats of importance just outside of the onshore project area. The surveys followed a similar methodology to that

<sup>5</sup> M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747.

<sup>6</sup> EU Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

undertaken by MacArthur Green at the cable landfall search area in 2020/2021<sup>7</sup>, previously discussed with Natural England.

The aims of surveys were:

- To record the distribution of target species and the locations of potentially important areas for roosting and feeding within the survey area;
- To establish peak numbers of birds likely to utilise particular areas; and
- To establish when, and how frequently, such locations are used.

The survey area was split into discrete labelled mapping areas (see **Figure 1** which shows those used from late November onwards) in order to avoid surveyor overlap as well as to aid determination of the distribution of non-target species within different parts of the survey area, with separate tally counts made in each mapping area.

During the early stages of the non-breeding season, refinements to the onshore project area meant that there were some differences from the survey area used from late November onwards, with changes made before the surveys in early November, and again before surveys in late November (mapping areas were therefore also slightly different as a result). These amendments were relatively minor in extent, but it is possible that some small parts of the final survey area were not covered during the early November visit. It is also possible that there may be slight over or underestimates of tally counts of non-target species in these visits due to differences in survey area. Again, these are likely to be minor.

### 2.3 Survey Methodology

Survey methodology was informed by the following sources:

- The British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) Core Count methodology for waterbirds<sup>8</sup> which follows Bibby *et al.* (2000<sup>9</sup>); and Gilbert *et al.* (1998<sup>10</sup>); and
- Scottish Natural Heritage (2017<sup>11</sup>) guidance on bird survey methods for onshore wind farms, which includes a section on surveying wintering and migratory wildfowl.

A reconnaissance visit was made in September 2021 to gather the following information, in addition to recording birds:

- Suitable survey routes, including land access, Public Right of Ways (PRoWs), parking locations and health & safety issues;
- Location of suitable vantage points to cover larger areas of land more efficiently and record movements of birds within the survey area and across the wider area; and

<sup>7</sup> MacArthur Green (2020). North Falls Offshore Wind Farm: Onshore Cable Route: Ornithology Survey Methodology, Winter 2020/21.

<sup>8</sup> [https://www.bto.org/sites/default/files/02\\_-\\_core\\_count\\_o.pdf](https://www.bto.org/sites/default/files/02_-_core_count_o.pdf)

<sup>9</sup> Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S. 2000. Bird Census Techniques. 2nd edition. Academic Press, London.

<sup>10</sup> Gilbert, G., Gibbons, D.W. & Evans, J. 1998. Bird Monitoring Methods. RSPB, Sandy.

<sup>11</sup> SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms.



- Land use and broad habitat types within the survey area.

Based on the results of the reconnaissance visit, as well as desk study information and local surveyor knowledge, surveys from October onwards focussed on areas of suitable habitat for target species, including:

- Any grassland habitat with short sward (e.g. <5cm), including golf course/amenity land;
- Any arable land comprising oilseed rape, winter cereals, maize stubble or bare till;
- Any coastal, wetland or marsh habitat; and
- Any waterbodies which may be used by geese, waders or ducks.

The visit also determined any areas, generally small in extent, that could be reasonably excluded from further surveys due to low suitability, e.g. settlements, woodland.

The “look-see” methodology advised for WeBS core counts was followed during all surveys, which determines that efforts should be made to ensure all suitable areas should be surveyed to within 500m. This means that counts can be made for example, from a suitable location outside of a field boundary, either along a footpath or from a public road. This method helps ensure that the risk of disturbance to birds is minimised, and also enables the surveyor to record birds just outside of the survey area, which may still be subject to disturbance.

Surveyors scanned the survey area from a combination of walkovers and vehicles, from suitable vantage points for a suitable duration until it could be confidently determined that all birds present have been recorded.

The following information was recorded during each survey for target species:

- Counts of each species (including non-target species);
- Location(s) of target species;
- Date and time of each count;
- Behaviour of birds (e.g. roosting, feeding);
- Directions of any movements within or outside of the survey area; and
- Accuracy of counts should estimates be required, e.g. by access restrictions, continuous movements of birds

In some cases when bird activity was high, tally counts of abundant non-target species such as woodpigeon or corvids were suspended to allow the surveyor to concentrate on recording target species. As such, these species may be under-recorded on some surveys.

For each survey, total counts per mapping area have been summed in order to give a total count within the whole survey area. Whilst this is likely to be a reasonable estimate of species populations at the time of survey, because each visit took place across four or five days, it is possible that some individuals were recorded in more than one mapping area, leading to overestimates of abundance. Nevertheless, the total counts are useful in providing comparisons of relative numbers through the non-breeding season.

## 3 RESULTS

### 3.1 Summary of Results

Overall, the survey area hosts a relatively wide range of wader, wildfowl and raptor species during the non-breeding season. A total of 111 species was recorded during the surveys, and a full species list and breakdown of peak tally counts per mapping area, and peak total survey count is presented in Annex A. Of these species, a total of 51 were considered to be target species. Table 3-1 below summarises the total counts per survey, and peak count for these target species.

Species diversity is reasonably consistent across the survey area, with a range of 76-96 species recorded within a particular mapping area during a survey (excluding areas H and I which were only surveyed in October under a previous survey area). Mapping area A (northwest around Little Bromley) and E (nearest to Hamford Water SPA) hosted the most species, at 95 and 96 respectively.

The only wildfowl or wader species that was present in sufficient numbers to exceed the BTO WeBS Report<sup>12</sup> threshold for national importance was green sandpiper, when counts of up to eight individuals within the survey area exceeded the Great British threshold (3 individuals) on four surveys. Notable numbers of some species were however recorded, and may be of importance at a regional level. These include a flock of 124 brent geese, reasonably high peak counts of golden plover, lapwing and curlew, and a healthy population of wintering corn bunting.

The sections below describe the temporal and spatial distribution, and abundance of the target species recorded during surveys.

### 3.2 Geese

Brent geese were largely absent from the survey area during the non-breeding season. Only one flock was recorded in November (124 individuals, including 17 juveniles), feeding in a field just south of Lawford, at the northern boundary of the survey area (**Figure 2**). No European white-fronted geese were recorded during surveys, despite some presence observed within the cable landfall search area to the south during the winter (see MacArthur Green, 2022).

