environmental solutions ltd

ecology • arboriculture • fisheries • licencing

SAND LANE SOLAR FARM

BREEDING BIRD SURVEY REPORT AND ASSESSMENT

Prepared for: PS Renewables

Date: August 2025

Report Reference: JN00718/D04

CONTENTS

DRAWINGS

APPENDICES

1. INTRODUCTION

Background

1.1 SK Environmental Solutions Ltd was commissioned by PS Renewables to undertake a suite of breeding bird surveys on a proposed solar farm adjacent to Sand Lane, near the village of Manton, Lincolnshire, to assess the usage of these areas by breeding birds.

Definition of Terms

1.2 The term ‘site’ is used to refer to the fields in which the panels are to be installed (the western part of the red line boundary), while the term ‘cable route’ refers to the long, narrow extension of the red line boundary to the east. Detailed surveys of the cable route were not undertaken as there will be no permanent loss of suitable breeding habitat here.

Figure 1. Site Location Plan

Site Description

1.3 The proposed solar farm covers approximately 32.7ha and is located approximately 1.1km to the west of Manton, 1.3km to the north-east of Scotter and 1.4km to the south-east of Messingham. The site is bounded to the east by the B1400 (Kirton Road), to the south by Black Walk Nook Woodland and to the north and east by further areas of predominantly arable agricultural land. An existing access track is located along the northern and eastern boundaries. The cable route, which is covered by the red line boundary, runs parallel to this track on its northern side, through arable fields, eastwards to Manton village.

1.4 The proposed solar farm comprises five arable crop fields with narrow margins. The fields are divided by field drains, one of which also has an associated hedgerow with trees. A tree line separates the easternmost field from the existing track. Further native hedgerows without trees bound the site to the west, adjacent to the B1400, and on the north side of the access track opposite the easternmost two fields of the site.

1.5 The surrounding landscape is dominated by arable land with occasional farmsteads. Other than the large woodland block to the south of the site, only fragments of woodland are present within the surrounding area. The area is also characterised by sand extraction, with active and disused quarries (which are now largely infilled with water) scattered throughout the landscape. One of these, Messingham Sand Quarry, is largely managed as a nature reserve by Lincolnshire Wildlife Trust and supports notable populations of breeding and wintering birds. Much of the quarry is also a Site of Special Scientific Interest (SSSI).

Aims and Objectives

1.6 The purpose of the surveys was to:

- Identify any notable bird species interacting with the site, particularly those potentially associated with Messingham Sand Quarry SSSI; and
- Identify important habitats present within and around the site for breeding bird species.

1.7 The instructed works therefore entailed:

- A suite of breeding bird surveys of the site for the months of March, April, May, June, July and August; and

- The production of a breeding bird survey report and associated drawings to identify key species which may need to be sensitively considered as part of the works.

Development Proposal

1.8 The proposed development is for the installation of photovoltaic cells (PV) and associated infrastructure to be constructed within the site boundary. Access to the site will be from the B1400 to the west.

2. LEGISLATION

2.1 All birds, their nests and eggs are protected in the UK under the Wildlife & Countryside Act 1981, as amended. This makes it an offence, with certain exceptions, to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- Intentionally take or destroy the egg of any wild bird.

2.2 Bird species listed under Schedule 1 of the Act (which includes species such as barn owl Tyto alba and peregrine falcon Falco peregrinus are afforded additional protection when breeding. It is an offence to intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird. A total of 90 bird species are afforded Schedule 1 (with another six classed as Schedule 1 A) protection status. A Schedule 1 designation affords some level of increased protection for these species as the penalties for harming, disturbing or killing these species are greater than those covered only under the Wildlife and Countryside Act.

2.3 NERC - Species “of principal importance for the purpose of conserving biodiversity” covered under Section 41 (England) of the NERC Act (2006) and therefore need to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. A total of 49 species of bird in the UK are afforded this level of protection.

2.4 Birds of Conservation Concern - Commonly referred to as the UK Red List for birds, this is a review of the status of birds in the UK, Channel Islands and Isle of Man. Birds are assigned to the Red, Amber or Green lists of conservation concern, depending on population trends. Red List bird species are those that have met any of a number of criteria with regard to breeding or non-breeding decline in numbers of individuals either globally or across the UK. A total of 70 species of bird are included on the Red List, while 103 species are on the amber list.

2.5 UK BAP priority species were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). A total of 51 bird species is included within the UKBAP as of 2014.

3. METHODOLOGY

Field Survey

3.1 The methodology used for the survey work broadly adhered to a combination of the guidelines outlined by the British Trust for Ornithology (BTO) for Common Bird Census (CBC) and Breeding Bird Survey (BBS) methodologies, combined with a vantage point survey overlooking the adjacent estuary.

3.2 A suitable transect route was drafted prior to the surveys from aerial imagery and existing knowledge of the site. This comprised walking the boundaries of the main site fields.

3.3 The transect route was walked at a steady place, pausing briefly at intervals to listen for song and scan for birds moving / flying overhead, observing any birds present within the survey area or the habitats immediately adjacent.

3.4 All data collected was transferred onto a transect map and recording sheet. The data collected included:

- Species and corresponding BTO species code (Appendix 1 BTO Species Codes);
- Number of birds;
- Age (where possible);
- Sex (where possible); and
- Activity and corresponding BTO activity code (Appendix 2 BTO Activity Codes).

3.5 Six surveys were undertaken between March and August 2025. Surveys commenced at dawn, or in the early hours of the morning, in order to coincide with the time of day at which breeding species would be most active.

3.6 Table 1 (below) summarises the survey information including date, the time survey was undertaken and the particular weather conditions on each occasion.

Table 1 - Survey Information			
Survey	Date	Time	Weather
1	06/03/2025	06:00	Cool, still, sunny 3C
2	03/04/2025	04:45	Sunny, still 6C
3	28/05/2025	04:45	Drizzle ceasing, overcast, mild 12C
4	26/06/2025	06:10	Sunny spells, light breeze 18C
5	14/07/2025	06:20	Overcast, light breeze 19C
6	18/08/2025	06:30	Occasional drizzle, still 18C

3.7 Using the data collected during each survey, the following were produced:

- A comprehensive list of all bird species identified each month to provide a snapshot of species composition across the two potential extension areas; and
- A drawing for each month identifying bird activity across the site to provide an overview of the habitats being utilised by bird species, enabling areas considered to be of particular importance to be identified.

