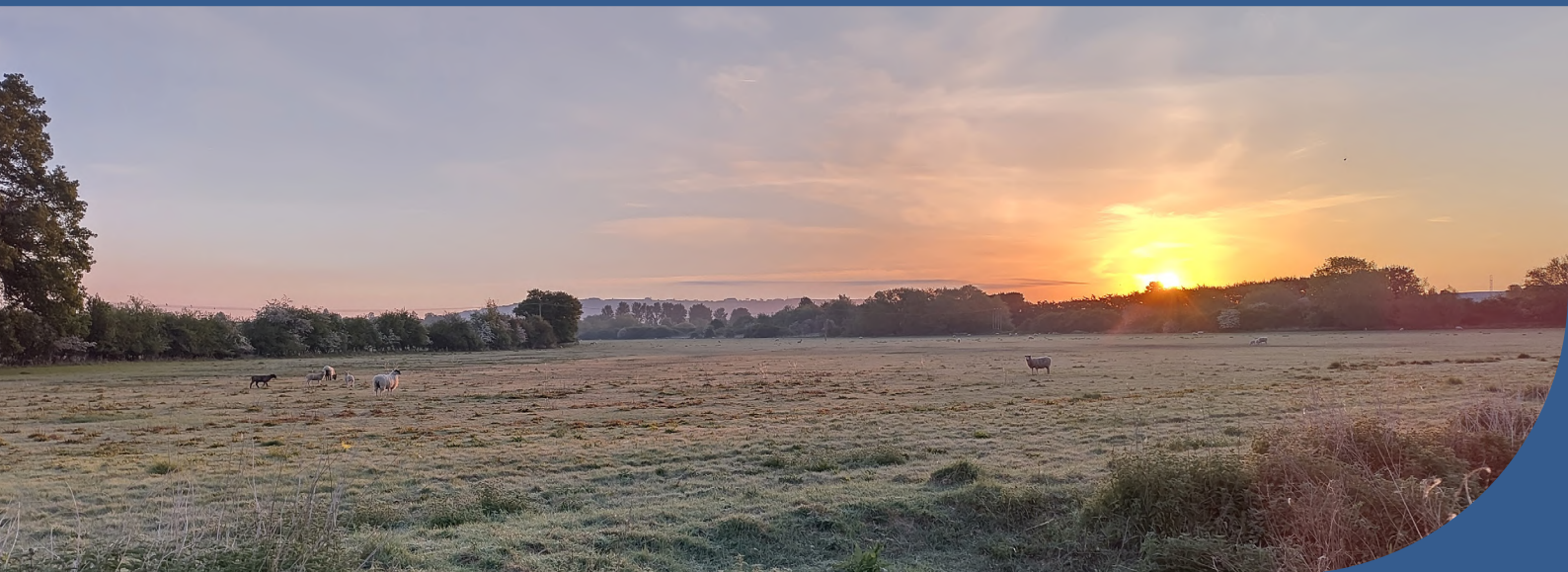


Breeding Curlew Survey Ornithology Report

Wychavon District Council

July 2025



LEPUS CONSULTING
LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Breeding Curlew Survey at Mitton, Worcestershire

Ornithology Report for Wychavon District Council

LC-1353	Document Control Box
Client	Wychavon District Council
Report Title	Mitton Curlew Survey
Status	Final
Filename	LC-1353_SW DPR_Curlew Report_5_150725JM.docx
Date	July 2025
Author	JM
Reviewed	PO
Approved	ND

Cover Photo: Mitton Strategic Allocation

About this report & notes for readers

Lepus Consulting Ltd (Lepus) has prepared this report for the use of Wychavon District Council. There are a number of limitations that should be borne in mind when considering the conclusions of this report. No party should alter or change this report without written permission from Lepus.

© Lepus Consulting Ltd

This assessment is based on the best available published information at the time of writing. No attempt to verify secondary data sources has been made and they have been assumed to be accurate as published. This report was prepared between March and July 2025 and is subject to and limited by the information available during this time.

Client comments can be sent to Lepus using the following contact details.

Eagle Tower,
Montpellier Drive
Cheltenham
Gloucestershire
GL50 1TA

Telephone: 01242 525222
E-mail: enquiries@lepusconsulting.com
www.lepusconsulting.com

Contents

1	Executive summary	1
1.1	Executive summary.....	1
2	Introduction	2
2.1	Appointment and purpose of report	2
2.2	Background.....	2
2.3	Site description – Mitton strategic allocation	3
2.4	Details of the proposed development	4
2.5	Site description – Functionally Linked Land	4
2.6	Previous survey work.....	4
2.7	Evidence of technical competence and experience	5
3	Curlew habitat requirements and threats.	7
3.1	Habitat requirements	7
3.2	Threats.....	7
3.3	Role of lowland England for breeding Curlew.....	8
4	Protection and conservation status of Curlew in the UK	9
4.1	The Wildlife and Countryside Act 1981.....	9
4.2	Natural Environment and Rural Communities Act 2006.....	9
4.3	Birds of Conservation Concern 5	9
4.4	International Union for the Conservation of Nature's Red List of Threatened Species	10
4.5	Severn Estuary SPA	10
4.6	Functionally Linked Land	12
4.7	Favourable conservation status of Curlew	12
5	Methodology.....	14
5.1	Aims	14
5.2	Method.....	14
5.3	Territory mapping	15
5.4	Limitations	15
6	Results	18
6.1	Mitton allocation	18
6.2	Functionally Linked Land	20
6.3	Incidental records of non-target species	24
7	Discussion	25
7.1	Functional linkage to the Severn Estuary SPA.....	25
7.2	Favourable Conservation Status.....	25
7.3	Functional linkage and the proposed Mitton allocation	26
7.4	Habitats Regulations Assessment	26
7.5	Conclusions and recommendations.....	26
Appendix A Site photos		A.1
Appendix B Survey metadata		B.1

Tables

Table B.1. Survey dates, times, and weather conditions of the breeding Curlew surveys at the Mitton Allocation.....	B.1
Table B.2. Survey dates, times, and weather conditions of the breeding Curlew surveys at land functionally linked to The Severn Estuary SPA	B.2