Greylag geese, and non-native Canada and Egyptian geese were more commonly recorded. A peak count of 400 greylag geese was recorded in late October (max flock size of 381 individuals within mapping area F in the southwest) and the species was present throughout the non-breeding season. Up to 352 and 99 individuals of Canada goose and Egyptian goose respectively were recorded during any one survey.

The fields around Stacie's Farm within the northern part of the survey area appear to be relatively important for geese, and the waterbodies present in this area are likely to be used by birds. Away from this area the site usage is more sporadic with no real concentrations of activity, although the agricultural land near Hamford Water SPA may be more frequently used.

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<sup>12</sup> <https://app.bto.org/webs-reporting/numbers.jsp>

Table 3-1 Total Counts of Target Species per Survey within Survey Area.

Species	Sep*	Early Oct	Late Oct	Early Nov	Late Nov	Early Dec	Late Dec	Early Jan	Late Jan	Early Feb	Late Feb	Early Mar	Late Mar	Peak Count
Avocet					1									1
Barn Owl			1	2	1			1	1					2
Black-tailed Godwit (islandica)						1								1
Brent Goose (bernicla)				124										124
Canada Goose			3	352		32	49	5	6	10	4	2	8	352
Cetti's Warbler		1												1
Coot	1	98	24	8	14	10	26	27	15	32	25	16	22	98
Cormorant	1	16	41	4	9	25	13	7	6	9	16	9	2	41
Corn Bunting	1		12	74	37	83	86	59	51	43	15	22	43	86
Curlew			6	30	84	82	13	10	11	45	24	5	14	84
Egyptian Goose		2	61	77	53	93	99	26	92	17		2	10	99
Gadwall		8	2		8		44	19	3	25	20	9	2	44
Garganey													3	3
Golden Plover	4	1			39	30	48	484	87	5				484
Great Crested Grebe	1	6	4								1	2	1	6
Great Egret					1	1	1	1		1	1			1
Green Sandpiper				2	4	1	8	1	5	1	3	1	6	8
Grey Heron		2	5	4	4	4	2	3	2	3	3		2	5
Grey Partridge									3	5			7	7
Grey Plover					2				1	5				5

Species	Sep*	Early Oct	Late Oct	Early Nov	Late Nov	Early Dec	Late Dec	Early Jan	Late Jan	Early Feb	Late Feb	Early Mar	Late Mar	Peak Count
Greylag goose	95	220	400	10	10	12	62	16	280	25	6	29	12	400
Hen harrier						1								1
Kestrel	4	6	16	10	12	12	13	16	15	18	14	7	15	18
Kingfisher			1	3	1	1		1		1				3
Lapwing			17	6	282	155	1044	1628	102	212	11	12	10	1628
Little Egret		2	2	5	3	6	2	4	2	2	1	1	1	6
Little Grebe	1	2	8	2	4	3	4	3	6	8	4	7	7	8
Little Owl	1	1	1		2		2			2		1	4	4
Mallard	12	30	59	59	55	74	103	86	73	42	46	25	55	103
Mandarin Duck							1							1
Marsh Harrier	1	2	2	1		1				6	2			6
Merlin						2	1			1				2
Moorhen	1	1	10	8	13	10	23	18	17	28	12	16	19	28
Mute Swan		2	7	7	8		5	7	14	19	6	3	10	19
Oystercatcher									1			2	1	2
Peregrine Falcon		1	4	1	1	2	2	2	2	2			1	4
Pochard							3				2			3
Red Kite										5	1	1		5
Redshank		2		4	5	10	4		5	5	3	2	3	10
Ruff						1	3							3
Shelduck							17	2				15	7	17

Species	Sep*	Early Oct	Late Oct	Early Nov	Late Nov	Early Dec	Late Dec	Early Jan	Late Jan	Early Feb	Late Feb	Early Mar	Late Mar	Peak Count
Shoveler		4	6		2		24	3	8	11	3	4	4	24
Snipe					2	3	2	1	3		1			3
Spoonbill		1												1
Tawny Owl						1			1	-1	1		1	1
Teal	1	6	12	15	64	22	83	46	137	84	40	20	23	137
Tufted Duck		22	2	14	2		11	8	3	29	28	18	35	35
Water Rail						1								1
Wigeon	1	57	53				36	11			25			57
Woodcock				2		1		2	1	2		1	3	3
Woodlark			2											2

\* September survey was reconnaissance visit and so some species may be under-recorded.

### 3.3 Lapwing

Lapwings were present within the survey area from late October onwards, although there was a clear peak in numbers in midwinter, with total counts of over 1,000 individuals in late December and early January. The largest flocks, and highest frequency of observations, were recorded near Hamford Water SPA around Quay Farm, Beaumont Hall and Barker's Farm (**Figure 3**) with the largest flock of 1,250 individuals being an overspill from a flock of approximately 2,300 individuals in a field outside of the survey area to the north.

Other areas frequented by smaller numbers of lapwing were in the north just south of Lawford, and in the south near the cable landfall search area. Birds were recorded within winter wheat, stubble fields, and on two occasions roosting in ploughed fields in the north of the survey area. There were also a number of incidences where surveyors noted that lapwings were disturbed by walkers, a gas gun, and shooting.

### 3.4 Golden Plover

Like lapwing, golden plover numbers had a midwinter peak in early January, albeit in smaller numbers (survey peak of 484 individuals). The peak flock size recorded was 375 individuals which was combined with the aforementioned lapwing flock at Quay Farm near Hamford Water SPA (**Figure 3**), and was also an overspill, from a larger flock of 1,880 individuals, to the north of the survey area.

Golden plovers were generally found in similar areas to lapwing, close to Hamford Water SPA, or within the northern part of the survey area. Birds were recorded feeding in winter wheat and stubble fields, and in the north, roosting in stubble and grass fields.

### 3.5 Curlew

Curlew numbers were smaller than lapwing and golden plover, and present from late October onwards, with a peak of 84 and 82 individuals within the survey area in late November and early December respectively. Birds were most commonly recorded feeding in stubble fields relatively near Hamford Water SPA in the centre of the survey area, and towards the cable landfall search area in the south, but were notably absent in the north of the survey area (**Figure 3**).

