

# M25 junction 10/A3 Wisley interchange TR010030

## 6.5 Environmental Statement: Appendix 7.15 Breeding birds

Regulation 5(2)a  
Planning Act 2008

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



## **Infrastructure Planning**

### **Planning Act 2008**

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

### **M25 junction 10/A3 Wisley interchange**

#### **The M25 junction 10/A3 Wisley interchange Development Consent Order 202[x ]**

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### **6.5 ENVIRONMENTAL STATEMENT: APPENDIX 7.15 BREEDING BIRDS**

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# **Appendix 7.15 Breeding birds**

## 7.1 Breeding bird surveys (2016, 2017 and 2018)

### 7.1.1 Introduction

- 7.1.1.1 Due to the setting of the Scheme within the Thames Basin Heaths Special Protection Area (SPA), and the presence of suitable nesting habitats within the Scheme (such as woodland and scrub), it was considered that breeding bird surveys were required to inform the Environmental Impact Assessment.
- 7.1.1.2 Bird surveys were carried out during the 2016 and 2017 breeding bird seasons for the M25 junction 10/A3 Wisley interchange Improvement Scheme. In addition, two areas were surveyed in 2018; Nutberry Fruit Farm (not surveyed prior to 2018) and Painshill Park (only received a single survey visit in 2017 due to access constraints).
- 7.1.1.3 The SPA was also surveyed for its qualifying species in 2016, 2017 and 2018. The SPA falls within the south-east and south-west quadrants surrounding junction 10 of the M25.

### 7.1.2 Objectives

- 7.1.2.1 The aim of the breeding bird surveys was to determine the abundance and distribution of breeding bird species notable for their protected or conservation concern status, within or near the Scheme, including qualifying species of the Thames Basin Heaths SPA (Dartford warbler, nightjar and woodlark). For this assessment, notable birds have been taken as those listed on:
- Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
  - Annex 1 of the Birds Directive<sup>1</sup>;
  - The red or amber lists of Birds of Conservation Concern (BoCC)<sup>2</sup>, and;
  - Species of Principal Importance (SPI)<sup>3</sup>.

### 7.1.3 Methodology

#### Desk study

- 7.1.3.1 All bird records within 1km of the Scheme within the last ten years (since 2007) were requested from the Surrey Biodiversity Information Centre (SBIC) in April 2017.

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<sup>1</sup> Directive 2009/147/EC of the European Parliament on the conservation of wild birds

<sup>2</sup> The UK's leading bird conservation organisations have worked together on a quantitative review of the status of the birds that occur regularly in the UK (currently on the third review). Bird species have been assessed against a set of objective criteria to place each on one of three lists – green, amber and red – indicating an increasing level of conservation concern. The criteria used in assessments are intended to ensure that Birds of Conservation Concern (BoCC) listings reflect each species' global and European status as well as that within the UK, and additionally measure the importance of the UK population in international terms.

The findings of the fourth review are in: Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, pp708–746.

<sup>3</sup> Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 sets out the duty for public authorities to conserve biodiversity in England. Habitats and species of principal importance for the conservation of biodiversity as identified by the Secretary of State for England, in consultation with Natural England, are referred to in Section 41 of the NERC Act 2006 for England. The list of habitats and species was updated in 2008 and is known as the England Biodiversity List.

- 7.1.3.2 Every year, breeding bird surveys of the Thames Basin Heaths SPA for Dartford warblers, nightjars and woodlarks are undertaken by 2J's<sup>4</sup>. In early 2018, the breeding bird data for Wisley Common and Ockham Common was obtained from 2J's for the five-year period of 2013-2017. The breeding bird data for Wisley Common and Ockham Common for 2018 was also obtained in early 2019.

### Breeding bird surveys

- 7.1.3.3 The 2016, 2017 and 2018 breeding bird surveys were based on the British Trust for Ornithology's (BTO) Common Bird Census methodology (as described in Gilbert *et al.*, 1998<sup>5</sup>). These will be hereafter referred to as 'CBC surveys' to avoid confusion with the nightjar surveys.
- 7.1.3.4 The surveys involved walking transect routes that allowed birds to be recorded within the heathland and woodland habitats of the survey area. See Figures 7.20, 7.21 and 7.22 for a plan of the survey areas and transect routes.
- 7.1.3.5 The CBC surveys commenced at sunrise (following standard CBC methodology<sup>5</sup>) and lasted approximately three to four hours. Often several transects were surveyed in a single visit, so the order in which they were surveyed was varied between visits to minimise recording bias.
- 7.1.3.6 The nightjar surveys commenced approximately half an hour after sunset and lasted for up to two hours, or commenced approximately 1.5 hours before sunrise and lasted until sunrise (these timings follow the nightjar survey method as described in Gilbert *et al.*, 1998<sup>5</sup>). Figures 7.20, 7.21 and 7.22 show the survey areas and transect routes for the nightjar surveys.
- 7.1.3.7 For all surveys, the direction surveyors walked through the site was varied between visits to optimise detection and minimise recording bias. The bird surveys were undertaken in fair weather conditions (i.e. not in heavy rain, poor visibility or wind greater than Beaufort 4). The surveys were led by an experienced ornithologist and Chartered Ecologist, with over ten years of professional bird survey and assessment experience.
- 7.1.3.8 The surveyors, with the aid of binoculars, recorded all contacts with birds by either sight or sound by walking through the site at a slow and steady pace. The positions of the recorded birds were plotted as accurately as possible (to the nearest 10-20m) on a suitably scaled base map, i.e. a 'visit map'. Standard BTO codes and symbols were used for mapping species (including sex and age, e.g. juvenile, immature or adult) and bird activity (including singing, alarm-calling, nest-building and location, carrying food or faecal sacs, territorial disputes and copulation).
- 7.1.3.9 Registrations of birds during the surveys were judged to be 'breeding', 'probable/possible breeding', or 'non-breeding' according to the criteria in Table 7.1.1 below<sup>6</sup>. Breeding behaviour includes displaying, singing, territorial activity, agitated or defensive behaviour or pairs of adults together.