Figures

Figure 2.1. The strategic allocation at Mitton and nearby wildlife sites and areas of FLL to the Severn Estuary SPA...	6
Figure 5.1. The survey area and transect routes used during the breeding Curlew surveys	17
Figure 6.1. Mitton allocation breeding Curlew survey results.....	19
Figure 6.2. FLL Tier 1 breeding Curlew survey results.....	21
Figure 6.3. FLL Tier 2 breeding Curlew survey and territory mapping results.....	22
Figure 6.4. FLL Tier 3 breeding Curlew survey results.....	23
Figure 6.5. Field adjacent to the western bank of the River Avon after being mown	24
Figure A.1. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 1-5 were taken on 14/07/25.....	A.1
Figure A.2. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 6-10 were taken on 14/07/25.....	A.2
Figure A.3. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 11,12,14, and 15 were taken on 14/07/25. Photo 13 was taken on 04/04/25.....	A.3
Figure A.4. FLL site photos. The location and direction of photos are shown in the bottom right image. Photos 16,18, and 20 were taken on 14/07/25 after hay cutting had taken place. Photo 19 was taken on 14/07/25. Photo 17 was taken on 04/04/25.....	A.4

Abbreviations

BoCC	Birds of Conservation Concern
BTO	British Trust for Ornithology
EMS	European Marine Site
FCS	Favorable Conservation Status
FLL	Functionally Linked Land
IUCN	International Union for the Conservation of Nature
NE	Natural England
NERC	Natural Environment and Rural Communities
PRoW	Public Right of Way
RLB	Red Line Boundary
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SWDPR	South Worcestershire Development Plan Review
WeBS	Wetland Bird Survey
WWT	Wildfowl and Wetland Trust

1 Executive summary

1.1 Executive summary

- 1.1.1 Lepus Consulting has been commissioned by the South Worcestershire Councils to undertake breeding Curlew (*Numenius arquata*) surveys at the South Worcestershire Development Plan Review (SWDPR) strategic allocation at Mitton. The aim of the surveys is to gain a better understanding of how the strategic allocation is utilised by Curlews and whether the Site itself is functionally linked to the Severn Estuary SPA. This report outlines the methodology and results from these surveys.
- 1.1.2 A total of ten breeding Curlew surveys were conducted between March and July 2025, covering the Mitton allocation and three areas of previously identified Functionally Linked Land (FLL).
- 1.1.3 Across the suite of ten surveys, Curlews were recorded within the Mitton allocation on three occasions, namely foraging on the pasture fields within the Red Line Boundary (RLB) on the 9th and 30th May, and in direct/passage flight over the Site on the 6th June. No breeding behaviour within the Mitton allocation was recorded. Results from the FLL confirm the presence of a breeding population within the flood meadows adjacent to the River Avon, however, early hay cutting likely impacted nest productivity.
- 1.1.4 It is concluded that land within the red line boundary of the proposed Mitton allocation is unlikely to be considered as Functionally Linked Land in the context of the Severn Estuary SPA, however, mitigation measures need to be considered to reduce any potential impacts on nearby breeding Curlew populations that might arise from a development allocation within the redline area.

2 Introduction

2.1 Appointment and purpose of report

2.1.1 Lepus Consulting has been commissioned by the South Worcestershire Councils to undertake breeding Curlew surveys at the SW DPR strategic allocation at Mitton. This report details the methodology behind these surveys.

2.1.2 Lepus Consulting is a multi-disciplinary environmental planning and assessment practice based in Cheltenham, Gloucestershire, specialising in landscape and ecological impact assessment, Sustainability Appraisal and Habitats Regulations Assessment.

2.2 Background

2.2.1 Natural England (NE) has previously commissioned a series of studies designed to identify sites of importance to the bird populations within, and outside of, the Severn Estuary Special Protection Area (SPA), the Severn Estuary Ramsar site, and the underpinning Sites of Special Scientific Interest (SSSI) known as FLL. Birds for which the Severn Estuary SPA is designated may use these areas of land at different stages of their life cycle for roosting, feeding, or breeding. As part of this commission, Lepus has provided a desk-based review of best available data on birds using wetland sites throughout Gloucestershire and Worcestershire over the last 10 years, to help identify potential functional linkages. The outputs from this part of the commission are presented in Report NECR401¹.

2.2.2 The focus of Report NECR401 was on the species named in the SPA (i.e., Gadwall (*Anas strepera*), greater white-fronted goose (*Anser albifrons*), Dunlin (*Calidris alpina*), Bewick's swan (*Cygnus columbianus bewickii*), Shelduck (*Tadorna tadorna*), Redshank (*Tringa totanus*), and a waterbird assemblage) and/or SSSI citations, along with a select few additional species for which the Severn Estuary is becoming more important and/or for which regular movements of known birds have been recorded. This movement indicates connectivity to the SPA. The main study area was the Severn and Avon Vales, with a focus on sites covered by the British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS), both counted and uncounted, between Frampton Pools (Gloucestershire) at the downstream end and Grimley New Workings (Worcestershire) at the upstream end.

2.2.3 Overall, the results of the study indicated that 11 WeBS sites are proven to be functionally linked to the Severn Estuary SPA. The study provided specific detail on Curlew, indicating there is a nesting population of 30-35 pairs of Curlews in the Severn and Avon Vales, which is a major component of the lowland English breeding population. There is also very strong evidence of movements of these birds between the SPA and the Vales. For example, three Curlew colour-ringed on the SPA between 2010 and 2013 were re-sighted in the Severn and Avon Vales, demonstrating clear links between the SPA and the Vales. However, report NECR401 also acknowledges the low productivity of this population due to the loss of nests through habitat change, predation and early hay cutting. The report mentions there has been much attention devoted to liaison with landowners and farmers to develop ways of maintaining both breeding Curlew and agricultural productivity.

¹ Palmer, E. & Smart, M. (2021). Identification of wintering and passage roosts on functionally linked land of the Severn Estuary - Gloucestershire and Worcestershire (Phase 5). Natural England Commissioned Reports. NECR401.

