



Little Crow

Solar Park

Little Crow Solar Park, Scunthorpe

ENVIRONMENTAL STATEMENT: TECHNICAL APPENDICES

APPENDIX 7.3

BREEDING BIRDS SURVEY

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BREEDING BIRD SURVEYS

LITTLE CROW SOLAR FARM, SCUNTHORPE

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1 INTRODUCTION

- 1.1.1 Clarkson and Woods Ltd. was commissioned by INRG Solar to carry out breeding birds surveys of land proposed to accommodate Little Crow Solar Farm in Scunthorpe. The surveys were carried out between April and July 2018 by experienced bird surveyors.
- 1.1.2 This report aims to inform a planning application for construction of a solar park within the survey area. It details the methods and results of the surveys and informs the Environmental Statement (ES) Chapter on Ecology prepared for the site.
- 1.1.3 Unless the client indicates to the contrary, information on the presence of species will be passed to the county biological records centre in order to augment their records for the area.

2 SITE DESCRIPTION

- 2.1.1 The survey area consisted of seventeen (predominantly arable) agricultural fields; with occasional patches of dense scrub, broadleaved woodland and five ponds. Hedgerows, ditches and woodland made up the site boundaries. The wider landscape is characterised by the industrial steelworkings to the west of the site, and further arable farmland and plantation woodland to the north and east. Beyond the woodland to the south lies a recently constructed solar array.
- 2.1.2 The Order Limits cover an area of approximately 225 hectares (ha) in size, and the approximate centre of the site is at OS Grid Ref. SE 941099.
- 2.1.3 Figure 1 shows the present layout of habitats across the site according to the Phase 1 Habitats Survey.
- 2.1.4 The proposals for the site consist of the installation of solar panels on metal frames, which are driven into the ground, and connected by underground cables to a cabin containing a transformer. This is then connected locally to the National Grid network

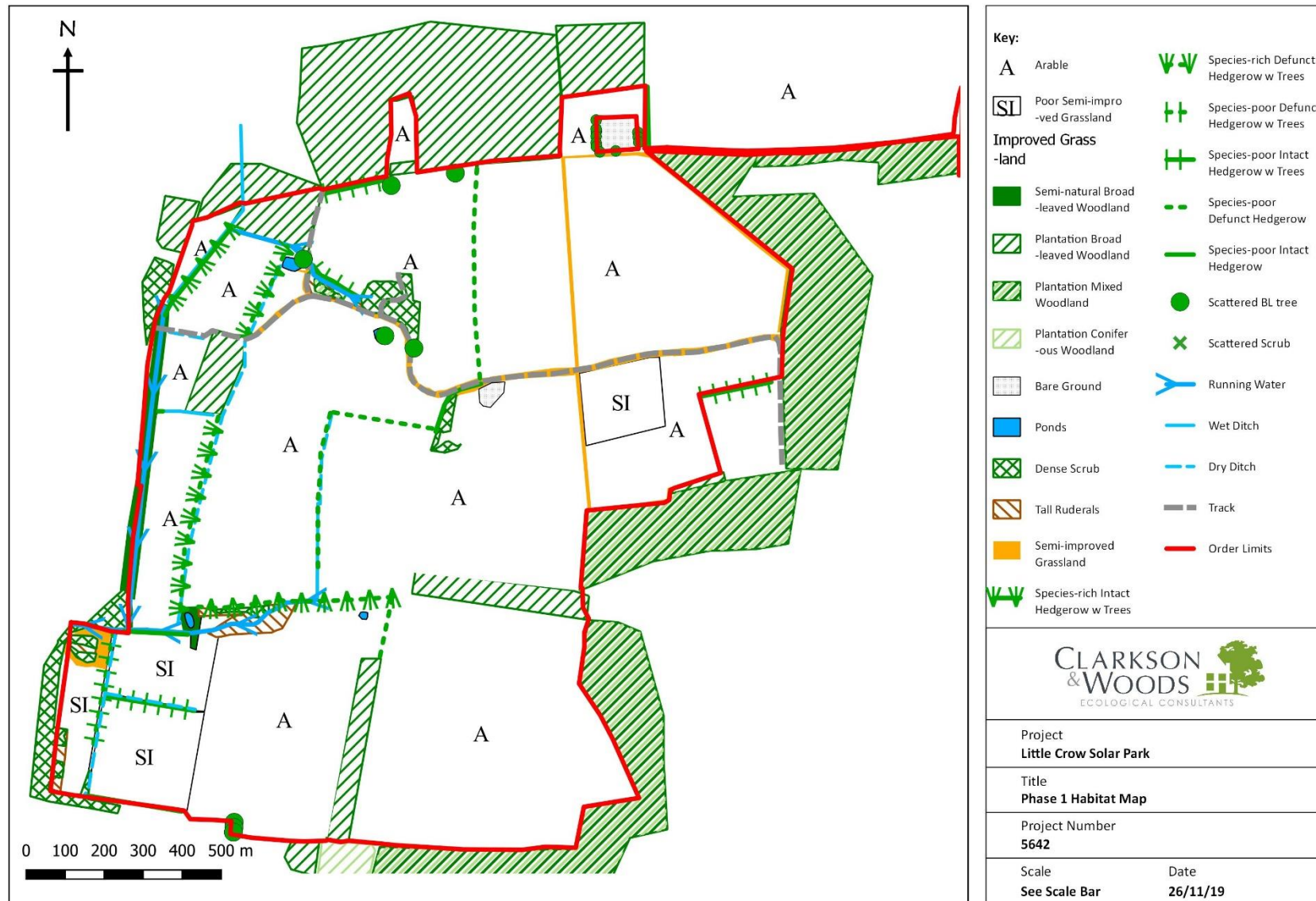


Figure 1: Phase 1 Habitat Map of the Survey Area

3 SURVEY AND ASSESSMENT METHODOLOGY

3.1 Data Search

3.1.1 Lincolnshire Environmental Records Centre (LERC) was consulted for records of birds within 2km of the site.

3.2 Survey Area

3.2.1 The site consisted of seventeen (predominantly arable) agricultural fields; with occasional patches of dense scrub, broadleaved woodland and five ponds. Hedgerows, ditches and woodland made up the site boundaries. The wider landscape is characterised by the industrial steelworkings to the west of the site, and further arable farmland and plantation woodland to the north and east. Beyond the woodland to the south lies a recently constructed solar array.

3.3 Survey Timings and Protocol

3.3.1 The site was surveyed for breeding birds four times between April 2018 and July 2018, to identify which bird species were using the site for breeding or exhibited territorial behaviour and which habitats appeared to be of greatest value.

3.3.2 The surveys were carried out on the following days, under the weather conditions described in Table 1 below. Due to the large size of the site, some of the visits (namely visits 1 and 2) were split over two days.

Table 1: Dates and Weather Conditions during Breeding Bird Surveys

Survey Number	Date	Description of weather: Precipitation; Cloud (Oktas); Wind (Beaufort Scale)	Temperature (°C)	Timings
1	16/04/2018	Dry, Cloud 2, Wind 4	11-15	08:00 – 13:00
	17/04/2018	Dry, Cloud 2, Wind 4	8-10	08:00 – 11:30
2	03/05/2018	Dry, Cloud 3, Wind 2	10-16	08:30 – 13:00
3	11/06/2018	Dry, Cloud 1, Wind 2	10-22.5	05:15 – 11:00
	12/06/2018	Intermittent light drizzle, Cloud 8, Wind 2	13-16	08:00 – 10:30

Survey Number	Date	Description of weather: Precipitation; Cloud (Oktas); Wind (Beaufort Scale)	Temperature (°C)	Timings
4	24/07/2018	Dry, Cloud 4, Wind 2	18-25	08:30 – 13:00

3.3.3 The survey followed BTO guidelines, where the observer systematically walked through the site, ensuring that all points on site were visited to within 50m. The location and behaviour of all birds and flocks of birds seen was noted on large-scale survey maps which were later collated onto master maps for interpretation. Particular attention was paid to bird exhibiting breeding behaviour, for instance birds in full song, exhibiting antagonistic behaviour/calling, carrying nest material, carrying food, and returning to nesting sites. Standard BTO Common Birds Census symbology and species codes were used to create a survey map of each individual visit.

3.4 Personnel

3.4.1 All surveyors have been assessed under the Clarkson and Woods QA processes as competent to complete the surveys.

3.4.2 Surveys were undertaken by Harry Fox BSc MCIEEM, Mark Baker BSc MCIEEM, James Latham BSc MCIEEM, Mike Hockey Grad CIEEM, and Steve Miller affiliate member of CIEEM. Harry, Mark, James, Mike and Steve are highly experienced bird surveyors able to identify all British species by sight and sound.