<sup>4</sup> 2J's is a voluntary group of ornithologists who survey all of the Thames Basin Heaths SPA sites during the breeding bird season, to monitor the numbers of SPA qualifying species.

<sup>5</sup> Gilbert, G., Gibbons, D.W. and Evans, J. (1998) Bird monitoring methods: A manual of techniques for key UK species. RSPB: Sandy.

<sup>6</sup> Breeding criteria definitions adapted from Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000) Bird Census Techniques: Second Edition. Academic Press: London.

**Table 7.1.1: Definition of breeding criteria**

Category	Criteria
Breeding	Adults observed at nest Nest with eggs Unfledged young Carrying nest material, food or faecal sac Present in one location (within normal territory range) on at least two occasions and displaying behaviour indicative of breeding on at least one occasion.
Probable breeding	Present in suitable breeding habitat in the same location (within normal territory range) on one or more occasions Displaying breeding behaviour on one occasion only
Possible breeding	Present in suitable breeding habitat on one occasion
Non-breeding	Present in non-suitable habitat for breeding Immature birds

7.1.3.10 The data captured over the survey visits was analysed to provide an estimate of the number of recorded notable species territories and their locations. Data from the 'visit maps' was transferred to a single breeding bird survey map for each notable species, giving an indication of where notable bird species were recorded and where they may be breeding. Territories of notable species can be viewed on Figures 7.23, 7.24<sup>7</sup> and 7.25.

7.1.3.11 The surveys carried out ensured that the species-specific survey methodologies for the qualifying breeding bird species of the Thames Basin Heaths SPA (woodlark, Dartford warbler and nightjar), as taken from Gilbert *et al* (1998)<sup>5</sup> were incorporated within the survey effort. The species-specific survey requirements are listed below:

- Woodlark – three early morning visits (Visit 1 between 15 February and 21 March; Visit 2 between 22 March and 25 April; Visit 3 between 26 April and 1 June). These were covered by the CBC surveys in 2016 and 2017. In 2018, specific survey visits to record woodlark and Dartford warbler were undertaken.
- Dartford warbler – three early morning visits (Visit 1 between beginning of April and mid-May; Visit 2 between mid-May and late-May; Visit 3 during June). These were covered by the CBC surveys in 2016 and 2017. In 2018, specific survey visits to record woodlark and Dartford warbler were undertaken.
- Nightjar – two dusk or pre-dawn visits between June and mid-July. These were covered by nightjar-specific surveys in 2016, 2017 and 2018.

<sup>7</sup> Due to the sensitive nature of hobby as a Schedule 1 species of the Wildlife and Countryside Act 1981 (as amended), the location of the hobby territory has been omitted from Figure 7.24.

## Breeding bird surveys - 2016

- 7.1.3.12 The 2016 breeding bird surveys were focused on the land within and surrounding the Scheme in the four quadrants surrounding junction 10 of the M25 (the four areas of land adjacent to the Scheme separated by the M25/A3 junction). See Figure 7.20 in Volume 3 for a map of the 2016 breeding bird survey area.
- 7.1.3.13 CBC surveys were undertaken on five occasions in 2016.
- 7.1.3.14 In addition, the heathland areas within the south-east and south-west quadrants received two nightjar surveys<sup>8</sup>. See Table 7.1.2 for details of surveys.

**Table 7.1.2: 2016 breeding bird survey details**

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise / sunset	Weather <sup>9</sup>
28/04/2016	All four quadrants	CBC survey	1	05:50	11:15	05:50	Okta 0, BF 1, dry, 11°C, good visibility.
13/05/2016	All four quadrants	CBC survey	2	05:10	08:30	05:11	Okta 8, BF 2, dry, 11°C, good visibility.
31/05/2016	All four quadrants	CBC survey	3	04:30	08:15	04:50	Okta 8, BF 4, dry, 11°C, good visibility.
07/06/2016	NE quadrant SE quadrant	CBC survey	4	03:30	07:00	04:45	Okta 1, BF 1, dry, 5°C, good visibility.
09/06/2016	SE quadrant	Nightjar survey	1	21:45	22:30	21:15	Okta 4, BF 1, dry, 13°C, good visibility.
10/06/2016	SW quadrant	Nightjar survey	1	03:30	04:45	04:46	Okta 4, BF 1, dry, 13°C, good visibility.
10/06/2016	NW quadrant SW quadrant	CBC survey	4	04:45	06:30	04:45	Okta 1, BF 1, dry, 13°C, good visibility.
28/06/2016	SE quadrant	Nightjar survey	2	03:40	04:45	04:46	Okta 1-2, BF 1, dry, 10°C, good visibility.
28/06/2016	NE quadrant SE quadrant	CBC survey	5	04:45	07:02	04:46	Okta 1-2, BF 1, dry, 10°C, good visibility.
30/06/2016	SW quadrant	Nightjar survey	2	03:45	04:45	04:46	Okta 8, BF 1, occasional light

<sup>8</sup> The 2016 nightjar surveys at Wisley Common focused on the recently cleared heathland area by Junction 10, rather than the wider heathland habitats within Wisley Common.

<sup>9</sup> Cloud cover was measured using the Okta scale (where 0 is no cloud cover, and 8 is 100% cloud cover). Wind speed was measured using the Beaufort Scale (0-12, where 0 is calm and 12 is hurricane force winds. All surveys were carried out in Beaufort 4 or less) and is shown in the table as BF.

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise / sunset	Weather <sup>9</sup>
							drizzle, 11°C, good visibility.
30/06/2016	NW quadrant SW quadrant	CBC survey	5	04:45	07:30	04:46	Okta 8, BF 1, occasional light drizzle, 11°C, good visibility.

