Report on the 2025 ground-nesting bird survey and protection management at St. Mary's Lands, Warwick

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EXECUTIVE SUMMARY

- In 2025, the British Trust for Ornithology was commissioned to undertake standardised breeding birds survey at St Mary's Lands, Warwick, between 26th April and 1st August, specifically to assess site use by ground nesting birds and to set a baseline against which future change in bird populations and site management change can be measured.

- The main focus was to evaluate the use made by ground nesting birds of compartments with temporary fencing, which provides protected areas for nesting, at this open predominantly grassland site, with high use by the public.

- Skylark, Meadow Pipit and Reed Bunting all held breeding season territories (14, 4 and 5, respectively), within St. Mary's Lands.

- The majority of Skylark (9 territories – 64%) and Meadow Pipit (3 territories – 75%) breeding season territories and respective territory densities (Skylark: 1.16 territories per hectare and Meadow Pipit: 0.39 territories per hectare) were found within fenced compartments, demonstrating the high selection of these protected areas during the summer, compared to unprotected parts of the site.

- High levels of territorial display and breeding activity were noted for both Skylark and Meadow Pipit between the 26th April and 13th June survey visits, diminishing substantially by 14th July, indicating that the breeding season may have ended early, likely due to seasonal grass growth reducing suitability for later breeding attempts. However, the atypically dry summer may also have influenced the shortening of the 2025 breeding season through a reduction in invertebrate prey availability for feeding offspring.

- Numbers of both Skylark and Meadow Pipit breeding territories appear to have increased compared to results obtained by previous surveys. Although the previous survey methods and outputs are not directly comparable, regional breeding bird trends indicate a slight increase in breeding numbers for both species within the West Midland region.

- St Mary's Lands is a locally important site for both breeding Skylark and Meadow Pipit, due to the large area of the extensively managed grassland and likely also due to the protection afforded by the sympathetic site management and temporary fencing.

- The planned repeat 2026 breeding bird survey will provide further confirmation of the numbers of ground nesting bird species present and their use of the habitats, as well as the influence of protective fencing. The combined results and findings from the 2025 and 2026 breeding bird surveys will inform future site management and breeding bird protection plans.

1. INTRODUCTION

This report presents the results from breeding bird surveys carried out at the St. Mary's Lands, Warwick, Warwickshire, during summer 2025. This is the first of two baseline breeding bird surveys, the second to be carried out in 2026. The survey includes all species but specifically focuses on mapping the territory locations and habitat use of ground nesting species – primarily Skylark *Alauda arvensis* and Meadow Pipit *Anthus pratensis*. St. Mary's Lands are located within Warwick Racecourse (1-km grid reference SP2764) and are predominantly grassland, with different areas undergoing different management. In 2017 a masterplan was implemented to increase site biodiversity (Plincke, 2017). This work included a trial of temporary fenced areas of meadow grass (hereafter 'temporary fenced areas), fenced off for the duration of the breeding season (March to August) for ground-nesting birds; specifically Skylark and Meadow Pipit (the focal species). This was put in place due to a large number of visitors, particularly dog walkers, accessing the grassland areas off the established paths, thought to disturb breeding activity and pose the risk of destruction to nests, eggs, and chicks. Temporary fencing was first erected prior to the 2021 breeding season, surrounding compartment one, with the addition of compartment two prior to the 2024 breeding season (Figure 1).

Skylark and Meadow Pipit are small songbirds associated with open habitats, particularly grassland. Both species are listed as Birds of Conservation Concern (Stanbury, et al, 2021). Skylark is red listed, due to a greater than 50% population decline in the last 25 years, however it has shown a slight increase since 2012 both in the UK and regionally in the West Midlands (BTO, 2025c). Meadow pipit is an amber listed species and underwent a long-term decline of between 25% and 50%. The occurrence of these breeding species within the survey area is of high conservation importance (BTO, 2025c).

Warwick District Council are seeking to review the effectiveness of temporary fencing, so that a suitable long-term management solution can be provided that will protect breeding Skylark and Meadow Pipit from disturbance and nest destruction within St. Mary's Lands. Previous breeding bird surveys had been undertaken (Waller, 2020; 2021; 2023), however these were based on a small number of survey visits and not covering the full duration of the breeding season. Additionally, the previous surveys had not robustly assessed how the two focal ground nesting species were using the temporary fenced plots versus unfenced areas. In order to ensure appropriate measures are recommended and can be subsequently evaluated, it is necessary to have comprehensive baseline data on the breeding pairs and territories supported by the site, and their use of the fenced and unfenced areas. This ensures that repeat surveys can be undertaken to monitor future changes in numbers and distribution, and the role different factors may play in this. The British Trust for Ornithology (BTO) was commissioned to undertake the breeding bird survey.

This main aims of this survey were to 1) collect standardised data on the breeding ground-nesting species and all other bird species present within Warwick Racecourse (hereafter 'survey area') and surrounds, including the arable fields to the west of the site, and the built-up area to the east (Figure 1); and 2) on the use of temporary and permanent fenced areas, and the reedbed (hereafter jointly referred to as the 'fenced areas') versus unfenced areas by the focal species, particularly for breeding.

The baseline dataset collected can be used to assess the importance of the survey area for the two focal species during the breeding season, and the effectiveness and suitability of the temporary fenced areas, by identifying breeding territories within the fenced areas, and comparing this to the wider, unfenced grassland within the site. Based on the outcomes of the 2025 and 2026 surveys,

recommendations will be suggested for long-term measures, where appropriate, for protecting ground-nesting birds, as well as future annual and periodic monitoring options, including formal surveys to assess change in bird numbers/habitat use.

2. METHODS

2.1. Survey site

The map below shows the survey area and surrounding habitat for St. Mary's Lands (Figure 1). Through this report, the 'survey area' is used to refer to the area contained within the main racecourse boundaries, within the outer yellow line. The survey area is divided into compartments; each assigned a unique number (1-15) and with boundaries marked by a yellow line. The main site paths are marked with a red line and were walked by the surveyor in addition to the compartment boundaries.

The fenced and unfenced compartments have been grouped for analysis and are referred to throughout this report. Where the term 'fenced areas' is used, this refers collectively to temporary fenced areas (compartments 1 and 2), the permanent fenced area (compartment 7), and the reedbed (compartment 6.1). The term 'unfenced areas' refers to all other areas of the site (i.e. all compartments excluding 1, 2, 6.1, and 7). This includes the racetrack (compartment 15) contained within the yellow boundaries.