Limitations

3.8 An evening survey visit was not undertaken. However, given the habitats present within the red line boundary, this is not considered to represent a significant detriment to the dataset collected.

3.9 No other limitations were encountered during the surveys.

Personnel and Equipment

3.10 All survey work was carried out by experienced bird surveyors, using suitable viewing equipment (binoculars / scopes etc).

4. RESULTS

4.1 In total sixty species were identified during the transect surveys. This comprised fourteen red list species, twenty amber list species and twenty-four green list species, with two introduced (non-native) species. Table 2 (below) lists all bird species that were recorded during the surveys, as well as their protected statuses.

4.2 Full survey results tables can be provided upon request.

Table 2- Breeding bird survey results

Common Name	Latin Name	Schedule 1	NERC	Annex I	BoCC	Max count in one survey
Barn owl	*Tyto alba*	✓			Green	1 (July / August)
Blackbird	*Turdus merula*				Green	7 (May)
Blackcap	*Sylvia atricapilla*				Green	3 (May)
Black-headed gull	*Chroicocephalus ridibundus*				Amber	45 (April)
Blue tit	*Cyanistes caeruleus*				Green	8 (August)
Buzzard	*Buteo buteo*				Green	2 (June / July / August)
Canada goose	*Branta canadensis*				N/A	17 (August)
Carrion crow	*Corvus corone*				Green	20 (June)
Chaffinch	*Fringilla coelebs*				Green	4 (June / July)
Chiffchaff	*Phylloscopus collybita*				Green	3 (April / June)
Coal tit	*Periparus ater*				Green	2 (July)
Common gull	*Larus canus*				Red	10 (March)
Common whitethroat	*Sylvia communis*				Amber	4 (May)
Cuckoo	*Cuculus canorus*		✓		Red	1 (May)
Curlew	*Numenius arquata*		✓		Red	4 (March)

Table 2- Breeding bird survey results						
Common Name	**Latin Name**	**Schedule 1**	**NERC**	**Annex I**	**BoCC**	**Max count in one survey**
Dunnock	*Prunella modularis*		✓		Amber	1 (March / April / June)
Egyptian goose	*Alopochen aegyptiaca*				N/A	1 (March)
Fieldfare	*Turdus pilaris*	✓			Red	1 (March)
Garden warbler	*Sylvia borin*				Green	2 (June)
Goldfinch	*Carduelis carduelis*				Green	6 (May / August)
Great egret	*Ardea alba*				Amber	1 (March)
Great spotted woodpecker	*Dendrocopus major*				Green	1 (April / May / June / July / August)
Great tit	*Parus major*				Green	5 (July)
Green woodpecker	*Picus viridis*				Green	1 (August)
Greenfinch	*Chloris chloris*				Red	3 (May)
Grey heron	*Ardea cinerea*				Green	2 (June)
Grey partridge	*Perdix perdix*		✓		Red	8 (August)
Grey wagtail	*Motacilla cinerea*				Amber	1 (April)
Greylag goose	*Anser anser*				Amber	220 (May)
Herring gull	*Larus argentatus*		✓		Red	11 (August)
Kestrel	*Falco tinnunculus*				Amber	1 (July)
Lapwing	*Vanellus vanellus*		✓		Red	2 (April / May)
Linnet	*Linaria cannabina*		✓		Red	25 (March)
Long-tailed tit	*Aegithalos caudatus*				Green	10 (May)
Magpie	*Pica pica*				Green	1 (May)

Table 2- Breeding bird survey results						
Common Name	**Latin Name**	**Schedule 1**	**NERC**	**Annex I**	**BoCC**	**Max count in one survey**
Mallard	*Anas platyrhynchos*				Amber	22 (April)
Meadow pipit	*Anthus pratensis*				Amber	8 (March)
Mistle thrush	*Turdus viscivorus*				Red	1 (August)
Moorhen	*Gallinula chloropus*				Amber	6 (June)
Mute swan	*Cygnus olor*				Green	1 (March)
Oystercatcher	*Haematopus ostralegus*				Amber	3 (June)
Pheasant	*Phasianus colchicus*				N/A	10 (May)
Pied wagtail	*Motacilla alba*				Green	4 (April)
Pink-footed goose	*Anser brachyrhynchus*				Green	2 (March)
Reed bunting	*Emberiza schoeniclus*		✓		Amber	3 (April / June / August)
Reed warbler	*Acrocephalus scirpaceus*				Green	2 (August)
Robin	*Erithacus rubecula*				Green	3 (April)
Rook	*Corvus frugilegus*				Amber	34 (July)
Sedge warbler	*Acrocephalus schoenobaenus*				Amber	2 (July)
Shelduck	*Tadorna tadorna*				Amber	6 (April)
Skylark	*Alauda arvensis*		✓		Red	14 (July)
Snipe	*Gallinago gallinago*				Amber	1 (April)
Song thrush	*Turdus philomelos*		✓		Amber	3 (March / April)
Swallow	*Hirundo rustica*				Green	2 (August)
Swift	*Apus apus*				Red	1 (May)
Willow warbler	*Phylloscopus trochilus*				Amber	4 (July)

Table 2- Breeding bird survey results						
Common Name	**Latin Name**	**Schedule 1**	**NERC**	**Annex I**	**BoCC**	**Max count in one survey**
Woodpigeon	*Columba palumbus*				Amber	44 (July)
Wren	*Troglodytes troglodytes*				Amber	3 (March / April / May / June)
Yellow wagtail	*Motacilla flava*		✓		Red	1 (May)
Yellowhammer	*Emberiza citrinella*		✓		Red	3 (July / August)

4.3 None of the species recorded are listed on Annex I of the European Birds Directive. Two, barn owl and fieldfare, are listed on Schedule 1 of the Wildlife and Countryside Act.