## Breeding bird surveys - 2017

- 7.1.3.15 The 2017 CBC survey area included the land within and surrounding the Scheme around M25 Junction 10, as well as the wider heathland areas surrounding the Scheme (which form part of the Thames Basin Heaths Special Protection Area (SPA)). In addition, Elm Lane, Bolder Mere and Wisley Airfield<sup>10</sup> were included in the CBC surveys as these fall within or adjacent to the Scheme. The survey area was extended from the quadrants surveyed in 2016, as a result of increased knowledge of the Scheme options, increased access and consultation with Natural England<sup>11</sup>.
- 7.1.3.16 The CBC surveys were carried out on six occasions, approximately every two weeks between late March 2017 and early July 2017, with the exception of the heathland areas within the south-east and south-west quadrants, which received seven visits to account for the species-specific requirements of woodlark (see Table 7.1.3 for details of surveys). The survey effort was agreed with Natural England<sup>11</sup> and was increased from the five visits in 2016 due to the surveys starting slightly earlier in the breeding bird season (see Constraints Section 7.1.4).
- 7.1.3.17 Painshill Park, the Heyswood Girl Guide Camp and surrounding properties also received a single CBC survey on the 19<sup>th</sup> June 2017. Only a single visit was undertaken due to access limitations.
- 7.1.3.18 In addition, the heathland areas within the south-east and south-west quadrants also received at least four<sup>12</sup> post-dusk or pre-dawn nightjar surveys between early June 2017 and early July 2017. This increase from the two survey visits as defined in the nightjar species-specific survey methodology described in Gilbert *et al* (1998)<sup>5</sup> was designed to enable accurate and thorough territory analysis of nightjars, based on repeated registrations.
- 7.1.3.19 See Figure 7.21 in Volume 3 for a map of the 2017 breeding bird survey areas.

<sup>10</sup> The transect followed the outer edge of Wisley Airfield, allowing coverage of the Scheme and adjacent habitats.

<sup>11</sup> The 2017 bird survey methodology was approved by Natural England in an email on 12<sup>th</sup> June 2017.

<sup>12</sup> The Ockham Common section received an additional fifth visit to aid in the confirmation of nightjar territories

**Table 7.1.3: 2017 breeding bird survey details**

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>13</sup>
10/03/2017	SE quadrant	CBC survey	1	06:30	08:00	06:30	Okta 8, BF 1, dry, 7°C, good visibility.
10/03/2017	SW quadrant	CBC survey	1	08:00	10:00	06:30	Okta 8, BF 1, occasional light drizzle, 7°C, good visibility.
07/04/2017	SE quadrant	CBC survey	2	06:28	08:50	06:22	Okta 1-2, BF 1, dry, 5°C, good visibility.
07/04/2017	Elm Lane Transect	CBC survey	1	08:50	09:50	06:22	Okta 1-2, BF 1, dry, 5°C, good visibility.
11/04/2017	SW quadrant	CBC survey	2	06:30	09:20	06:13	Okta 0, BF 1, dry, 5°C, good visibility.
11/04/2017	NW quadrant	CBC survey	1	09:20	09:55	06:13	Okta 0, BF 1, dry, 5°C, good visibility.
11/04/2017	NE quadrant	CBC survey	1	10:00	10:30	06:13	Okta 0, BF 1, dry, 5°C, good visibility.
25/04/2017	SE quadrant	CBC survey	3	05:50	08:00	05:43	Okta 8, BF 1, dry, 0°C, good visibility.
25/04/2017	NE quadrant	CBC survey	2	09:40	10:15	05:43	Okta 1-2, BF 1, dry, 10°C, good visibility.
25/04/2017	Elm Lane Transect	CBC survey	2	08:00	09:20	05:43	Okta 8, BF 1, dry, 0°C, good visibility.
27/04/2017	SW quadrant	CBC survey	3	05:55	08:40	05:39	Okta 1-2, BF 1, dry, 1°C, good visibility.
27/04/2017	NW quadrant	CBC survey	2	08:40	09:30	05:43	Okta 3, BF 1, dry, 6°C,

<sup>13</sup> Cloud cover recorded in Okta, wind speed recorded in Beaufort (BF).

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>13</sup>
							good visibility.
12/05/2017	Elm Lane Transect	CBC survey	3	05:30	06:30	05.13	Okta 8, BF 1, dry, 10°C, good visibility.
12/05/2017	NE quadrant	CBC survey	3	10:00	10:35	05.13	Okta 8, BF 1, light drizzle, 10°C, good visibility.
12/05/2017	SE quadrant	CBC survey	4	06.45	09.30	05.13	Okta 8, BF 1, dry, 10°C, good visibility.
17/05/2017	NW quadrant	CBC survey	3	06:20	07:05	05.08	Okta 5, BF 1, dry, 15°C, good visibility.
18/05/2017	SW quadrant	CBC survey	4	05.20	08:40	05.05	Okta 5, BF 1, dry, 8°C, good visibility.
30/05/2017	SE quadrant	CBC survey	5	04:50	07:15	04.50	Okta 8, BF 1, dry, 15°C, good visibility.
30/05/2017	SW quadrant	CBC survey	5	07:15	09:35	04.50	Okta 8, BF 1, dry, 15°C, good visibility.
01/06/2017	NE quadrant	CBC survey	4	05:15	06:00	04.52	Okta 1, BF 1, dry, 10°C, good visibility.
01/06/2017	NW quadrant	CBC survey	4	06:00	06:45	04.52	Okta 1, BF 1, dry, 10°C, good visibility.
01/06/2017	Elm Lane Transect	CBC survey	4	07:00	08:05	04.52	Okta 1, BF 1, dry, 10°C, good visibility.
09/06/2017	SW quadrant	CBC survey	6	05:10	08:15	04.44	Okta 0, BF 1, dry, 13°C, good visibility.
09/06/2017	SE quadrant	Nightjar survey	1	03:00	05:00	04.46	Okta 1, BF 1, dry, 13°C, good visibility.