### 3.6 Other Waders

Records of other wader species were mainly made in the area around Beaumont Quay, adjacent to Hamford Water SPA to the east of the central part of the survey area (**Figure 4**). These birds, which are likely to form part of the assemblage of the SPA, included relatively small numbers of a variety of species such as redshank, green sandpiper, avocet, black-tailed godwit, ruff and snipe.

There was also a small concentration of waders found in the north, particularly around Stacie's Farm, including regular records of up to three green sandpipers (meeting the BTO WeBS threshold for national importance) feeding around the edges of a waterbodies. Observations of two and four green sandpipers were also made by reservoirs to the northeast of Thorpe-le-Soken.

### 3.7 Ducks

The main concentrations of duck species were found in similar locations to waders, namely at the edge of Hamford Water SPA and on waterbodies around Stacie's Farm in the north, but they were also associated with waterbodies throughout the rest of the survey area, including those northeast of Thorpe-le-Soken, near Tendring, and on Holland Brook in the south (**Figure 5**).

Species found in largest numbers were mallard, teal and wigeon, although the latter was recorded only sporadically through the winter. Other species recorded included shelduck, close to Hamford Water SPA, shoveler mainly in the north, and gadwall across the survey area.

### 3.8 Raptors and Owls

Raptor and owl species were frequently recorded during surveys, mainly flying over or hunting within the survey area (**Figure 6**). Marsh harrier and peregrine falcon were regularly recorded, with up to six and four observations respectively within the survey area during one survey. Barn owls and little owls were recorded near farms in the northern half of the survey area, and both species are likely to breed there. Other species such as merlin and hen harrier were infrequently recorded.

### 3.9 Corn Bunting

Red-listed corn bunting was regularly recorded, in flocks of up to 41 individuals throughout the winter period, with a peak single survey count of 86 individuals across the survey area in late December. Birds were recorded feeding in ploughed, weedy or stubble fields and maize strips. Flocks were recorded mainly in two parts of the survey area: in the north around Little Bromley and New Hall, and in the south near Great Holland (**Figure 6**). The species is likely to breed within the survey area.

### 3.10 Other Species

Other notable species include a number of grey partridge records in the northwest corner of the survey area (up to seven individuals), woodlark near Thorpe-le-Soken, and kingfishers associated with waterbodies throughout the survey area. It is possible that these species breed within the survey area.

## 4 DISCUSSION

Although a wide range of target species were recorded across the survey area, it is evident that there are particular parts that are of relatively greater importance for most species. These are (i) the central part of the survey area in closest proximity to Hamford Water SPA; and (ii) the northern part of the survey area around Little Bromley where the grid connection and onshore substation would be located.

Waders and geese that may feed and roost within the central part of the survey area are likely to be part of the Hamford Water SPA assemblage, and so although not recorded in nationally important numbers (except for green sandpiper), may form an important part of the SPA population. It will therefore be important to seek to carefully consider the location of onshore cable route and construction programme in this area to avoid or minimise impacts on these species.

In the north of the survey area, the key location for wildfowl and waders is the fields and waterbodies around Stacie's farm which is used for feeding and roosting, including nationally important (albeit still small) numbers of green sandpiper. This area is likely to be used by geese and waders that form part of the assemblage of Stour and Orwell Estuaries SPA to the north, and possibly Hamford Water SPA. In addition, it is possible that Red-listed species such as corn bunting and grey partridge, and Schedule 1 barn owl may breed in this area, and so careful consideration will be required for the placement of the onshore cable route and onshore substation, as well as potential mitigation measures, to minimise potential effects.



## ANNEX A. SURVEY RESULTS

**Table 4-1 Non-breeding season survey results showing peak counts per species per mapping area, and per survey.**

\* Mapping areas H and I were only surveyed in October 2021 under a previous survey area.