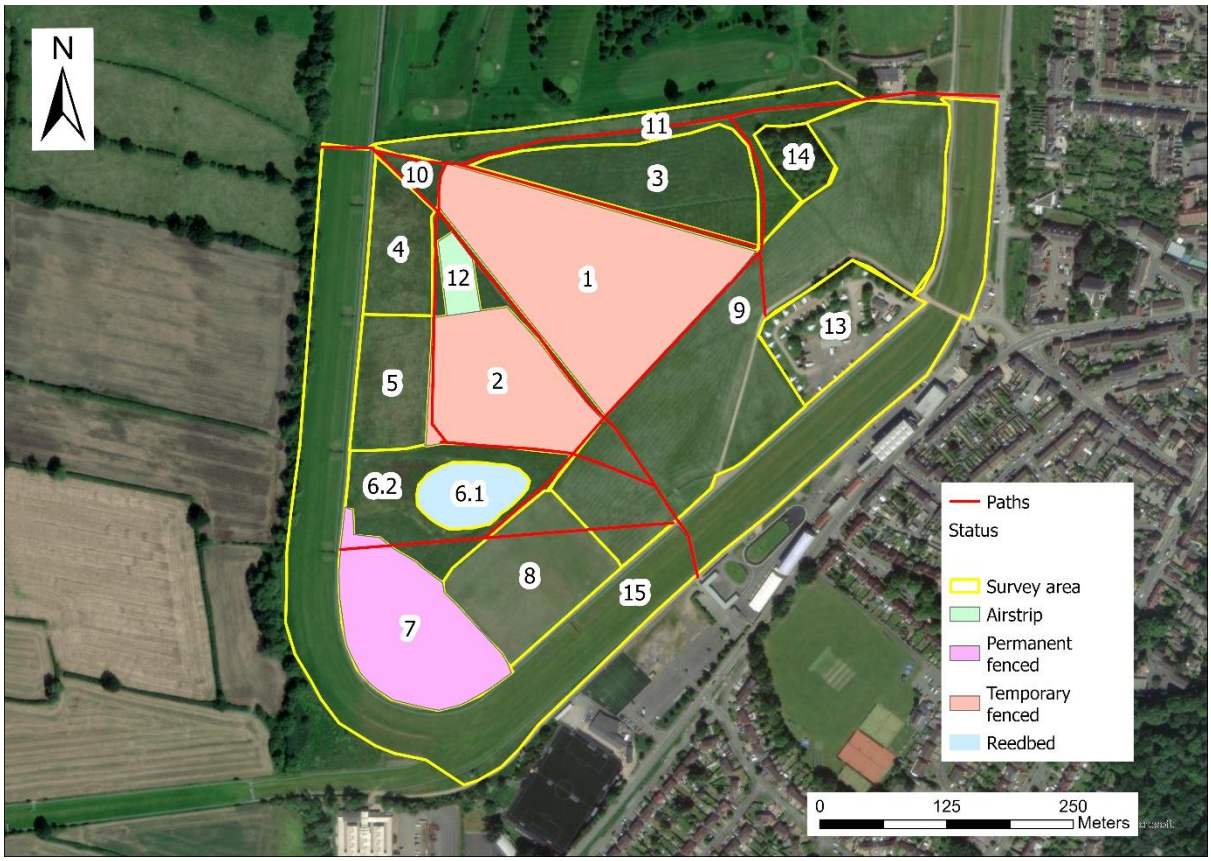

Figure 1 Map showing the St. Mary's Lands survey area, compartments and paths.

2.2. Survey design and field methods

2.2.1. Breeding bird survey

The purpose of the survey was to determine which breeding bird species are using St. Mary's Lands during summer 2025, with the survey to be repeated in 2026. The main focus was ground nesting species, i.e. Skylark and Meadow Pipit, where detailed territory locations and foraging activity was mapped in order to determine the use made of fenced and unfenced areas. The survey methodology consisted of a full breeding bird survey comprising five visits, following the Common Bird Census methods (hereafter 'CBC method') (Marchant 1983). This uses a standard methodology to estimate the number of breeding bird territories (typically pairs or territorial singing males) derived from discrete clusters of bird registrations across the visits. It must be noted that this survey does not provide a direct count of breeding birds, which requires nest finding to be undertaken – this method is time consuming and still may not discover all nests present. By using the standardised CBC method to collect the data, this provides a comparable baseline dataset, which can be used to identify changes in breeding bird territories over time.

A territory is a discrete area in which a single male or pair of birds undertake breeding activity. Song is the main and most reliable way to identify a territory, which is defended throughout the breeding season. This can include pre-breeding behaviour, such as a singing male trying to attract a mate; behaviour relating to nesting and raising young, such as the transport of food or nesting material; and protective behaviour, such as alarm calls and displays. Typically, the nest of a pair is located within the defended territory. However, foraging may take place within the territory and outside, so birds will often commute outside the territory to feed. For example, Skylark and Meadow Pipit nest in tall tussocky grassland but often prefer short turf where insect prey can be caught more easily, so may travel outside the breeding territory to access this. Territory size is also influenced by the suitability and availability of habitat. In an area of optimal habitat, territories are likely to be smaller, as more individuals can be sustained.

The CBC method (Marchant 1983) is the standard method for territory mapping. The data collection consists of multiple survey visits, mapping all bird registrations, their activities, counts, and sex, in addition to the relationships between registrations. Individual bird observations were mapped onto a paper site map, using 2 letter species codes and activity codes, and relationship line symbols. Mapping bird registrations allows accurate associations to be made between individuals and the different compartments/management, and this is crucial for understanding how different species are using the survey area.

Where the term 'registration' is used in this report, this refers to a single observation that may involve one or more birds. The term does not imply a unique individual; in other words, there may be multiple registrations of a given individual within a survey visit and across the survey period. Relationship lines were used to indicate where bird registrations referred to two different individuals, or to multiple observations of a single individual that had moved to a nearby location, within a particular visit. This is particularly important where there are multiple registrations of the same species within close proximity, as confirmation of simultaneously singing males, or observed males/pairs, permits the most robust assessment of number of different territories to be made.

