

A417 Missing Link
TR010056

6.4 Environmental Statement
Appendix 8.10 Breeding Bird
Technical Report

Planning Act 2008

APFP Regulation 5(2)(a)
Infrastructure Planning (Applications: Prescribed Forms and
Procedure) Regulations 2009

Volume 6

May 2021

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms
and Procedure) Regulations 2009**

A417 Missing Link

Development Consent Order 202[x]

**6.4 Environmental Statement
Appendix 8.10 Breeding Bird Technical Report**

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Executive Summary

The proposed A417 Missing Link scheme (hereafter referred to as 'the scheme') aims to provide a dual carriageway to a stretch of single carriageway between the Cowley roundabout and Crickley Hill in Gloucestershire; the 5.5km section is the only remaining section of single carriageway. The scheme would increase capacity by creating a free-flowing link between the Brockworth Bypass and Cowley roundabout and remove the at-grade junction with the A436, resulting in a continuous flow between the M4 Junction 15 (Swindon) and the M5 Junction 11a (Gloucester/Cheltenham).

ECOSA were commissioned by Mott MacDonald Sweco Joint Venture (MMSJV) to carry out a breeding bird survey to inform the A417 Missing Link Scheme. The breeding bird surveys were undertaken by ECOSA between April 2019 and June 2019 in order to establish the usage of the site, and adjacent habitat by breeding bird species. The main findings of the surveys are:

- The southern arm of the survey area comprises large arable fields on the Cotswold plateau, with hedgerows and small belts and copses of woodland. The western arm of the survey area includes woodland, pasture and calcareous grassland on the Cotswold scarp.
- The arable fields and their margins hold in places a high density of breeding territories of seed-eating species including skylark, linnet and yellowhammer. Woodlands and other areas with trees hold species of conservation concern such as marsh tit, song thrush, mistle thrush and bullfinch.
- The preferred scheme alignment will likely result in a loss of open fields, field boundaries and areas of tree cover and therefore impacts on breeding birds will occur through land take and disturbance, although much similar habitat exists in the wider area.

-
- Any clearance of vegetation should be undertaken between September and February, avoiding the breeding season for birds. Where this is not possible, an ecologist should be present immediately prior to vegetation clearance in order to check for nesting birds. Any active nests would need to be left in situ until chicks have fledged and left the nest.

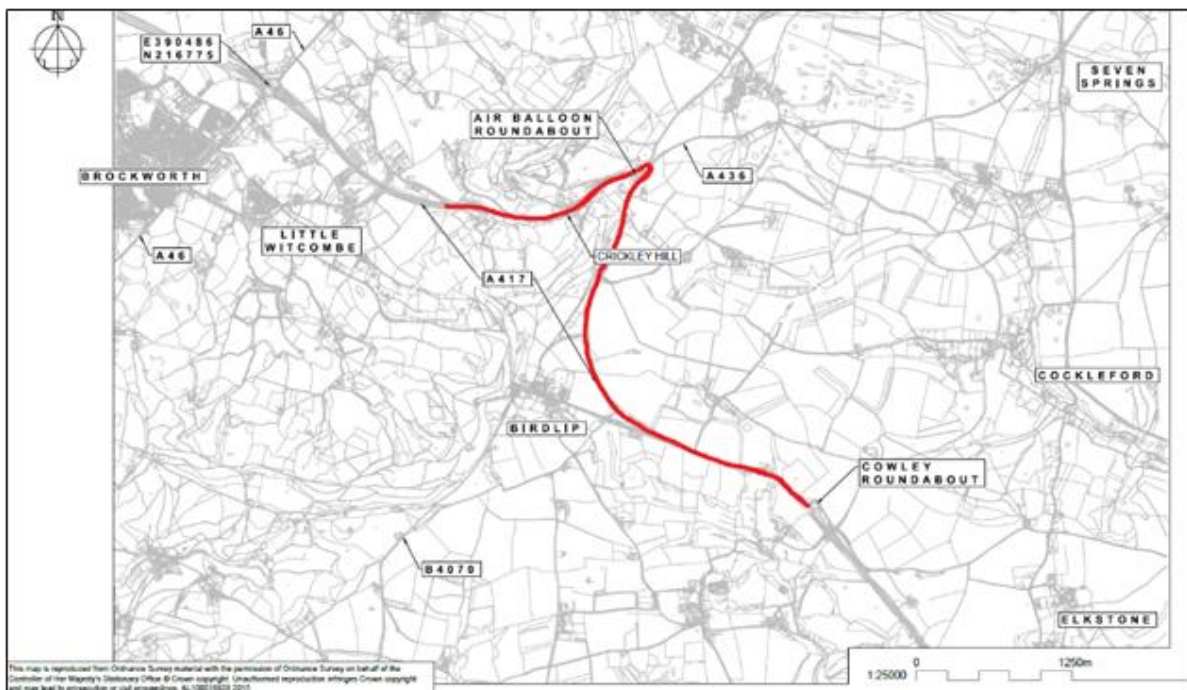
 - It is recommended that the road improvement scheme design seeks to minimise effects on breeding birds through avoidance and mitigation of visual, noise and lighting disturbance. Opportunities exist for improving and reconnecting habitats associated with sections of the existing A417 that may no longer be required for use by road traffic.

1. Introduction

1.1. Background

- 1.1.1. The A417/A419 provides an important link between the Midlands/North and South of England, between Gloucester and Swindon, and as an alternative to the M5/M4 route via Bristol. The section of the A417 near Birdlip, known as the 'missing link', forms the only section of single carriageway along the route, with an at-grade junction located at the 'Air Balloon' public house. The single carriageway is located between the Cowley roundabout and the base of Crickley Hill, a 5.5km stretch shown on Figure 1.1 below.

Figure 1.1: A417 Missing Link Scheme Location Plan



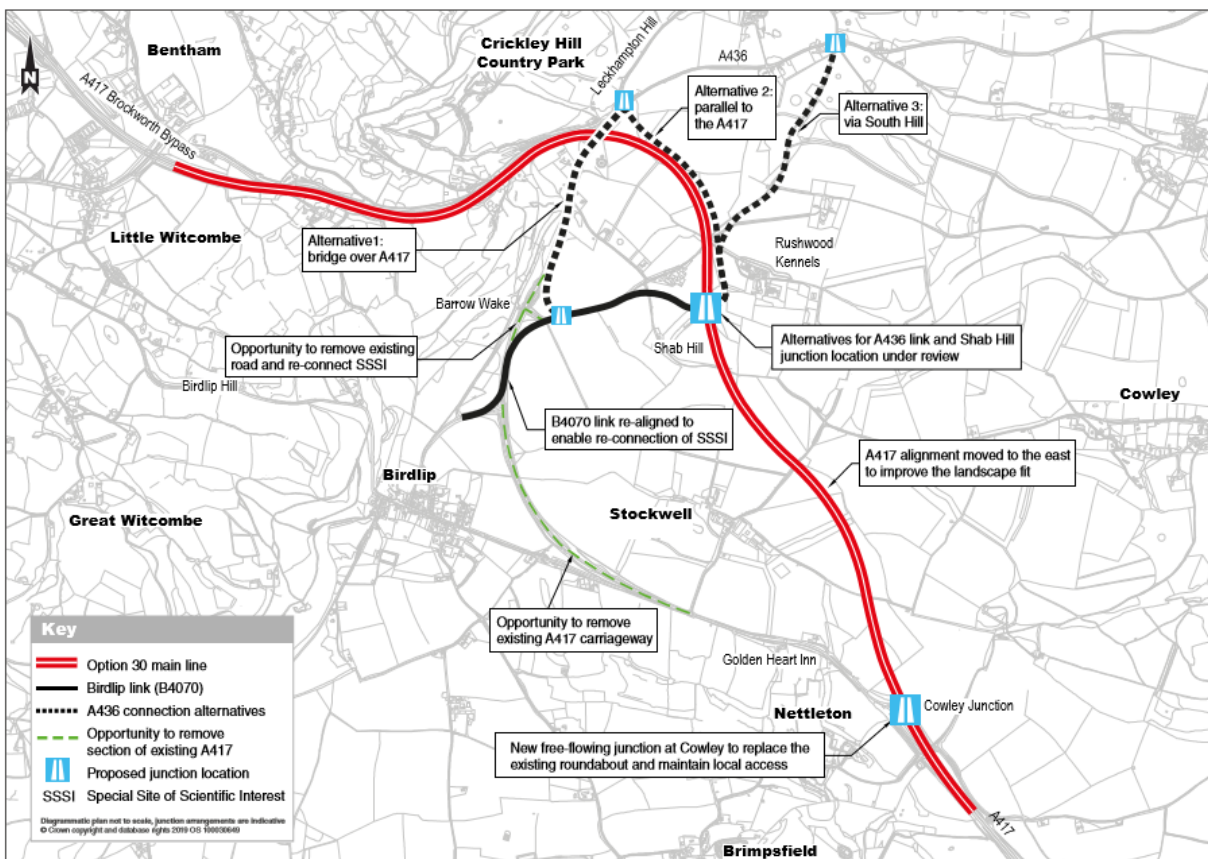
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1.2. Scheme Proposal