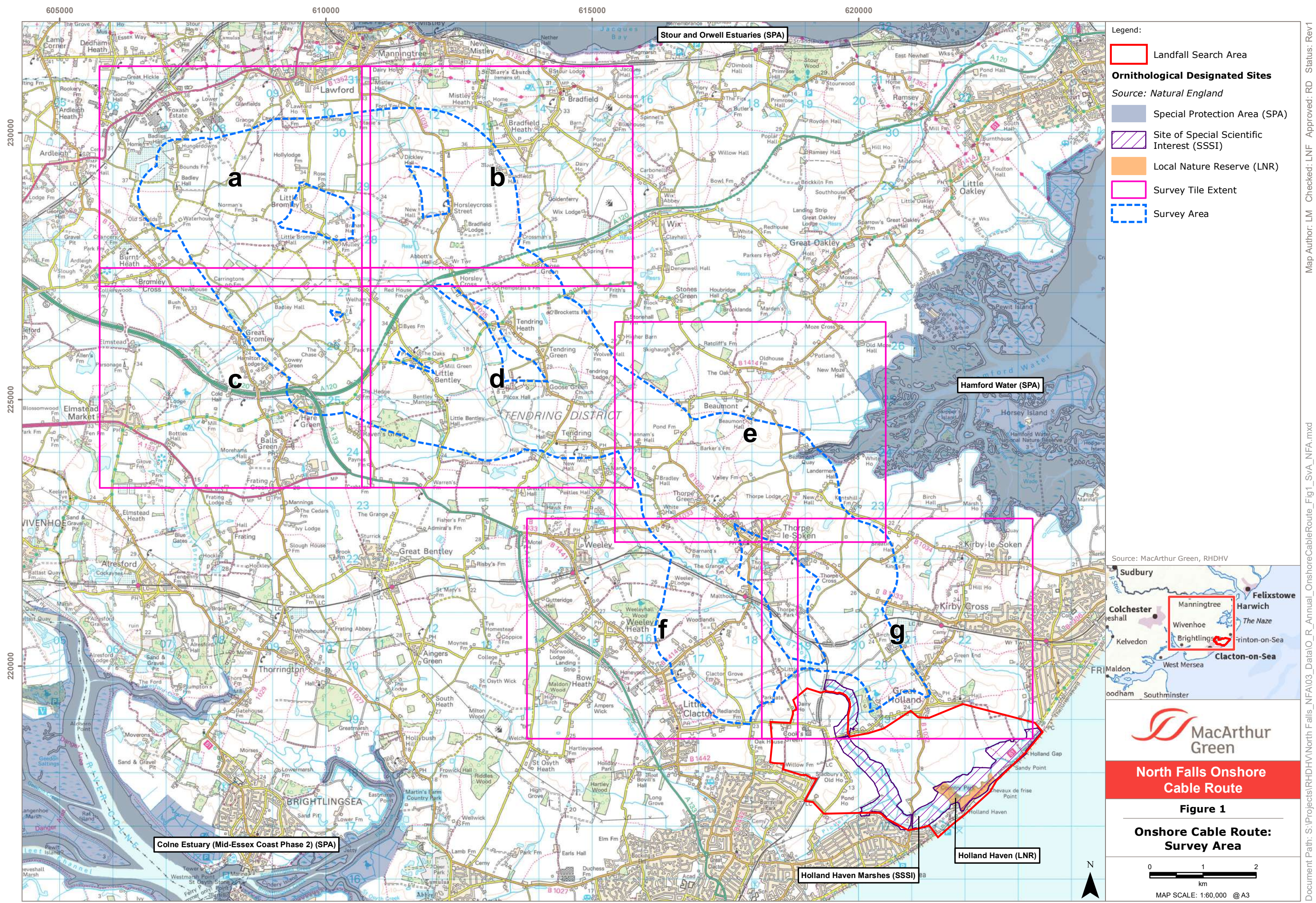
Species	A	B	C	D	E	F	G	H*	I*	Peak Survey Count
Avocet					1					1
Barn Owl	1		1	1	1					2
Black Redstart	1									1
Blackbird	45	30	40	45	70	67	30	5	6	195
Blackcap	1			3						4
Black-headed Gull	1200	1200	350	295	280	575	725	180	350	2695
Black-tailed Godwit (islandica)					1					1
Blue Tit	30	45	45	58	45	21	42	8	15	203
Brambling	26	2		1	3	1	2		2	28
Brent Goose (bernicla)	124									124
Bullfinch	1	2	2	6	9	1	1			12
Buzzard	12	6	10	22	18	9	11	1	3	58
Canada Goose	39	350		4	8	3				352
Carrion Crow	125	115	70	125	80	45	49	55	22	435
Cetti's Warbler							1			1
Chaffinch	70	25	55	60	125	24	33	5	12	254
Chiffchaff	12	3	4	35	9	4	3		2	63
Coal Tit	2	2	3	12	10					27
Collared Dove	4	6	6	5	6	8	5		2	22
Common Gull	320	350	180	230	130	39	42	2	5	900
Coot	8	2		2	28	98	14			98

Species	A	B	C	D	E	F	G	H*	I*	Peak Survey Count
Cormorant	18	3	4	6	3	17	9		24	41
Corn Bunting	79	30	6	2	4	22	35			86
Corvid sp.	100	100	100	100	100		200	100	100	700
Curlew		1		31	51	14	84		6	84
Dunnock	22	12	30	32	38	10	14	3	6	113
Egyptian Goose	95	72		5	2	16	2			99
Feral Pigeon	280	125	75	3	25	5	35		5	297
Fieldfare	325	55	40	430	85	19	125			895
Gadwall	1			14	44	8	2			44
Garganey	3									3
Goldcrest	3		1	5	3	22	5		2	24
Golden Plover	109	56	4	34	375	30	1			484
Goldfinch	45	28	48	50	45	40	42	5	15	186
Great Black-backed Gull	1	2		1	3	1	8	1	1	9
Great Crested Grebe				3	2	6	1			6
Great Egret				1						1
Great Spotted woodpecker	4	4	3	6	4	2	5		1	13
Great Tit	30	19	35	42	40	20	23	2	5	135
Green Sandpiper	4	4	1		7		1			8
Green woodpecker	5	4	6	6	9	2	6	2	3	31
Greenfinch	7	4	6	5	5	5	34	2		35
Grey Heron	1	2	1	2	2	4	2		1	5
Grey Partridge	7		1							7
Grey Plover		5			2					5

Species	A	B	C	D	E	F	G	H*	I*	Peak Survey Count
Grey Wagtail	1		1	1	1		1			2
Greylag goose	110	7	6	187	23	381	6		19	400
Hen harrier						1				1
Herring Gull	47	28	35	45	60	49	60	3	5	208
House Martin	2	1	40							40
House Sparrow	24	8	15	12	8	30	57		3	57
Jackdaw	90	100	35	100	125	213	190	45	155	585
Jay	12	3	6	3	8	6	20	6	12	38
Kestrel	6	3	6	6	5	8	5	2	1	18
Kingfisher	2			1	1	1				3
Lapwing	313	78	2	2	1315	230	73			1628
Lesser Black-backed Gull	25	15	25	25	25	6	9		1	108
Lesser Redpoll	1			3	1					3
Linnet	170	65	260	125	255	18	50	5	16	585
Little Egret	3	2		1	6	3	2			6
Little Grebe	1			2	7	5	7			8
Little Owl	1			1	3		1			4
Long-tailed Tit	25	15	12	25	30	20	30		6	120
Magpie	20	7	15	15	20	17	21	8	5	52
Mallard	59	46	7	48	32	43	12	12	25	103
Mandarin Duck						1				1
Marsh Harrier	1	1		5	1	1	2			6
Meadow Pipit	35	43	40	60	35	317	44	3	3	319
Mediterranean Gull	4	2	1	4	3	12				14

Species	A	B	C	D	E	F	G	H*	I*	Peak Survey Count
Merlin	1	1			1					2
Mistle Thrush	4	5	4	14	7	9	6		1	16
Moorhen	10	3	2	13	6	2	8	3	6	28
Mute Swan	7	12	3	6	3	7	2			19
Oystercatcher			1		1					2
Peregrine Falcon	1	1	1	1	1	1	2			4
Pheasant	18	130	50	65	10	40	60	30	20	285
Pied Wagtail (yarrellii)	32	7	22	31	25	35	50	6	4	102
Pochard	3				2					3
Raven	4	2	1	2						4
Red Kite	1			5		1				5
Red-legged Partridge	16	25	30	45	40	102	58	5	30	134
Redshank	1				10	4	2			10
Redwing	225	13	5	40	140	130	250	75	80	303
Reed Bunting	2			5	11					14
Robin	32	45	20	40	50	18	18	10	7	167
Rock Pipit					8		1			8
Rook	325	245	220	305	220	250	280	60	125	1270
Ruff					3					3
Shelduck					17	2				17
Shoveler	24	3			2	6	4			24
Siskin	4	2	5	54	8	22	11	4		60
Skylark	190	540	125	220	120	35	130	27	20	890
Snipe	1	2		1	2	1	1			3