- 2.2.4 The Severn Estuary SPA is located approximately 30km from the strategic allocation at Mitton and three areas of FLL identified within Report NECR401 that are ecologically important for Curlew are located within close proximity to the allocation. These areas of FLL are shown in **Figure 2.1** and include:
- Mitton (WeBS Location Code 15305) - 327m west of the Mitton allocation;
 - Bredon's Hardwick Gravel Pits (WeBS Location Code 40260) - 119m west of the Mitton allocation; and,
 - Avon Meadows - Twyning and Bredon's Hardwick (WeBS Location Code 40353) - located 322m northwest of the Mitton allocation.
- 2.2.5 Report NECR401 concludes that these areas of FLL are one of the strongholds for nesting Curlew in the Vales, with up to five pairs nesting between Mitton and the M5 above Fleet Lane. Furthermore, when considered in combination with Fleet Lane Meadows, Upham Meadows and Summer Leasow WeBS sites to their immediate north, the complex of sites are likely to be ecologically important for Curlew at a landscape scale.
- 2.2.6 NE's position statement on the 5th February 2024, notes that Curlew are known to forage on the fields within the development site at Mitton, stating that "*Curlew populations at Bredon's Hardwick and Mitton are very important*" ... "*Several pairs are also known to breed here, with five nests found in 2023. Curlew will be moving across the development site between the River Avon and Carrant Brook, and are known to forage on fields within the development site, opposite to Cowfield Marsh*".
- 2.2.7 The Curlew surveys Lepus Consulting has been appointed to undertake aim to further investigate the potential impacts of the proposed development on Curlew and assess whether the strategic allocation itself is functionally linked to the Severn Estuary SPA.

2.3 Site description – Mitton strategic allocation

- 2.3.1 The Mitton allocation lies approximately 650m to the east of the River Avon and immediately adjacent to the B4080 (see **Figure 2.1**). It comprises agricultural fields, which are surrounded by dense hedgerows with no direct public access. At the time of surveying, the two northeast fields contained arable crops and the rest of the Site was being used as pasture for sheep grazing.
- 2.3.2 The Site itself is free from obstructions such as power lines and the M5 runs adjacent to the northeastern corner of the Site, presenting a significant source of noise disturbance. Existing residential development is located to the south of the Site and the Northway Industrial Estate is situated to the east and southeast and is within the Tewkesbury Borough Council's administrative area.
- 2.3.3 The Carrant Brook marks the boundary between Wychavon and Tewkesbury Borough Council and flows along the Site's southeastern boundary adjacent to a Public Right of Way (PRoW) on the watercourse's eastern side. Cowfield Marsh Key Wildlife Site lies between the Carrant Brook and Northway Industrial Estate. The topography of the site slopes downwards from the B4080 towards the Carrant Brook, with the southernmost field regularly becoming waterlogged.
- 2.3.4 Photos of the Mitton allocation are shown in **Appendix A**.

2.4 Details of the proposed development

2.4.1 The SWDPR seeks to allocate 1,000 dwellings at an 88ha site off Bredon Road in Mitton under Policy SWDPR 54. The location of this allocation is shown on **Figure 2.1**, and the Site is referred to in this report as the Mitton allocation. Phase 1 will deliver 500 dwellings to meet the needs of Tewkesbury Borough Council and Phase 2 will deliver a further 500 homes to meet the needs of Wychavon District Council. There are currently three live outline planning applications covering the whole allocation that are still to be determined:

- 23/00682/OUT – 500 dwellings (Phase 1);
- 23/00683/OUT – New primary school; and
- 25/00596/OUT – 500 dwellings and neighbourhood centre (Phase 2).

2.4.2 The SWDPR allocates the Site at Mitton for the following approximate uses:

- Total site area 87ha;
- 1,000 dwellings;
- New primary school;
- Convenience shop;
- Community hall;
- Sports pitches; and
- Minimum of 40% green infrastructure, including orchards and allotments.

2.5 Site description – Functionally Linked Land

2.5.1 The three areas of FLL identified by NE in Report NECR401 are all BTO WeBS sites and sit between the River Avon and Bredon Road (B4080). The three areas of FLL are shown in **Figure 2.1**. The habitat is classified as riverine and marshy wetland and is part of the River Avon's floodplain, with Avon Meadows FLL and Bredon's Hardwick Gravel Pits FLL sitting directly adjacent to the watercourse. Mitton is approximately 30m from the River Avon, being separated by the Tewkesbury Cruising & Sailing Club.

2.5.2 Croft Farm Water Park sits on the eastern edge of the Avon Meadows FLL which comprises of camping facilities and a 5ha lake used for recreational activities. A second 3ha lake also sits within the Avon Meadows FLL, north of the water park. An 8ha lake sits within the eastern side of the Bredon's Hardwick Gravel Pits FLL.

2.5.3 Photos of the FLL are shown in **Appendix A**.

2.6 Previous survey work

2.6.1 Various survey work relating to Curlew has been carried out to date at the Site and nearby areas of FLL; a summary of the surveys is provided below.

- 2.6.2 **WWT Eurasian Curlew recovery project:** The Wildfowl and Wetlands Trust (WWT) Severn & Avon Vale Eurasian Curlew Project was set up to help support local Curlew populations by working with farmers, landowners, conservationists and communities. The project continues to monitor local Curlew populations along the Severn & Avon Vales, including the three areas of FLL listed in **Section 2.2**. For example, in 2022 the project identified 32 pairs of Curlew and located 20 nests. Of these, half were on the River Severn and the other half were found along a short stretch of the River Avon, between Mitton and Asham Meadow, Eckington. The project is also testing a headstarting approach whereby Curlew eggs are taken from wild pairs and the young reared in aviaries before being released back into the wild.
- 2.6.3 **Breeding bird surveys to inform planning applications:** As part of an ecological appraisal, breeding bird surveys were undertaken at the Mitton allocation in May 2017, May 2020, and April 2023 by The Environmental Dimension Partnership Ltd². These bird surveys and accompanying records from the Worcestershire Biological Records Centre and the Gloucestershire Environmental Records Centre, which were obtained in 2016 and 2020, provided no records of Curlew on the Mitton allocation itself.
- 2.6.4 **Lepus site visit:** A site visit to the Mitton allocation was undertaken by Lepus on 17th May 2024. During this visit a single Curlew was observed foraging in the area of flooded land to the southeast of the strategic allocation, adjacent to the Carrant Brook. This sighting accords with the conclusions set out in NE's Position Statement which indicate that Curlew have been seen overhead and are known to forage in the fields within the Mitton allocation Site itself.
- 2.6.5 **Wetland Bird survey data:** The WeBS is the monitoring scheme for non-breeding waterbirds in the UK, which aims to provide the principal data for the conservation of their populations and wetland habitats³. The three target areas of FLL listed in **Section 1.2** are WeBS sites and non-breeding bird survey data is therefore collected annually at each site.
- 2.7 Evidence of technical competence and experience**
- 2.7.1 The breeding Curlew surveys were undertaken by Joseph Marcus MSc, a Qualifying Member of CIEEM and an ecological consultant at Lepus. Joe has a specialism in ornithology and two years of professional bird survey experience.
- 2.7.2 This report was authored by Joseph and has undergone an internal review and quality assurance by Neil Davidson CEnv CIEEM CMLI, Director at Lepus with 32 years of professional experience.