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>13</sup>
15/06/2017	SE quadrant	Nightjar survey	2	21.50	22.30	21.20	Okta 1, BF 2, dry, 17°C, good visibility.
16/06/2017	SE quadrant	CBC survey	6	04:48	06:56	04.45	Okta 4, BF 1, dry, 12°C, good visibility.
16/06/2017	SW quadrant	Nightjar survey	1	03.30	04.40	04.45	Okta 5-6, BF 1, dry, 12°C, good visibility.
19/06/2017	Painshill Park	CBC survey	1	05.10	09.50	04.45	Okta 0, BF 1, dry, 16°C, good visibility.
19/06/2017	SE quadrant	Nightjar survey	3	21.00	22.11	21.20	Okta 5, BF 1, dry, 27°C, good visibility.
20/06/2017	SW quadrant	CBC survey	7	05:00	08:15	04.44	Okta 3, BF 1, dry, 15°C, good visibility.
26/06/2017	SW quadrant	Nightjar survey	2	21.30	23.05	21.21	Okta 5-6, BF 1, dry, 20°C, good visibility.
27/06/2017	Elm Lane Transect	CBC survey	5	05:00	06:25	04.47	Okta 8, BF 1, dry, 15°C, good visibility.
27/06/2017	NE quadrant	CBC survey	5	06:40	07:10	04.47	Okta 8, BF 1, dry, 15°C, good visibility.
27/06/2017	NW quadrant	CBC survey	5	07:15	07:50	04.47	Okta 8, BF 1, dry, 15°C, good visibility.
28/06/2017	SW quadrant	Nightjar survey	3	21.30	22.25	21.22	Okta 8, BF 2, dry, 14°C, good visibility.
29/06/2017	SE quadrant	CBC survey	7	04:45	06:40	04.48	Okta 8, BF 2, dry, 14°C, good visibility.
29/06/2017	SE quadrant	Nightjar survey	4	02.50	04.55	04.45	Okta 8, BF 2, dry, 14°C,

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>13</sup>
							good visibility.
06/07/2017	SE quadrant	Nightjar survey	5	21.50	22.50	21.10	Okta 1, BF1, dry, 24°C, good visibility.
07/07/2017	NW quadrant	CBC survey	6	05:10	06:15	04.53	Okta 1, BF1, dry, 18°C, good visibility.
07/07/2017	NE quadrant	CBC survey	6	06:20	06:50	04.53	Okta 3, BF1, dry, 18°C, good visibility.
07/07/2017	SW quadrant	Nightjar survey	4	03:30	04:30	04.53	Okta 0, BF1, dry, 18°C, good visibility.
10/07/2017	Elm Lane Transect	CBC survey	6	05:40	06:57	04.56	Okta 1, BF1, dry, 15°C, good visibility.

### Breeding bird surveys - 2018

- 7.1.3.20 The 2018 CBC survey area included the proposed site compound at Nutberry Fruit Farm and Painshill Park, and the Heyswood Girl Guide Camp and surrounding properties. Due to access constraints, Nutberry Fruit Farm was not surveyed in 2017 and Painshill Park, the Heyswood Girl Guide Camp and surrounding properties only received a single visit. See Figure 7.22 for the 2018 survey transect locations.
- 7.1.3.21 The CBC surveys were carried out on six occasions, approximately every two weeks between late March 2018 and early July 2018.
- 7.1.3.22 In addition, the heathland areas within the south-east and south-west quadrants (i.e. the SPA) also received five Dartford warbler and woodlark surveys between early March 2018 and early May 2018, as well as three post-dusk or pre-dawn nightjar surveys between early June 2018 and mid July 2018.
- 7.1.3.23 See Figure 7.22 in Volume 3 for a map of the 2018 breeding bird survey areas.

**Table 7.1.4: 2018 breeding bird survey details**

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>14</sup>
13/03/2018	SE quadrant	Dartford warbler and woodlark survey	1	07:15	08:00	06:21	Okta 3, BF 1, dry, 6°C, good visibility
13/03/2018	SW quadrant	Dartford warbler and woodlark survey	1	08:00	08:50	06:21	Okta 3, BF 1, dry, 6°C, good visibility
16/03/2018	SE quadrant	Dartford warbler and woodlark survey	2	07:25	08:15	06:18	Okta 1, BF 1, dry, 7°C, good visibility
26/03/2018	SW quadrant	Dartford warbler and woodlark survey	2	07:30	08:25	06:52	Okta 2, BF 0, dry, 6°C, good visibility
04/04/2018	SE quadrant	Dartford warbler and woodlark survey	3	06:35	07:50	06:32	Okta 3, BF 2, dry, 8°C, good visibility
05/04/2018	Painshill	CBC survey	1	06:30	09:00	06:30	Okta 8, BF 1, dry, 4°C, good visibility.
05/04/2018	Nutberry Fruit Farm	CBC survey	1	09:40	10:29	06:30	Okta 2, BF 2, dry, 8°C, good visibility.
16/04/2018	SW quadrant	Dartford warbler and woodlark survey	3	06:13	07:30	06:05	Okta 1, BF 0, dry, 9°C, good visibility
17/04/2018	SE quadrant	Dartford warbler and woodlark survey	4	06:00	06:50	06:03	Okta 7, BF 2, dry, 10°C, good visibility
23/04/2018	Painshill	CBC survey	2	05:58 07:48	06:15 08:50	05:45	Okta 1, BF 1, dry, 8°C, good visibility.
23/04/2018	Nutberry Fruit Farm	CBC survey	2	06:30	07:15	05:45	Okta 1, BF 1, dry, 8°C, good visibility.
02/05/2018	SW quadrant	Dartford warbler and woodlark survey	4	05:22	06:25	05:33	Okta 8, BF 3, dry, 9°C,

<sup>14</sup> Cloud cover recorded in Okta, wind speed recorded in Beaufort (BF).