The survey period spanned 15th April to 15th August, with 5 visits required to ensure coverage of the whole breeding season, including extended breeding attempts later in the season. Furthermore, not all individuals are always detected on a given visit, so multiple visits maximise detection of the majority of individuals. Visits were carried out in the morning, starting from one hour after sunrise and ending before noon. This is the optimum period for maximum song output and territorial activity, providing the best data on species occurrence and abundance. During each survey visit, the entire survey area (Figure 1) was covered three times, to maximise detection of the birds present; these were recorded as sub-visits (Table 1). Sub-visits A and B covered all species, while Sub-visit C focused on nesting and foraging activity in Skylark, Meadow Pipit, and additionally Reed Bunting *Emberiza schoeniclus*; another ground-nesting species found using the site in 2025. Each sub-visit involved walking at a slow to medium pace along the site paths and site boundary. In sub-visits A and B, the surveyor recorded all birds (identified by sight and sound) encountered within and outside the boundaries (Figure 1), and their activity, indicating different individuals and birds in continuous flight. In sub-visit C, the same methodology was employed, however only Skylark, Meadow Pipit, and Reed Bunting were recorded to provide more information on nesting activity/locations and foraging locations.

Table 1 Sub-visit types and descriptions for the St. Mary's Lands breeding bird survey in 2025.

Sub-visit	Description
A	Clockwise circuit of survey area, recording all bird species and activity.
B	Anti-clockwise circuit of the survey area, recording all bird species and activity.
C	Focal species survey, for signs and locations of nesting and foraging activity.

2.2.2. Habitat recording

A simple habitat recording methodology was used to characterise the habitat within the survey area, which is predominantly grassland (Table 2). The main focus of this was the vegetation height and structure, as this is key to determining the suitability of an area for breeding versus other activities such as foraging, or if it is entirely unsuitable, and is expected to change through out the summer due to vegetation growth and mowing. Habitat was recorded for each of the numbered compartments containing grassland within the survey area (Figure 1) and recorded directly onto the map of compartments. Vegetation height was classified into three categories, and vegetation structure into three categories (Table 2). Habitat recording was carried out following the bird surveys on each of the five core visits. Any recent habitat management or changes were also recorded, as this could impact on the suitability of an area throughout the breeding season.

Table 2 Grassland habitat recording classification for the St. Mary's Lands breeding bird survey 2025.

Height category	Description
Short	0cm – 5cm
Medium	5cm – 15cm
Tall	>15cm
Structure category	**Description**
Uniform	Majority same height
Patchy	Majority tall with some shorter patches
Tussocky	Majority short with some taller tussocks

Within the survey area (Figure 1) there are few structural boundaries between compartments, providing few nesting opportunities for the majority of non-ground nesting species. However, the outer boundary of the racecourse (Compartment 15 – Figure 1) is comprised of hedgerows with trees in the west and north, which provide ample nesting opportunities for many species, and their territories will encompass part of the racecourse and open grassland for feeding. Similarly, the gardens and other human habitats to the east will support a variety of species whose territories will overlap with open grassland habitats.

2.2.3. Data entry

The bird registration data for each visit was digitised using ArcGIS Pro 3.4.2. (ESRI, 2024), allowing all the data to be plotted together for each individual visit, including the attributes of the activity, sex and counts as well as the relationships. A standardised set of symbols and labels were used to display the key information about visit number, activity, count and sex. The handwritten species codes were screened for typographical and transcription errors, which can occur.

In order to determine how each bird species uses St. Mary's Lands, it was necessary to look at the use made of the compartments under different management, particularly the use of fenced and unfenced areas. This was achieved by intersecting all bird registrations with the different compartments using ArcGIS Pro 3.4.2 (ESRI, 2024). Using Excel (Microsoft, 2025), pivot tables were then used to create summary tables allowing comparison between compartments and fenced versus unfenced areas.

2.2.4. Territory analysis

The territory analysis processing was carried out using ArcGIS Pro 3.4.2 (ESRI, 2024). Breeding territories were defined based on a number of different species-specific criteria (e.g. different singing males, or individual males separated by a greater distance then the typical territory size for the species, etc.), set out in the CBC methodology (Marchant, 1983). Territories were mapped for all ground-nesting species, including Skylark, Meadow Pipit, and Reed Bunting.

The individual species territories were defined by discrete clusters of registrations from across the five survey visits, which were drawn as polygons, and were primarily defined using confirmed simultaneously singing and observed individuals (i.e. definitely different individuals) from each visit. A territory was only defined where a singing/displaying male was present on two or more visits. For non-simultaneously observed individuals (i.e. birds not confirmed as different in the field) a distance threshold was applied to class individuals as the same or different. This is based on maximum territory size for each species, so individuals separated by a distance exceeding the species' threshold (180m for Meadow Pipit and Skylark; 200m for Reed Bunting) were treated as different, but those within as assumed to be the same. This conservative approach was applied consistently to ensure that the number of territories/pairs was not overestimated.

To assess how individual territories were associated with particular compartments and/or habitats, and to compare fenced and unfenced areas, territories were intersected with the site and compartments using ArcGIS Pro 3.4.2 (ESRI, 2024). Attribution of a territory to an area or compartment was based on the distribution of registrations within a territory: where 50% or more registrations of territorial behaviour within a territory polygon were within a compartment, the territory would be attributed to this compartment. Territory totals were then produced for the site, and comparing the fenced and unfenced areas, including the percentage of the survey area breeding territory totals.

Territory density (the number of territories per hectare) was calculated for each species, for the site, and comparing the fenced and unfenced areas. The total area in hectares was calculated for the site, the fenced areas, and the unfenced areas, respectively. In order to calculate the territory density, the number of territories within the site, combined fenced compartments, and combined unfenced compartments was divided by the area of the respective total areas of each.

3. RESULTS

3.1. Breeding bird survey visits

A total of six visits were carried out between 26th April and 1st August (Table 3). This included five core visits, and a supplementary survey visit (visit two) in which training was also provided to volunteers on monitoring of the focal species. Three sub-visits were carried out on all core visits, and two sub-visits were carried out on the supplementary visit, visit two. All bird visits were conducted between the hours of 0600 and 1125. Each of the five core visits was undertaken by the same experienced surveyor, and a supplementary bird survey (visit two) was undertaken by another experienced BTO surveyor.

Table 3 Visit dates and times for the St. Mary's Lands breeding bird survey in 2025.