Species	A	B	C	D	E	F	G	H*	I*	Peak Survey Count
Song Thrush	10	3	3	5	17	5	3	12	6	20
Sparrowhawk	3	1	1	2	2	1	1	1	1	6
Spoonbill							1			1
Starling	450	330	800	200	300	325	140	40	65	1133
Stock Dove	250	130	80	125	450	40	250	25	8	795
Stonechat	1									1
Swallow	2		40							42
Tawny Owl				1	1					1
Teal	79	12		14	65	15	11			137
Treecreeper	2	1	1	5	3		1	1		7
Tufted Duck	5	2			29	22	2			35
Water Rail					1					1
Wheatear					2					2
Wigeon	5				25	57				57
Woodcock	2	1	1	2	1					3
Woodlark	1						1			2
Woodpigeon	3000	6000	1000	2000	2200	1764	370	225	300	9100
Wren	45	20	30	45	70	8	12	2	4	150
Yellowhammer	12	13	12	16	17	7	3			49
<b>Number of Species</b>	<b>95</b>	<b>76</b>	<b>68</b>	<b>84</b>	<b>96</b>	<b>78</b>	<b>79</b>	<b>38</b>	<b>49</b>	<b>112 (inc. 'corvid sp')</b>



- Legend:
- Landfall Search Area
  - Ornithological Designated Sites**
  - Source: Natural England
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Local Nature Reserve (LNR)
  - Survey Tile Extent
  - Survey Area



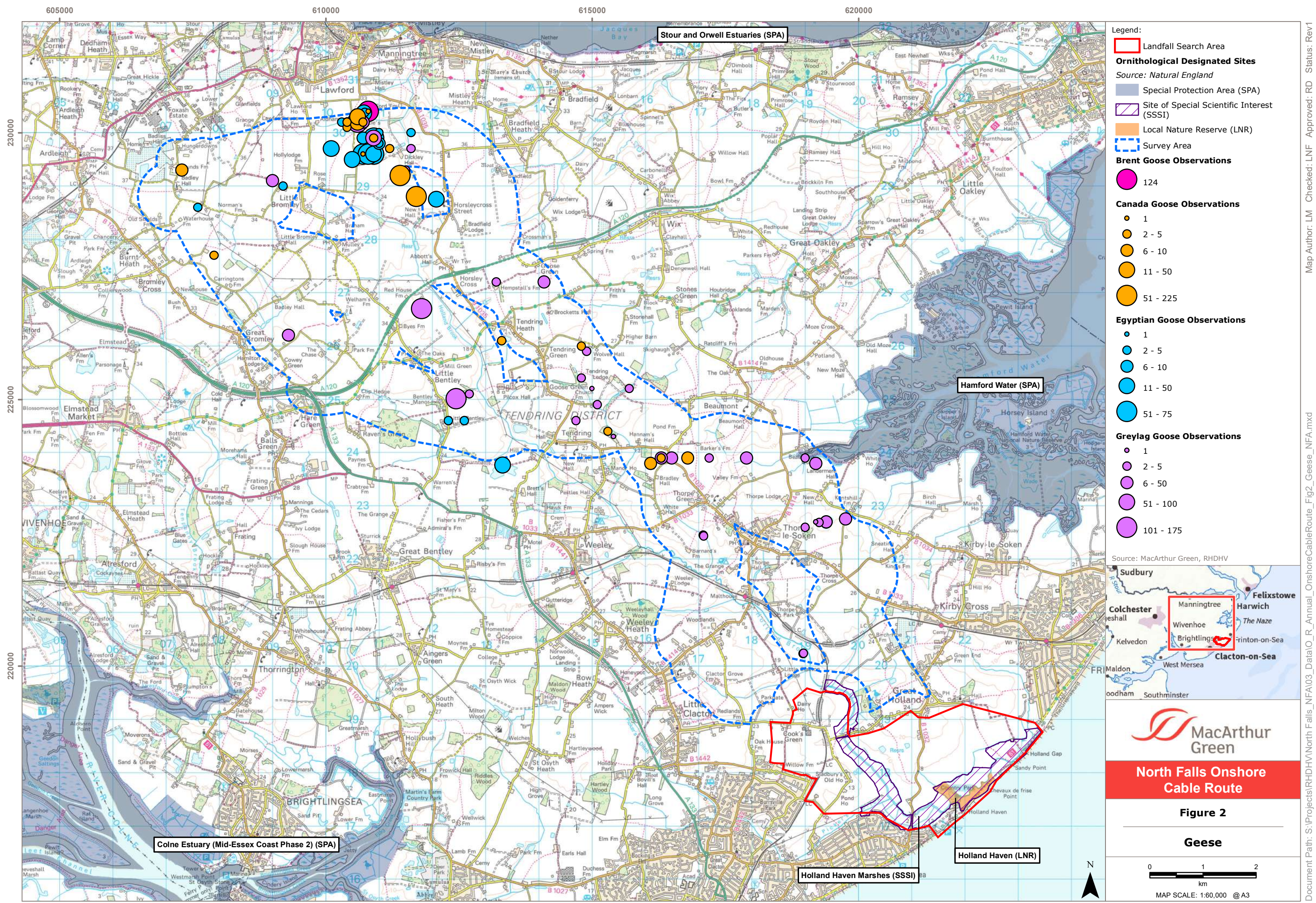
**MacArthur Green**

**North Falls Onshore Cable Route**

**Figure 1**

**Onshore Cable Route: Survey Area**

0 1 2  
km  
MAP SCALE: 1:60,000 @A3



- Legend:**
- Landfall Search Area
  - Ornithological Designated Sites**  
*Source: Natural England*
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Local Nature Reserve (LNR)
  - Survey Area
  - Brent Goose Observations**
  - 124
  - Canada Goose Observations**
  - 1
  - 2 - 5
  - 6 - 10
  - 11 - 50
  - 51 - 225
  - Egyptian Goose Observations**
  - 1
  - 2 - 5
  - 6 - 10
  - 11 - 50
  - 51 - 75
  - Greylag Goose Observations**
  - 1
  - 2 - 5
  - 6 - 50
  - 51 - 100
  - 101 - 175