Mapping

3.4.3 The site was divided up into eight survey “zones” (largely comprising agricultural fields) and twelve “boundaries” (comprising hedgerows, scrub, woodland and ditches) according to similar habitat characteristics to assist in the interpretation of data (see **Table 2** & **Figure 2**). This separation of the site’s features allowed the relative usage of the site’s habitats by notable species or numbers of species to be assessed. It should be noted that these zones and boundaries combine multiple fields and hedgerows and therefore the numbering differs from that used in the Phase 1 survey map (Figure 1).

Table 2: Zones and Boundaries numbering scheme

Zone No.	Description
1	Arable fields to the north-east of the site, sown with winter barley
2	Primarily arable fields sown with winter barley and early wheat, with a block of improved grassland present
3	Arable field to the south-east of the site sown with early wheat
4	Arable field to the south of the site sown with early wheat
5	Primarily semi-improved grassland fields to the south-west of the site
6	Primarily arable fields to the west of the site sown with oil seed rape
7	Arable field towards the centre of the site sown with oil seed rape
8	Arable fields towards the north of the site sown with vining peas
Boundary No.	Description
B1	Mixed plantation woodland to the east of the site and poultry farm
B2	Mixed plantation woodland to the south-east of the site
B3	Broad-leaved plantation woodland towards the centre of the site
B4	Broad-leaved plantation woodland to the south of the site dividing zones 3 and 4
B5	Hedgerow, scrub and woodland habitat to the south of the site
B6	Riparian woodland, hedgerows and scrub to the west of the site
B7	Broad-leaved plantation woodland, as well as an arable field containing a portion of bare ground surrounded by trees, situated to the north of the site
B8	Broad-leaved plantation woodland and hedgerows dividing zones 6 and 7
B9	Dense scrub and hedgerow between zones 7 and 8
B10	Hedgerows and ditch in the centre of the site
B11	Hedgerow with ditch to the north of zone 4
B12	Hedgerows and ditches to the south-west of the site

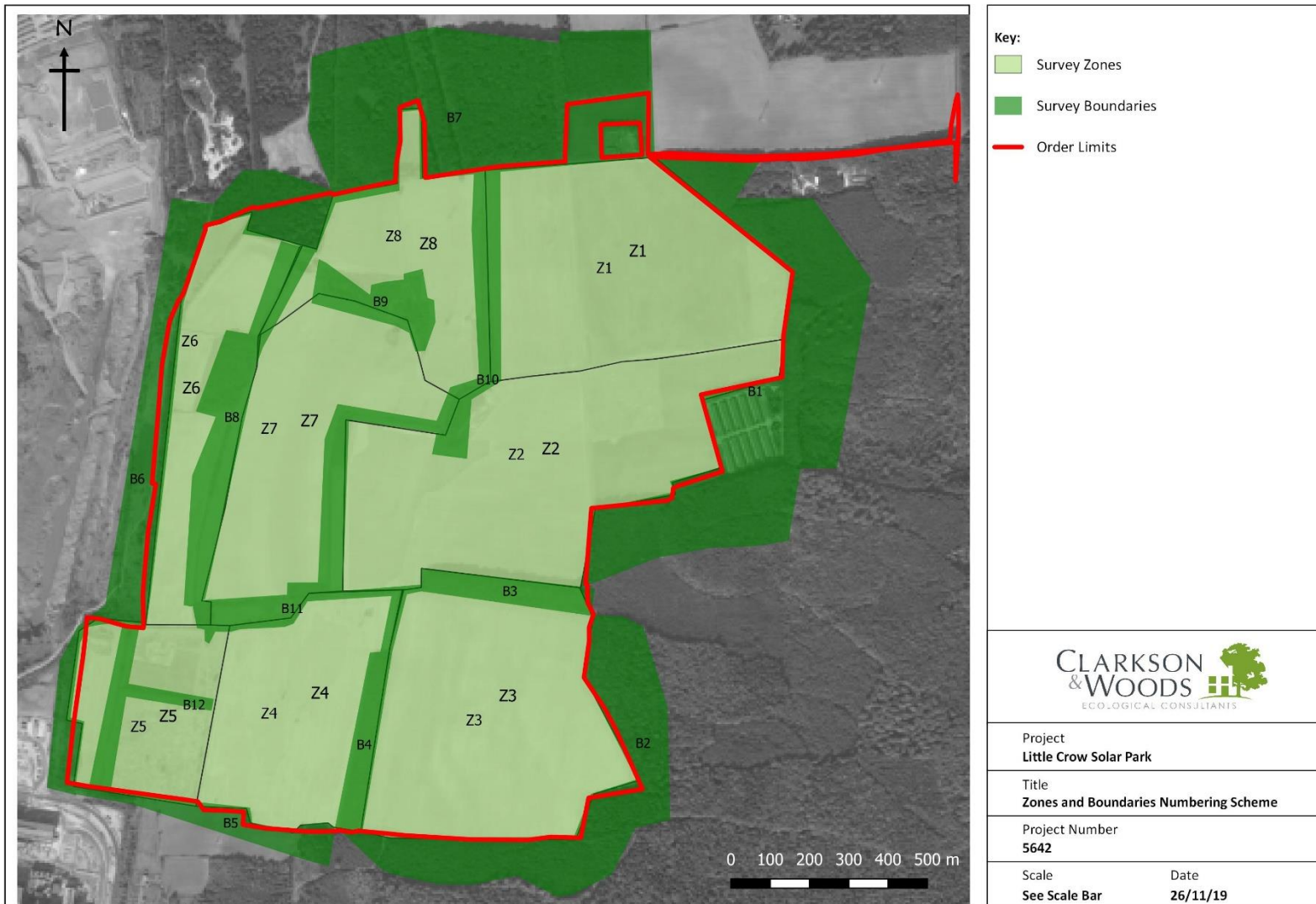


Figure 2: Map showing Habitat/Boundary Zones

4 SURVEY LIMITATIONS

Survey

- 4.1.1 Nocturnal bird surveys were not undertaken and as such the activity on site of birds such as owls cannot be determined. In lieu of survey data, a judgement has been made based on the results of the data search and the presumed value of the habitats on site to such species.
- 4.1.2 The surveys offer only 'snapshots' of the Site and whilst trying to account for seasonal differences, may miss certain species which attend the site infrequently or which might choose to take up residence subsequent to completion of the surveys. At the same time a lack of signs of any particular species does not confirm its absence, merely that there was no indication of its presence during this survey.
- 4.1.3 If no action or development of this land takes place within twelve months of the date of this report, then the findings of this survey should be reviewed and may need to be updated. After three years the findings will be out of date and the full survey should be repeated.

Site Compound Area

- 4.1.4 The survey area did not encompass the entire field surrounding the former oil well in the north east of the survey area, which is expected to be used to house the temporary site compound during construction of the array. This field was added to the Order Limits subsequent to the completion of the breeding bird surveys. The Order Limits were amended to include this area after the surveys had been completed. The use of this area by breeding birds was not fully investigated and it is possible that bird species (including those of conservation concern) using this area were not recorded. However the survey route did follow the southern boundary of this field and this area was included within survey boundary zone B7 (figure 2 refers). As such any conspicuous activity by birds exhibiting territorial behaviour within the southern portion of this field (such as display flights or calls) would likely have been recorded, and the surveyors

also noted any movement of birds into and out of this area. However it is likely that small numbers of birds and territories/nest sites within the area would have gone unrecorded as, unlike the rest of the fields within the survey area, the surveyor would not have flushed birds sat on nests. It is noted that the arable land present in this field is relatively small in size (circa 2.1 ha) and predominately surrounded by tall woodland and trees, and therefore suboptimal for certain open farmland bird species due to a lack of clear sightlines for predator detection.

4.1.5 Overall, the findings of the survey (particularly the results recorded within B7) are therefore considered to depict a reasonable but not a precise reflection of the bird use of this area during the survey period.

5 RESULTS

5.1 Data Search – Protected and Notable Species

Data obtained from Lincolnshire Environmental Records Centre (LERC)

5.1.1 The data search identified 65 notable bird species within 2km of the site since 2000 which winter in the UK (or are vagrants) and are considered relevant to this report. These species and their conservation designations are detailed in Section 8 at the end of this report. Additional records beyond the most recent record for each species have been excluded.