² EDP (2023) Land East of Tewkesbury Road, Bredon's Hardwick (Mitton Bank) Update Ecological Appraisal.

³ Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. (2025). Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

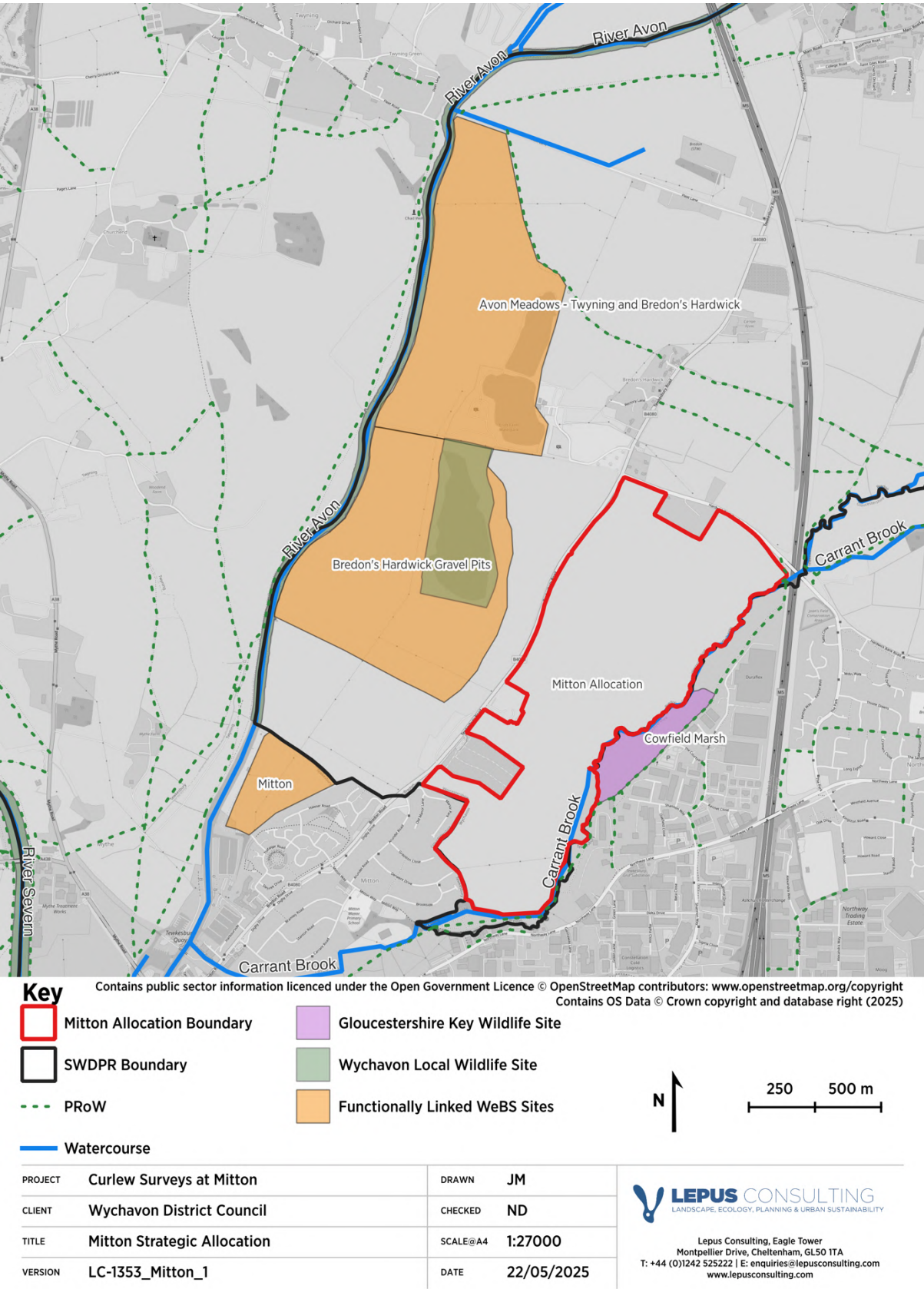


Figure 2.1. The strategic allocation at Mitton and nearby wildlife sites and areas of FLL to the Severn Estuary SPA

3 Curlew habitat requirements and threats.

3.1 Habitat requirements

- 3.1.1 Curlew habitat includes large estuaries, muddy sites, fens, peat bogs, heathlands, river valleys, coastal marshlands, wet grasslands, and arable fields⁴. They are migratory and temperate breeding species⁵ typically migrating to Western Europe, the Mediterranean, and parts of Africa in winter⁶. However, non-breeding Curlews often remain in wintering areas throughout the year⁷. From July, breeding adults typically gather on coasts. The breeding season occurs between April and August in territorial pairs, typically producing four offspring⁸.
- 3.1.2 Breeding Curlew require a mosaic of vegetation of different heights. This allows for the protection of nests and chicks in taller vegetation and foraging in shorter vegetation by adults and chicks with nearby cover from predators. Breeding adults and Curlew chicks feed on a diet of soil invertebrates including earthworms, leatherjackets and beetles etc. Non-breeding Curlew feed on a range of mud/soil invertebrate prey within intertidal areas and wet grassland⁹.
- 3.1.3 Breeding, foraging and roosting Curlew require open terrain with unobstructed sight lines to allow them to detect predators or to ensure visibility of displaying behaviour⁹.

3.2 Threats

- 3.2.1 The Curlew population in England has historically experienced, and continues to face, threats due to range contractions, particularly affecting the number of breeding pairs⁹. Curlew nests are often located on the ground in rough grasslands¹⁰, making breeding populations and their offspring vulnerable to changes in land management such as agricultural intensification, overgrazing, trampling, new developments, flooding, and the drainage of wetlands¹¹. They are also vulnerable to predation by red foxes (*Vulpes vulpes*) and Carrion Crows (*Corvus corone*). Small fragmented habitat is particularly vulnerable to these threats.

⁴ Tucker, G. M. & Heath, M. F. (1994). *Birds in Europe: Their Conservation Status*. Birdlife International, Cambridge, UK.