Visit	Date	Sub-visit A Clockwise circuit of survey area, recording all bird species and activity.	Sub-visit B Anti-clockwise circuit around the survey area, recording all bird species and activity.	Sub-visit C Focal species survey, examining signs of nesting as well as foraging activity.
1	26/04/2025	06:30 – 07:55	08:00 – 09:20	09:30 – 11:25
2	08/05/2025	06:00 – 07:50	–	08:20 – 10:00
3	16/05/2025	06:37 – 08:10	08:21 – 09:50	10:10 – 11:25
4	13/06/2025	06:08 – 07:32	07:35 – 09:05	09:15 – 10:45
5	14/07/2025	06:05 – 07:32	07:35 – 08:57	09:14 – 10:35
6	01/08/2025	06:00 – 07:25	07:30 – 09:05	09:15 – 10:15

3.2. Breeding bird survey results

3.2.2. Species totals

Species totals refer to the number of registrations across all visits, and do not strictly refer to unique individuals, but rather to the total number of birds observed. The total registration count provides an index of species abundance (Table 4). This list includes all species confirmed or likely to be breeding within the survey area (noted with 'breeding'), those flying over the site (noted with 'Flight only), and species likely to be using the grassland within the survey area for feeding (noted with 'foraging').

A total of 56 species were observed within or from the survey area (Figure 1) across the six visits, with a total of 2544 registrations (Table 4). Within this total, 42 species were observed within the survey area, totalling 1138 registrations. Of these, 40 species were observed across the unfenced areas, totalling 663 registrations. Twenty-six species were observed across the fenced areas, totalling 462 registrations. This included sixteen species detected in the temporary fenced areas, totalling 273 registrations (Table 4).

Only three species; Skylark, Meadow Pipit, and Reed Bunting are confirmed, or likely, to be using the grassland habitat within the survey area for breeding, however as mentioned previously, the racecourse boundaries provide suitable breeding habitat for a number of other species encountered. Eighteen of the species observed are likely to be using the grassland within the survey area for foraging (Table 4), including some of the most recorded species in the survey area; Blackbird (31 registrations), Carrion Crow (51 registrations), Goldfinch (39 registrations) Linnet (91 registrations), Starling (46 registrations) and Woodpigeon (107 registrations). Seven species were observed in flight only: Black-headed Gull, Greylag Goose, Grey Heron, Herring Gull, Kestrel, Red Kite and Yellow Wagtail (Table 4).

A total of 288 Skylark registrations were recorded 272 in the survey area, consisting of 164 across the fenced areas, 150 registrations were made across the temporary fenced areas and 88 across the unfenced areas (Table 4). A total of 164 Meadow Pipit registrations were made: 162 of these in the survey area, consisting of 89 in the fenced areas ,67 registrations were made across the temporary fenced areas, and 73 across the unfenced areas (Table 4). Finally, a total of 73 reed bunting registrations were made: 71 of these in the survey, consisting of 51 within the fenced areas, 11 within the temporary fenced areas and 20 across the unfenced areas (Table 4).

Table 4 Summary of species registrations recorded within and from St. Mary's Lands in 2025.

Overall total refers to the survey area, plus fields to the west of the site and built-up area to the east (Figure 1). Survey area only refers to the area contained within the racecourse boundaries.

		Survey area only				
Species	**Overall Total**	**Survey area total**	**Temp fenced**	**Perm fenced**	**Reedbed**	**Unfenced**
Blackbird (Foraging)	126	31	0	2	0	29
Blackcap	26	0	0	0	0	0
Black-headed Gull (Flight only)	21	1	0	0	0	1
Blue Tit	101	21	0	0	0	21
Buzzard	1	0	0	0	0	0
Carrion Crow (Foraging)	113	51	6	6	3	32
Chiffchaff	35	2	0	0	0	2
Collared Dove (Foraging)	1	0	0	0	0	0
Chaffinch (Foraging)	1	0	0	0	0	0
Coal Tit	1	1	0	0	0	1
Dunnock (Foraging)	46	11	0	0	0	11
Feral Pigeon (Foraging)	13	1	0	0	0	1
Green Woodpecker (Foraging)	4	0	0	0	0	0
Goldcrest	7	0	0	0	0	0
Greylag Goose (Flight only)	1	1	1	0	0	0
Goldfinch (Foraging)	74	39	3	2	14	20
Greenfinch (Foraging)	8	2	0	0	0	2
Great Spotted Woodpecker	13	0	0	0	0	0
Great Tit	19	2	0	0	0	2
Grey Heron (Flight only)	6	5	2	0	1	2

Species	Overall Total	Survey area only				
		Survey area total	Temp fenced	Perm fenced	Reedbed	Unfenced
Herring Gull (Flight only)	8	5	2	0	0	3
House Martin	23	6	0	0	0	6
House Sparrow (Foraging)	164	20	0	5	0	15
Jackdaw (Foraging)	64	24	2	0	0	22
Kestrel (Flight only)	3	2	0	1	0	1
Red Kite (Flight only)	2	2	0	1	0	1
Lesser Black-backed Gull (Foraging)	18	7	1	0	0	6
Linnet (Foraging)	95	91	20	17	6	45
Little Owl	7	0	0	0	0	0
Long-tailed Tit	10	4	0	0	0	4
Lesser Whitethroat	3	1	0	0	0	1
Mistle Thrush (Foraging)	1	0	0	0	0	0
Mallard	3	2	0	1	1	0
Magpie (Foraging)	99	32	1	0	0	31
Meadow Pipit (Breeding)	164	162	67	12	10	73
Nuthatch	2	0	0	0	0	0
Peregrine	2	0	0	0	0	0
Pheasant	15	0	0	0	0	0
Pied Wagtail (Foraging)	18	5	0	0	1	4
Peacock	1	0	0	0	0	0
Robin (Foraging)	114	22	0	0	0	22
Reed Bunting (Breeding)	73	71	11	12	28	20
Rook (Foraging)	4	1	0	0	0	1
Reed Warbler	3	3	0	0	2	1
Skylark (Breeding)	288	272	150	14	14	88
Stock Dove (Foraging)	23	10	1	1	0	8
Starling (Foraging)	124	46	1	1	0	44
Swift	31	17	1	0	0	16
Swallow	4	3	0	0	0	3
Song Thrush (Foraging)	7	1	0	0	0	1
Sedge Warbler	15	12	0	3	7	2
Whitethroat	32	20	0	15	2	3
Woodpigeon (Foraging)	397	107	4	6	0	97
Wren	97	21	0	1	0	20
Yellowhammer	12	0	0	0	0	0
Yellow Wagtail (Flight only)	1	1	0	0	0	1

3.2.3. Breeding territories

Skylark, Meadow Pipit, and Reed Bunting all held territories within the survey area, indicating breeding activity (Table 5). Skylark held a total of 17 territories: 14 within the survey area, plus three territories on the arable fields to the west of the survey area (Figure 2). Nine Skylark territories fell within the fenced area (64% of the survey area territory total), and five across the unfenced areas (36% of the survey area territory total). Seven territories fell within the temporary fenced areas, 50% of the survey area territories. Meadow Pipit held four territories within the survey area: three of these across the fenced area (75% of the survey area territory total), and one across the unfenced areas (25% of the survey area territory total) (Figure 3). Two Meadow Pipit territories fell within the temporary fenced areas, 50% of the survey area total. Reed bunting held five territories within the survey area, all within the fenced area (Figure 4). This includes one in the temporary fenced area (20% of the survey area territory total), one in the permanent fenced area (20% of the survey area breeding territory total), and three around the reedbed (60% of the survey area territory total).