5.1.2 A number of birds within Section 8 were recorded within the site. This includes Lapland bunting *Calcarius lapponicus*, merlin *Falco columbarius*, peregrine *Falco peregrinus*, brambling *Fringilla montifringilla*, tree sparrow *Passer montanus*, fieldfare *Turdus pilaris* and hobby *Falco subbuteo*.

5.1.3 Details of the legislation affecting those protected species which have been identified as occurring on the site from the wintering bird surveys, or potentially occurring on the site given their ecological requirements, are detailed in Section 6.

Data Search – Local Conservation Priorities

5.1.4 Farmland birds as a group are identified as targets for conservation within the Lincolnshire Biodiversity Action Plan (BAP) 2011-2020 (3rd Edition). The species of bird listed within this group are:

- Grey partridge *Perdix perdix*
- Lapwing *Vanellus vanellus*
- Yellow wagtail *Motacilla flava*
- Skylark *Alauda arvensis*
- Corn bunting *Miliaria calandra*
- Linnet *Carduelis cannabina*
- Yellowhammer *Emberiza citronella*
- Reed bunting *Emberiza scheoniclus*
- Turtle dove *Streptopelia turtur*
- Bullfinch *Pyrrhula pyrrhula*
- Starling *Sturnus vulgaris*

- Tree sparrow *Passer montanus*
- Snipe *Gallinago gallinago*
- Curlew *Numenius arquata*
- Redshank *Tringa totanus*
- Barn owl *Tyto alba*

5.1.5 These species have been identified as local conservation priorities and therefore will be given appropriate additional weight within the ES Chapter.

5.2 Field Survey

5.2.1 In total, 55 bird species (including woodpigeon *Columba palumbus* and pheasant *Phasianus colchicus* which were not enumerated) were recorded during the survey visits. 21 of these were BTO Birds of Conservation Concern red/amber lists¹ or Species of Principal Importance (SPI)², comprising 10 'red listed' birds and 11 'amber listed' birds. 10 species were listed as being SPI for nature conservation and as such are capable of being material considerations within the planning process. The patterns of abundance and distribution of each of these species is discussed later in this section, with greatest detail given to birds of conservation concern and SPIs.

5.2.2 **Table 4** shows the numbers of each species encountered across all the survey visits with the peak count(s) of sightings highlighted. This enables patterns in changing abundance of each species to be observed over the course of the breeding season.

5.2.3 **Table 5** shows the peak counts of each species recorded in each survey zone/ boundary. This allows the relative usage of each survey zone and habitat type to be inferred. The information in this table will be discussed in the next section for each notable species in turn.

¹ Red list species are those that are globally threatened, whose population or range has declined rapidly in recent years (i.e. >50% in 25 years), or which have declined historically and not recovered. Amber list species are those whose population or range has declined moderately in recent years (>25% but <50% in 25 years) declined historically but recovered recently, rare breeders (fewer than 300 pairs), internationally important populations in the UK, localised populations and those with an unfavourable conservation status in Europe.

² Species of Principal Importance (SPI) are listed in section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

5.2.4 In Tables 4 and 5, the bird species are colour coded to indicate their conservation status and their likely breeding status on-site is indicated by abbreviations as outlined in Table 3 below:

Table 3: Colours and symbols used in Tables 4 and 5 below

Bold text	Listed under Section 41 of the NERC Act 2006 (Species of Principal Importance - SPIs) or UK Biodiversity Action Plan species
Red fill	'Red listed' species according to BTO/RSPB Bird of Conservation Concern
Orange fill	'Amber listed' species according to BTO/RSPB Bird of Conservation Concern
Yellow fill	Peak Count of Survey for each species
Y	Breeding confirmed (nests located or adults with food/nest material, or fledglings seen)
Pr	Breeding probable
Po	Breeding possible
N	Not likely to breed on site

Table 4: Numbers of Each Species Recorded During Each Survey Visit

Common Name	Latin Name	Visit				Breeding?
		1	2	3	4	
Greylag goose	<i>Anser anser</i>	2				N
Moorhen	<i>Gallinula chloropus</i>		1		2	Y
Lapwing	<i>Vanellus vanellus</i>	2	4	1	7	Pr
Woodcock	<i>Scolopax rusticola</i>		1			N
Herring gull	<i>Larus argentatus</i>		1	3	2	N
Lesser black-backed gull	<i>Larus fuscus</i>		2			N
Tawny owl	<i>Strix aluco</i>			1		Po
Buzzard	<i>Buteo buteo</i>	1	2	3	4	Po
Kestrel	<i>Falco tinnunculus</i>	2	2	2	2	Pr
Red legged partridge	<i>Alectoris rufa</i>	10	7	3	9	Pr
Stock dove	<i>Columba oenas</i>	1	1			N
Great spotted woodpecker	<i>Dendrocopos major</i>	1		1		Po
Cuckoo	<i>Cuculus canorus</i>			1		N
Skylark	<i>Alauda arvensis</i>	68	47	35	12	Y
Meadow pipit	<i>Anthus pratensis</i>	2	2	6		Pr
Yellow wagtail	<i>Motacilla flava</i>		4	8		Pr
Pied wagtail	<i>Motacilla alba</i>	1		2	1	Po
Dunnock	<i>Prunella modularis</i>	4	4	9	3	Pr
Robin	<i>Erithacus rubecula</i>	19	9	13	2	Y
Blackbird	<i>Turdus merula</i>	28	9	21	4	Y
Song thrush	<i>Turdus philomelos</i>	3		3	1	Po
Mistle thrush	<i>Turdus viscivorus</i>		3	2		Po
Treecreeper	<i>Certhia familiaris</i>	1				Po
Nuthatch	<i>Sitta europaea</i>		1		2	N
Swallow	<i>Hirundo rustica</i>	3	8	16	12	N
Swift	<i>Apus apus</i>			1		N
Lesser whitethroat	<i>Sylvia curruca</i>			1		N
Whitethroat	<i>Sylvia communis</i>	1	16	19	5	Pr
Goldcrest	<i>Regulus regulus</i>	1	3			Po
Wren	<i>Troglodytes troglodytes</i>	26	17	31	7	Y
Great tit	<i>Parus major</i>	9	10	10	1	Pr
Blue tit	<i>Cyanistes caeruleus</i>	20	15	23	15	Pr
Long-tailed tit	<i>Aegithalos caudatus</i>		4	1		Pr

Common Name	Latin Name	Visit				Breeding?
		1	2	3	4	
Blackcap	<i>Sylvia atricapilla</i>	13	20	24		
Coal tit	<i>Parus ater</i>	4	1	2		Po
Carrion crow	<i>Corvus corone</i>	8	1	6	37	Po
Jay	<i>Garrulus glandarius</i>	1				N
Magpie	<i>Pica pica</i>	1	1		3	Po
Brambling	<i>Fringilla montifringilla</i>		4	2		Po
Goldfinch	<i>Carduelis carduelis</i>	3	11	42	18	Y
Chaffinch	<i>Fringilla coelebs</i>	47	34	38	18	Y
Chiffchaff	<i>Phylloscopus collybita</i>	11	7	6	2	Pr
Greenfinch	<i>Carduelis chloris</i>			4	4	Po
Willow Warbler	<i>Phylloscopus trochilus</i>	8	16	5	1	Pr
Garden warbler	<i>Sylvia borin</i>		3	1		Po
Wheatear	<i>Oenanthe oenanthe</i>			3		N
Bullfinch	<i>Pyrrhula pyrrhula</i>		2	5		Pr
Linnet	<i>Linaria cannabina</i>	17	20	39	23	Y
Reed bunting	<i>Emberiza schoeniclus</i>	2	8	14	17	Y
Yellowhammer	<i>Emberiza citrinella</i>	15	8	16	11	Y
Total Individuals		338	309	430	225	
Number of Species		34	38	41	28	

Note that wood pigeon and pheasant were excluded from the survey. They were recorded as present on all visits but counts were not made.