- 1.2.1. The proposed scheme would provide a dual carriageway to improve the current Missing Link section of single carriageway of the A417 between Cowley roundabout and Crickley Hill. Any proposed scheme would aim to increase capacity by creating a free-flowing link between the Brockworth Bypass and the Cowley roundabout and remove the at-grade junction with the A436 (Air Balloon roundabout). This Missing Link will provide a free-flowing journey between Swindon (M4 Junction 15) and Gloucester / Cheltenham (M5 Junction 11).

- 1.2.1 The preferred route for the Scheme was confirmed as Option 30 by the Secretary of State in March 2019 (see Figure 1.2 below). The Scheme comprises the construction of a new dual carriageway to replace the existing single carriageway section between Brockworth bypass and Cowley Roundabout. It is predominately an “offline” Scheme but approximately a third of the route follows the existing A417 route corridor at Crickley Hill.
- 1.2.2 A new link road would be built between the slip road junction at Shab Hill and the existing A417 to connect traffic to and from Birdlip and the A436 with the new A417. This new link road would end in a new roundabout near Barrow Wake.

Figure 1.2: A417 Preferred Route Announcement



- 1.2.3 Figure 1.2 above shows three A436 link road alternative connections. Alternative 2, parallel to the A417, is the option taken forward for assessment in the Environmental Statement.

1.3. Scope of Report

- 1.3.1. Ecological Survey & Assessment Limited (ECOSA) were contracted by Mott MacDonald Sweco Joint Venture (MMSJV) to undertake breeding bird surveys to inform ecological assessment of the scheme. Details of these surveys, including methods and results, are provided in the ECOSA Breeding Bird Survey Report in Appendix A.

Appendices

Appendix A A417 Breeding Bird Survey Report (ECOSA 2019)

**A417 ROAD IMPROVEMENT SCHEME, BIRDLIP,
GLOUCESTERSHIRE**

BREEDING BIRD SURVEY

Final Document (Revision 2)

December 2019

Preliminary Ecological Appraisals • Protected Species Surveys and Licensing • NVC • EclA • HRA • Management Plans
Habitats • Badger • Bats • Hazel Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species



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ECOSA Quality Assurance Record

This report has been produced in accordance with the CIEEM Guidelines for Ecological Report Writing 2017 (CIEEM, 2017). The survey work has been undertaken in line with references within CIEEM's Source of Survey Guidance (CIEEM, 2017).

Description:	Breeding Bird Survey
Produced For:	Mott MacDonald Sweco Joint Venture
Issue:	Final (Revision 2)
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**A417 ROAD IMPROVEMENT SCHEME, BIRD LIP,
GLOUCESTERSHIRE**

BREEDING BIRD SURVEY

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Appendix 1 Breeding Bird Survey Counts

Map 1 Survey Area and Transect Route

Map 2 Breeding Bird Survey Results West: Red Listed Species

Map 3 Breeding Bird Survey Results South: Red Listed Species

Map 4 Breeding Bird Survey Results West: Amber Listed Species

Map 5 Breeding Bird Survey Results South: Red Listed Species

EXECUTIVE SUMMARY

ECOSA were commissioned by Mott MacDonald Sweco Joint Venture (MMSJV) to carry out a breeding bird survey to inform the A417 Birdlip Road Improvement Scheme. The breeding bird surveys were undertaken by ECOSA between April 2019 and June 2019 in order to establish the usage of the site, and adjacent habitat by breeding bird species. The main findings of the surveys are:

- The southern arm of the survey area comprises large arable fields on the Cotswold plateau, with hedgerows and small belts and copses of woodland. The western arm of the survey area includes woodland, pasture and calcareous grassland on the Cotswold scarp.
- The arable fields and their margins hold in places a high density of breeding territories of seed-eating species including skylark, linnet and yellowhammer. Woodlands and other areas with trees hold species of conservation concern such as marsh tit, song thrush, mistle thrush and bullfinch.
- The preferred scheme alignment will likely result in a loss of open fields, field boundaries and areas of tree cover and therefore impacts on breeding birds will occur through land take and disturbance, although much similar habitat exists in the wider area.
- Any clearance of vegetation should be undertaken between September and February, avoiding the breeding season for birds. Where this is not possible, an ecologist should be present immediately prior to vegetation clearance in order to check for nesting birds. Any active nests would need to be left in situ until chicks have fledged and left the nest.
- It is recommended that the road improvement scheme design seeks to minimise effects on breeding birds through avoidance and mitigation of visual, noise and lighting disturbance. Opportunities exist for improving and reconnecting habitats associated with sections of the existing A417 that may no longer be required for use by road traffic.

1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been contracted by Mott MacDonald Sweco Joint Venture (MMSJV) to undertake breeding bird surveys to inform the proposed route of a road improvement scheme for the A417 at Birdlip, Gloucestershire. A wintering bird survey was carried out by ECOSA during 2018/19 (ECOSA, 2019).

1.2 The Site

The survey area extends southward and westward in two ‘arms’ from approximately 500 metres north of the Air Balloon roundabout on the A417, following two branches of the A417. The area covered is approximately 2.5 kilometres from west to east and north to south and encompasses the existing road corridor and the proposed route of the road improvement scheme. The extent of the survey area is shown on **Map 1**. The surveyed area was based on the route alignment at the time of survey. The final route alignment and redline boundary may result in additional areas lying outside of the survey boundary. However, due to the similarity on habitats, these areas are likely to support similar assemblages of breeding birds.

The survey area covers 475 hectares and is characterised by arable farmland with large fields bisected by hedgerows, rural roads, and areas of calcareous grassland and broadleaved woodland. The majority of the site is on the Cotswold plateau, but in the west of the survey area, the land falls away steeply to the west.

The wider landscape consists of further areas of farmland, woodland copses and small villages. The town of Cheltenham and city of Gloucester lie approximately four kilometres to the north and west respectively.

1.3 Aims and Scope of Report

Breeding bird surveys were undertaken by ECOSA between April 2019 and June 2019 in order to establish the usage of the site by bird species associated with open farmland, grassland, hedgerow and woodland habitats found along the proposed alignment.

This report presents the findings of the breeding bird surveys carried out by ECOSA between April 2019 and June 2019.

1.4 Site Proposals

Proposals for the site are for the re-routing of the existing A417 road, and associated infrastructure. The planning application is expected to be submitted in early 2020.

2.0 PLANNING POLICY CONTEXT

2.1 Introduction

This section summarises the planning policy in relation to ecology and biodiversity within the Tewkesbury and Cotswold Council administrative areas. The west of the survey area lies within Tewkesbury, whilst the east is within Cotswold.