4.4 Twelve species recorded during the surveys are listed in NERC Section 41 and as such are also considered to be species of "principal importance for the purpose of conserving biodiversity": These species were:

- Cuckoo;
- Curlew;
- Dunnock;
- Grey partridge;
- Herring gull;
- Lapwing;
- Linnet;
- Reed bunting;
- Skylark;
- Song thrush;

- Yellow wagtail; and
- Yellowhammer.

4.5 The remaining species identified during the surveys are species that carry no specific designations, other than the general protection afforded to all nesting birds in the UK under the Wildlife and Countryside Act 1981.

5. DISCUSSION

Potential Impacts of the Works on Breeding Birds

5.1 The proposed works have the potential to impact breeding birds through loss of habitat. There also may be some disturbance of breeding birds during the construction phase, should this occur during the breeding bird season.

Species

5.2 Table 3 below, lists the species observed on or adjacent to site and assesses the likelihood of their breeding on site or within adjacent habitat likely to be affected by the works. Those categorised as possible comprise species for which the habitats present are considered to be sub-optimal, but could still breed in them, and species for which the habitat was suitable, but was not consistently recorded during the surveys.

Table 3 – Likelihood of Breeding					
Common Name	**Confirmed**	**Approximate No. of Nests**	**Probable**	**Possible**	**Unlikely**
Barn owl					✓
Blackbird			✓		
Blackcap					✓
Black-headed gull					✓
Blue Tit					✓
Buzzard					✓
Canada goose					✓
Carrion crow					✓
Chaffinch				✓	
Chiffchaff				✓	
Coal tit					✓
Common gull					✓
Common whitethroat			✓		

Table 3 – Likelihood of Breeding					
Common Name	**Confirmed**	**Approximate No. of Nests**	**Probable**	**Possible**	**Unlikely**
Cuckoo					✓
Curlew					✓
Dunnock			✓		
Egyptian goose					✓
Fieldfare					✓
Garden warbler					✓
Goldfinch				✓	
Great egret					✓
Great spotted woodpecker					✓
Great tit					✓
Green woodpecker					✓
Greenfinch				✓	
Grey heron					✓
Grey partridge			✓		
Grey wagtail					✓
Greylag goose					✓
Herring gull					✓
Kestrel					✓
Lapwing					✓
Linnet			✓		
Long-tailed tit				✓	
Magpie					✓
Mallard				✓	
Meadow pipit			✓		

Table 3 – Likelihood of Breeding					
Common Name	**Confirmed**	**Approximate No. of Nests**	**Probable**	**Possible**	**Unlikely**
Mistle thrush					✓
Moorhen					✓
Mute swan					✓
Oystercatcher					✓
Pheasant				✓	
Pied wagtail					✓
Pink-footed goose					✓
Reed bunting			✓		
Reed warbler			✓		
Robin			✓		
Rook					✓
Sedge warbler				✓	
Shelduck					✓
Skylark			✓		
Snipe					✓
Song Thrush			✓		
Swallow					✓
Swift					✓
Willow warbler				✓	
Woodpigeon				✓	
Wren			✓		
Yellow wagtail					✓
Yellowhammer			✓		

5.3 Table 3 identifies a total of sixty species of which:

- thirteen species are considered to probably, or definitely, have bred within or along the margins of, the site during the 2025 breeding season;
- ten species which may possibly have done so; and
- thirty-seven which are considered unlikely to have done so.

5.4 Of the thirteen species considered to have probably bred on site in 2025, three are green list with no additional designations. These species are currently considered to be common, breed widely across the UK and have relatively stable populations.

5.5 In addition to these, three amber list species (common whitethroat, meadow pipit, and wren) with no additional designations are also considered to be common and widespread breeding species. Wren is amber listed due to the proportion of the European breeding population found in the UK. This belies the fact that wren is the commonest bird species in the UK, having undergone a population increase of 94%, between 1967 and 2020. Common whitethroat and moorhen have suffered moderate population declines since 1969 but generally continue to be common and widespread breeding species in the UK.

Dunnock

5.6 Single singing dunnocks were observed during the March, April and May surveys. The hedgerows and other marginal habitat present on site are suitable for breeding dunnock.

5.7 Presence of low numbers of dunnock on site is not considered to be significant, this is a common and widespread breeding species. All hedgerows and trees will be retained within the development and an additional 1.48km of new native hedgerow is proposed. Overall, it is anticipated that the proposals will increase the site's suitability for this species.

Grey Partridge

5.8 Grey partridge were recorded on all bar one of the survey visits. The mix of arable habitats on site is highly suitable for this species and its continued presence throughout the survey window suggests that on site breeding of this species is likely. The group of six birds recorded in August may represent a mixed group of adults and juveniles.

5.9 Grey partridges breed in hedgerows and other marginal features surrounding arable land and species-rich grasslands. There will be no loss of such features as a result of the

development, with the length of on site species rich hedgerow increased by 1.48km. While the arable habitat itself will be lost, it will be replaced with relatively diverse grassland. It is considered that this habitat will provide equal, if not greater, foraging resources for farmland / grassland bird species than the existing arable crop.

Linnet

5.10 Linnet were recorded within the site on all survey visits. Suitable nesting habitat for this species is found on site in the form of the existing hedgerows and other marginal habitats. It is therefore considered likely that this species bred on site in 2025.

5.11 As for grey partridge above, it is considered that new hedgerow and grassland planting will provide improved breeding and foraging opportunities for this species post-development.

Reed bunting

5.12 Reed buntings were recorded on site during all survey visits. The suitability of the site for breeding reed buntings is increase by the ditches and associated vegetation that divide the site fields. The extent of suitable habitat and continued presence of the species throughout the season indicates a string likelihood of the species having bred.

5.13 Suitable breeding habitat for this species will not be impacted by the creation of the solar farm, with no reduction in suitable foraging habitat anticipated.

Skylark

5.14 A maximum of four singing skylarks were observed within the site during the June survey visit, with three territories consistently recorded between March and May.