⁵ Malzer, I. in Curlew Life. Nd. What do curlew do in the winter months? Available at: <https://curlewlife.org/2021/11/what-do-curlew-do-in-the-winter-months/> [Accessed 10.07.25]

⁶ Hagemeijer, W. M. & Blair, M. J. (1997). *The EBCC Atlas of European Breeding Birds: Their Distribution and Abundance*. Poyser, London.

⁷ Billerman, S. M. et al. (2020). *Birds of the World*. Cornell Lab of Ornithology.

⁸ Hayman, P. J. et al. (1986). *Shorebirds: An identification guide to the waders of the world*. Boston: Houghton Mifflin Company.

⁹ Drewitt, A. (2020). Definition of Favourable Conservation Status of Eurasian Curlew *Numenius arquata*. Defining Favourable Conservation Status Project.

¹⁰ BirdLife International (2021) 'Numenius Arquata. The IUCN Red List of Threatened Species'.

¹¹ Colwell, M. (2017) Curlews in Crisis. British Wildlife.

- 3.2.2 Given their reliance on upland areas, Curlew are also sensitive to the impacts of climate change. NE's work to inform the Climate Change Adaptation Manual, which is intended to support land managers adapt to the impact of climate change, indicates that with a rise of temperatures of 2°C, large parts of England are likely to become unsuitable for breeding Curlew. It sets out measures to help Curlew adapt to the impact of climate change including managing predation and improving habitat quality in upland areas¹².

3.3 Role of lowland England for breeding Curlew

- 3.3.1 England plays a fundamental role in supporting 25% of the global breeding population of Curlew¹³. Until the 1960s there were significant numbers of breeding Curlew in the East Midlands and 650 10km squares in England supported breeding birds during the 1968 and 1972 bird atlas survey.
- 3.3.2 Since 1972, there has been a reduction of breeding birds in areas across England, including the West Midlands, with over 100 10km squares losing their breeding birds between 1968 to 1972 and 2007 to 2011 (Breeding Atlas). During the 2007 to 2011 Atlas survey, Curlew occupied around 54 10km squares in England, with the majority of birds in northern England and the West Midlands⁹.
- 3.3.3 The breeding population of Curlew declined by 33% in England from 1995 to 2014⁹. Estimates in 2020 suggest there are 58,000 breeding pairs in England with fewer than 500 pairs breeding in southern England¹³. See **Chapter 4** for details of conservation status and protection.
- 3.3.4 The remaining populations of breeding Curlew in southern England are mainly scattered in fragmented pockets, although there is a continuous distribution between the lower Severn Vale in Gloucestershire and Shropshire¹³.
- 3.3.5 As noted in **Section 2.2**, NE's Position Statement highlights the importance of the Avon and Severn Vales for Curlew, indicating that approximately 35 pairs breed in this area. The complex of floodplain sites to the west of the strategic allocation at Mitton, and to the east of the River Avon, is highlighted in NE's Position Statement as supporting approximately half of these 35 breeding pairs and therefore as being of particular importance.

¹² Natural England and RSPB (2019) Climate Change Adaptation Manual - Evidence to support nature conservation in a changing climate, 2nd Edition. Natural England, York, UK.

¹³ Colwell, M., Hilton, G., Smart, M. & Sheldrake, P. On behalf of the Curlew Forum (2020) Saving England's lowland Eurasian Curlews. Available at: <https://www.curlewcall.org/wp-content/uploads/2020/09/Brit.-Birds-113-279-292.pdf> [Date Accessed: 21/05/24].

4 Protection and conservation status of Curlew in the UK

4.1 The Wildlife and Countryside Act 1981

4.1.1 Section 1, Part I of the Wildlife and Countryside Act 1981 (as amended) makes it an offence (with certain limited exceptions and in the absence of a licence) to intentionally:

- Kill, injure, or take any wild bird;
- Damage, take or destroy its nest while that nest is in use or being built; and
- Take or destroy its eggs.

4.1.2 A person shall also be guilty of an offence if they possess or control any live or dead wild bird or any part of, or anything derived, from such a bird, or an egg of a wild bird or any part of such an egg.

4.1.3 The Act also affords additional protection to species listed in Schedule 1 (Sch. 1) of the Act, however, Curlew are not listed as a Schedule 1 species.

4.2 Natural Environment and Rural Communities Act 2006

4.2.1 Section 41 of the Natural Environment and Rural Communities (NERC) Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the purpose of conserving biodiversity in England. The Section 41 list is used to guide decision-makers, such as public bodies, in implementing their duty under Section 40 of the NERC Act 2006 and to have regard to the conservation of biodiversity in England.

4.2.2 There are 943 species of principal importance included on the Section 41 list, including several bird species. In accordance with Section 41(4) the Secretary of State will, in consultation with Natural England, keep this list under review and will publish a revised list if necessary. Curlew is included on the Section 41 list as a species of principal importance.

4.3 Birds of Conservation Concern 5

4.3.1 The Birds of Conservation Concern (BoCC) 5 is a list of avian species found in the UK, Channel Islands, and the Isle of Man, and uses a set of standardized criteria to allocate species to either the red, amber, or green list depending on their level of conservation concern. Species in the red list are of highest conservation priority, followed by species on the amber, and then green list.

4.3.2 Curlew were first added to the red list in the fourth BoCC edition, which was published in December 2015. BoCC 5, the most recent edition, was published in December 2025 and Curlew were again listed on the red list, qualifying for the red list for the following criteria:

- Severe UK breeding population decline of >50% over the long-term

4.3.3 The species also qualifies for the amber list for the following criteria:

- Moderate UK breeding population decline of >25% but <50% in 25 years;
- Moderate UK non-breeding population decline of >25% but <50% in 25 years; and

- Breeding population is of international importance (UK holds at least 20% of the European population in the breeding season).

4.4 International Union for the Conservation of Nature's Red List of Threatened Species

4.4.1 The International Union for the Conservation of Nature's (IUCN) Red List of Threatened Species was established in 1964 and provides a comprehensive list of the extinction risk of animals, plants, and fungi. The list uses a globally recognised set of criteria to categorise species into nine red list categories according to their extinction risk, taking into account factors such as population size, geographic range, and rate of population decline. The nine categories comprise the following in order of decreasing extinction risk: extinct, extinct in the wild, critically endangered, endangered, vulnerable, near threatened, least concern, data deficient, and not evaluated.