2.2 Planning Policy

2.2.1 National Policy

The National Policy Statement for National Networks (NPSNN) sets out the need for, and government's policies to deliver Nationally Significant Infrastructure Projects on the national road network in England.

Chapter 3 of the NPSNN identifies that in order to be sustainable and to improve people's quality of life, the need for development must be seen in the context of the Government's wider policies on economic performance, environment, safety, technology, sustainable transport and accessibility, as well as journey reliability and the experience of road - rail users. Wider policies relate to:

- Environmental and social impacts – national road networks should be designed to minimise social and environmental impacts and improve quality of life. In delivering new schemes, the Government expects applicants to avoid and mitigate environmental and social impacts in line with the principles set out in the National Planning Policy Framework (NPPF) and the Government's planning guidance.

Chapter 5 of the NPSNN outlines the possible impacts that would be relevant to any type of national networks infrastructure and sets out how these impacts should be considered. The sections include consideration of biodiversity.

The National Planning Policy Framework (NPPF) sets out the government's requirements for the planning system in England. The original document was published in 2012 with the revised NPPF published in July 2018 and updated in February 2019. A number of sections of the NPPF are relevant when taking into account development proposals and the environment. As set out within Paragraph 11 of the NPPF "*Plans and decisions should apply a presumption in favour of sustainable development*". However, Paragraph 177 goes on to state that "*The presumption in favour of sustainable development does not apply where development requiring appropriate*

assessment because of its potential impact on a habitats site¹ is being planned or determined”.

The general impetus of the NPPF in relation to ecology and biodiversity is for development proposals to not only minimise the impacts on biodiversity but also to provide enhancement. Paragraph 170 states that the planning system should contribute to and enhance the natural environment by “...*minimising impacts on biodiversity and providing net gains in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...*”.

A number of principles are set out in Paragraph 175, including that where harm cannot be adequately avoided then it should be mitigated for, or as a last resort, compensated for. Where impacts occur on nationally designated sites, the benefits must clearly outweigh any adverse impact and incorporating biodiversity in and around developments should be encouraged. Specific reference is also made to the protection of irreplaceable habitats². Where loss to irreplaceable habitats occur planning permission would normally be refused unless there are wholly exceptional reasons and an adequate compensation strategy is in place. Paragraph 175 also states “*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity*”. Protection of sites proposed as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites or acting as compensation for SPAs, SACs and Ramsar sites, should receive the same protection as habitat sites.

In addition to the NPPF, Circular 06/05 provides guidance on the application of the law relating to planning and nature conservation as it applies in England. Paragraph 98 states “*the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat*”. Whilst paragraph 99 states “*it is essential that the presence or otherwise of a protected species, and the extent that they may be affected by the proposed development, is established before planning permission is granted*”.

¹ The NPPF defines a habitats site as “*Any site which would be included within the definition at regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations, including candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, Special Protection Areas and any relevant Marine Sites.*”

² The NPPF defines irreplaceable habitats as “*Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen.*”

2.2.1 Highways England Policy

Highways England Biodiversity Plan

Highways England's Biodiversity Plan (BAP) identifies its approach to meeting the key performance indicator identified within the Roads Investment Strategy (RIS) of "no net loss of biodiversity by 2020" and that "by 2040 it must deliver a net gain in biodiversity". Biodiversity is required to be fully considered during the building of any new roads and opportunities sought to work with stakeholders and enhance the network for wildlife.

2.2.2 Local Policy

A single policy within the Cotswold District Local Plan (2011-2031) refers to ecology and biodiversity:

- **Policy EN8: Biodiversity and Geodiversity: Features, Habitats and Species.** Development will be permitted that conserves and enhances biodiversity and geodiversity, providing net gains where possible. Proposals that would result in significant habitat fragmentation and loss of ecological connectivity will not be permitted. Proposals that reverse habitat fragmentation and promote creation, restoration and beneficial management of ecological networks, habitats and features will be permitted, particularly in areas subject to landscape-scale biodiversity initiatives. Developer contributions may be sought in this regard. Development with a detrimental impact on protected species and species and habitats "of principal importance for the purpose of conserving biodiversity" will not be permitted unless adequate provision can be made to ensure the conservation of the species or habitat.

The Joint Core Strategy for Gloucester, Cheltenham and Tewkesbury (2011-2031) also considers biodiversity through policy:

- **Policy SD9 (Biodiversity and Geodiversity):** The biodiversity and geological resource of the JCS area will be protected and enhanced in order to establish and reinforce ecological networks that are resilient to current and future pressures. This will be achieved by ensuring that European Protected Species and National Protected Species are safeguarded in accordance with the law; encouraging new development to contribute positively to biodiversity and geodiversity whilst linking with wider networks of green infrastructure; encouraging the creation, restoration and beneficial management of priority landscapes, priority habitats and populations of priority species. Where there is a risk of harm as a consequence of development, this should be mitigated by integrating enhancements into the scheme that are appropriate to the location

and satisfactory to the local planning authority. If harm cannot be mitigated onsite then, exceptionally, compensatory enhancements off-site may be acceptable.

3.0 METHODS

3.1 Introduction

This section details the methods used during the breeding bird surveys undertaken at the A417 site between April 2019 and June 2019.

3.2 Survey Methodology

A walked transect survey allowing observation of all major habitat areas was undertaken on six occasions between April 2019 and June 2019 inclusive, to determine the usage of the area by breeding birds (**Map 1**).

The survey largely consisted of the surveyors scanning the site using binoculars to identify the bird species utilising the survey area. The surveys aimed to determine the presence and numbers of notable or protected wintering bird species. Due to the size of the survey area, the southern and western parcels of land were surveyed separately.

During each survey, breeding behaviour was noted and recorded, for example singing male birds, and birds carrying food or nest material. Following completion of the survey visits, the data was collated and territory maps for protected and notable (Schedule 1³ and Red⁴ and Amber⁵ Listed Birds of Conservation Concern (BoCC)) breeding species created following the British Trust for Ornithology Common Birds Census approach (Marchant, J.H., 1983).

Birds listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended) are afforded additional protection making it an offence to: Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or; Intentionally or recklessly disturb the dependent young of any such bird.

The UK's birds are split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green (Hayhow *et al.*, 2017).

³ **Schedule 1:** Birds listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended) are afforded additional protection making it an offence to: intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or; intentionally or recklessly disturb the dependent young of any such bird.

⁴ **Birds of Conservation Concern Red List:** The UK's birds are split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority and include species which are: globally threatened; have been subject to historical population decline in UK during 1800–1995; are in severe (at least 50%) decline in UK breeding population over the last 25 years, or longer-term period, or; subject to severe (at least 50%) contraction of UK breeding range over the last 25 years, or longer-term period.

⁵ **Birds of Conservation Concern Amber List:** Amber list criteria include species which are: in unfavourable conservation status in Europe; subject to historical population decline during 1800–1995, but recovering; subject to moderate (25-49%) decline in UK breeding population or contraction of UK breeding range over the last 25 years, or the longer-term period; subject to moderate (25-49%) decline in UK non-breeding population over the last 25 years, or the longer-term period; rare breeders (1–300 breeding pairs in UK); rare non-breeders (less than 900 individuals), or; internationally important species with at least 20% of European breeding or non-breeding population in the UK .

3.3 Survey Details

Table 1 and Table 2 provide details of each survey visit.