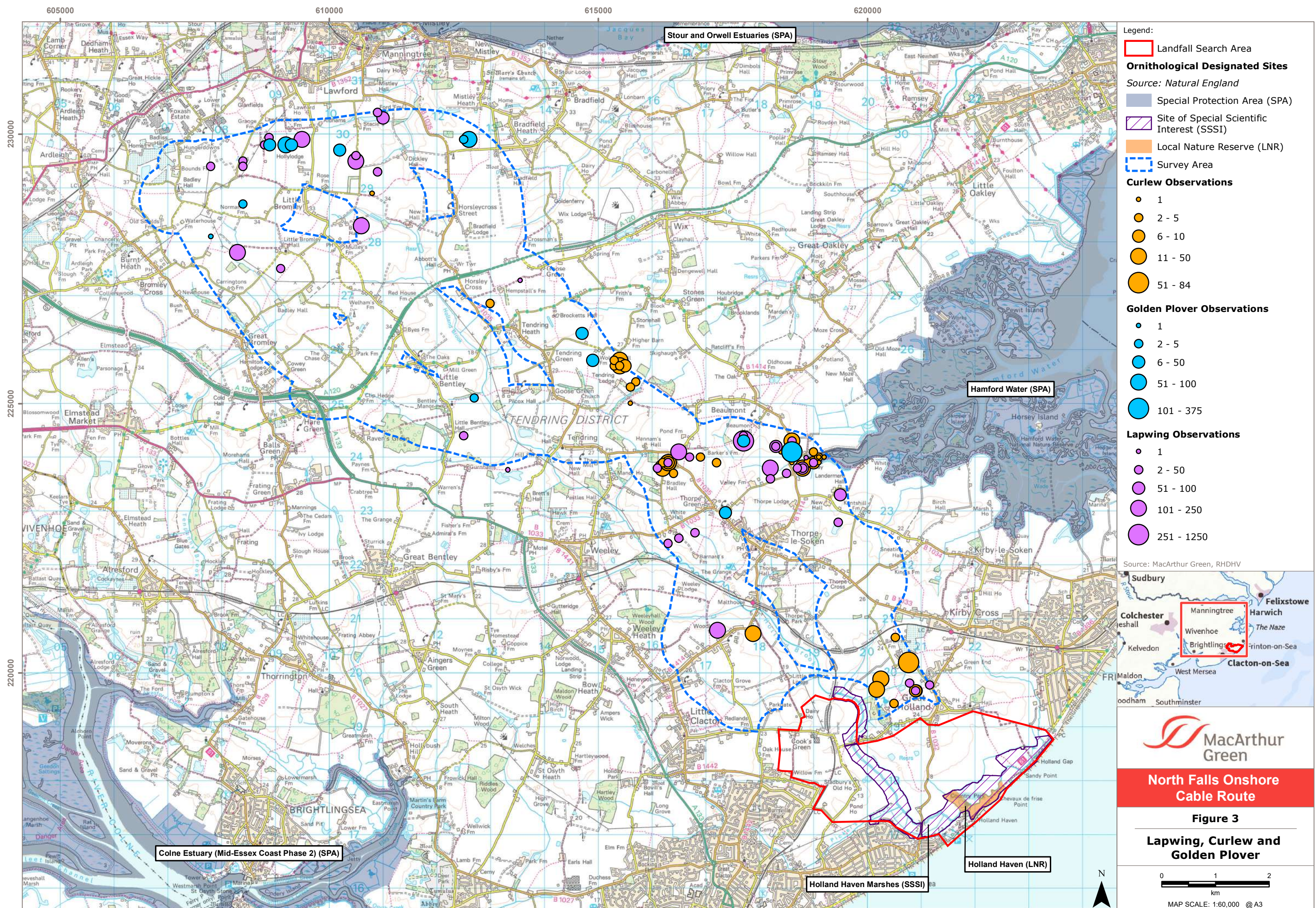
**MacArthur Green**

**North Falls Onshore Cable Route**

**Figure 2**

**Geese**

0 1 2  
km  
MAP SCALE: 1:60,000 @A3







**Legend:**

- Landfall Search Area
- Ornithological Designated Sites**
- Source: Natural England
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)
- Survey Area