4.4.2 The Eurasian Curlew is listed as 'near threatened' on the global IUCN Red List, being last assessed in October 2017. Significant threats include, but are not limited to:

- The loss and fragmentation of breeding habitats (e.g. moorland) due to afforestation and marginal grassland resulting from agricultural intensification; and
- High egg and chick mortalities due to agricultural practises, human disturbance and higher predation rates resulting from habitat change and fragmentation.

4.5 Severn Estuary SPA

4.5.1 The following European site designations apply to the Severn Estuary:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA); and
- Wetland of International Importance designated under the Ramsar Convention.

4.5.2 Areas of the Severn Estuary SAC, SPA and Ramsar designations which are covered partly or completely by tidal water are known collectively as the Severn Estuary European Marine Site (EMS).

4.5.3 As detailed in the most recent update of the Natura 2000 Standard data form for the Severn Estuary¹⁴, submitted to the European Commission on 22/12/2015 (Joint Nature Conservation Committee 2016), the Severn Estuary SPA is designated for seven qualifying species of individual waterfowl. In addition, under Article 4.2 of the Birds Directive, the Severn Estuary also qualifies as a SPA due to its waterfowl assemblage, as it regularly supports more than 20,000 individuals. This wintering waterfowl assemblage (consisting of 84,317) includes all regularly occurring waterfowl, all of the birds listed individually as qualifying species, and also species present in nationally important numbers, which includes Curlew¹⁵.

¹⁴ Available at: <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9015022.pdf> [Date Accessed: 23/06/25]

¹⁵ D.A. Stroud, D. Chambers, S. Cook, N. Buxton, B. Fraser, P. Clement, P. Lewis, I. McLean, H. Baker & S. Whitehead (2001) The UK SPA network: its scope and content. Available at: <https://data.jncc.gov.uk/data/3634580a-cabc-4218-872f-8660a1760ad8/uk-spa-vol1-web.pdf> [Date Accessed: 23/06/25].

- 4.5.4 Regulation 33 Conservation Advice is provided by the statutory nature conservation body to help competent authorities fulfil their duties under the Habitats Regulations¹⁶. This advice provides a basis to inform the scope and nature of assessment which may be required in the form of an HRA in relation to plans and projects
- 4.5.5 The conservation objective of the Severn Estuary SPA as a whole is to *‘ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;*
- *The extent and distribution of the habitats of the qualifying features*
 - *The structure and function of the habitats of the qualifying features*
 - *The supporting processes on which the habitats of the qualifying features rely*
 - *The population of each of the qualifying features, and,*
 - *The distribution of the qualifying features within the site.’*
- 4.5.6 The conservation advice of the Severn Estuary SPA in regard to the waterbird assemblage is to maintain the waterfowl assemblage (including Curlew) and its supporting habitats in favourable condition, as follows:
- 4.5.7 *‘The interest feature waterfowl assemblage will be considered to be in favourable condition when, subject to natural processes¹⁷, each of the following conditions are met:*
- *The 5 year peak mean population size for the waterfowl assemblage is no less than 68,026 individuals (i.e. the 5 year peak mean between 1988/9 - 1992/3);*
 - *The extent of saltmarsh and their associated strandlines is maintained;*
 - *The extent of intertidal mudflats and sandflats is maintained;*
 - *The extent of hard substrate habitats is maintained;*
 - *The extent of vegetation of <10cm throughout the saltmarsh is maintained;*
 - *The abundance and macroscale distribution of suitable invertebrates¹⁸ in intertidal mudflats and sandflats is maintained;*
 - *The abundance and macroscale distribution of suitable invertebrates in hard substrate habitats is maintained;*
 - *Greater than 25% cover of suitable soft leaved herbs and grasses¹⁹ during the winter on saltmarsh areas is maintained;*
 - *Unrestricted bird sightlines of >500m at feeding and roosting sites are maintained;*
 - *Waterfowl aggregations at feeding or roosting sites are not subject to significant disturbance.’*

¹⁶ Regulation 33 of the Conservation (Natural Habitats, &c.) Regulations 1994.

¹⁷ Natural processes ‘Each feature may be subject to both natural processes and human influence. Human influence on the interest features is acceptable provided that it is proved to be / can be established to be compatible with the achievement of the conditions set out under the definition of favourable condition for each interest feature. A failure to meet these conditions, which is entirely a result of natural process will not constitute unfavourable condition, but may trigger a review of the definition of favourable condition’.

¹⁸ e.g. Arenicola, Carcinus, Corophium, Crangon, Gammarus, Hydrobia, Macoma, Hediste, Notomastus and Talitrus spp. - these lists are examples and are not exhaustive

¹⁹ e.g. Puccinellia maritima, Salicornia spp., Agrostis stolonifera, Atriplex spp., Hordeum marinum, Festuca rubra, Alopecurus bulbosus, Lolium perenne - these lists are examples and are not exhaustive

4.5.8 The Conservation Advice also notes that the waterbird assemblage requires the following habitats:

- Intertidal mudflats and sandflats;
- Saltmarsh;
- Hard substrate habitats; and
- Freshwater coastal grazing marsh, improved grassland and open standing water in the SPA (but outside the EMS).

4.6 Functionally Linked Land

4.6.1 A research project commissioned by NE (Report NECR207)²⁰ to look into case law relating to FLL notes that the term 'functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European site might fulfil in terms of supporting the populations for which the site was designated or classified. Such an area of land or sea is therefore 'linked' to the site in question because it provides a (potentially important) role in maintaining or restoring a protected population at favourable conservation status. Whilst areas beyond a site boundary might serve a function in respect of a designated habitat type, for example by being linked hydrologically to the qualifying habitat, in the context of this report 'functional linkage' refers only to land or sea which is linked to a qualifying species (whether an Annex II species for which a SAC has been designated, or a bird species for which a SPA has been classified).

4.6.2 This definition is reflected in the Birds Directive which refers to the protection of areas outside an SPA, Article 4(4): '*...Outside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats*'.

4.6.3 Whilst the Severn Estuary SPA and Ramsar sites have been designated for Curlew as part of a wintering waterfowl assemblage, land outside the designated areas of these sites may be used by Curlew at different stages of their life cycle, such as for passage, roosting, feeding or breeding. Land outside the designated site boundaries would be functionally linked to the SPA and Ramsar if it has the potential to provide an important role in maintaining or restoring the population of species which are part of the waterfowl assemblage (including Curlew) at favourable conservation status.