Table 1: Breeding bird survey details – Southern land parcels

Survey Date	Duration	Weather Conditions
1 st April 2019	06:30-10:00	Dry, 8°C, 100% cloud cover, moderate easterly breeze
7 th May 2019	07:50-10:15	Dry, 13°C, 50% cloud cover, no wind
25 th May 2019	07:20-09:30	Dry, 17°C, 50% cloud cover, no wind
2 nd June 2019	06:00-10:00	Showery, 15°C, 100% cloud cover, fresh northerly breeze
11 th June 2019	05:45-09:05	Sunny, 13°C, 25% cloud cover, light north westerly breeze
19 th June 2019	07:15-10:15	Misty, 15°C, 100% cloud cover, light westerly breeze

Table 2: Breeding bird survey details – Western land parcels

Survey Date	Duration	Weather Conditions
5 th April 2019	06:45-09:45	Dry, 8°C, 100% cloud cover, moderate north westerly breeze
14 th May 2019	05:30-09:45	Dry, 14°C, 25% cloud cover, faint north easterly breeze
27 th May 2019	05:45-09:15	Dry, 12°C, 100% cloud cover, moderate north westerly breeze
1 st June 2019	05:30-09:25	Showery, 12°C, 75% cloud cover, fresh north westerly breeze
12 th June 2019	05:30-09:45	Overcast, 13°C, 100% cloud cover, moderate south westerly breeze
17 th June 2019	05:15-09:25	Sunny, 14°C, 25% cloud cover, light westerly breeze

The breeding bird surveys were carried out by experienced ornithologists Simon Colenutt and Graeme Down of ECOSA. Bird observations were mapped using British Trust for Ornithology codes. Particular attention was paid to identifying birds actively using the survey area, rather than just flying over.

3.4 Survey Limitations

Access around Crickley Hill Farm was restricted to Public Rights of Way.

While the weather conditions on 19th June were misty, this was not significantly dense or prolonged to have negatively impacted upon the survey results.

Transect data has not been extrapolated across the whole study area and thus the report should not be interpreted as showing the total number of territories for bird species within the whole red line boundary of the project.

4.0 RESULTS

4.1 Introduction

This section details the results of the breeding bird surveys undertaken at the A417 site between April 2019 and June 2019.

4.2 Breeding Birds

A summary of notable species recorded within survey area and their respective breeding status are provided in **Table 3**, along with common species recorded. Full survey data is presented in **Appendix 1**. The territories of species listed under Schedule 1 of the Wildlife & Countryside Act and BoCC Red and Amber Listed breeding species are mapped on **Map 2**, **Map 3**, **Map 4** and **Map 5**. During the course of the surveys a total of 55 bird species were recorded.

Table 3: Summary of bird species recorded from survey area

Species	Typical Habitat	Breeding Status**	Number of Territories	Schedule 1	Red List	Amber List	Green List
Hobby <i>Falco subbuteo</i>	Parkland/heath/woodland	F	-	X			X
Red-backed shrike <i>Lanius collurio</i>	Heath/scrub	V	-	X	X		
Red kite <i>Milvus milvus</i>	Woodland	F	-	X			X
Linnet <i>Linaria cannabina</i>	Hedgerows/scrub	B	12		X		
Marsh tit <i>Poecile palustris</i>	Woodland	B	6		X		
Mistle thrush <i>Turdus viscivorus</i>	Woodland/parkland	B	4		X		
Skylark <i>Alauda arvensis</i>	Arable fields	B	23		X		
Song thrush <i>Turdus philomelos</i>	Woodland	B	13		X		
Spotted flycatcher <i>Muscicapa striata</i>	Woodland/parkland	B	1		X		
Tree pipit <i>Anthus trivialis</i>	Heaths/woodland clearings	V	1		X		
Wood warbler <i>Phylloscopus sibilatrix</i>	Woodland	V	-		X		
Yellowhammer <i>Emberiza citrinella</i>	Hedgerows	B	7		X		
Yellow wagtail <i>Motacilla flava</i>	Arable/meadows	P	-		X		
Bullfinch <i>Pyrrhula pyrrhula</i>	Woodland/parkland/orchards/scrub	B	2			X	
Common gull <i>Larus canus</i>	Open fields	V	-			X	
Dunnock <i>Prunella modularis</i>	Hedgerows/scrub	B	19			X	
Kestrel <i>Falco tinnunculus</i>	Trees/open fields	B	1			X	
Lesser black-backed gull <i>Larus fuscus</i>	Moorland/open fields	F	-			X	
Meadow pipit <i>Anthus pratensis</i>	Moorland/heaths/rough grassland	B	2			X	
Stock dove <i>Columba oenas</i>	Woodland/open fields	B	3			X	
Swift <i>Apus apus</i>	Buildings/cliffs	F	-			X	
Willow warbler <i>Phylloscopus trochilus</i>	Woodland/heathland	B	2			X	

Species	Typical Habitat	Breeding Status**	Number of Territories	Schedule 1	Red List	Amber List	Green List
Blackbird <i>Turdus merula</i>	Woodland/parkland/gardens	B	NA				X
Blackcap <i>Sylvia atricapilla</i>	Woodland/parkland/scrub	B	NA				X
Black-headed gull <i>Chroicocephalus ridibundus</i>	Open fields	V	NA				X
Blue tit <i>Cyanistes caeruleus</i>	Woodland/scrub/gardens	B	NA				X
Buzzard <i>Buteo buteo</i>	Woodland	B	NA				X
Carrion crow <i>Corvus corone</i>	Woodland/open fields	B	NA				X
Chaffinch <i>Fringilla coelebs</i>	Woodland/parkland/scrub/gardens	B	NA				X
Chiffchaff <i>Phylloscopus colybita</i>	Woodland	B	NA				X
Coal tit <i>Periparus ater</i>	Woodland/gardens	B	NA				X
Garden warbler <i>Sylvia borin</i>	Woodland	P	NA				X
Goldcrest <i>Regulus regulus</i>	Woodland	B	NA				X
Goldfinch <i>Carduelis carduelis</i>	Hedgerows/scrub	B	NA				X
Great spotted woodpecker <i>Dendrocopos major</i>	Woodland/parkland	B	NA				X
Great tit <i>Parus major</i>	Woodland/scrub/gardens	B	NA				X
Greenfinch <i>Chloris chloris</i>	Scrub	B	NA				X
Green woodpecker <i>Picus viridis</i>	Woodland/open fields	B	NA				X
Jackdaw <i>Corvus monedula</i>	Woodland/parkland/buildings	B	NA				X
Jay <i>Glandarius glandarius</i>	Woodland/parkland/scrub	B	NA				X
Lesser whitethroat <i>Sylvia curruca</i>	Scrub	P	NA				X
Long-tailed tit <i>Aegithalos caudatus</i>	Woodland/parkland/gardens	B	NA				X
Magpie <i>Pica pica</i>	Woodland/scrub/gardens	B	NA				X
Nuthatch <i>Sitta europaea</i>	Woodland	B	NA				X
Pied wagtail <i>Motacilla alba</i>	Parkland/gardens	B	NA				X
Pheasant <i>Phasianus colchicus</i>	Woodland/open fields	B	NA				X
Raven <i>Corvus corax</i>	Moorland/woodland/open fields	P	NA				X
Red-legged partridge <i>Alectoris rufa</i>	Arable fields	B	NA				X
Robin <i>Erithacus rubecula</i>	Woodland/scrub/gardens	B	NA				X
Rook <i>Corvus frugilegus</i>	Woodland/open fields/arable fields	B	NA				X
Sparrowhawk <i>Accipiter nisus</i>	Woodland	P	NA				X
Treecreeper <i>Certhia familiaris</i>	Woodland	B	NA				X
Wheatear <i>Oenanthe oenanthe</i>	Open field boundaries/arable fields	V	NA				X
Whitethroat <i>Sylvia communis</i>	Scrub/hedgerows	B	NA				X
Woodpigeon <i>Columba palumbus</i>	Woodland/scrub/gardens	B	NA				X
Wren <i>Troglodytes troglodytes</i>	Woodland/scrub/gardens	B	NA				X

** B= confirmed breeding. P= possible breeding, but unconfirmed. V= visiting only, not breeding, F = fly over only

On the 26th June 2019, whilst an invertebrate survey was being undertaken, a female red-backed shrike *Lanius collurio* was found to be present. This Schedule 1 species is extinct as a regular breeding species in England, with a few pairs breeding sporadically, mainly in Scotland. This individual was recorded as being an individual over-shooting migrant as no evidence of a pair or a nest was observed.