Table 5 Breeding territory totals and percentages for Skylark, Meadow Pipit, and Reed Bunting, within and detected from St Mary's Lands in 2025, by habitat management type

Overall total refers to the survey area, plus fields to the west of the site and built-up area to the east (Figure 1). Survey area only refers to the area contained within the racecourse boundaries.

Species	Overall Total	Survey area only				
		Survey area total	Temp. Fen	Perm. Fen	Reedbed	Unfenced
Meadow Pipit	4	4	2 (50%)	1 (25%)	0	1 (25%)
Reed Bunting	5	5	1 (20%)	1 (20%)	3 (60%)	0
Skylark	17	14	7 (50%)	2 (14%)	0	5 (36%)

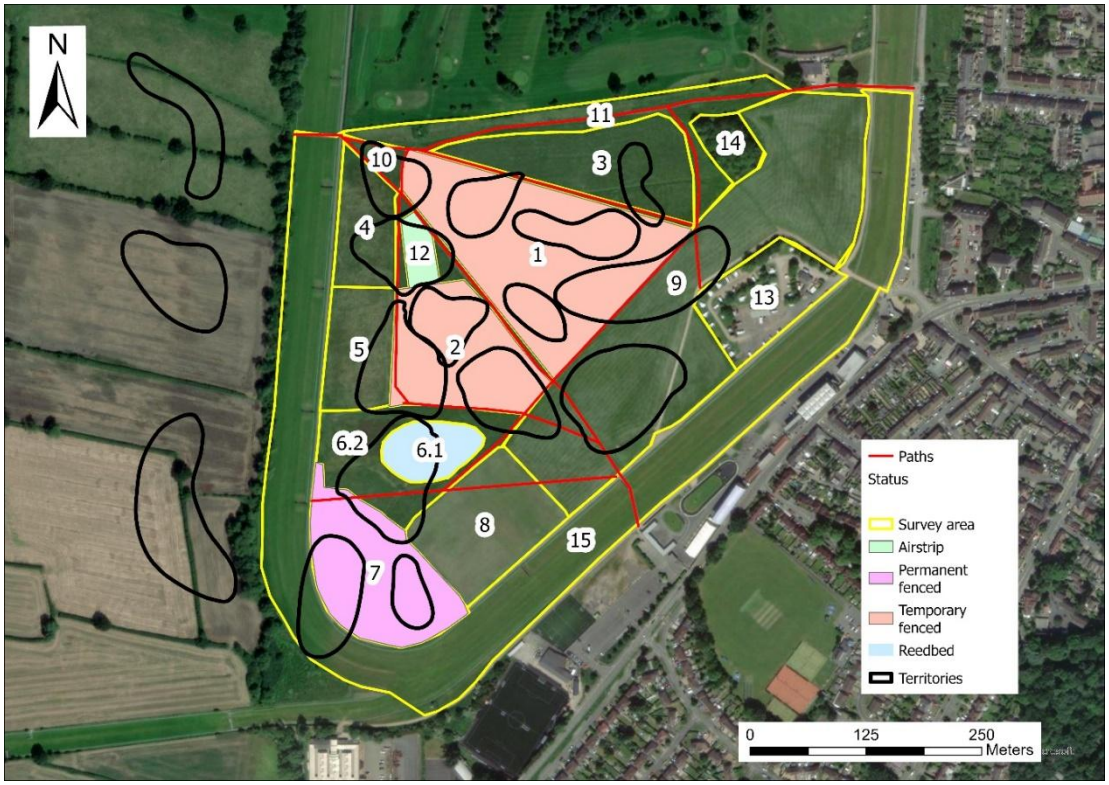

Figure 2 Map of Skylark breeding territories within and detected from St. Mary's Lands in 2025.