5.15 As skylark nest within open areas of crop or grassland, the establishment of solar panels within the fields will likely lead to the displacement of the existing breeding birds. However, extensive similar habitat is present in the surrounding area. The proposed development will result in the arable habitats being converted to species rich grassland (with small areas of developed land for the access track and invertors). There is only a limited amount of research available on how skylarks and other farmland birds use solar farms, however, a study undertaken by R. Shotton between 2018 and 2020 in partnership with the RSPB Centre for Conservation Science and energy solutions company Anesco (https://community.rspb.org.uk/ourwork/b/science/posts/bird-use-on-solar-farms-final-results) found that "*Solar parks are being used by birds at a similar level compared to other land use*

types. There was also a significantly higher variation of species found on solar parks compared to arable fields which suggest that solar parks provide a habitat for a range of farmland birds".

5.16 A survey of 59 solar sites in 2023 recorded skylark being present at 71% of the solar farms (*Solar Habitat 2024: Ecological trends on solar farms in the UK*). Whilst no clear patterns between bird biodiversity and site management were directly found, there were positive relationships between bird species richness and plant species richness, as well as a positive relationship between bird abundance and invertebrate abundance across solar farms.

5.17 Research has shown that skylarks incorporate solar farms into their territories, with these areas widely utilised as a foraging resource for the species. Research by Montag et al. (2016) compared solar plots with unpanelled control plots at eleven sites across the UK. Although no nesting was recorded within panel arrays, the number of territories recorded in these areas was not significantly lower, nor were the number of foraging birds observed. Indeed, at two of the plots, numbers of foraging skylark were significantly higher in the solar plot than the control. This suggests that skylark nest sites 'lost' by creating a solar farm are displaced into the surrounding habitat, with the solar site continuing to form part of the territory of displaced birds.

5.18 An article by Harry Fox in CIEEM InPractice (Issue 117, September 2022) states that although nesting has not been confirmed on solar sites, "*skylarks have been recorded many times foraging within solar arrays and even feeding recently fledged young. Fledglings can disperse considerable distances from their nests in just a few days and continue to be fed by parent birds for between 8 and 12 days after fledging (Donald, 2004), so this behaviour alone may not be considered evidence of nesting on site. It is possible, therefore, that development sites with suitable grassland might even provide 'nursery' habitat where nesting takes place on adjacent farmland.*"

5.19 Although skylark have been recorded at solar parks it is unclear if they are using them for nesting. What is more certain is that the high quality grassland under the panels can act as optimal foraging habitat (secured in the long term), and in turn improve outcomes for off-site nests in territories adjacent to solar parks. Solar parks are also infrequently visited by humans once operational, this means they offer undisturbed habitat which is at odds with the current arable management regimes.

Song thrush

5.20 Singing song thrush were recorded on most survey visits, typically from within Black Walk Nook to the south of the site. However, the hedgerows on site also provide suitable nesting habitat for this species.

5.21 As all existing hedgerows are to remain intact as part of the development, and 1.48km of new species rich hedgerow is to be created. Therefore, it is considered that this species will benefit from the proposed development.

Yellowhammer

5.22 Yellowhammer were recorded throughout the survey period, albeit in low numbers. However, the ongoing presence of the species in suitable habitat suggests a small breeding population present on site.

5.23 Yellowhammer locate their nests within hedgerows and other marginal habitat around suitable farmland. It is considered there will be an overall increase in the extent of suitable nesting habitat, through the creation of 1.48km of new species rich hedgerow, while the replacement of arable crop with a mix of grassland habitats should not lead to a reduction in foraging opportunities.

6. RECOMMENDATIONS

6.1 Overall, the site supports an assemblage of breeding birds that includes several declining farmland species. The majority of the nesting opportunities on site are found within the hedgerows and other marginal features.

6.2 For farmland birds which nest within those features, it is not considered that the solar farm will detrimentally impact the existing populations of these species. Indeed, with new hedgerow planting and a mix of grassland habitat replacing the arable crop, it is considered likely that many of these species will benefit from the proposed development.

6.3 The exception to the above is skylark, which will lose suitable nesting habitat as a result of the development. It is considered that management of on site grassland in line with by rotational hay-cutting or late season grazing will provide the best year-round food supply for this species, which could then improve the breeding success of nesting skylark in adjacent farmland that will foraging on the site.

6.4 The presence of the wetland habitats of Messingham Sand Quarry SSSI within the area surrounding the site is reflected within the bird assemblage recorded on site. Species such as lapwing, curlew, mallard and greylag geese, among others, were all recorded more frequently than might be expected on 'normal' farmland. However, no evidence to suggest breeding of these species on site was recorded and the greatest numbers of these species were observed at the start and end of the survey period. This suggests these constituted non-breeding birds which moved away to breeding grounds through the main survey window. Many records also comprised flyover birds.

6.5 Overall, there is little evidence to suggest the site forms an important habitat for breeding birds which form part of the assemblage for which Messingham Sand Quarry SSSI is designated, either in the form of wetland species nesting on site or moving from the quarry to forage there.

6.6 Any vegetation clearance should be commenced outside of the breeding bird season (March – August inclusive).

6.7 Should this not be possible, an Ecological Clerk of Works (ECoW) should be present to search that vegetation prior to its removal, to ensure any nests are protected. If nests are found, clearance of surrounding vegetation cannot take place, and nearby disturbance kept to a minimum, until the chicks have fledged.

6.8 The following advice should be adhered to at all times:

The Wildlife and Countryside Act 1981 states that, it is an offence for any person to intentionally (subject to Provisions of this Part) -

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird whilst it is in use or being built; or
- take or destroy an egg of any wild bird.

7. REFERENCES

Gilbert, G, Gibbons, D.W. and Evans, J. *Bird Monitoring Methods – A manual of Techniques for Key UK Species*, RSPB 2011

JNCC. 2010. *Handbook for Phase 1 habitat survey - a technique for environmental audit*. JNCC, UK.

Marchant, J.H. (1983). *Common Birds Census instructions*. BTO, Tring. 12pp.

Marchant, J.H., Hudson, R., Carter, S.P. & Whittington, P.A. (1990) *Population Trends in British Breeding Birds.* BTO, Tring.