4.2.1 Breeding Species – Red Listed

Of the red-listed species confirmed as breeding within the survey area or possibly breeding, spotted flycatcher, tree pipit, and yellow wagtail are listed due to severe breeding population declines over 25 years. Linnet, marsh tit, mistle thrush, skylark, song thrush and yellowhammer have suffered similarly severe declines as breeding species over a longer period of time.

Yellow wagtail is a summer visitor that breeds in lowland meadow and arable habitats, and one pair was recorded within fields in the south of the site, but breeding could not be confirmed.

Spotted flycatcher is a summer visitor and is a bird of woodland edges and parkland, and one pair was found to be present associated with woodland edge habitat in the west of the survey area.

Tree pipit habitat comprises woodland with cleared areas and immature trees present. One pair of this summer visitor was located near Barrow Wake, 50-100 metres west of the existing alignment of the A417.

Marsh tit is a woodland resident, and five pairs were confirmed within the survey area, with a further pair very close by. All pairs were in the west of the survey area, with four north of the A417 and two to the south and west of the existing alignment. Two of the six pairs were located close to the existing alignment.

Song thrush and mistle thrush are resident species associated with woodland and other habitats with trees present. Thirteen pairs of song thrush were confirmed with distribution across the whole of the survey area. Four pairs of mistle thrush were similarly scattered across the survey area.

Linnet, skylark and yellowhammer are all birds of arable habitats as well as open grassland with, in the case of yellowhammer and linnet, hedgerows and scrub for breeding. Skylark is a ground nesting species. All three species are resident. Two pairs of linnet were located in the extreme west of the site, with ten other pairs confirmed in the southern survey arm, including five pairs from Castle Hill Cottage, and further south. Due to the gregarious nature of this species it is likely that more than one pair are

present at some of these locations and twelve territories should be taken as a minimum number.

Yellowhammer were located exclusively in the southern arm of the survey area, with the majority found around the southern-most fields.

Twenty-three pairs of skylark were recorded, all in the southern arm of the survey area. A particularly high density was found in the southern-most fields, but pairs were distributed across the southern area with clusters in fields east of the Air Balloon roundabout, west of Acorn House and Shab Hill Farm and south of Shab Hill.

There was a single record of hobby, this related to a flyover bird and there was no evidence of the species breeding within the survey area.

4.2.2 Breeding Species – Amber Listed

Kestrel is an amber listed species due to a moderate decline in breeding population over 25 years, whilst bullfinch, dunnock and meadow pipit have suffered similar declines over a longer period. Stock dove is amber listed due to the UK having breeding populations of international importance.

One kestrel territory was identified in the western arm of the survey area. Kestrels require open country for hunting and trees or man-made structures for nesting.

Bullfinch is a resident species primarily associated with scrub and orchards, and two pairs were confirmed in the western arm of the survey area.

Dunnock breed in scrub and hedgerow habitats and nineteen pairs were recorded across the survey area. Although amber listed, the species is still numerous, and nineteen pairs is not an unexpectedly high number for this survey.

Meadow pipit is a bird of open country, including rough grassland, and is particularly frequent in upland areas. Two pairs were identified as breeding in such habitat in the western arm of the survey area.

Stock dove rely on a mixture of woodland an open habitats for breeding and foraging and three pairs were located in the western arm of the survey area, north of the A417.

4.2.3 Breeding Species – Green Listed and No Status (non-native)

Common and widespread terrestrial species were also recorded as part of the survey work and twenty-eight of these were confirmed as breeding with four possibly breeding. The vast majority of these are birds associated with woodland/ parkland and scrub habitats. Most are resident species, with blackcap, garden warbler, lesser whitethroat, whitethroat, and chiffchaff being summer migrant warblers.

There were records of red kite from the survey area but no evidence of the species breeding within the survey area. It is likely that the species breeds in wooded areas nearby.

5.0 EVALUATION, IMPACTS AND RECOMMENDATIONS

5.1 Introduction

This section provides an overall site evaluation in relation to breeding birds. Full details of the breeding bird assessment, mitigation, compensation and enhancement measure will be considered within the Biodiversity chapter of the Environmental Statement for the project.

5.2 Site Evaluation

The southern arm of the survey area is composed of large arable fields located on the Cotswold plateau, interspersed with small copses and belts of woodland. The western arm is steeply sloped with greater woodland cover and with a greater proportion of calcareous grassland in open areas as opposed to arable land.

According to a published methodology for appraising the value of a site to breeding birds, the survey area is of Local importance to breeding birds, given that a total of 46 species are confirmed or likely to be breeding (Fuller, 1980).

Overall the diversity and numbers of birds recorded over a large survey area is considered typical of farmland, grassland and woodland habitats present within the site. These habitats are not uncommon in the wider area.

5.3 Impacts and Recommendations

Full details of ecological mitigation measures will be included within the Biodiversity chapter of the Environmental Statement for the project. Mitigation measures relevant to breeding birds should include any effects identified from:

- Habitat loss;
- Destruction of active nests during the breeding period;
- Visual disturbance;
- Noise; and
- Lighting.

Positive measures should be considered that may offer benefits to breeding birds, including habitat reconnection and enhancement.

6.0 REFERENCES

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Map 1 Survey Area and Transect Route