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>14</sup>
							good visibility
11/05/2018	Painshill	CBC survey	3	05:25	07:30	05:15	Okta 1, BF 1, dry, 6°C, good visibility.
11/05/2018	Nutberry Fruit Farm	CBC survey	3	07:40	08:25	05:15	Okta 2, BF 1, dry, 8°C, good visibility.
14/05/2018	SW quadrant	Dartford warbler and woodlark survey	5	05:32	06:30	05:13	Okta 3, BF 1, dry, 7°C, good visibility
14/05/2018	SE quadrant	Dartford warbler and woodlark survey	5	06:40	07:38	05:13	Okta 3, BF 1, dry, 7°C, good visibility
29/05/2018	Painshill	CBC survey	4	05:19	07:10	04:53	Okta 8, BF 3, dry, 15°C, good visibility.
29/05/2018	Nutberry Fruit Farm	CBC survey	4	07:24	08:15	04:53	Okta 8, BF 3, dry, 15°C, good visibility.
04/06/2018	SE quadrant	Nightjar survey	1	21:30	22:36	21:11	Okta 8, BF 2, dry, 15°C, good visibility.
05/06/2018	SW quadrant	Nightjar survey	1	03:11	04:41	04:49	Okta 8, BF 3, occasional light drizzle, 12°C, good visibility.
14/06/2018	SW quadrant	Nightjar survey	2	21:27	23:00	21:19	Okta 1, BF 1, dry, 19°C, good visibility.
15/06/2018	Nutberry Fruit Farm	CBC survey	5	04:50	05:41	04:45	Okta 2, BF 1, dry, 10°C, good visibility.
15/06/2018	Nutberry Fruit Farm	CBC survey	5	06:08	08:35	04:45	Okta 5, BF 1, dry, 12°C, good visibility.
25/06/2018	SE quadrant	Nightjar survey	2	21:18	22:50	21:22	Okta 0, BF 0, dry,

Date	Survey area	Survey type	Visit number	Start time	End time	Sunrise/sunset	Weather <sup>14</sup>
							23°C, good visibility.
04/07/2018	SW quadrant	Nightjar survey	3	21:20	22:40	21:20	Okta 7, BF 0, dry, 22°C, good visibility.
05/07/2018	Painshill	CBC survey	6	05:05 07:20	05:35 08:30	04:52	Okta 0, BF 0, dry, 16°C, good visibility.
05/07/2018	Nutberry Fruit Farm	CBC survey	6	05:45	06:41	04:52	Okta 1, BF 0, dry, 16°C, good visibility.
20/07/2018	SE quadrant	Nightjar survey	3	21:29	22:25	21:29	Okta 8, BF 0, dry, 20°C, good visibility.

## 7.1.4 Survey limitations

- 7.1.4.1 Ornithological surveys are affected by a variety of factors which affect the presence of birds such as season, weather, climate, migration patterns, food availability, species behaviour and the presence of predators. Therefore, the bird surveys may not have produced a complete bird list for the survey areas. The absence of evidence of any particular species or evidence of breeding of any particular species within the survey area (or a part of the survey area), should not be taken as conclusive proof that the species is not present or that it will not be present in the future.
- 7.1.4.2 In 2016, breeding bird surveys did not commence until 28 April due to the timing of commissioning of the survey work. This could have caused some early nesting species to be overlooked. However, the areas covered in 2016 were resurveyed in 2017 and 2018 and were considered to be thoroughly covered, with surveys commencing by mid-March in 2017 and 2018.
- 7.1.4.3 The survey coverage of the Scheme footprint surrounding M25 Junction 10, and of Elm Lane, Bolder Mere, Wisley Airfield, Nutberry Fruit Farm, Painshill Park, Heyswood Girl Guide Camp and the surrounding properties has been thorough. Therefore, it is considered that the results of these bird surveys (outer edge adjacent to the Scheme) provide an accurate indication of the use of the survey area by breeding bird species during the survey period.

## 7.1.5 Results

### Desk study

- 7.1.5.1 The SBIC data search identified 103 bird species that have been recorded within 1 km of the Scheme. Of these, 83 bird species have been recorded since 2007, of which 60 species are notable for their protected or conservation concern status. Thirty-nine of these notable species are thought to potentially breed within the local area, and 27 of these species were recorded during the 2016,

2017 and/or 2018 breeding bird surveys.

- 7.1.5.2 The 12 species not recorded during the 2016, 2017 or 2018 surveys are considered unlikely to have bred within the survey area due to the habitats present being unsuitable. These species are: house martin, house sparrow, lapwing, lesser spotted woodpecker, little egret, peregrine, pochard, starling, swift, teal, tree sparrow and yellowhammer.
- 7.1.5.3 A list of the 60 notable species recorded since 2007 can be found in Table 7.9 of Appendix 7.3
- 7.1.5.4 Breeding bird survey data from 2J's on the qualifying species of the Thames Basin Heaths SPA species at Wisley Common and Ockham Common, for the six-year period 2013-2018, recorded up to seven Dartford warbler territories (peak count in 2016), up to six nightjar territories (peak count 2017 and 2018), and up to four woodlark territories (peak count in 2013, 2014, 2015 and 2016). All territories were recorded outside the Scheme. See Table 7.1.5 for a summary of the 2J's breeding bird data.

**Table 7.1.5: 2J's breeding bird data for qualifying species of the Wisley Common and Ockham Common components of Thames Basin Heaths SPA between 2013 and 2018**

Year	Common name	Number of territories within Wisley Common	Number of territories within Ockham Common
2013	Dartford warbler	None recorded	None recorded
	Nightjar	None recorded	Four territories, all outside the Scheme
	Woodlark	Three territories, all outside the Scheme	One territory, outside the scheme
2014	Dartford warbler	None recorded	None recorded
	Nightjar	One territory, outside the Scheme	Four territories, all outside the Scheme
	Woodlark	Three territories, all outside the Scheme	One territory, outside the Scheme
2015	Dartford warbler	One territory, outside the Scheme	Two territories, both outside the Scheme
	Nightjar	None recorded	Five territories, all outside the Scheme
	Woodlark	Three territories, all outside the Scheme	One territory, outside the Scheme
2016	Dartford warbler	Three territories, all outside the Scheme	Four territories, all outside the scheme
	Nightjar	One territory, outside the Scheme	Four territories, all outside the scheme
	Woodlark	Three territories, all outside the Scheme	One territory, outside the Scheme
2017	Dartford warbler	Three territories, all outside the Scheme	Three territories, all outside the scheme
	Nightjar	Three territories, all outside the Scheme	Three territories, all outside the Scheme

Year	Common name	Number of territories within Wisley Common	Number of territories within Ockham Common
2018	Woodlark	One territory, outside the Scheme	Two territories, both outside the Scheme
	Dartford warbler	One territory, outside the Scheme	Three territories, all outside the Scheme
	Nightjar	Three territories, all outside the Scheme	Three territories, all outside the Scheme
	Woodlark	None recorded	None recorded

### Breeding bird surveys (2016, 2017 and 2018)

7.1.5.5 Across all of the 2016, 2017 and 2018 breeding bird surveys (CBC, Dartford warbler and woodlark surveys, and nightjar surveys), a total of 77 bird species were recorded. Of these, 60 species were either confirmed to have bred, or thought to have bred, within the survey area (see Table 7.1.6 for a list of species and their breeding status within the survey area).