Sutherland, W.J., Newton, I., Green, R. E. (2004) *Bird Ecology and Conservation: A handbook of techniques.* Oxford University Press. Oxford.

APPENDIX 1

BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carrion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Dunnock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

If you are not submitting your data electronically using BBS-Online, please return your Field Recording Sheets to your Regional Organiser with your other BBS forms. If you would like to submit your results on BBS-Online, please inform your RO, then visit www.bto.org/bbs.

APPENDIX 2

ECN Protocols for Standard Measurements at Terrestrial Sites

BI (BB/BC/BM) Protocols

Note 3 BTO bird activity map symbols
(Sheet reproduced from BTO instructions for CBC recorders)

This standard list of conventions is designed for clear and unambiguous recording. Symbols can be combined where necessary. Additional activities of territorial significance, such as display or mating, should be noted using an appropriate clear abbreviation.

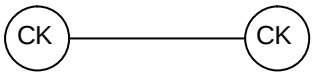
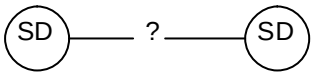
CH, CH ♂ CH ♀	Chaffinch sight records, with age, sex or number of birds if appropriate.
3Chjuve, CH2♀♂ 1 ♀	Use CH ♀♂ to indicate one pair of Chaffinches, so that: 2CH♀♂ means two pairs together.
R fam	Juvenile Robins with parent(s) in attendance
R	A calling Robin
R	A Robin repeatedly giving alarm calls or other vocalisations (not song) thought to have strong territorial significance
(R)	A Robin in song
\ | / – R – / | \	An aggressive encounter between two Robins
*R	An occupied nest of Robins. Do not mark unoccupied nests, which are not of territorial significance by themselves
* BT	Blue tits nesting in a specially provided site. Please remember to use this special symbol for a nest in a nestbox.
*PW on	Pied Wagtail nest with adult sitting
PW mat	Pied Wagtail carrying nest material
PW food	Pied Wagtail carrying food

Movements of birds can be indicated by an arrow using the following conventions:

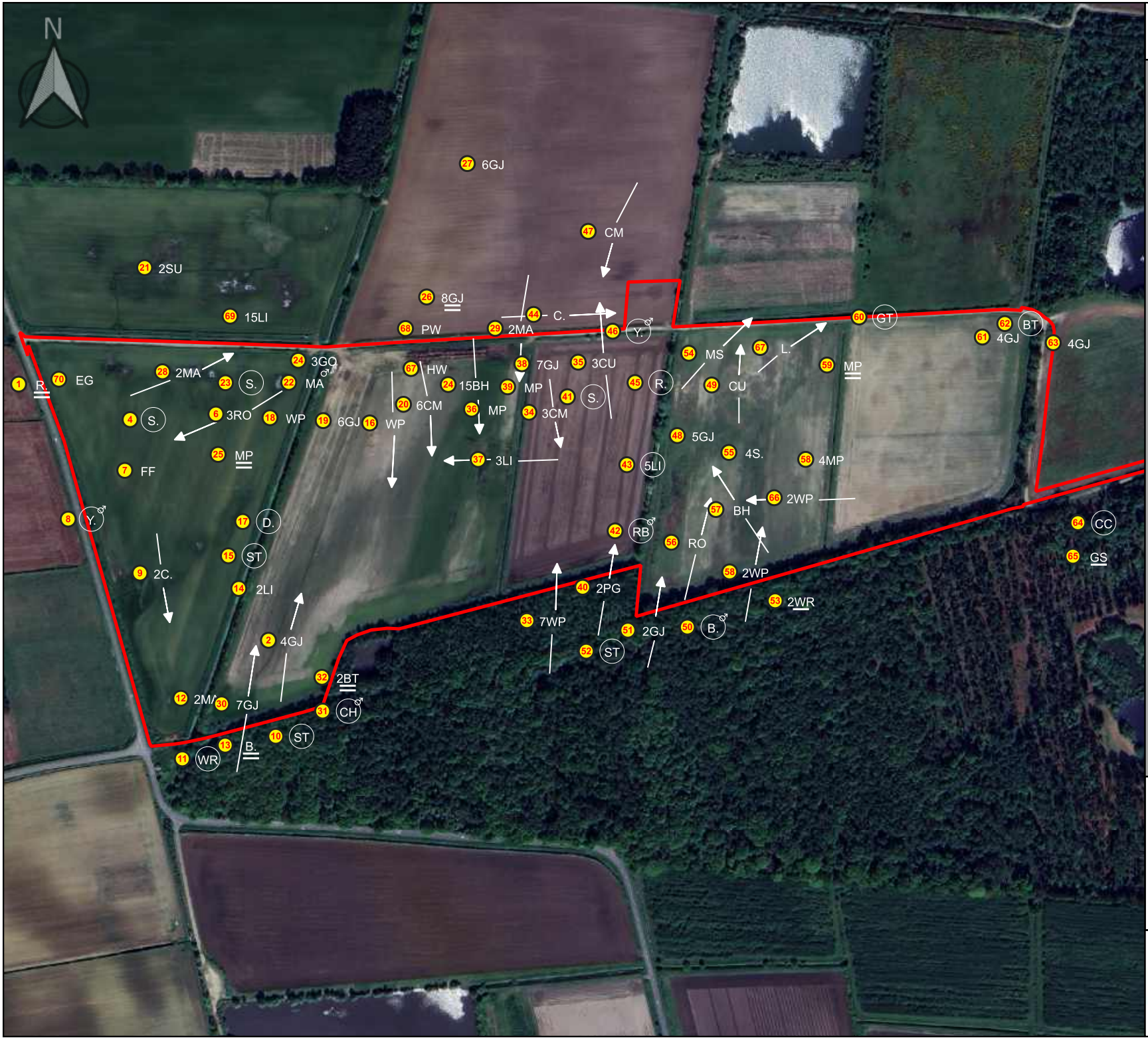
——— GR ——→	A calling Greenfinch flying over (seen only in flight)
(D) ——→	A singing Dunnock, perched then flying away (not seen to land)
——→ B.♂	A male blackbird flying in and landing (first seen in flight)
WR ——→ WR	A Wren moving between two perches. The solid line indicates that it was **definitely the same bird.**

The following conventions indicate which registrations relate to different, and which to the same individual birds. Their proper use will be essential for the accurate assessment of clusters.