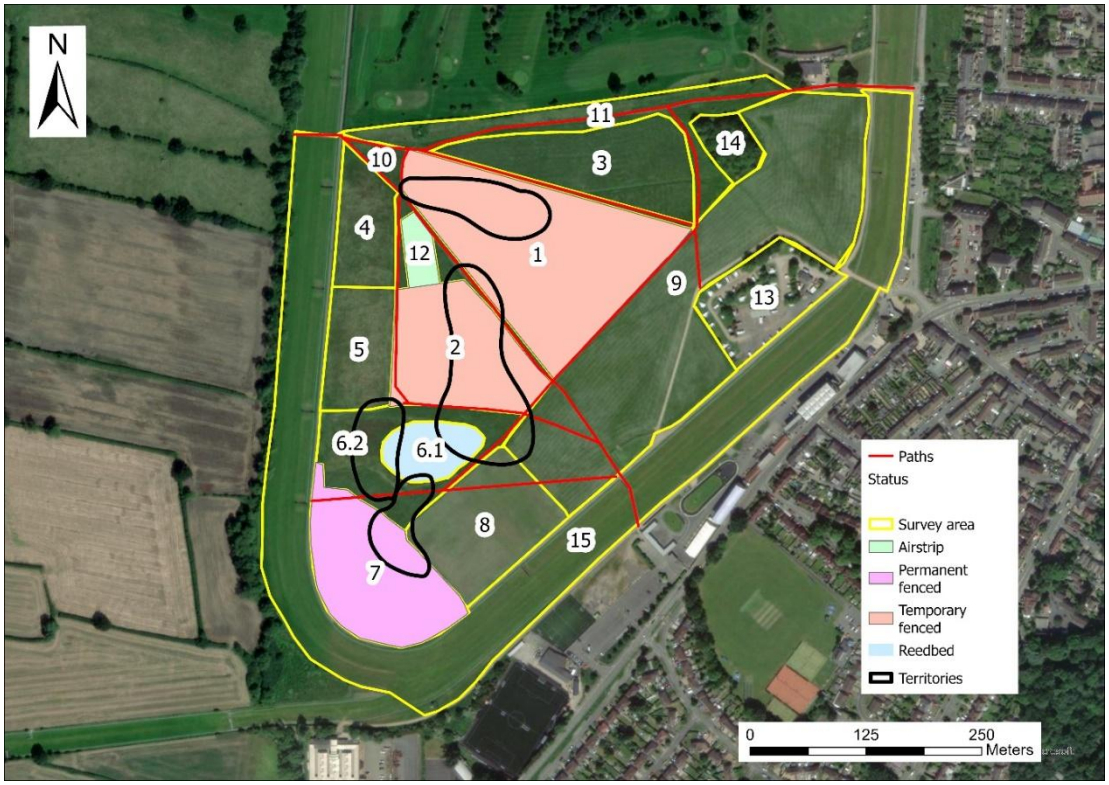

Figure 3 Map of all Meadow Pipit territories within and detected from St. Mary's Lands in 2025.

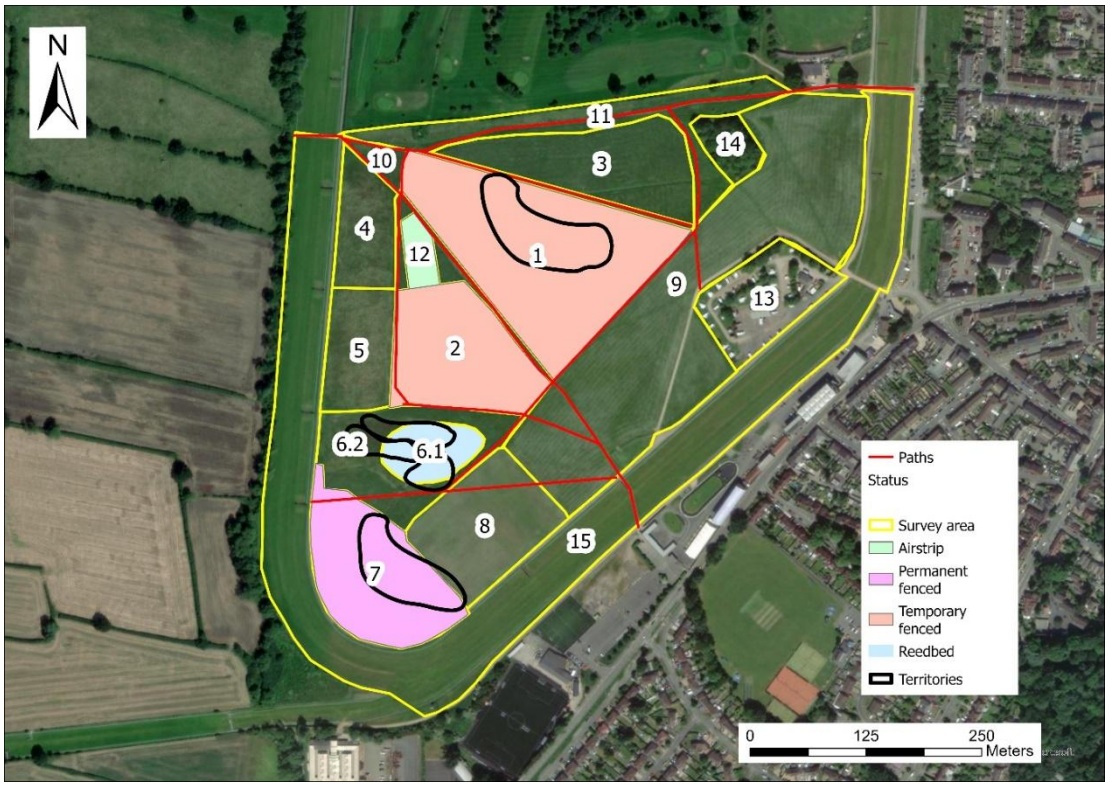

Figure 4 Map of all Reed Bunting territories within and detected from St. Mary's Lands in 2025.

Breeding territory densities were calculated for the survey area (Figure 1), and different habitats and management (Figure 1; Table 6). The area in hectares was calculated for the temporary fenced areas, permanent fenced areas, and reedbed, as well as totals for the fenced areas, unfenced areas, and survey area. In order to calculate the density per hectare, the relevant territory total for each species was divided by the area in hectares. A territory was associated to a discrete management type where 50% or more of the registrations of territorial behaviour contributing to the territory fell within that area.

Table 6 Ground nesting bird territory numbers and densities by habitat/management for St. Mary's Lands in 2025.

		Meadow Pipit		Reed Bunting		Skylark	
Management	**Area (ha)**	**Territories**	**Density**	**Territories**	**Density**	**Territories**	**Density**
Temp. fenced	5.33	2	**0.38**	1	0.19	7	**1.31**
Perm. fenced	1.85	1	**0.54**	1	**0.54**	2	**1.08**
Reedbed	0.55	0	0.00	3	**5.45**	0	0.00
Total fenced	7.73	3	**0.39**	5	**0.65**	9	**1.16**
Total unfenced	24.35	1	0.04	0	0.00	5	0.21
Total survey area	32.08	4	0.12	5	0.16	14	0.44

The registrations of singing and displaying males per visit for each species provide an index of breeding activity and duration across the breeding season (Table 7). Singing/displaying Skylark were observed on visits 1 and 5, with a peak of 28 registrations on visit 3. Across all visits, a total of 67 Skylark registrations were made across the fenced areas, with 25 registrations across the unfenced areas. Singing/displaying Meadow Pipit were also observed on visits 1 to 5, and registrations fluctuated across these visits, to a maximum of seven. Across all visits, a total of 17 Meadow Pipit registrations were registered across the fenced areas with six across the unfenced areas. Looking finally to Reed Bunting, singing/displaying males were recorded on visits 1 to 4, with a peak of 11 registrations on visit 4. Thirteen Reed Bunting registrations were registered across the fenced areas, with four observed across the unfenced areas. Skylark display activity peaked on 16th May and Meadow Pipit between 8th May and 13th June, both diminishing considerably by 14th July, whereas Reed Bunting display peaked on 13th June with no activity thereafter (Table 7).

Table 7 Number of registrations of displaying or singing birds by visit during the St Mary's Lands breeding bird survey in 2025.

Fenced refers to temporary fenced areas (compartments one and two); permanent fenced area (compartment seven); and the reedbed (compartment 6.1 (Figure 1). Unfenced includes all other areas within the survey area (Figure 1).