**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

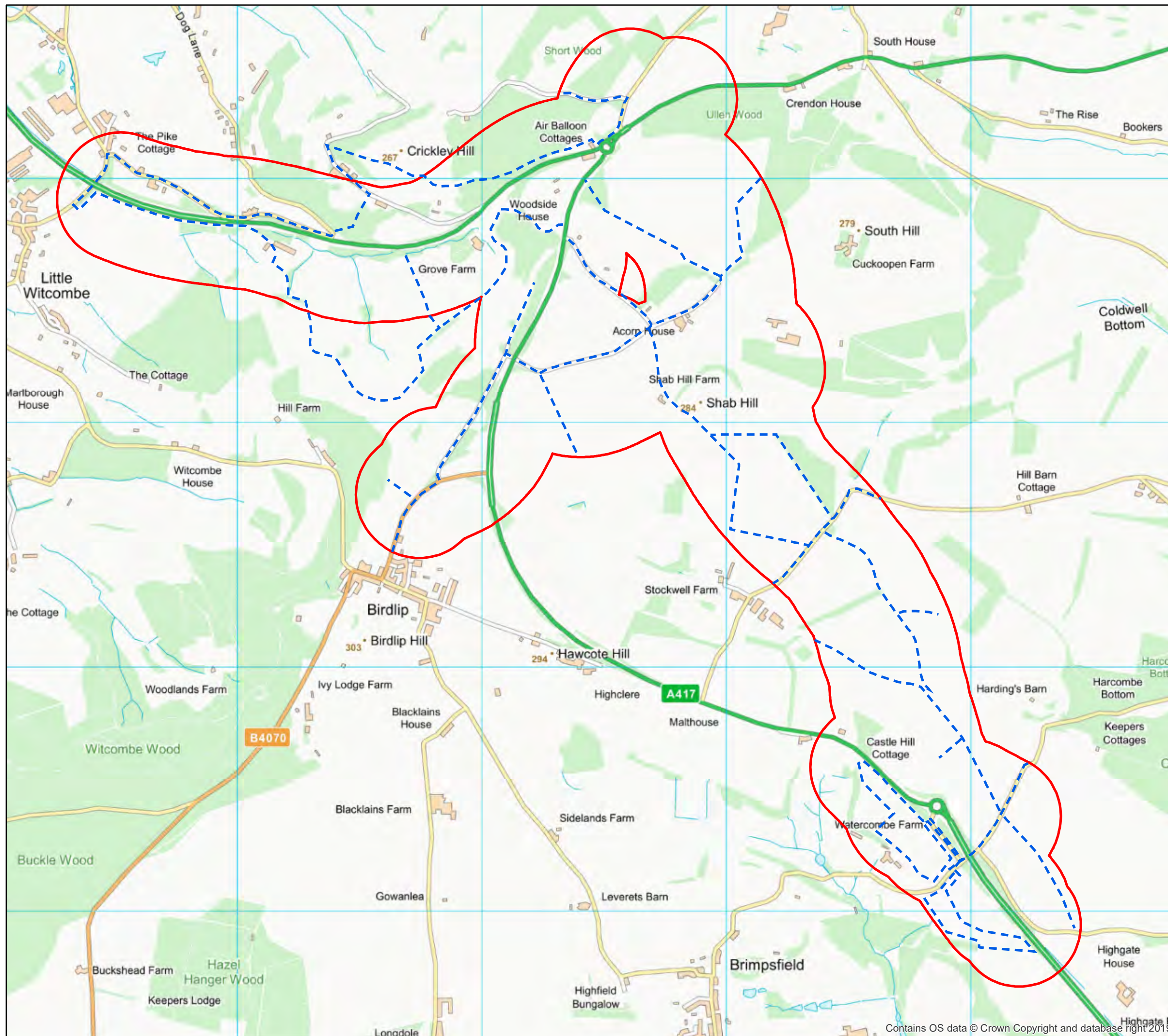
BREEDING BIRD SURVEY

Map 1 - Survey Area and Transect Route

Client:	Mott MacDonald Sweco Joint Venture
Date:	November 2019
Status:	Final

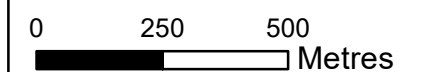
KEY

- Site Boundary
- Breeding Bird Survey Transect Route



N.B. A total of twelve survey visits were undertaken between April and June 2019 inclusive.

Scale at A3: 1:15,000



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Map 2 Breeding Bird Survey Results West: Red Listed Species







**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

BREEDING BIRD SURVEY

Map 2 - Breeding Bird Survey Results
West: Red Listed Species

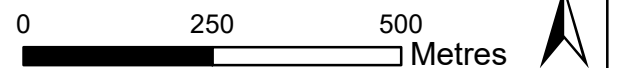
Client:	Mott MacDonald Sweco Joint Venture
Date:	November 2019
Status:	Final

KEY

-  Site Boundary
- Red Listed Bird Species Breeding Territories**
-  Linnet (LI)
-  Marsh Tit (MT)
-  Mistle Thrush (M)
-  Skylark (S)
-  Song Thrush (ST)
-  Spotted Flycatcher (SF)
-  Tree Pipit (TP)
-  Yellowhammer (Y)

N.B. Breeding territories are representative of survey data taken from across the breeding bird surveys undertaken between April and June 2019 inclusive. Species symbols represent the approximate territory centre.

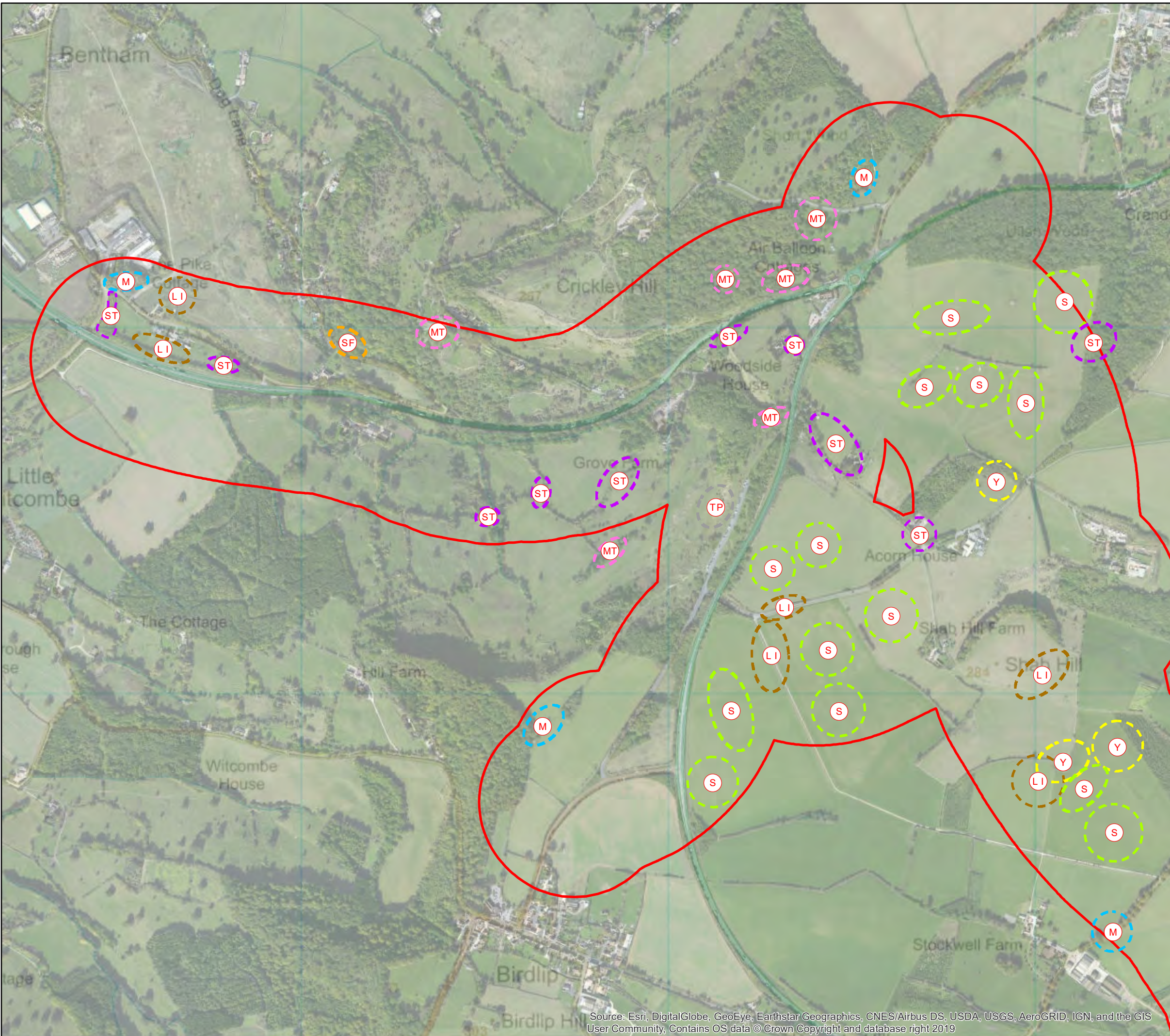
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Map 3 Breeding Bird Survey Results South: Red Listed Species

**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

BREEDING BIRD SURVEY

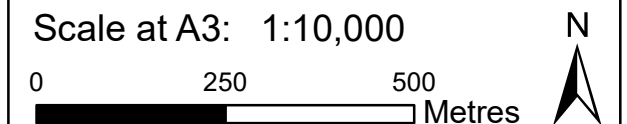
**Map 3 - Breeding Bird Survey Results
South: Red Listed Species**