(WR) - - - - - - - - - (WR)	Two Wrens in song at the same time, i.e. definitely different birds. The dotted line indicates a simultaneous registration (or contemporary contact) and is of very great value in separating territories.

* - - - - - - - - - - - - - - * LI LI	Two Linnet nests occupied simultaneously, and thus belonging to different pairs. This is another example of the value of dotted lines. Only adjacent nests need to be marked in this way.
	The solid line indicates that the registrations definitely refer to the same bird.
	This question-marked solid line indicates that the registrations relate to probably the same bird. This convention is of particular use when your census route brings you back past an area already covered - it is possible to mark new positions of (probably the same) birds recorded before, without risk of double-recording. If you record birds without using the question-marked solid line, over-estimation of territories will result.
 WR mat	No line joining the registrations - it will be assumed that the birds are probably different, but depending on the pattern of other registrations they may be treated as if only one bird was involved. (You may if you wish use a question-marked dotted line, indicating that the registrations were almost certainly of different birds.)
C* C*	Where adjacent nests are marked without a line, it will often be assumed that they were in first and second broods, or a replacement nest following an earlier failure.

DRAWINGS



DRAWING TITLE: Sand Lane March BBS Map

KEY:

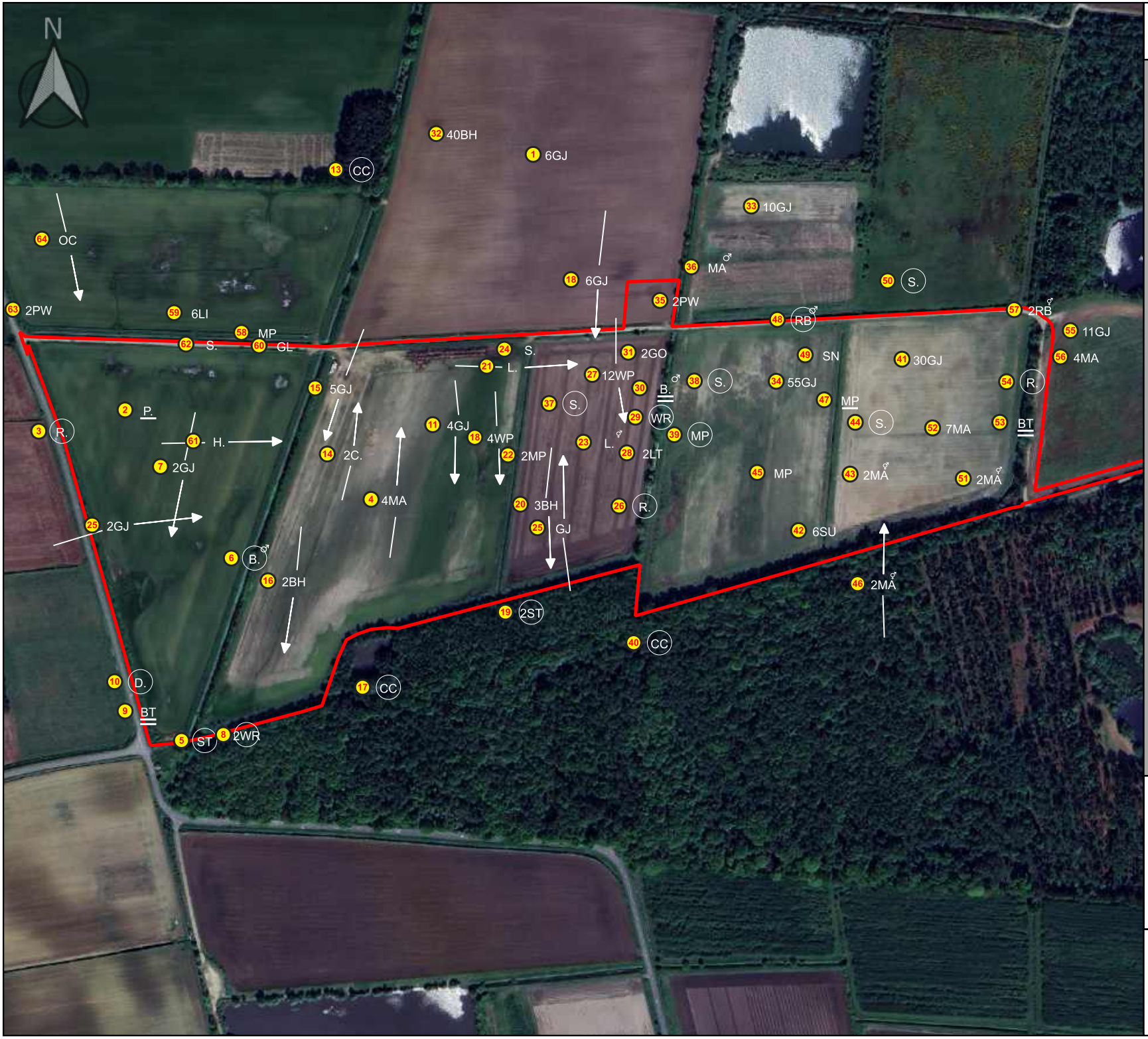
- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW04
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licensing



DRAWING TITLE: Sand Lane April BBS Map

KEY:

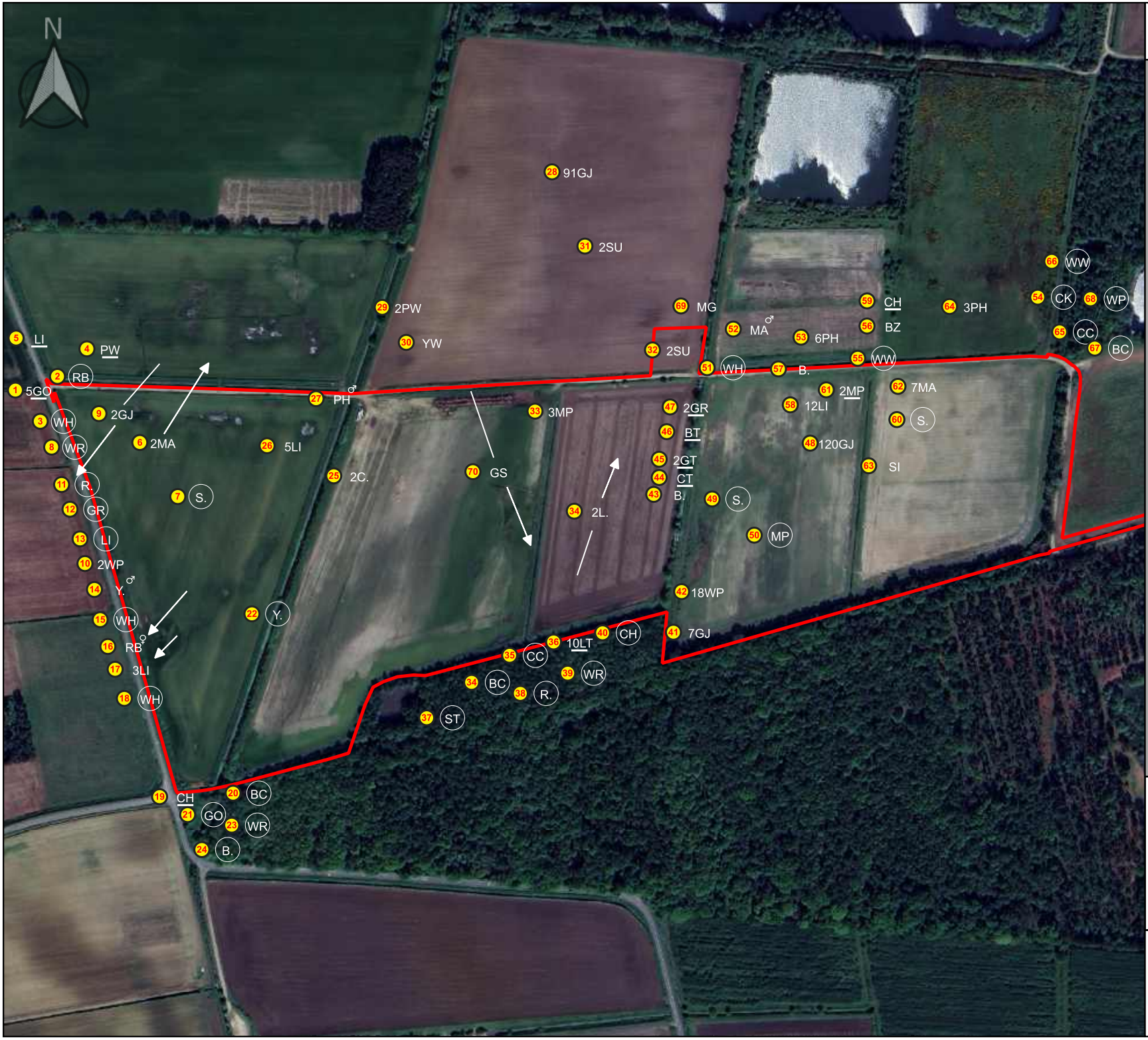
- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW05
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licencing



DRAWING TITLE: Sand Lane May BBS Map

KEY:

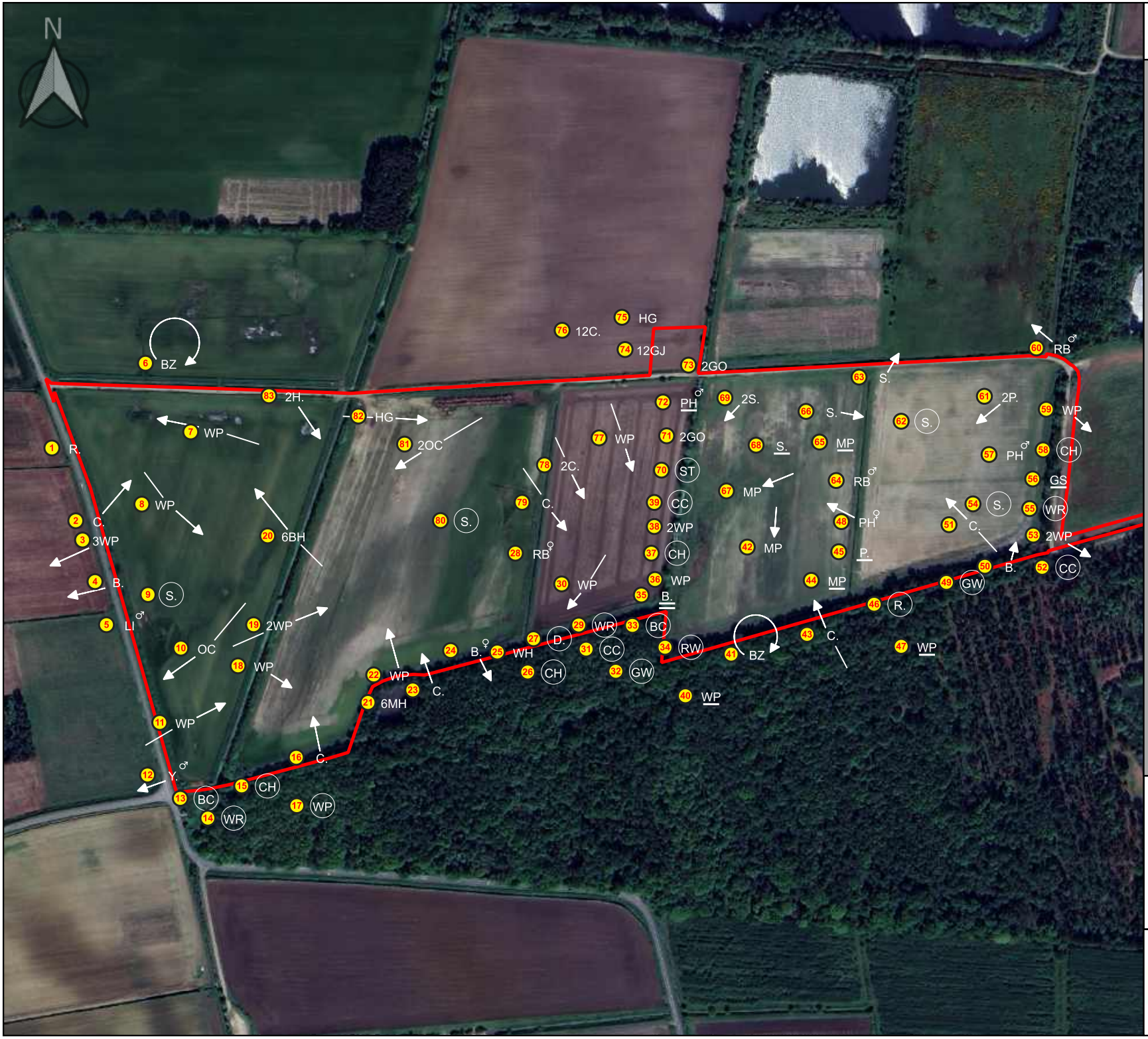
- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW06
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licencing