		Meadow Pipit		Reed Bunting		Skylark	
Visit	**Date**	**Fenced**	**Unfenced**	**Fenced**	**Unfenced**	**Fenced**	**Unfenced**
Visit 1	26/04/2025	3	0	0	1	11	3
Visit 2	08/05/2025	4	3	1	1	15	5
Visit 3	16/05/2025	3	0	3	0	20	8
Visit 4	13/06/2025	5	2	9	2	18	7
Visit 5	14/07/2025	2	1	0	0	3	2
Visit 6	01/08/2025	0	0	0	0	0	0

Juveniles and family parties were observed for Skylark, Meadow Pipit and Reed Bunting (Table 8). For Skylark, a total of nine registrations were recorded: eight within the fenced areas, and one registration across the unfenced areas. For Meadow Pipit, eight registrations were recorded: seven within the fenced areas, and one across the unfenced areas.

Table 8 Number of juvenile and family party registrations by visit during the St Mary's Lands breeding bird survey in 2025.

Fenced refers to temporary fenced areas (compartments 1 and 2); permanent fenced area (compartment 7); and the reedbed (compartment 6.1) (Figure 1). Unfenced includes all other areas within the survey area (Figure 1).

		Meadow Pipit		Reed Bunting		Skylark	
Visit	**Date**	**Fenced**	**Unfenced**	**Fenced**	**Unfenced**	**Fenced**	**Unfenced**
Visit 1	26/04/2025	0	0	0	0	0	0
Visit 2	08/05/2025	0	0	0	0	0	0
Visit 3	16/05/2025	0	0	0	0	3	1
Visit 4	13/06/2025	3	0	0	0	5	0
Visit 5	14/07/2025	1	1	0	0	0	0
Visit 6	01/08/2025	3	0	1	0	0	0

3.2.4. Habitat recording

Habitat information was recorded during five of the bird survey visits (Table 9). Habitat data was collected for all compartments containing grassland within the survey area. The majority of the compartments, both fenced and unfenced, consisted primarily of tall grass. Most of the tall grass plots were tussocky in structure, while short and medium sward compartments had a uniform structure. Compartment 7 was predominantly patchy in structure. Almost all compartments maintained the same sward height category throughout the survey period, the exception being compartments seven and eight where vegetation height increased through the season (Table 9).

Table 9 Compartment height and structure for St. Mary's Lands in 2025.

Information for grassland compartments within the survey area per visit. Height categories are: Tall (>15cm), med (medium: 5cm-15cm), and short (0cm-5cm). Structure categories are as follows: Tuss (tussocky: majority short with some taller tussocks), Patch (patchy: majority tall with some shorter patches), and Unif (uniform: majority same height).

Comp	26/04/2025	16/05/2025	13/06/2025	14/07/2025	01/08/2025
1	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss
2	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Patch	Tall-Tuss
3	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss
4	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Unif	Tall-Tuss
5	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Unif	Tall-Tuss
6.2	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss/Patch
7	Med-Patch	Tall-Tuss	Tall-Tuss/Unif	Tall-Patch	Tall-Tuss
8	Short-Unif	Short-Unif	Med-Unif	Med-Unif	Tall-Patch
9	Med-Patch	Med-Unif	Med-Unif	Med-Unif	Med-Unif
10	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss
11	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss	Tall-Tuss
12	Short-Unif	Short-Unif	Short-Unif	Short-Unif	Short-Unif
15	Short-Unif	Short-Unif	Short-Unif	Short-Unif	Short-Unif

4. DISCUSSION

4.1. Survey limitations

In order to be able to provide a measurable comparison between recent survey and the current 2025 survey, it is important that standardised methods are used throughout all surveys. This is key to reducing the impact of factors such as surveyor bias, under-recording due to incorrect method or survey timing, and to ensure that the same survey area is covered to the same extent. While the same methodology (CBC method) may have been applied to all surveys between 2019 and 2025, the survey period and number of survey visits and survey intensity varied considerably. The substantial difference in survey effort and timing greatly limits the inference that can be made about population change and habitat use/association. Carrying out visits throughout the period March to August, is important where species have longer a breeding season consisting of multiple broods. For this reason, only limited comparisons can be made with former years, due to shorter survey periods, fewer visits, and irregular visit timing compared to the 2025 survey. However, the 2025 survey sets a robust baseline for assessing future change in breeding numbers and habitat use, which can be compared with the planned 2026 repeat survey.

A simple habitat recording method was used in 2025, using just three height categories. Due to the complexity of the vegetation structure and height additional intermediate categories will be included to the 2026 survey to better track vegetation change through the breeding season. This is particularly relevant for the tall category (over 15cm), where vegetation exceeding 60cm without gaps is largely unsuitable for breeding (Chamberlain, et al, 1999).

4.2. Breeding bird survey

St. Mary's Lands are used by a range of different species, however with the site offering different resources, e.g. for breeding and foraging. While only Skylark, Meadow Pipit, and Reed Bunting are indicated to be breeding within the grassland in the survey area, the presence of other groups such as corvids (e.g. Carrion Crow), thrushes (e.g. blackbird), pigeons (e.g. Woodpigeon), finches (e.g. Goldfinch), as well as species such as Pied Wagtail, Starling, Lesser Black-backed Gull, House Sparrow, and Dunnock show the value of food resources within the survey area. Red Kite and Kestrel were observed in flight over the site, however the site could offer suitable feeding opportunities for these species and so their use of the site cannot be ruled out.

4.2.1. Skylark

Skylark territories were held throughout the survey area, showing suitable habitat to be available for some of the survey period (Table 5; Figure 2). Skylarks rely on mixed vegetation structure; with short vegetation allowing easier foraging and some taller vegetation offering shelter and protection for nesting (Ferguson-Lees, 2011), however as mentioned previously, tall vegetation beyond a certain height and density becomes unsuitable. Where suitable habitat is available, Skylarks have an average of two broods, sometimes three, with final chicks usually fledging in early August (Ferguson-Lees, 2011).

A mix of habitats is found across the survey area and is reflected by the distribution of territories (Tables 6 and 9; Figure 1). A total of 17 Skylark territories were identified, 14 of these within the survey area, giving a density of 0.44 territories per hectare. This is an apparent increase based on previous breeding bird surveys, in which eight Skylark territories were detected in 2019, 11 in 2021, and 14 in 2023. (Stokes and Conway, 2024). This is consistent with Skylark trends for the West Midlands, which have shown a slight population increase in recent years (BTO, 2025a), however, the greater numbers of territories detected may also be due to the more intensive survey methods and visits regime used in 2025.