4.6.4 The tests set out under the Habitats Regulations need to be applied in respect of plans or projects which may significantly affect FLL.

4.7 Favourable conservation status of Curlew

4.7.1 There is a requirement to maintain supporting habitats in a favourable condition for the waterbird assemblage of the Severn Estuary SPA and also to ensure feeding or roosting sites are not subject to significant disturbance and that bird sight lines are maintained.

²⁰ Chapman, C. & Tyldesley, D. (2016) Report NECR207. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions. Natural England Commissioned Reports, Number207.

- 4.7.2 NE has provided guidance on the contribution of England to achieving the Favourable Conservation Status (FCS) of Curlew in terms of natural range, population of the species and extent of habitat necessary for long-term maintenance of populations⁹. This guidance indicates that the achievement of FCS requires both recovery of breeding range and also breeding and non-breeding populations.
- 4.7.3 In terms of the Curlew population, NE's guidance indicates that it is appropriate to recover at least 75% of historic losses. FCS would represent at least 51,000 breeding pairs and 65,000 non-breeding individuals, monitored by Breeding Bird Survey (BBS), periodic national surveys and WeBS.
- 4.7.4 With regards to supporting habitat, NE's guidance considers that FCS would represent around 620 10km squares supporting extensive areas of habitat suitable for breeding birds and maintenance of the extent and quality of existing habitats for non-breeding birds (coastal intertidal habitats and wet grassland). Specifically, NE's guidance indicates the re-establishment of birds to approximately 75 10km squares in the south-west and West Midlands should be maintained as described by the 2007 to 2011 Atlas. 'Range and population recovery would require restoration of suitable habitat at a landscape scale, both in lowland wet, extensively grazed grassland and in upland grasslands, rush pastures and moorland.

5 Methodology

5.1 Aims

- 5.1.1 The survey area covers the strategic allocation at Mitton, along with the three areas of FLL (**Figure 5.1**), aiming to further investigate the potential impacts of the proposed development on Curlew and assess whether the strategic allocation itself is functionally linked to the Severn Estuary SPA. Whilst it is unlikely Curlew are breeding within the allocation, surveying this area aims to confirm this and establish whether the Site acts as a key foraging ground, particularly for the population known to be breeding within the FLL. Surveys of the FLL aim to estimate and map the number of breeding pairs and their productivity, as well as assess the activity/movement of the birds (e.g., observe whether birds are flying east over Tewksbury Road towards the development site).

5.2 Method

- 5.2.1 The proposed survey methodology has been adapted from the methodologies outlined by the Bird Survey Guidelines Breeding Bird Survey Methodology²¹, O'Brien & Smith (1992) method for censusing lowland breeding wader populations²² and the Curlew Recovery Partnership method for censusing breeding Curlew²³. A total of ten surveys has been conducted between March and July 2025, with each survey being separated by at least seven days. These have been split into three tiers according to aims and output:

- **Tier one:** Three surveys conducted between March and mid-April, with the aim of providing a general picture of site occupancy.
- **Tier two:** Four surveys conducted between mid-April and May, with the aim of estimating the number of territorial pairs.
- **Tier three:** Three surveys conducted between June and July, with the aim of estimating breeding and fledging success.

- 5.2.2 The dates, times, and weather conditions for each survey is provided in **Appendix B**.

²¹ Available at: <https://birdsurveyguidelines.org/methods/survey-method/> [accessed 08/04/2025]

²² Available at: <https://www.bto.org/our-science/projects/wader-hub/supported-survey-methods/censuses-transects-and-wader-calendar#censuses> [accessed 08/04/2025]

²³ Available at: <https://www.curlewrecovery.org/resources> [accessed 08/04/2025]

- 5.2.3 During each survey visit, the surveyor will walk a transect route at a slow, ambling pace, using binoculars to stop and scan for target species at each enclosed field. Short vantage point watches will also be conducted over areas of priority habitat, such as the southernmost field within the strategic allocation site, where Curlew have previously been recorded foraging on the Carrant Brook floodplain. Access has been provided to the land within the strategic allocation itself, allowing surveyors to enter each enclosed field and fully scan the habitat. Due to access restrictions to the land within the FLL, surveys of the FLL will be conducted from the PRoW located along the western bank of the River Avon and off Fleet Lane to the north of Avon Meadows - Twynning and Bredon's Hardwick. A short vantage point will also be conducted from the B4080 to assess the eastern fields of Bredon's Hardwick Gravel Pits. The transect route and vantage point locations are shown in **Figure 5.1**.
- 5.2.4 All visual and auditory contact with Curlew will be recorded, mapping the locations on a field map alongside the number of individuals present and observed behaviours (e.g. feeding, loafing, roosting, commuting flight, display/courtship). Unless unavoidable, surveys will be conducted in suitable weather conditions, avoiding heavy rain, strong winds (Beaufort force >5) and significantly reduced visibility (visibility <500m). Surveys of the strategic site will start/end within half an hour of dawn/dusk, respectively, as activity can be highest during this time. However, because a population is known to be breeding within the FLL, surveys of the FLL will be conducted between 08:30 and 18:00 to avoid the main periods of rapidly changing bird activity, thus enabling more accurate mapping of territories.

5.3 Territory mapping

- 5.3.1 The mapped registrations from survey visits within Tier 2 will be used to map out and estimate the number of territorial pairs within the survey area. The territory mapping approach detailed in Bibby *et al.*, (2000)²⁴ will be used, where non-overlapping rings around clusters of Curlew registrations will be drawn to signify breeding pairs and provide an estimate of the number of breeding territories. The minimum requirements for a territory/cluster are that there are at least two registrations of breeding behaviour, and that at least two registrations are recorded at least 10 days apart.