Table 5: Results of the Breeding Bird Survey (Peak Counts of Birds within Each Habitat Type)

Common name	Peak counts for each species per zone								Peak counts for each species per boundary											
	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Greylag goose					2															
Moorhen																		1		
Lapwing						4		1												
Woodcock																			1	
Herring gull			1	2	1															
Lesser black-backed gull						2														
Tawny owl															1					
Buzzard		1		1	1	1				1					1					
Kestrel	1	1			2											1				
Red legged partridge	2	2		2		3									2	3		2		
Stock dove				1		1														
Great spotted woodpecker									1		1									
Cuckoo															1					
Skylark	12	29	8	5	4	8	7	2												1
Meadow pipit	1	4			2															
Yellow wagtail	4	1	3				2												1	
Pied wagtail		2						1												
Duncock					1	3							1	1	1			1	2	1
Robin	4					2	1		4	2		1	2	4	1	3	2	1	1	1
Blackbird	3	3			1	1		4	3	3	3	1	4	2	4	1	3	1	5	
Song thrush						1				2				1				1	1	
Mistle thrush	1	1		1		1						2			1	1				
Treecreeper										1										
Nuthatch										1										
Swallow	3			1	11	1	2	1								2				
Swift		1																		

Common name	Peak counts for each species per zone								Peak counts for each species per boundary												
	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	
Lesser whitethroat														1							
Whitethroat					2	3	1				1			2	1	1	1	5	2	3	
Goldcrest										1		1		1			1				
Wren	4				1	4		1	3	3	3	4	1	2	4	2	2		2	3	
Great tit		1				1			1	1	3	1	1	1	1	3	3		1	1	
Blue tit	4	3			1	2		2	4	2	2	3	1	1	2	4	3	1	2	3	
Long-tailed tit															1				4		
Blackcap	4	1			1	2		1	2	5	3	1	3	3	3	4	2		2	1	
Coal tit										1	1	1	1		1		1				
Carrion crow			1		3		30	3							2		1	1	1		
Jay										1											
Magpie														1							
Brambling									1		1	1			2						
Goldfinch	25	2	1			1		2							2	4	6	6	1		
Chaffinch	7	2			3	5		9	1	4	3	2	4	6	4	6	3	8	2	2	
Chiffchaff						2		2	2	1			2	2	3					1	
Greenfinch		1														1		1		1	
Willow Warbler	1												2	9	4				1	1	
Garden warbler										1								1	1	1	
Wheatear																				3	
Bullfinch						1								1		2				2	
Linnet	26	4			2	3	5	2		2				2	1		2	5	1	4	
Reed bunting	4	3			2	2	1							3		2	3	1	2		
Yellowhammer	3	2			2	2								4		6	1	3	1	3	
Count of Species	18	19	5	7	21	25	7	14	10	16	10	11	11	21	23	16	14	16	21	14	

Overall Assemblage

5.2.5 The breeding bird assemblage was diverse: comprising typical species of farmland, woodland and hedgerows. Numerous summer visitors were recorded, including cuckoo, swift, swallow, willow warbler, chiffchaff, blackcap, and yellow wagtail. Other species were residents, though numbers may be swelled by an influx of migrant birds.

Temporal Changes (within season)

5.2.6 Over the course of the four surveys, the level of usage of the site by certain species varied a little. The peak number of individuals and species was recorded during Visit 3 at the beginning of June. The lowest number of species and individuals were recorded during the 4th visit in late July. It was noted that the majority of fields had been harvested by the 4th survey which may account for the drop in numbers of species which inhabit the centre of arable fields, such as skylarks, meadow pipits and yellow wagtail. The 4th visit was also conducted during an extended period of dry, hot weather which is likely to result in lower bird activity generally.

Red-listed Species

Skylark

5.2.7 The skylark is a species mainly associated with arable habitats, grassland and moorland in the UK. This species is red listed as a Species of Conservation Concern due to recent breeding and wintering population decline and range contraction. It is also a Species of Principal Importance under section 41 of the NERC Act (2006).

5.2.8 Skylark were recorded on each visit with peak numbers in the arable land in Zone 1 during Visit 1. Sightings were spread between across all Zones, although there was a stronger association Zones 1 and 2 in the north east of the site. The majority of fields at the site are suitable for breeding skylark as they provide a good supply of suitable open space, nesting and food resources as well as long sightlines for predator monitoring.

5.2.9 The site supports an excellent population of skylark and surveys indicate this is around 25 territories. Figure 3 provides a distribution map of skylark found during the survey

Yellow Wagtail

5.2.10 Yellow Wagtails are farmland bird which are usually found in damp habitats such as marshes, lowland meadows and river valleys, but there has been much greater use of arable habitats over recent years, with oil-seed rape, legume and root crops increasingly used for breeding.

5.2.11 The population has fallen by an estimated 75 per cent between 1970 and 2009. It is thought that land drainage, the conversion of pasture to arable and a decline in invertebrate numbers (notably those associated with livestock) may be behind the decline, although the species is a long-distance migrant so changes in conditions at wintering or passage grounds cannot be ruled out

5.2.12 Yellow wagtail were recorded in reasonably low numbers (peak of 8) during visits 2 and 3. This species was absent during visit 1 and visit 4, although survey visit 1 was conducted when yellow wagtail are still arriving in the UK from overseas. Most observations were made within Zones 1 and 2 in the north east of the site as well as in Zone 7 in the central western area. Individuals were also recorded in Zone 3 in the south east of the site during the third visit.

5.2.13 The site supports a modest population of yellow wagtail and surveys indicate this is around 3 territories. Figure 4 provides a distribution map of yellow wagtail skylark found during the survey

Lapwing

5.2.14 Lapwing are a typical bird of farmland, wetland and upland grassland, but now in major decline due to habitat loss.

5.2.15 The site constitutes suitable lapwing breeding habitat as they are known to nest on spring tilled arable fields comprising solely bare ground which also provides a good foraging resource. Lapwing were observed in small numbers (peak of 7) on site in Zone 7 during visits 1, 2 and 4.

Display, calling and courtship behaviour was noted between those seen on site on these two visits. No nesting behaviour was observed at the site during the third visit, although an individual was seen flying overhead in Zone 8 during Visit 3.

5.2.16 The site supports a low population of breeding lapwing and surveys indicate this is probably 1 or 2 territories. Figure 5 provides a distribution map of lapwing found during the survey

Yellowhammer

5.2.17 Yellowhammers are mainly associated with open countryside and hedgerows. This species is red listed as a Species of Conservation Concern due to recent population declines. This is likely due to changes in agricultural practices, such as the removal of hedgerows and increased use of pesticides. Yellowhammers were most regularly observed within the boundary habitats particularly in the hedgerows and B8 and B6. These features offer suitable nesting habitat for foraging yellowhammers and appears to support modest numbers, with a peak count of 16 recorded during Visit 3.

Linnet

5.2.18 Linnets are found on farmland wherever there is a plentiful supply of seeds throughout the year. Mixed farmland is particularly valuable. They nest in dense hedgerows, bramble or other types of scrub.

5.2.19 Linnet numbers have dropped substantially over the past few decades, with the UK population estimated to have declined by 57 per cent between 1970 and 2008. This is largely the result of a lack of food sources in modern farming. Linnet is a red listed bird of conservation concern and a Species of Principal Importance.

5.2.20 Linnet were recorded on each survey visit in low to moderate numbers and the survey area appears to support a medium population. No particular association with either the boundary or open field habitats was noted, although a moderate flock of 25 birds were seen flying over Zone 1 during visit 3.

Amber-listed Species

Meadow pipit

5.2.21 Like skylarks, meadow pipits are associated with open arable, grassland and heathland habitats, are ground dwelling birds and have undergone declines in recent years, hence their amber status.

5.2.22 Relatively low numbers of these birds were encountered in each visit, aside from the 4th visits when none were seen or heard. They were primarily found within open habitats in the east of the survey area, as for skylarks. The site appears to support a small population of meadow pipit which are likely to nest within the fields. The surveys indicate this is probably 1 or 2 territories. Figure 6 provides a distribution map of meadow pipit found during the survey.

Dunnock

5.2.23 Dunnock inhabit any well vegetated areas with scrub, brambles and hedges, including field edges. They spend large amounts of time on the ground in amongst grassland but also remain close to shrubby vegetation cover. Dunnock abundance fell substantially between the mid-1970s and mid-1980s, after a period of population stability. Some recovery has occurred throughout the UK since the late 1990s. Dunnock is an amber listed Species of Conservation Concern and a Species of Principal Importance.

5.2.24 Dunnock were recorded in low numbers during each survey visit, and were primarily observed with the boundary habitats. This species is present all year round and the site appears to support a small breeding population.

Willow warbler

5.2.25 Willow warbler are associated with scrub and open woodland and are amber listed due to recent breeding and wintering population decline and reduction in breeding and wintering range.

5.2.26 This species were recorded in small numbers within the boundary habitats across the site during each, and were most regularly recorded at

the woodland edge at the western boundary (B6). The site probably supports small breeding population.