**Table 7.1.6: List of species recorded during the 2016, 2017 and 2018 breeding bird surveys (CBC, Dartford warbler and woodlark surveys, and nightjar surveys)**

Common name	Breeding status within survey area
Barn owl	Non-breeding (not thought to breed within survey area but may breed nearby)
Blackbird	Breeding
Blackcap	Breeding
Blue tit	Breeding
Bullfinch	Possibly breeding
Buzzard	Breeding
Canada goose	Possibly breeding
Carrion crow	Breeding
Chaffinch	Breeding
Chiffchaff	Breeding
Coal tit	Breeding
Common sandpiper	Non-breeding (passage record)
Common tern	Breeding
Common whitethroat	Breeding
Coot	Breeding
Cormorant	Non-breeding
Crossbill	Not thought to breed within survey area (mobile family party with no previous records)
Cuckoo	Probably breeding
Dartford warbler	Breeding
Dunnock	Breeding

Common name	Breeding status within survey area
Egyptian goose	Possibly breeding
Firecrest	Probably breeding
Gadwall	Non-breeding
Garden warbler	Breeding
Goldcrest	Breeding
Goldfinch	Breeding
Great crested grebe	Breeding
Great spotted woodpecker	Breeding
Great tit	Breeding
Green woodpecker	Breeding
Greenfinch	Breeding
Grey heron	Non-breeding
Grey wagtail	Probably breeding
Greylag goose	Non-breeding (not thought to breed within survey area, but may breed nearby)
Hobby	Breeding
Jackdaw	Non-breeding (not thought to breed within survey area, but may breed nearby)
Jay	Breeding
Kestrel	Non-breeding (not thought to breed within survey area, but may breed nearby)
Kingfisher	Probably breeding nearby
Lesser redpoll	Non-breeding (winter/passage records)
Linnet	Probably breeding
Little grebe	Possibly breeding
Long-tailed tit	Breeding
Magpie	Breeding
Mallard	Probably breeding
Mandarin duck	Breeding
Meadow pipit	Non-breeding (winter/passage records)
Mistle thrush	Probably breeding
Moorhen	Breeding
Mute swan	Breeding
Nightjar	Breeding
Nuthatch	Breeding
Pheasant	Breeding
Pied wagtail	Breeding
Red kite	Non-breeding (not thought to breed within survey area, but may breed nearby)

Common name	Breeding status within survey area
Reed bunting	Breeding
Reed warbler	Breeding
Ring-necked parakeet	Possibly breeding
Robin	Breeding
Rook	Non-breeding (not thought to breed within survey area, but may breed nearby)
Siskin	Breeding
Skylark	Non-breeding (not thought to breed within survey area, but may breed nearby)
Song thrush	Breeding
Sparrowhawk	Non-breeding (not thought to breed within survey area, but may breed nearby)
Spotted flycatcher	Breeding
Stock dove	Breeding
Stonechat	Breeding
Tawny owl	Probably breeding <sup>15</sup>
Tree pipit	Non-breeding (single passage record during peak migration period, with no further records)
Treecreeper	Breeding
Tufted duck	Probably breeding
Wheatear	Non-breeding (single passage record during peak migration period, with no further records)
Willow warbler	Breeding
Wood pigeon	Breeding
Woodcock	Breeding
Woodlark	Breeding
Wren	Breeding

- 7.1.5.6 A total of 33 of these bird species are notable for their protected or conservation concern status, of which 22 species were either confirmed to have bred, or thought to have bred, within the survey area in 2016, 2017 and 2018. See Figures 7.23, 7.24 and 7.25 for a plan of approximate territory locations of notable breeding birds in 2016, 2017 and 2018<sup>16</sup>.
- 7.1.5.7 In 2016, two notable species had breeding territories that wholly or partially fell within the Scheme: dunnock and song thrush. In addition, three notable species had territories that wholly or partially fell within the SPA enhancement area boundary: mistle thrush, song thrush and spotted flycatcher. See
- 7.1.5.8 Table 7.1.7 for a list of notable species recorded during the 2016 breeding bird surveys and their breeding status.

<sup>15</sup> A female tawny owl was heard calling within the SW quadrant during the nightjar survey on the 4<sup>th</sup> July 2018

<sup>16</sup> Due to the sensitive nature of hobby as a Schedule 1 species of the Wildlife and Countryside Act 1981 (as amended), the location of the hobby territory has been omitted from Figure 7.24.

**Table 7.1.7: Notable bird species recorded during 2016 breeding bird surveys (CBC and nightjar)**

Common name	Notable status	Breeding status
Common tern	Annex 1, Amber List BoCC	Breeding - One territory, outside the Scheme
Dartford warbler	Schedule 1, Annex 1, Amber List BoCC	Breeding - Up to five territories, all outside the Scheme
Dunnock	Amber List BoCC	Breeding - Up to three territories, all of which partially fall within the Scheme
Hobby	Schedule 1	Recorded on one occasion. No evidence of breeding within the survey area, but may breed nearby
Lesser redpoll	Red List BoCC	Not breeding (winter/passage records)
Mallard	Amber List BoCC	No evidence of breeding, but may breed on Bolder Mere (outside the Scheme)
Mistle thrush	Red List BoCC	Probably breeding - Up to three territories, one of which partially falls within the SPA enhancement area
Nightjar	Annex 1, Amber List BoCC	Breeding – Four territories, all outside the Scheme
Song thrush	Red List BoCC	Breeding - Up to eight territories, of which four wholly or partially fall within the Scheme and a further three wholly or partially fall within the SPA enhancement areas
Spotted flycatcher	Red List BoCC	Breeding - Up to two territories, both fall within the SPA enhancement areas
Stock dove	Amber List BoCC	Possibly breeding - Up to three territories, all outside the Scheme