**Other Wader Species Observations**

- 1
- 2
- 3 - 4
- 5 - 10

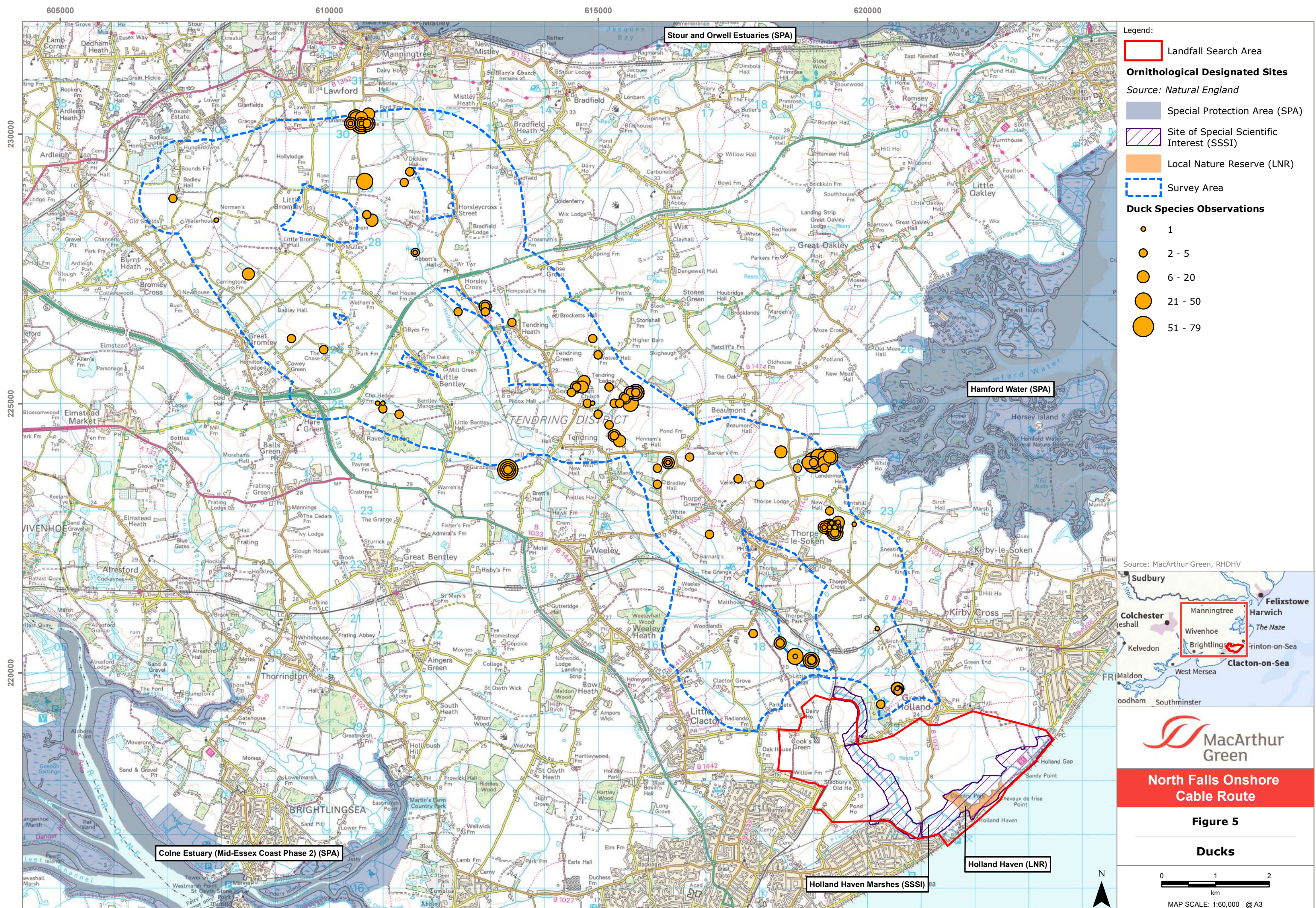
Source: MacArthur Green, RHDHV

**North Falls Onshore Cable Route**

**Figure 4**

**Other Waders**

MAP SCALE: 1:60,000 @ A3



**Legend:**

- Landfall Search Area
- Ornithological Designated Sites**
- Source: Natural England*
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)
- Survey Area

**Duck Species Observations**

- 1
- 2 - 5
- 6 - 20
- 21 - 50
- 51 - 79



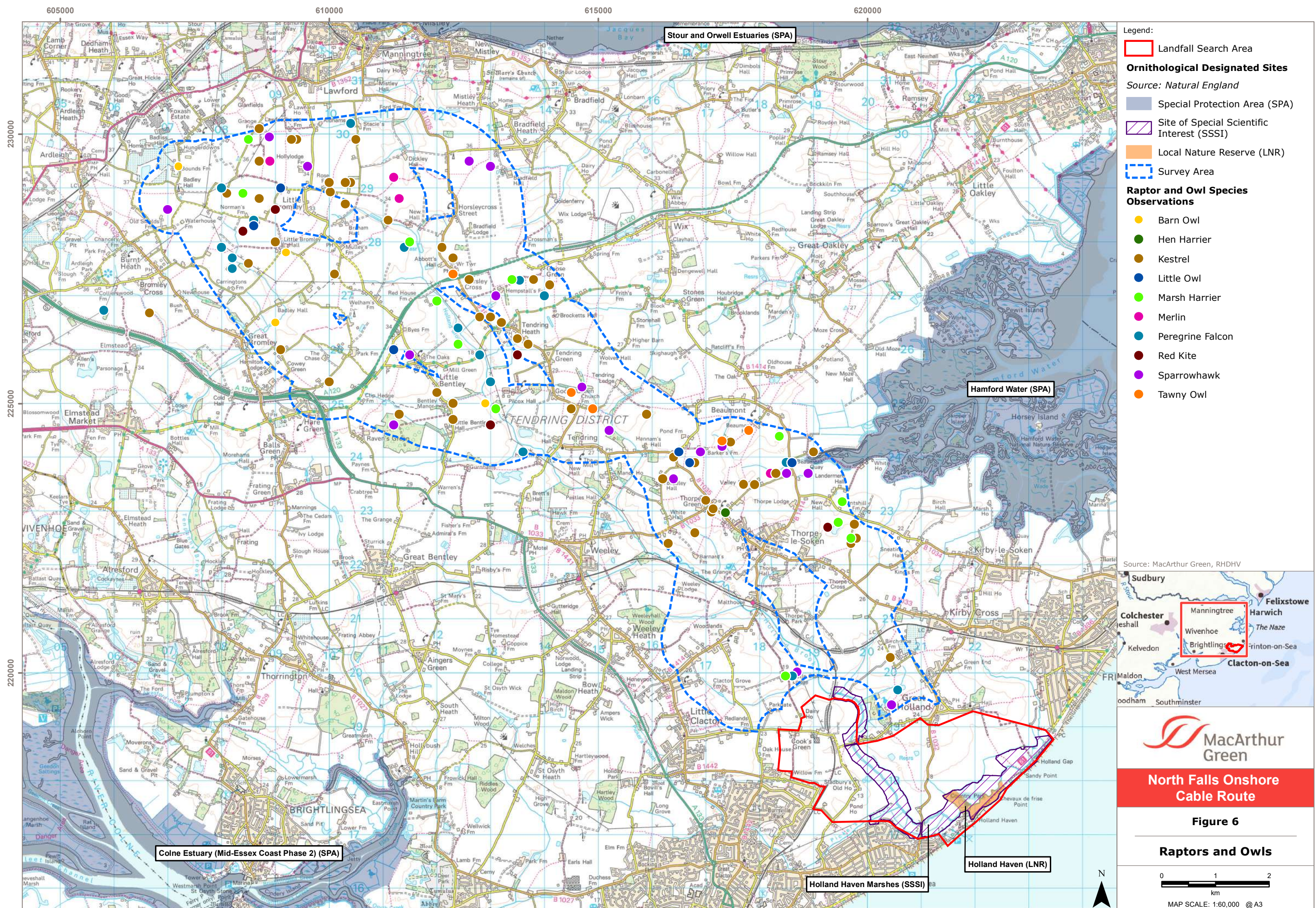
**North Falls Onshore Cable Route**

**Figure 5**

**Ducks**

MAP SCALE: 1:60,000 @A3

Document Path: S:\Projects\RHDHV\North Falls\_NFA03\_Data\O\_R\_Annual\_OnshoreCableRoute\_Fig5\_Ducks\_NFA.mxd Map Author: LM Checked: LNF Approved: RD Status: Rev1