Reed bunting

5.2.27 Reed bunting is a resident species that is typically found in wet vegetation, but has more recently spread into farmland. It nests close to the ground amongst dense vegetation including ditch banks. They feed on the ground and in ditches and banks and favour damp or marshy grassland and swamps.

5.2.28 Reed bunting numbers in the UK have been declining since the mid-1970s, due to habitat loss. Reed bunting is an amber listed Species of Conservation Concern and a Species of Principal Importance.

5.2.29 Observations of this species occurred on site primarily in the arable field in Zones 1 and 2, as well as the hedgerow, tall ruderal and ditch habitat at Boundaries 8, 9 and 11. The surveys identified approximately four territories of this species. Figure 7 provides a distribution map of reed bunting found during the survey.

Kestrel

5.2.30 Kestrel are a relatively common and widespread bird of prey species, although are amber listed due to recent declines in population and range. Two observation of these species were observed during each survey visit, primarily flying over the open fields. The grassland present at the field margins and fields in Zone 5 provide optimal habitat for small mammals, which is the chief food source for kestrels. This species could nest in the trees or pylons present within the site, but would be more likely to nest within the woodland edges around the site.

Other Birds of Conservation Concern

5.2.31 Individuals or small numbers of each of woodcock, herring gull, cuckoo, song thrush and mistle thrush (red-listed species) as well as greylag goose, lesser black-backed gull, tawny owl, stock dove, swift, and bullfinch (amber-listed species) were recorded on one or two occasions and did not show a persistent association with the site. It is therefore likely

that they are not present within the site throughout the breeding season but may use the site opportunistically.