- 7.1.5.9 In 2017, six notable species had breeding territories that partially fell within the Scheme: bullfinch, dunnock, mistle thrush, song thrush, stock dove and willow warbler. In addition, six notable species had territories that wholly or partially fell within the SPA enhancement area boundary: bullfinch, dunnock, song thrush, spotted flycatcher, willow warbler and woodcock. See Table 7.1.8 for a list of notable species and their breeding status.
- 7.1.5.10 In addition, a barn owl (*Tyto alba*) was observed hunting over the eastern edge of Ockham Common during a bat survey on the 25th July 2017. Barn owls are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and are an Amber List BoCC. Due to the large number of dusk and dawn nightjar and bat surveys, during which no other barn owls were observed, it is considered that this isolated sighting on a single occasion does not indicate that barn owls breed within or adjacent to the Scheme.

**Table 7.1.8: Notable bird species recorded during 2017 breeding bird surveys (CBC and nightjar)**

Common name	Notable status	Breeding status
Bullfinch	Amber List BoCC, SPI	Possibly breeding - Up to two territories, one of which partially falls within the Scheme and one of which wholly falls within the SPA enhancement area
Common sandpiper	Amber List BoCC	Not breeding (passage record)
Common tern	Annex 1, Amber List BoCC	Breeding - One confirmed territory, outside the Scheme
Crossbill	Schedule 1	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Cuckoo	Red List BoCC, SPI	Probably breeding - One probable territory, outside the Scheme
Dartford warbler	Schedule 1, Annex 1, Amber List BoCC	Breeding - Up to six territories, all outside the Scheme
Dunnock	Amber List BoCC, SPI	Breeding - Up to 27 territories, of which up to nine wholly or partially fall within the Scheme and a further seven wholly or partially fall within the SPA enhancement area
Firecrest	Schedule 1	Probably breeding – One probable territory, outside the Scheme
Grey wagtail	Red List BoCC	Probably breeding - Up to two territories, both outside the Scheme
Greylag goose	Amber List BoCC	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Hobby	Schedule 1	Breeding - One territory, outside the Scheme <sup>17</sup>
Kestrel	Amber List BoCC	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Kingfisher	Schedule 1, Annex 1, Amber List BoCC	Probably breeding nearby - One possible territory, outside the Scheme
Lesser redpoll	Red List BoCC, SPI	Not breeding (winter/passage records)
Linnet	Red List BoCC, SPI	Probably breeding - Up to two territories, both outside the Scheme
Mallard	Amber List BoCC	Probably breeding - At least six probable territories, all outside the Scheme
Meadow pipit	Amber List BoCC	Not breeding (winter/passage records)
Mistle thrush	Red List BoCC	Probably breeding - Up to seven territories, of which one partially falls within the Scheme
Mute swan	Amber List BoCC	Breeding – Up to two territories, both outside the Scheme
Nightjar	Annex 1, Amber List BoCC, SPI	Breeding – Up to seven territories, all outside the Scheme

<sup>17</sup> Due to the sensitive nature of this Schedule 1 species, the location of the hobby territory has been omitted from Figure 7.24.

Common name	Notable status	Breeding status
Red kite	Schedule 1, Annex 1	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Reed bunting	Amber List BoCC, SPI	Breeding - Up to two territories, both outside the Scheme
Skylark	Red List BoCC, SPI	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Song thrush	Red List BoCC, SPI	Breeding - Up to 28 territories, of which up to four partially fall within the Scheme and a further four wholly or partially fall within the SPA enhancement area
Spotted flycatcher	Red List BoCC, SPI	Breeding - Up to four territories, three of which wholly fall within the SPA enhancement area
Stock dove	Amber List BoCC	Breeding - Up to 10 territories, of which two wholly or partially fall within the Scheme
Tree pipit	Red List BoCC, SPI	Not breeding (passage record)
Willow warbler	Amber List BoCC	Breeding - Up to five territories, of which one falls partially within the Scheme and one falls partially within the SPA enhancement area
Woodcock	Red List BoCC	Breeding - Up to three territories, one of which may fall within the SPA enhancement area
Woodlark	Schedule 1, Annex 1, SPI	Breeding - Two territories, both outside the Scheme

7.1.5.11 In 2018, four notable species had breeding territories that partially fell within the Scheme: dunnock, mistle thrush, song thrush and linnet. See Table 7.1.9 for a list of notable species and their breeding status.

**Table 7.1.9: Notable bird species recorded during 2018 breeding bird surveys (CBC, Dartford warbler and woodlark surveys, and nightjar surveys)**

Common name	Notable status	Breeding status
Bullfinch	Amber List BoCC, SPI	Not thought to breed within survey area, may breed nearby (outside the Scheme)
Cuckoo	Red List BoCC, SPI	Probably breeding - One territory, outside the Scheme
Dartford warbler	Schedule 1, Annex 1, Amber List BoCC	Breeding - Up to three territories, all outside the Scheme
Dunnock	Amber List BoCC, SPI	Breeding - Up to 13 territories, of which up to six partially fall within the Scheme
Firecrest	Schedule 1	Breeding - One confirmed territory, outside the Scheme
Gadwall	Amber List BoCC	Not thought to breed within survey area
Grey wagtail	Red List BoCC	Probably breeding - One probable territory, outside the Scheme
Greylag goose	Amber List BoCC	Not thought to breed within survey area, may breed nearby (outside the Scheme)