- Legend:**
- Landfall Search Area
  - Ornithological Designated Sites**
  - Source: Natural England*
  - Special Protection Area (SPA)
  - Site of Special Scientific Interest (SSSI)
  - Local Nature Reserve (LNR)
  - Survey Area
  - Raptor and Owl Species Observations**
  - Barn Owl
  - Hen Harrier
  - Kestrel
  - Little Owl
  - Marsh Harrier
  - Merlin
  - Peregrine Falcon
  - Red Kite
  - Sparrowhawk
  - Tawny Owl



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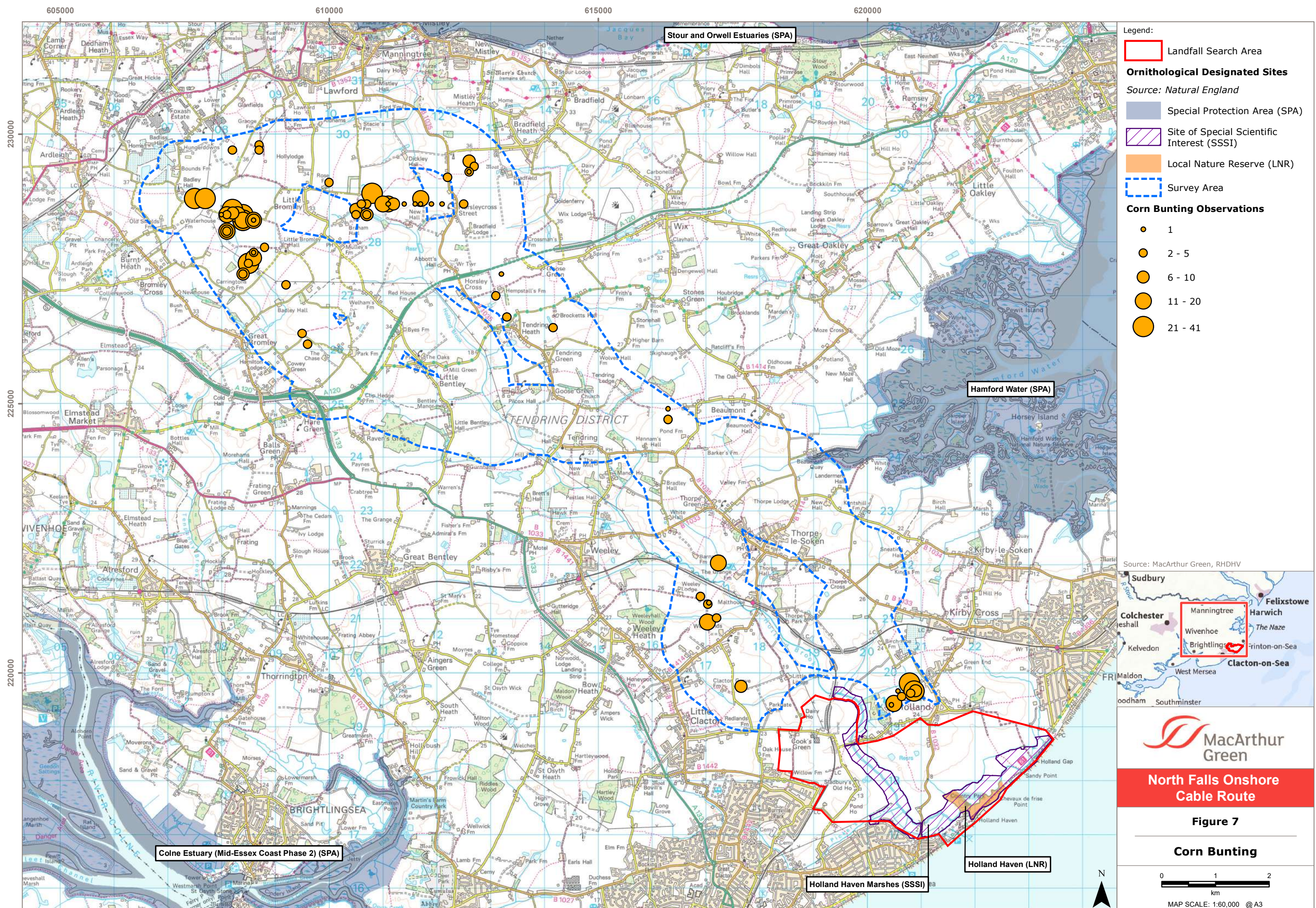
**North Falls Onshore Cable Route**

**Figure 6**

**Raptors and Owls**

0 1 2  
km  
MAP SCALE: 1:60,000 @ A3

Document Path: S:\Projects\RHDHV\North Falls\_NFA03\_Data\O\_R\_Annual\_OnshoreCableRoute\_Fig6\_Raptors\_Owls\_NFA.mxd Map Author: LMI Checked: LNF Approved: RD Status: Rev1



**Legend:**

- Landfall Search Area
- Ornithological Designated Sites**
- Source: Natural England*
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Local Nature Reserve (LNR)
- Survey Area

**Corn Bunting Observations**

- 1
- 2 - 5
- 6 - 10
- 11 - 20
- 21 - 41



**MacArthur Green**

**North Falls Onshore Cable Route**

**Figure 7**

**Corn Bunting**

0 1 2  
km  
MAP SCALE: 1:60,000 @A3

Document Path: S:\Projects\RHDHV\North Falls\_NFA03\_Data\O\_R\_Annual\_OnshoreCableRoute\_Fig7\_Corn\_Bunting\_NFA.mxd Map Author: LM Checked: LNF Approved: RD Status: Rev1



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OFFSHORE WIND FARM



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