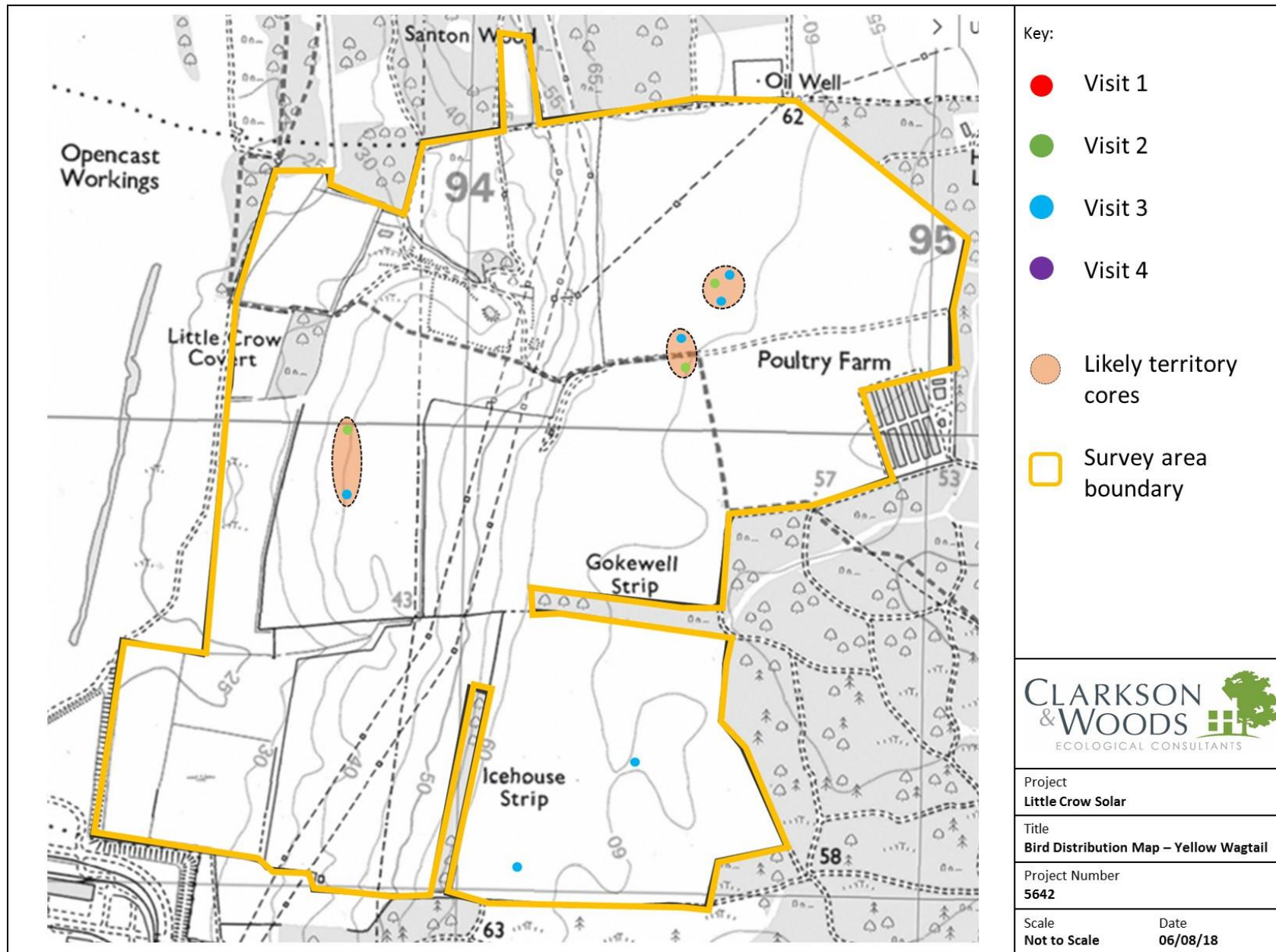


Figure 3: Skylark Distribution Map

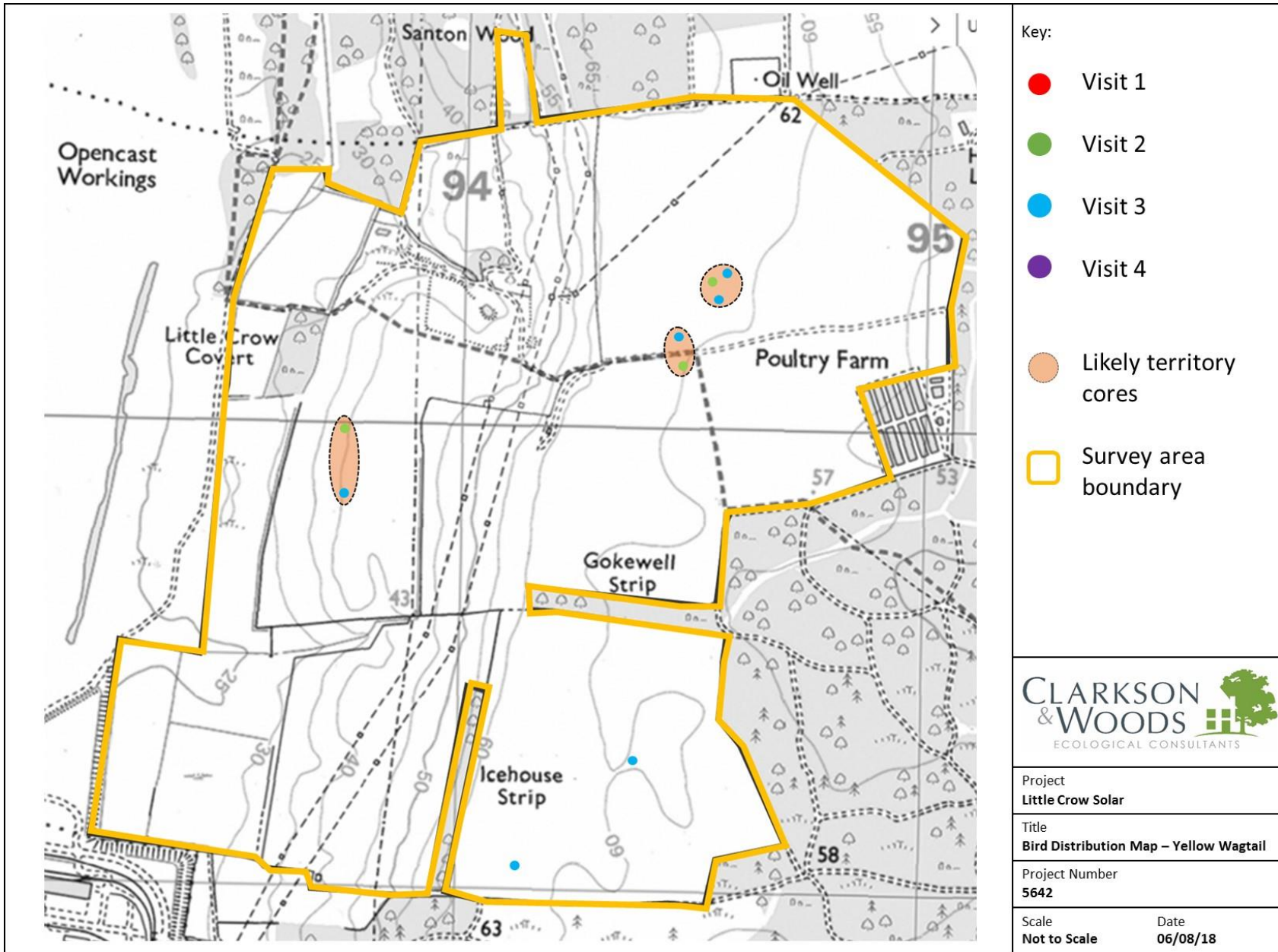


Figure 4: Yellow Wagtail Distribution Map

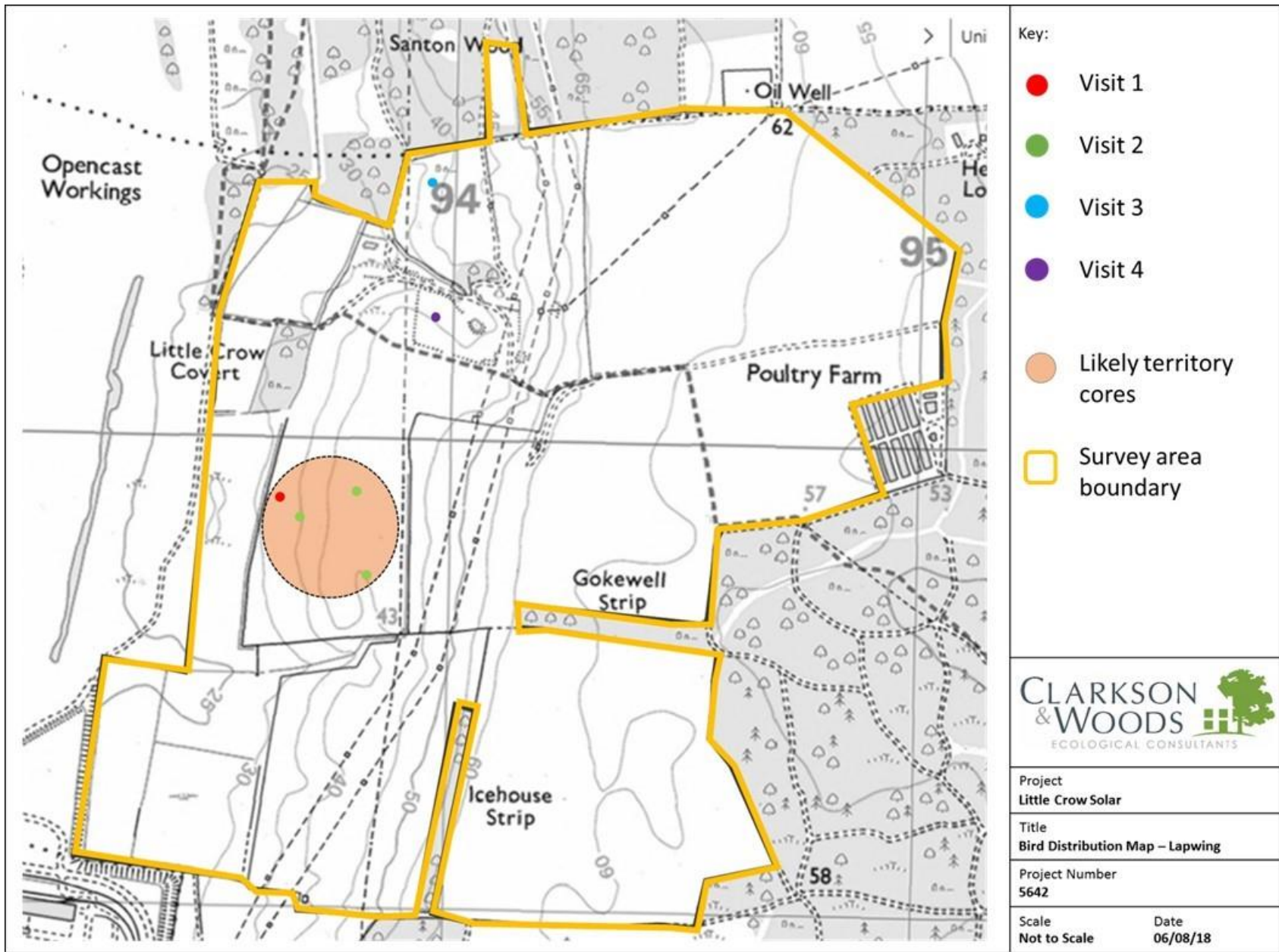


Figure 5: Lapwing Distribution Map

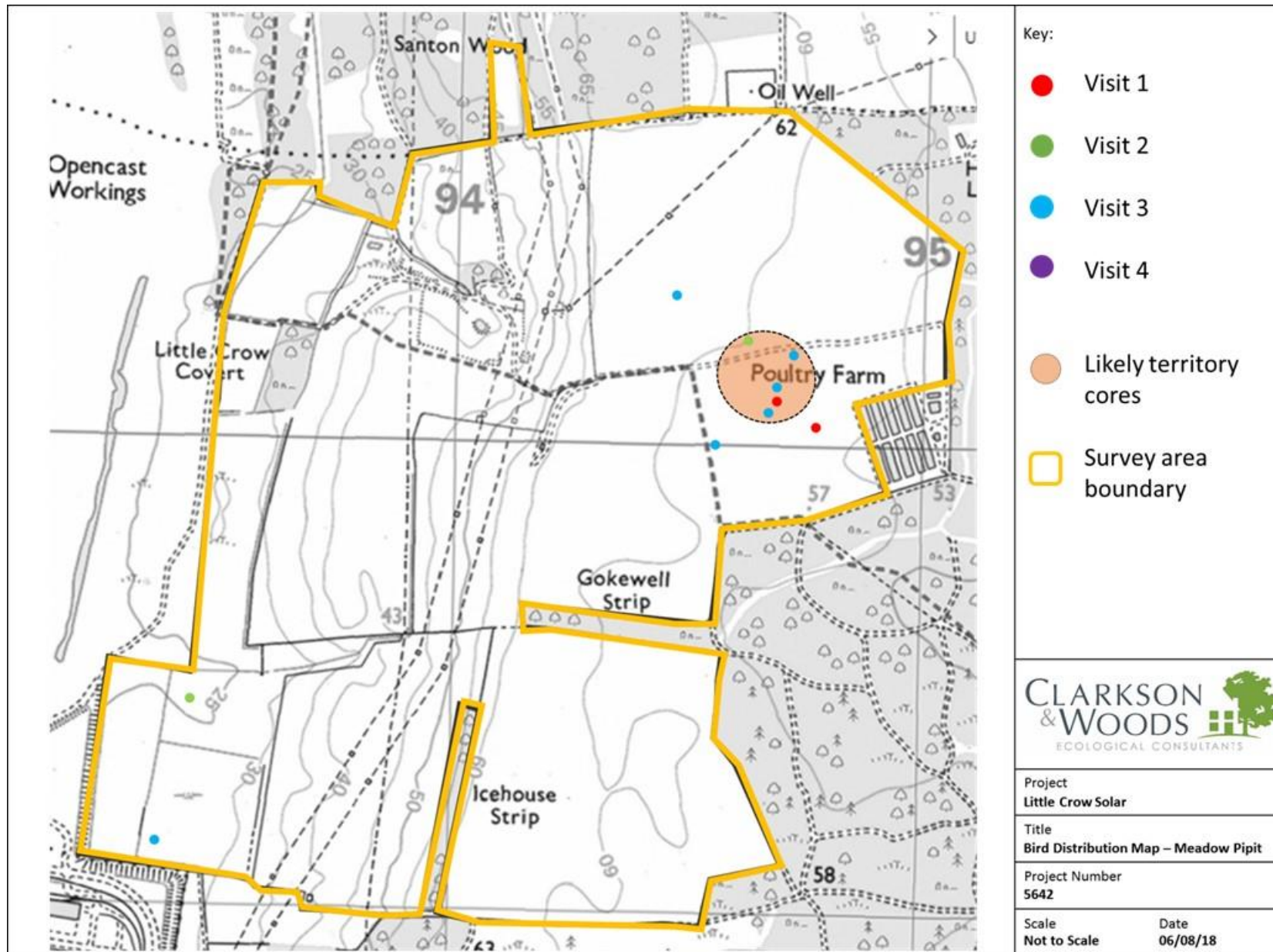


Figure 6: Meadow Pipit Distribution Map

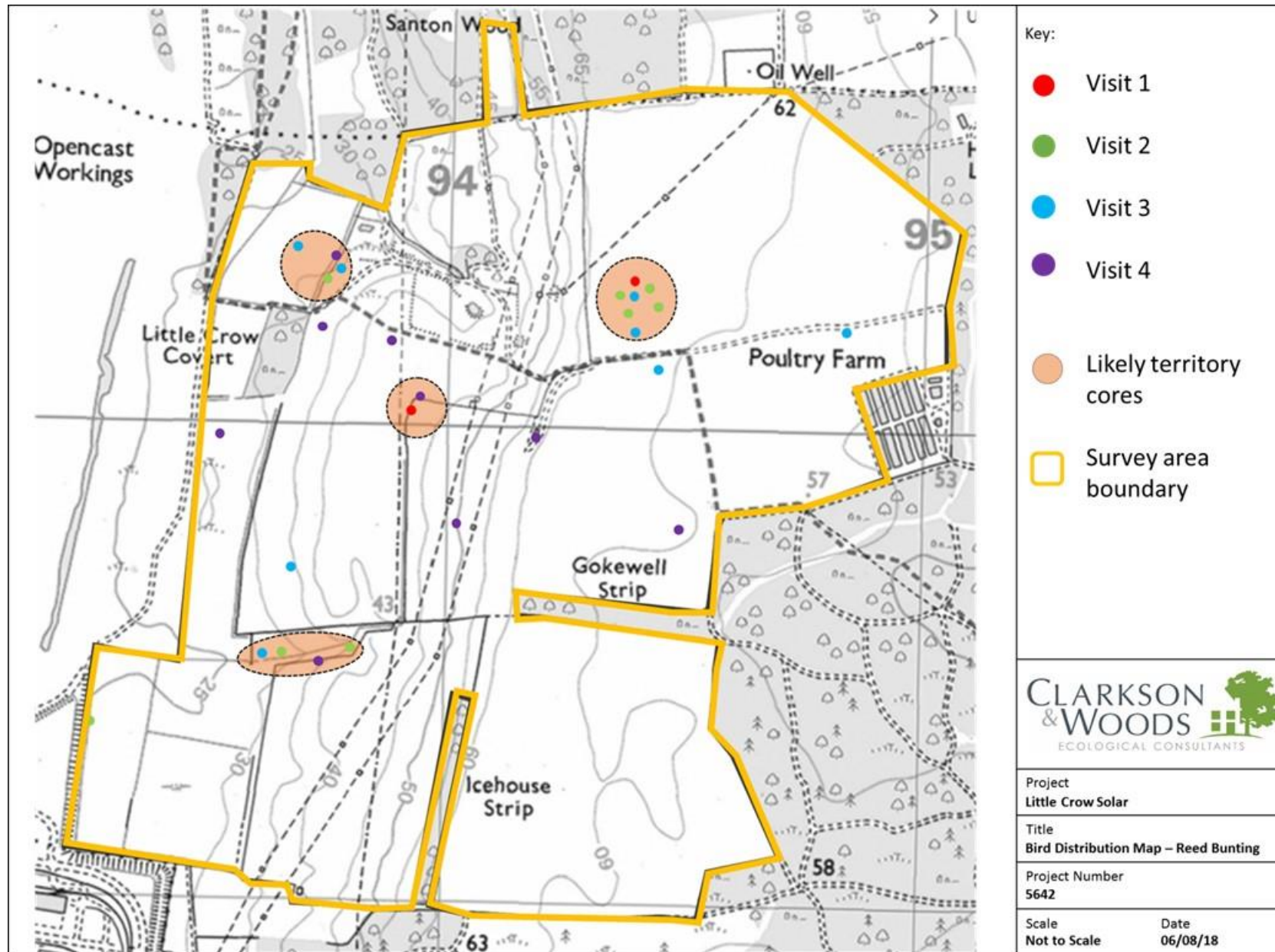


Figure 7: Reed Bunting Distribution Map

6 SUMMARY

6.1.1 A total of 55 species were identified; of which 10 were red listed birds and 11 were amber listed birds. Of these 21 bird species, 10 are also Species of Principal Importance under the NERC Act (2006) and so are a material consideration for planning.

6.1.2 The notable birds utilising the site can be split into two distinct categories; those which were recorded predominantly within open habitats and those recorded foraging predominantly in boundary habitats such as woodland and hedgerows.

6.1.3 The birds within open habitat are more likely to be directly impacted installation of a solar array. The approximate number of territories the site supports for each of these species is summarised in the Table 6 below. Although included in this summary, reed bunting may also utilise boundary habitat for nesting.

Table 6: Summary of Breeding Birds of Open Farmland

Birds Recorded within Open Habitats	Approximate Number of Territories
Skylark	25
Yellow wagtail	3
Lapwing	1 or 2
Meadow pipit	1 or 2
Reed bunting	3

6.1.4 Table 7 summaries the notable bird species that were either confirmed to be breeding or considered probably breeding within the boundary habitats at the site:

Table 7: Summary of Breeding Bird Associated with Boundary Habitats

Birds Recorded within Open Habitats
Kestrel
Dunnock
Song Thrush
Mistle Thrush
Willow Warbler
Bullfinch
Linnet
Yellowhammer

7 LERC RECORDS OF BIRDS FROM SURROUNDING 2KM

Species Name	Common Name	Date	Abundance	Designations
<i>Acanthis cabaret</i>	Lesser Redpoll	04/03/2015	3 Present (Count: Exact)	BoCC4-Red, Sect.41, Sect.42,
<i>Accipiter gentilis</i>	Goshawk	06/12/2003	1 Present (Count: Exact)	WCA1i,
<i>Alauda arvensis</i>	Skylark	27/06/2015	4 Total (Count: Exact)	BoCC4-Red, LBAP:3, Sect.41
<i>Alcedo atthis</i>	Kingfisher	01/11/2015		BoCC4-Amber, WCA1i,