Common name	Notable status	Breeding status
Kingfisher	Schedule 1, Annex 1, Amber List BoCC	Probably breeding nearby - One possible territory, outside the Scheme
Linnet	Red List BoCC, SPI	Probably breeding – Up to two probable territories, both of which fall within the Scheme
Mallard	Amber List BoCC	Probably breeding - Up to four territories, all outside the Scheme
Mistle thrush	Red List BoCC	Breeding - Two confirmed territories, one of which falls within the Scheme
Mute swan	Amber List BoCC	Probably breeding - Up to two territories, all outside the Scheme
Nightjar	Annex 1, Amber List BoCC, SPI	Breeding – Up to six territories, all outside the Scheme
Song thrush	Red List BoCC, SPI	Breeding - Up to 13 territories, one of which partially falls within the Scheme
Stock dove	Amber List BoCC	Breeding - Up to four territories, none of which fall within the Scheme
Tawny owl	Amber List BoCC	Probably breeding nearby - One probable territory, outside the Scheme

## 7.1.6 Discussion

- 7.1.6.1 The Scheme predominantly consists of areas of woodland immediately adjacent to the A3 and M25.
- 7.1.6.2 It is considered that the survey coverage in 2016, 2017 and 2018 has sufficiently covered the majority of the habitats within the Scheme footprint with the potential to support breeding birds, as well as adjacent habitats where sensitive species could be affected by disturbance during construction and operation.
- 7.1.6.3 The Scheme falls within the Thames Basin Heaths SPA (Ockham Common and Wisley Common).
- 7.1.6.4 Survey coverage focused on the land within and surrounding the Scheme around M25 Junction 10, as well as the wider heathland areas within Ockham Common and Wisley Common. In addition, Elm Lane, Bolder Mere Lake and Wisley Airfield, Nutberry Fruit Farm and Painshill Park, the Heyswood Girl Guide Camp and surrounding properties were included in the breeding bird surveys.
- 7.1.6.5 A total of 77 bird species were recorded during the 2016, 2017 and 2018 breeding bird surveys, of which 33 are notable for their protected or conservation concern status.
- 7.1.6.6 The 2016, 2017 and 2018 breeding bird surveys recorded many of the species for which records were also provided by SBIC during the data search. Records of a total of 60 notable species since 2007 were provided by SBIC, of which 39 were considered to potentially breed within the local area. Twenty-seven of the 39 species were recorded during the 2016 and/or 2017 breeding bird surveys. All 12 of the species not recorded are considered unlikely to have bred within the survey area due to the habitats present not being suitable. These species are: house martin, house sparrow, lapwing, lesser spotted woodpecker, little egret, peregrine, pochard, starling, swift, teal, tree sparrow and yellowhammer.

- 7.1.6.7 Wisley Common (south-west quadrant) and Ockham Common (south-east quadrant) were the most valuable locations for breeding birds, supporting a range of notable species including Dartford warbler, cuckoo, nightjar, spotted flycatchers, woodcock and woodlark. The majority of these species bred outside the Scheme.
- 7.1.6.8 Within the survey areas covered during the 2017 and 2018 surveys, a total of 22 notable species were thought to have bred within the survey area.
- 7.1.6.9 Of these 22 notable species, seven had breeding territories that partially fell within the Scheme: bullfinch (one territory), dunnoek (up to fifteen territories), linnet (up to two territories), mistle thrush (up to two territories), song thrush (up to eight territories), stock dove (up to two territories) and willow warbler (one territory).
- 7.1.6.10 In addition, six notable species had breeding territories that partially fell within the proposed SPA enhancement areas: bullfinch (one territory), dunnoek (up to seven territories), song thrush (up to four territories), spotted flycatcher (up to three territories), woodcock (one territory may fall within an SPA enhancement area) and willow warbler (one territory).
- 7.1.6.11 The findings of the 2017 and 2018 surveys were supported by the 2016 surveys, which focused on a smaller survey area within Wisley Common and may have missed some qualifying species territories (particularly woodlark due to the later commencement of the surveys).
- 7.1.6.12 The 2J's 2017 and 2018 breeding bird data for Dartford warbler, nightjar and woodlark at Wisley Common (south-west quadrant) and Ockham Common (south-east quadrant) was broadly in-keeping with Atkins 2017 and 2018 breeding bird data:
- In 2017 2J's recorded three Dartford warbler territories on Wisley Common and three Dartford warbler territories on Ockham Common. Atkins 2017 surveys recorded up to two Dartford warbler territories on Wisley Common and confirmed four Dartford warbler territories on Ockham Common.
  - In 2018 2J's recorded one Dartford warbler territory on Wisley Common and three Dartford warbler territories on Ockham Common. No Dartford warbler territories were recorded on Wisley Common during the 2018 surveys, and up to three Dartford warbler territories were recorded on Ockham Common;
  - In 2017 2J's recorded three nightjar territories on Wisley Common and three nightjar territories on Ockham Common. Atkins 2017 surveys recorded up to three nightjar territories on Wisley Common and four confirmed nightjar territories on Ockham Common.
  - In 2018 2J's recorded three nightjar territories on Wisley Common and three nightjar territories on Ockham Common. Atkins 2018 surveys recorded three confirmed nightjar territories on Wisley Common and three confirmed nightjar territories on Ockham Common;

- In 2017 2J's recorded one woodlark territory on Wisley Common and two woodlark territories on Ockham Common. Atkins 2017 surveys recorded one woodlark territory on Wisley Common. During Atkins 2017 surveys, woodlarks were recorded flying between the two locations where 2J's recorded separate woodlark territories on Ockham Common. Based on Atkins observations, it was considered that these are likely to be birds from the same territory and therefore there was only one woodlark breeding territory on Ockham Common in 2017.
- No woodlarks were recorded in 2018 in Wisley Common or Ockham Common by 2J's or Atkins.

7.1.6.13 Taking the 2017 and 2018 breeding bird survey results and 2J's 2017 and 2018 data into account, it is assumed that:

- Three Dartford warbler territories occur within Wisley Common and four Dartford warbler territories occur within Ockham Common;
- Three nightjar territories occur within Wisley Common and four nightjar territories occur within Ockham Common;
- One woodlark territory occurs within Wisley Common (although it is noted that in previous years, up to three woodlark territories have occurred on Wisley Common) and one woodlark territory occurs within Ockham Common.

7.1.6.14 All records of Dartford warbler, nightjar and woodlark territories were within the heathland habitats and were outside the Scheme.

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