Client:	Mott MacDonald Sweco Joint Venture
Date:	November 2019
Status:	Final

KEY

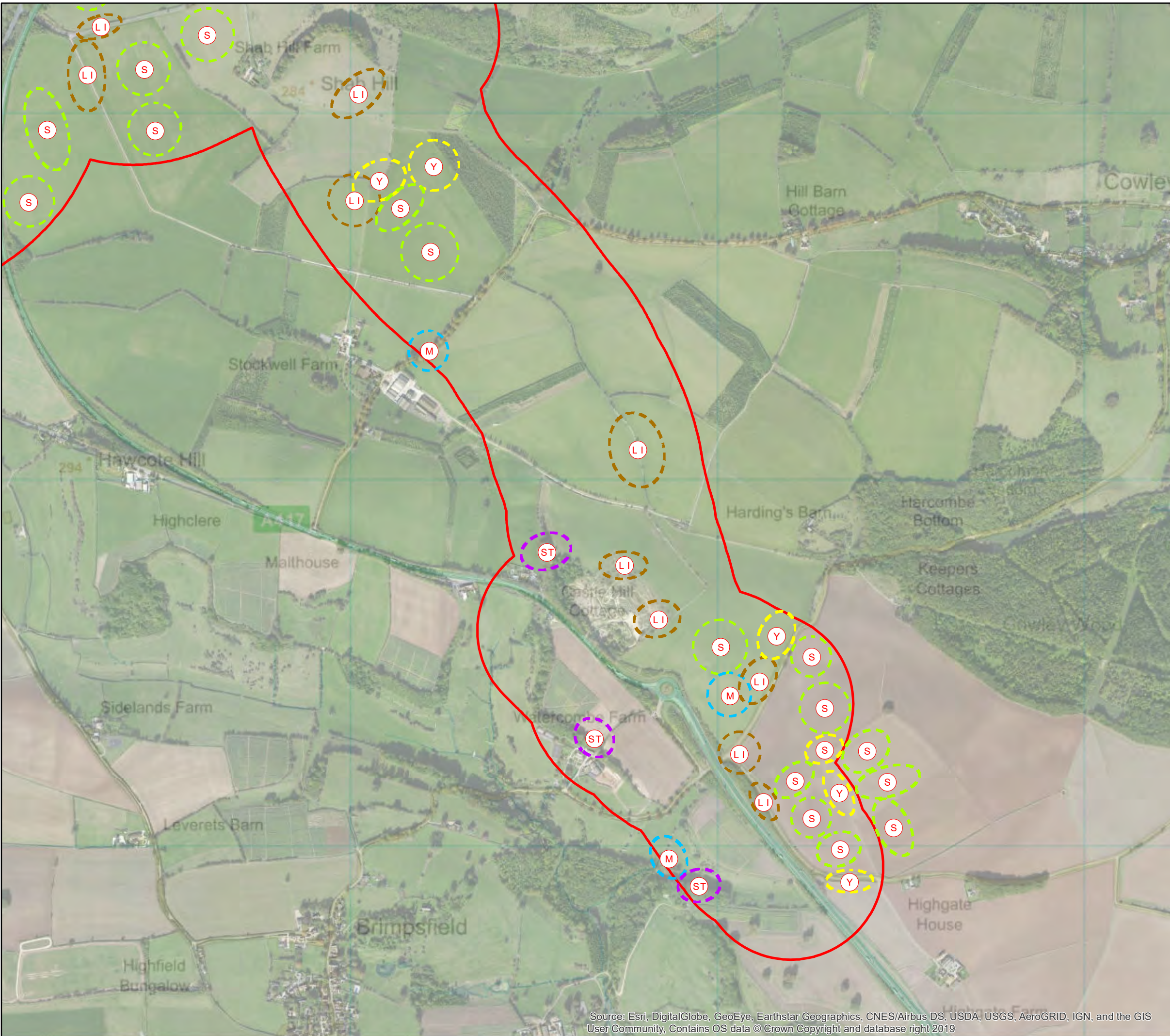
- Site Boundary
- Red Listed Bird Species Breeding Territories**
- Linnet (LI)
- Mistle Thrush (M)
- Skylark (S)
- Song Thrush (ST)
- Yellowhammer (Y)

N.B. Breeding territories are representative of survey data taken from across the breeding bird surveys undertaken between April and June 2019 inclusive. Species symbols represent the approximate territory centre.



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Map 4 Breeding Bird Survey Results West: Amber Listed Species








**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

BREEDING BIRD SURVEY

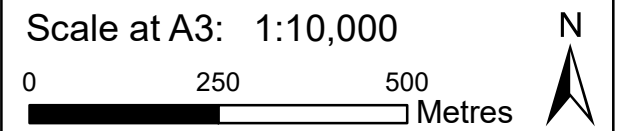
Map 4 - Breeding Bird Survey Results
West: Amber Listed Species

Client:	Mott MacDonald Sweco Joint Venture
Date:	November 2019
Status:	Final

KEY

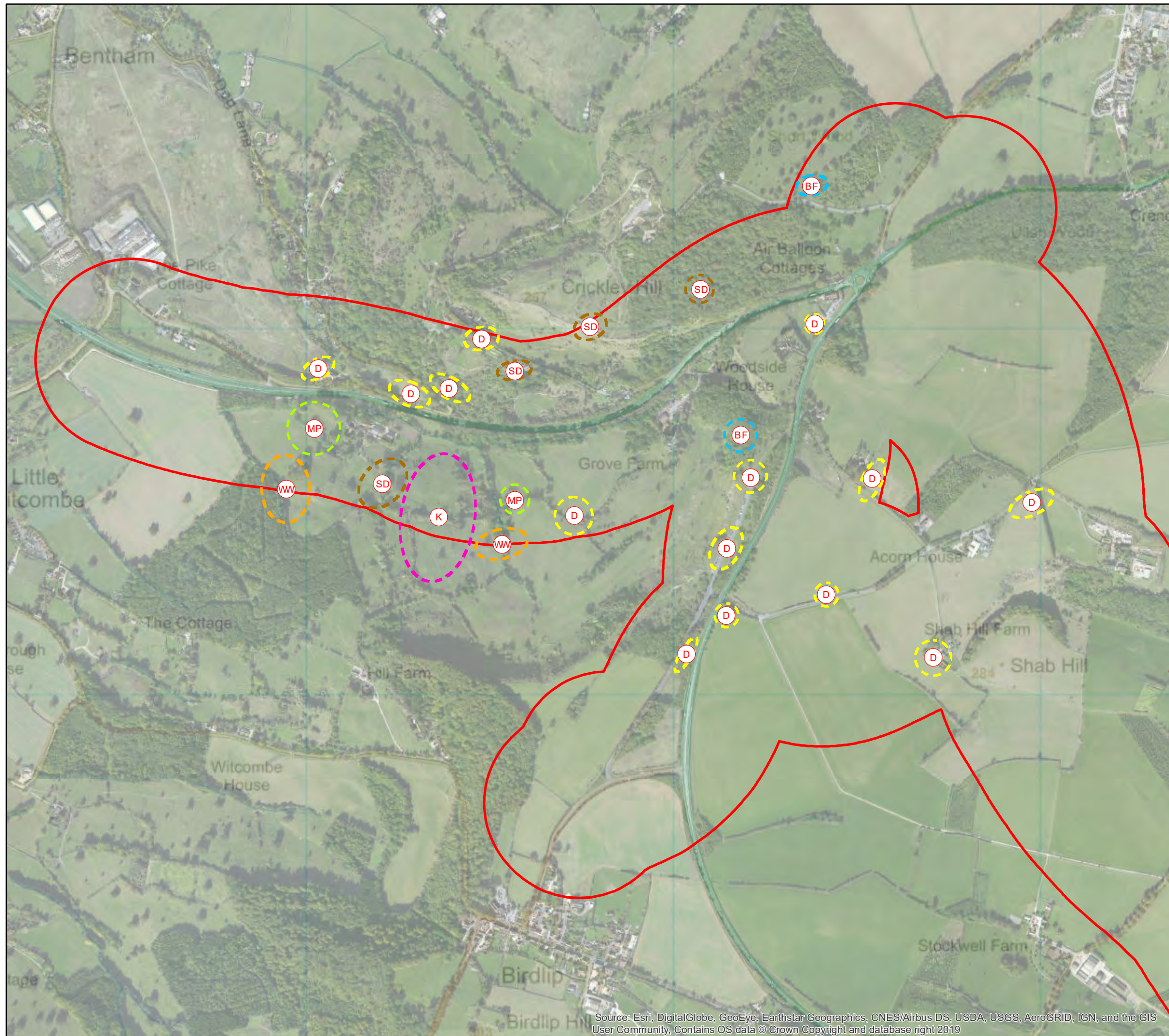
-  Site Boundary
- Amber Listed Bird Species Breeding Territories**
-  Bullfinch (BF)
-  Dunnock (D)
-  Kestrel (K)
-  Meadow Pipit (MP)
-  Stock Dove (SD)
-  Willow Warbler (WW)

N.B. Breeding territories are representative of survey data taken from across the breeding bird surveys undertaken between April and June 2019 inclusive. Species symbols represent the approximate territory centre.