<i>Anas acuta</i>	Pintail	23/11/2011	3 Present (Count: Exact)	BoCC4-Amber, WCA1ii,
<i>Anas penelope</i>	Wigeon	08/03/2015	1 Total (Count: Exact)	BoCC4-Amber,
<i>Anas strepera</i>	Gadwall	01/01/2013		BoCC4-Amber,
<i>Anser anser</i>	Greylag Goose	23/05/2015	2 Total (Count: Exact)	BoCC4-Amber, WCA1ii
<i>Anser brachyrhynchus</i>	Pink-footed Goose	01/11/2015		BoCC4-Amber,
<i>Anser fabalis subsp. fabalis</i>	Taiga Bean Goose	16/03/2011	8 Present (Count: Exact)	BoCC4-Amber,
<i>Anser fabalis subsp. rossicus</i>	Tundra Bean Goose	23/11/2011-07/12/2011	2 Juvenile (Count: Exact)	BoCC4-Amber,
<i>Aythya ferina</i>	Pochard	13/12/2015	2 Total (Count: Exact)	BoCC4-Red,
<i>Aythya marila</i>	Scaup	23/11/2011	1 1st calendar year male(s) (Count: Exact)	BoCC4-Red, Sect.41, , WCA1i,
<i>Bucephala clangula</i>	Goldeneye	20/12/2000	2 Present (Count: Exact)	BD2.2, BoCC4-Amber, WCA1ii,
<i>Calcarius lapponicus</i>	Lapland Bunting	27/10/2001	1 Present (Count: Exact)	BoCC4-Amber, WCA1i
<i>Charadrius morinellus</i>	Dotterel	25/04/2011	1 Present (Count: Exact)	BoCC4-Red, WCA1i,
<i>Circus aeruginosus</i>	Marsh Harrier	11/01/2012-22/02/2012	4 Present (Count: Exact)	BoCC4-Amber, WCA1i,
<i>Clangula hyemalis</i>	Long-tailed Duck	06/12/2004	1 Present (Count: Exact)	BoCC4-Red, WCA1i
<i>Coccothraustes coccothraustes</i>	Hawfinch	February 2009	11 Present (Count: Exact)	BoCC4-Red, Sect.41, Sect.42,
<i>Cygnus columbianus subsp. bewickii</i>	Bewick's Swan	15/02/2002	2 Present (Count: Exact)	BoCC4-Amber, Sect.41, Sect.42, WCA1i,
<i>Cygnus cygnus</i>	Whooper Swan	19/03/2013	26 Present (Count: Exact)	BoCC4-Amber, WCA1i,
<i>Cygnus olor</i>	Mute Swan	01/04/2014		BoCC4-Amber,
<i>Emberiza calandra</i>	Corn Bunting	2005 - 2010		BoCC4-Red, LBAP:3,
<i>Emberiza citrinella</i>	Yellowhammer	25/11/2015	9 Total (Count: Exact)	BoCC4-Red, LBAP:3, Sect.41, Sect.42,
<i>Emberiza schoeniclus</i>	Reed Bunting	25/11/2015	2 Total (Count: Exact)	BoCC4-Amber, LBAP:3, Sect.41, Sect.42,
<i>Falco columbarius</i>	Merlin	28/03/2012	1 Female (Count: Exact)	BD1, Bern2, BoCC4-Red, , WCA1i,i
<i>Falco peregrinus</i>	Peregrine	03/11/2015	1 Present (Count: Exact)	BD1, Bern2, CITESA, CMS_A2, LBCSchedule1, ScotBL, WCA1i,
<i>Falco subbuteo</i>	Hobby	02/08/2015	1 Total (Count: Exact)	WCA1i