DRAWING TITLE: Sand Lane June BBS Map

KEY:

- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW07
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licensing

DRAWING TITLE: Sand Lane July BBS Map

KEY:

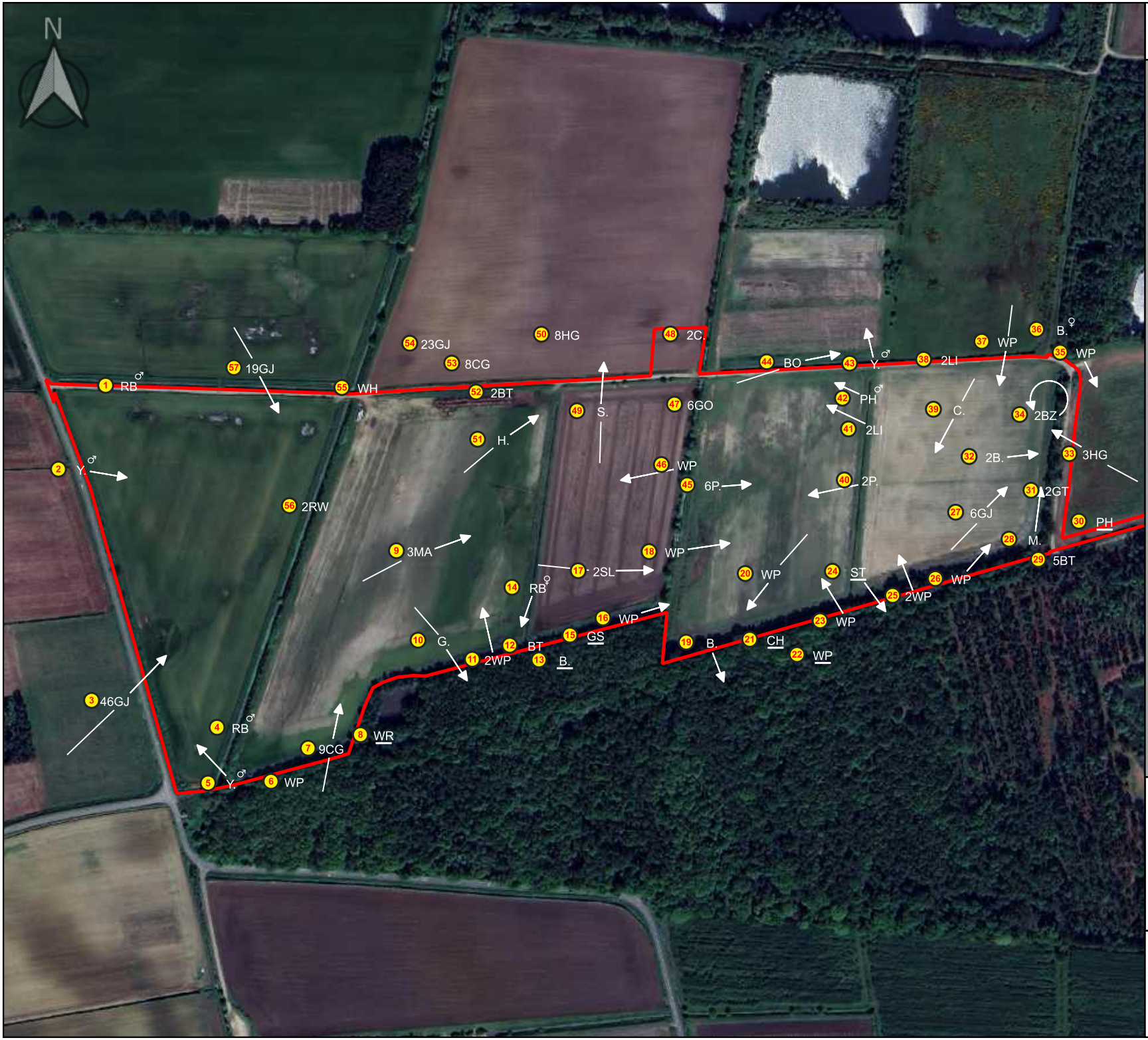
- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW08
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licensing



DRAWING TITLE: Sand Lane August BBS Map

KEY:

- Red Line Boundary

Birds

- ♂ Male
- ♀ Female
- ⚥ Pair
- Aggressive Interaction
- = Alarm Calling
- – Calling
- ◯ Singing
- AB BTO Code
- 1 Map Codes
- → Flight line
- ----- Different individuals

SITE: Sand Lane
CLIENT: PS Renewables
JOB NUMBER: JN00718
DRAWING NUMBER: JN00718_DW09
DATE: August 2025
DRAWN/CHECKED: JW / RS
SCALE: NTS

SK environmental solutions ltd
ecology • arboriculture • fisheries • licensing