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Map 5 Breeding Bird Survey Results South: Red Listed Species



**A417 ROAD IMPROVEMENT SCHEME,
BIRDLIP, GLOUCESTERSHIRE**

BREEDING BIRD SURVEY


Map 5 - Breeding Bird Survey Results
South: Amber Listed Species

Client:	Mott MacDonald Sweco Joint Venture
Date:	November 2019
Status:	Final

KEY

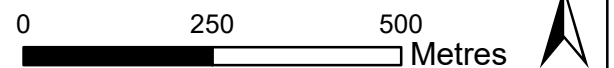
 Site Boundary

Amber Listed Bird Species Breeding Territories

 Dunnock (D)

N.B. Breeding territories are representative of survey data taken from across the breeding bird surveys undertaken between April and June 2019 inclusive. Species symbols represent the approximate territory centre.

Scale at A3: 1:10,000



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Appendix 1 Breeding Bird Survey Counts

Table 4: 2019 breeding bird records – Southern land parcels

Date	1 st April 2019		7 th May 2019		25 th May 2019		2 nd June 2019		11 th June 2019		19 th June 2019	
	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Blackbird	9	0	8	0	7	0	4	0	2	0	7	1
Blackcap	2	0	7	0	4	0	3	0	4	0	3	0
Blue tit	8	0	9	0	4	0	7	0	9	0	10	0
Bullfinch	0	0	0	0	1	0	1	0	0	0	1	0
Buzzard	0	0	1	0	0	0	Not counted	Not counted	Not counted	Not counted	1	0
Carrion crow	4	0	11	0	8	0	Not counted	Not counted	Not counted	Not counted	13	0
Chaffinch	5	0	8	0	3	0	7	0	4	0	1	0
Chiffchaff	4	0	4	0	3	0	7	0	5	0	1	0
Coal tit	2	0	0	0	1	0	0	0	0	0	1	0
Common gull	96	0	0	0	0	0	0	0	0	0	0	0
Dunnock	6	0	5	0	4	0	5	0	9	0	4	0

Date	1 st April 2019		7 th May 2019		25 th May 2019		2 nd June 2019		11 th June 2019		19 th June 2019	
	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Garden warbler	1	0	0	0	0	0	0	0	0	0	0	0
Goldcrest	0	0	4	0	1	0	2	0	2	0	2	0
Goldfinch	3	0	3	0	8	0	3	0	1	0	0	0
Great spotted woodpecker	0	0	0	0	1	0	0	0	0	0	0	0
Greenfinch	0	0	0	0	0	0	0	0	0	0	0	0
Green woodpecker	0	0	0	0	0	0	2	0	1	0	1	0
Great tit	5	0	7	0	2	0	3	0	4	0	3	0
Grey wagtail	0	0	0	0	0	0	0	0	0	0	0	0
Herring gull	0	0	0	0	0	0	0	0	0	0	0	0
Hobby	0	0	0	0	0	0	0	0	0	0	0	0
Jackdaw	0	0	0	0	0	0	0	0	0	0	1	0
Jay	1	0	0	0	1	0	0	0	0	0	0	0
Kestrel	0	0	0	0	1	0	0	0	0	0	1	0

Date	1 st April 2019		7 th May 2019		25 th May 2019		2 nd June 2019		11 th June 2019		19 th June 2019	
Species	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Lesser black-backed gull	0	125	0	0	0	0	0	0	0	0	0	2
Lesser whitethroat	0	0	0	0	0	0	0	0	0	0	0	0
Linnet	14	0	19	0	36	0	15	0	8	0	22	0
Long-tailed tit	0	0	1	0	2	0	0	0	0	0	1	0
Magpie	0	0	9	0	3	0	Not counted	Not counted	Not counted	Not counted	3	0
Marsh tit	2	0	0	0	0	0	1	0	1	0	0	0
Meadow pipit	6	0	0	0	0	0	7	0	2	0	0	0
Mistle thrush	0	0	1	0	1	0	4	0	8	0	3	0
Nuthatch	2	0	0	0	0	0	0	0	0	0	0	0
Pheasant	0	0	4	0	5	0	Not counted	Not counted	Not counted	Not counted	1	0
Pied wagtail	1	0	0	0	0	0	1	0	0	0	0	0
Raven	0	0	0	0	0	0	1	0	1	0	0	0

Date	1 st April 2019		7 th May 2019		25 th May 2019		2 nd June 2019		11 th June 2019		19 th June 2019	
Species	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Whitethroat	0	0	8	0	4	0	3	0	7	0	7	0
Willow warbler	0	0	4	0	3	0	1	0	1	0	1	0
Woodpigeon	0	0	13	0	13	0	Not counted	Not counted	Not counted	Not counted	20	0
Wren	12	0	10	0	9	0	14	0	16	0	9	0
Yellowhammer	8	0	7	0	5	0	5	0	4	0	6	0
Yellow wagtail	0	0	2	0	0	0	1	0	0	0	0	0

* Recorded flying over the site only

** Some species are shown as 'Not counted' usually these are common species which were present either in large numbers or were present but not showing evidence of breeding.

Date	5 th April 2019		14 th May 2019		27 th May 2019		1 st June 2019		12 th June 2019		17 th June 2019	
Species	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Robin	12	0	7	0	7	0	8	0	7	0	7	0
Rook	0	0	0	0	0	0	0	0	0	0	0	0
Skylark	0	0	0	0	0	0	0	0	0	0	0	0
Song thrush	7	0	6	0	7	0	4	0	5	0	5	0
Sparrowhawk	0	0	0	0	0	0	0	0	0	0	0	0
Spotted flycatcher	0	0	1	0	0	0	1	0	1	0	1	0
Stock dove	3	0	3	0	2	0	2	0	1	0	2	0
Swallow	0	0	6	0	4	0	8	0	4	0	3	0
Swift	0	0	0	0	0	0	0	0	0	30	0	5
Treecreeper	1	0	1	0	1	0	1	0	0	0	1	0
Tree pipit	0	0	0	0	0	0	0	0	1	0	1	0
Wheatear	0	0	0	0	0	0	0	0	0	0	0	0
Whitethroat	0	0	2	0	2	0	2	0	1	0	7	0
Willow warbler	0	0	2	0	2	0	1	0	1	0	2	0

Date	5 th April 2019		14 th May 2019		27 th May 2019		1 st June 2019		12 th June 2019		17 th June 2019	
Species	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over	On Site	Flying Over
Woodpigeon	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted	Not counted
Wood warbler	0	0	0	0	0	0	0	0	1	0	0	0
Wren	16	0	10	0	15	0	13	0	13	0	20	0
Yellowhammer	0	0	0	0	0	0	0	0	0	0	0	0
Yellow wagtail	0	0	0	0	0	0	0	0	0	0	0	0

* Recorded flying over the site only

** Although not a Schedule 1 species or Red or Amber listed, golden plover are listed on Annex 1 of the EC Birds Directive