Species Name	Common Name	Date	Abundance	Designations
<i>Fringilla montifringilla</i>	Brambling	25/01/2015	23 Present (Count: Exact)	WCA1i
<i>Gallinago gallinago</i>	Snipe	06/12/2014	1 Present (Count: Exact)	BoCC4-Amber, LBAP:3
<i>Gavia immer</i>	Great Northern Diver	12/01/2013	1 Present (Count: Exact)	BoCC4-Amber, WCA1i
<i>Gavia stellata</i>	Red-throated Diver	14/11/2011	1 Juvenile (Count: Exact)	WCA1i,
<i>Haliaeetus albicilla</i>	White-tailed Eagle	19/05/2011	1 Present (Count: Exact)	BoCC4-Red, WCA1i,
<i>Linaria cannabina</i>	Linnet	02/08/2015		BoCC4-Red, LBAP:3,
<i>Loxia curvirostra</i>	Common Crossbill	19/03/2014	22 Present (Count: Exact)	WCA1i,
<i>Loxia leucoptera</i>	Two-barred Crossbill	23/03/2014	1 Male (Count: Exact)	WCA1i
<i>Lullula arborea</i>	Woodlark	28/02/2014	1 Present (Count: Exact)	Sect.41, Sect.42, WCA1i
<i>Melanitta nigra</i>	Common Scoter	31/03/2005	1 Male (Count: Exact)	BoCC4-Red, Sect.41, Sect.42, , WCA1i,
<i>Milvus milvus</i>	Red Kite	19/10/2014	1 Present (Count: Exact)	WCA1i,
<i>Numenius arquata</i>	Curlew	2005 - 2010		BoCC4-Red, LBAP:3, , Sect.41, Sect.42,
<i>Numenius phaeopus</i>	Whimbrel	08/08/2011	1 Present (Count: Exact)	BoCC4-Red, WCA1i, WO1i
<i>Passer domesticus</i>	House Sparrow	25/11/2015		BoCC4-Red, LBAP:3, , Sect.41, Sect.42,
<i>Passer montanus</i>	Tree Sparrow	02/08/2015		BoCC4-Red, LBAP:3, Sect.41, Sect.42,
<i>Perdix perdix</i>	Grey Partridge	03/10/2015	5 Total (Count: Exact)	BoCC4-Red, LBAP:3, Sect.41, Sect.42,
<i>Pernis apivorus</i>	Honey-buzzard	02/10/2015	1 Present (Count: Exact)	BoCC4-Amber, WCA1i
<i>Pyrrhula pyrrhula</i>	Bullfinch	25/11/2015	1 Total (Count: Exact)	BoCC4-Amber, , LBAP:3,
<i>Serinus serinus</i>	Serin	17/11/2007	1 Present (Count: Exact)	WCA1i
<i>Stercorarius parasiticus</i>	Arctic Skua	07/05/2002	1 Present (Count: Exact)	BoCC4-Red, , UKBAP
<i>Sturnus vulgaris</i>	Starling	25/11/2015	100 Total (Count: Estimate)	BoCC4-Red, LBAP:3
<i>Tringa glareola</i>	Wood Sandpiper	28/08/2002	1 Present (Count: Exact)	BoCC4-Amber, WCA1i
<i>Tringa ochropus</i>	Green Sandpiper	20/06/2014	1 Present (Count: Exact)	BoCC4-Amber, WCA1i
<i>Tringa totanus</i>	Redshank	19/04/2011	4 Present (Count: Exact)	BoCC4-Amber, LBAP:3
<i>Turdus iliacus</i>	Redwing	06/12/2015	6 Present (Count: Exact)	BoCC4-Red, , WCA1i
<i>Turdus philomelos</i>	Song Thrush	15/06/2015	1 Total (Count: Exact)	BoCC4-Red, LBAP:3,
<i>Turdus pilaris</i>	Fieldfare	26/03/2014	400 Present (Count: Exact)	BoCC4-Red, WCA1i,
<i>Tyto alba</i>	Barn Owl	24/12/2015	1 Present (Count: Exact)	LBAP:3, WCA1i,
<i>Vanellus vanellus</i>	Lapwing	04/10/2015	8 Total (Count: Exact)	BoCC4-Red, LBAP:3, Sect.41, Sect.42,

Meaning of designations listed above

Designation	Meaning
BoCC4-Amber	BTO Amber List – Bird Population Status Amber
BoCC4-Red	BTO Red List – Bird Population Status Red
Sect.41/42	Section 41/42 of the NERC Act 2006/ UK Biodiversity Action Plan Species
WCA1i	Wildlife and Countryside Act 1981 Schedule 1
LBAP:3	Lincolnshire Biodiversity Action Plan (3 rd Edition)

- **Glossary and Acronyms**

Term / Acronym	Description
Amber Listed (Birds)	Bird species whose population or range has declined moderately in recent years (>25% but <50% in 25 years) declined historically but recovered recently, rare breeders (fewer than 300 pairs), internationally important populations in the UK, localised populations and those with an unfavourable conservation status in Europe.
Assemblage	A group of species found in the same location
BTO	British Trust for Ornithology – an organisation for the study of birds in the British Isles.
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management – professional body for ecology and environmental practitioners
Conservation Status	The state of a species or habitat including for example, extent, abundance, distribution and their trends.
Fragmentation	The breaking up of a habitat, ecosystem or land-use type into smaller parcels with a consequent impairment of ecological function
Greater Lincolnshire Nature Partnership	Government accredited Local Nature Partnership, comprising a broad range of local organisations who aim to bring about improvements in the natural environment in the Greater Lincolnshire Area.
JNCC	Joint Nature Conservation Committee - public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation
LBAP	Local Biodiversity Action Plan - a plan aimed at conserving the fauna, flora and habitats of a defined area, usually along local authority boundary lines
LERC	Lincolnshire Environmental Records Centre – Where wildlife and geological information and documents are kept pertaining to the Greater Lincolnshire area.
National Planning Policy Framework	Document setting out the Government’s planning policies for England and instruction on how they are expected to be applied
NBN	National Biodiversity Network
NERC Act 2006	Natural Environment and Rural Communities Act 2006 - Act of Parliament to make provision

Term / Acronym	Description
	concerned with the natural environment and rural communities (e.g. Natural England)
Priority Species	Species that are of principal importance for conservation in the UK (arising from the Section 42 list of the Natural Environment and Rural Communities Act 2006)
Red Listed (Birds)	Bird species that are globally threatened, whose population or range has declined rapidly in recent years (i.e. >50% in 25 years), or which have declined historically and not recovered.
RSPB	Royal Society for the Protection of Birds - mote conservation and protection of birds and the wider environment
SPI	Species of Principal Importance – see 'Priority Species'
Special Area of Conservation	Sites protected under the European 'Habitats Directive' to protect internationally important natural habitats and species.
Territory (Birds)	A defended area within that home range typically held by songbirds during the breeding season for pair formation facilitation. Typically, territories are defended against others of the same species but may also be defended against other species
UK BAP	United Kingdom Biodiversity Action Plan –the UK government's response to the Convention on Biological diversity. It brought about a series of created action plans for species and habitats in the UK that were most under threat so as to support their recovery. Succeeded by the 'UK Post-2010 Biodiversity Framework' in 2012
UK Post 2010 Biodiversity Framework	A framework of priorities for UK-level work for the Convention on Biological Diversity