There was a total of nine territories in the fenced areas, with a density of 1.16 territories per hectare; and five in the unfenced areas with a density of 0.21 territories per hectare (Table 5 & 6; Figure 2). The two temporary fenced areas contain tussocky, semi-improved grassland which is predominantly short with some taller tussocks (Table 9). These areas held a total of seven Skylark territories, with a density of 1.31 territories per hectare. Four territories were in compartment one, and three in compartment two. The permanently fenced area held a single territory, with a density of 1.08 territories per hectare. A comparative Britain-wide study of breeding Skylark habitat uses found an average density of 0.07 territories per hectare in unimproved ungrazed grassland, and 0.006 in unimproved grazed grassland (Browne, et al., 2000). The densities found in the survey area were considerably higher, indicating the importance of the habitat present.

Unfenced compartments with suitable tall, tussocky grassland habitat, held fewer Skylark territories than the fenced compartments. Compartment 3 held one territory, while no territories are held in compartments 4 or 5. This indicates these compartments are less preferential for breeding due to greater disturbance.

A further three territories were identified outside of the focal survey area, in the arable and pastoral fields to the west of the racecourse (Figure 2).

The results clearly demonstrate show that the majority of Skylark territories (64% - Table 5) are within with the fenced compartments or overlap with fenced compartments (Figure 2)

Tables 7 and 8 show changes in breeding behaviour and activity over the survey period and are used to indicate the duration of the nesting period. Singing and displaying Males were observed up to and including 14th July (Table 7). Two confirmed nests were recorded: one on visit one and the second on visit three, and juvenile and family parties were observed on 16th May and 13th June (Table 8). The lack of observations past 13th June may suggest that the survey area habitat became too tall and unsuitable for a second brood, and that breeding ended early.

4.2.2. Meadow Pipit

Meadow Pipits nest within grassy tussocks making them very inconspicuous, and have an average of two broods, with final chicks usually fledging in mid-July (Ferguson-Lees, 2011). This preference is reflected in the location of the breeding territories at St Mary's Lands (Table 9; Figure 3).

Four Meadow Pipit territories are held within the survey area, giving an overall density of 0.12 territories per hectare, but 0.39 territories per hectare within fenced compartments (Tables 5 & 6; Figure 3). A study in upland Wales, the optimum habitat, found an average density of 0.48 territories per hectare (Seel, et al, 1979), which is similar to the density found in the fenced compartments. The

results of recent surveys indicate a slight upturn in Meadow Pipit territories - three in 2019, two in 2021, and one in 2023 (Stokes and Conway, 2024 and likely reflect a slight population recovery in the Midlands (BTO, 2025a).

Singing and displaying Meadow Pipits were observed up to and including 14th July (Table 7). No nests were detected; however, juveniles and family groups are observed on 13th June and 14th July (Table 8). The lack of registrations of this type during the final, August visit is in line with the breeding timing for the species. However, the lack of observations of juveniles and families on earlier visits may suggest, like Skylark, that breeding ended prematurely and just a single brood.

4.2.3. Reed Bunting

Reed Buntings nest on or close to the ground, in grass tussocks or reeds, and usually have two broods, occasionally three, with the final brood usually fledging by mid-July (Ferguson-Lees, 2011).

Five Reed Bunting territories were held in the survey area (Table 5; Figure 4), with a density of 0.16 territories per hectare (Table 6). The reedbed held the majority (three territories) with single territories within other fenced grassland compartment.

Singing/displaying Reed Bunting were observed up to 13th June, and there was a single-family party/juvenile observation on the August visit (Tables 7 & 8).

5. CONCLUSION

5.1. Future work

The result of the 2025 survey show that St Mary's Lands supports a locally important breeding population of Skylark and Meadow Pipits, which appear to have increased in recent years due to the sympathetic management and habitat provision on the site. In addition, a substantial number of other bird species (Table 4) benefit from the mosaic of grassland structures available, providing ample foraging, as well as diverse boundary habitats for nesting.

Based on the findings of the 2025 survey, the current configuration of temporary fencing demonstrates that the densities of breeding Skylark and Meadow Pipit as substantially greater than those supported by unfenced areas (Tables 5 and 6, Figures 2 & 3). Therefore, the fenced areas provide the most suitable habitat, and protection from nest destruction and disturbance. While this is also in some part true for Reed Bunting, the habitat preferences of the species mean that the reedbed habitat is of the greatest importance.

However, it must also be considered that these temporary fenced compartments contain the optimal nesting habitat-structure for both Skylark and Meadow Pipit, meaning the reduced disturbance may only account in part for the higher breeding territory densities in these compartments. The near central position of the temporary fenced compartments is also in the optimum location to maximise suitability for both Skylark and Meadow Pipit, i.e. a large expanse of open habitat away from tall structures, as well has having a good tussocky sward structure.

The duration of the temporary fencing also has potential for revision. As the breeding activity and presences of families had substantially diminished by late July (Table 7 & 8), it may be possible to remove the temporary fencing earlier during the summer. However, as 2025 was an atypically hot dry summer, this may have also influenced the vegetation growth, altering the period of suitability for nesting across all parts of the site, and may have reduced insect prey abundance/availability, resulting in reduced breeding productivity and curtailing the breeding season earlier than typical. Therefore, the results of the planned 2026 breeding bird survey are needed to inform any proposal to change the habitat management regime.

An enhanced vegetation monitoring method will be used in 2026 (to add more vegetation height categories), in order to better quantify vegetation growth and change through the summer. This will provide better data on habitat suitability and help determine whether vegetation growth restricts the length of the breeding season.

Pre 2025 survey discussions about the effectiveness of the temporary fencing considered changing the location of the fenced compartments between years, to test whether the fencing or habitat management was the most important determinant of territory locations. However, as the 2025 temporary fenced compartments contain the best quality/structured habitat in the optimal centre of the sites, there are very limited options for using temporary fencing on other part of the site as available areas are small and the vegetation structure/composition is suboptimal. Therefore, any change to the temporary fence compartments, or their removal, may result in a reduction of breeding territories of both Skylark and Meadow Pipit. Prior to the 2026 season the location of temporary fencing will need to be discussed and agreed, based on the compartment configurations available but also to ensure that the existing breeding populations are not jeopardised.

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