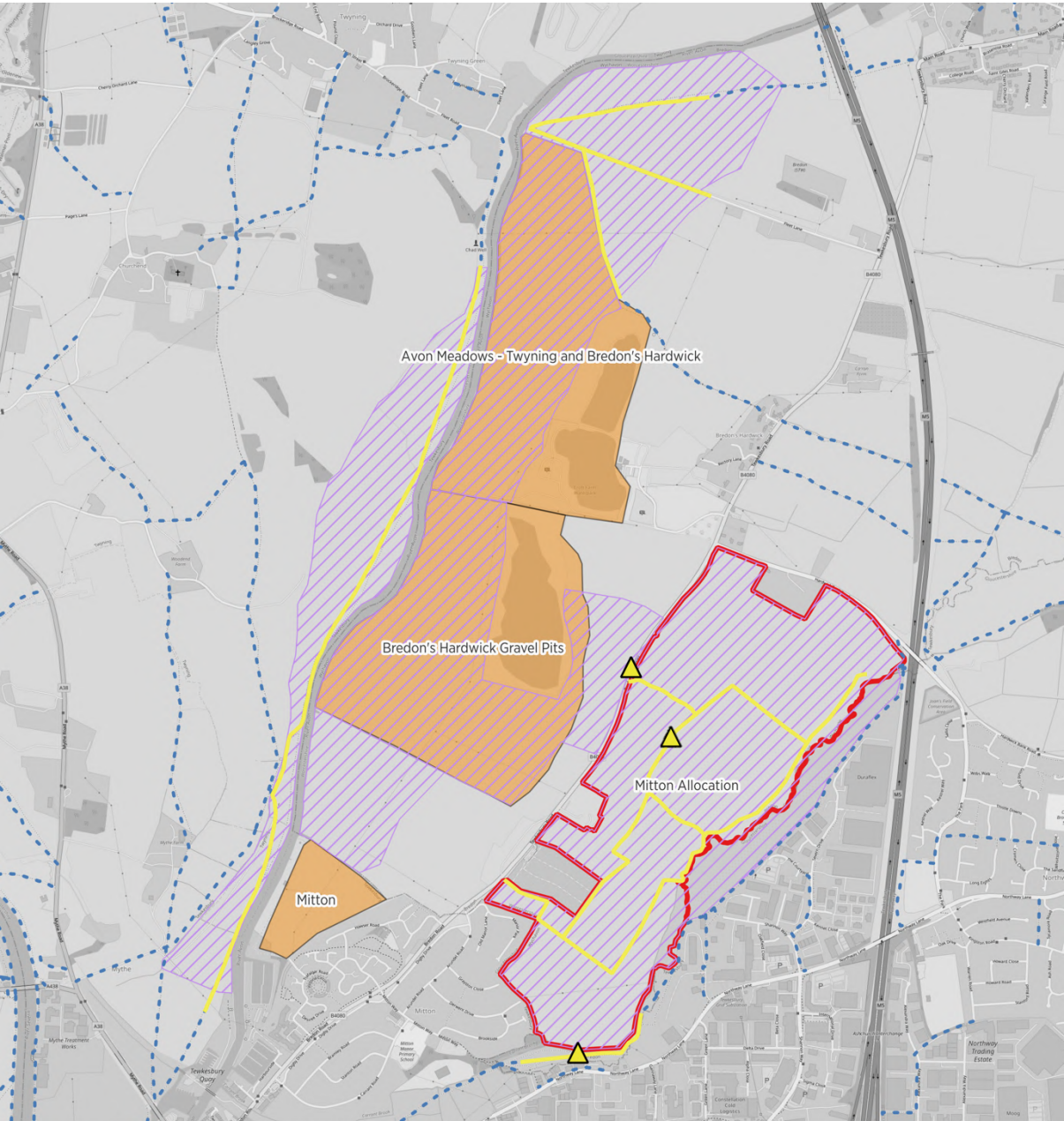
5.4 Limitations

- 5.4.1 Surveys of the FLL were conducted from the PRoW and B4080, and as a result the survey area will not be walked to within 50m. The Tewkesbury Cruising & Sailing Club also blocks the view into the Mitton FLL from the PRoW, and grass levees along the River Avon's embankment somewhat restrict the view of the fields within the Avon Meadows - Twynning and Bredon's Hardwick FLL. As a result, silent birds sitting or foraging on the ground may be missed, especially later in the breeding season when the sward height of the grass is at its highest, however, birds displaying, calling, or in flight will still be detected. As breeding behaviour such as display flights are most important for territory mapping, this shouldn't have a significant effect on the results from Tier 1 and 2. However, this will likely affect the detection of Curlew fledglings during Tier 3 surveys.

²⁴ Bibby, C.J. *et al.* (2000) *Bird census techniques*. 2nd edn. London: Elsevier.

- 5.4.2 From the 23rd May survey onwards, cattle were present and periodically rotated between four fields south of Feet Lane. On the 23rd May survey the herd blocked the PRoW and one of the fields in the center of the Avon Meadows FLL could not be surveyed.
- 5.4.3 Sometime prior to the final two surveys in late June, fields adjacent to the western bank of the River Avon, and five fields south of Fleet Lane within the Avon Meadows FLL were mown. It is likely this agricultural practise will have negatively affected the breeding success of Curlew potentially nesting in these fields by causing nestling/fledgling mortality.
- 5.4.4 Gloucestershire saw below average rainfall in spring 2025 (up to -30% of the 1991-2020 Average)²⁵, and as a result the habitats within the survey area were arid, which may have affected Curlew activity. For example, the southern field of the allocation, which is part of the Carrant Brook floodplain, was dry during the 2025 survey period. Curlew have previously been recorded foraging on this field by Lepus on the 17th May 2024, and on this date the field was waterlogged. It is possible the water level impacted foraging opportunities.

²⁵ Available at: <https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2025/double-record-breaker-spring-2025-is-warmest-and-sunniest-on-uk-record> [Date Accessed: 24/06/2025]



Contains public sector information licenced under the Open Government Licence © OpenStreetMap contributors: www.openstreetmap.org/copyright
Contains OS Data © Crown copyright and database right (2025)

Key

Mitton Allocation Boundary

Functionally Linked WeBS Sites

PRoW

Transect Route

Vantage Point

Survey Area

N

250

500 m

PROJECT	Curlew Surveys at Mitton	DRAWN	JM
CLIENT	Wychavon District Council	CHECKED	ND
TITLE	Survey Area and Transect Route	SCALE@A4	1:27000
VERSION	LC-1353_Curlew_Survey_1	DATE	22/05/2025

LEPUS CONSULTING

LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Lepus Consulting, Eagle Tower

Montpellier Drive, Cheltenham, GL50 1TA

T: +44 (0)1242 525222 | E: enquiries@lepusconsulting.com

www.lepusconsulting.com

Figure 5.1. The survey area and transect routes used during the breeding Curlew surveys

© Lepus Consulting for Wychavon District Council

17

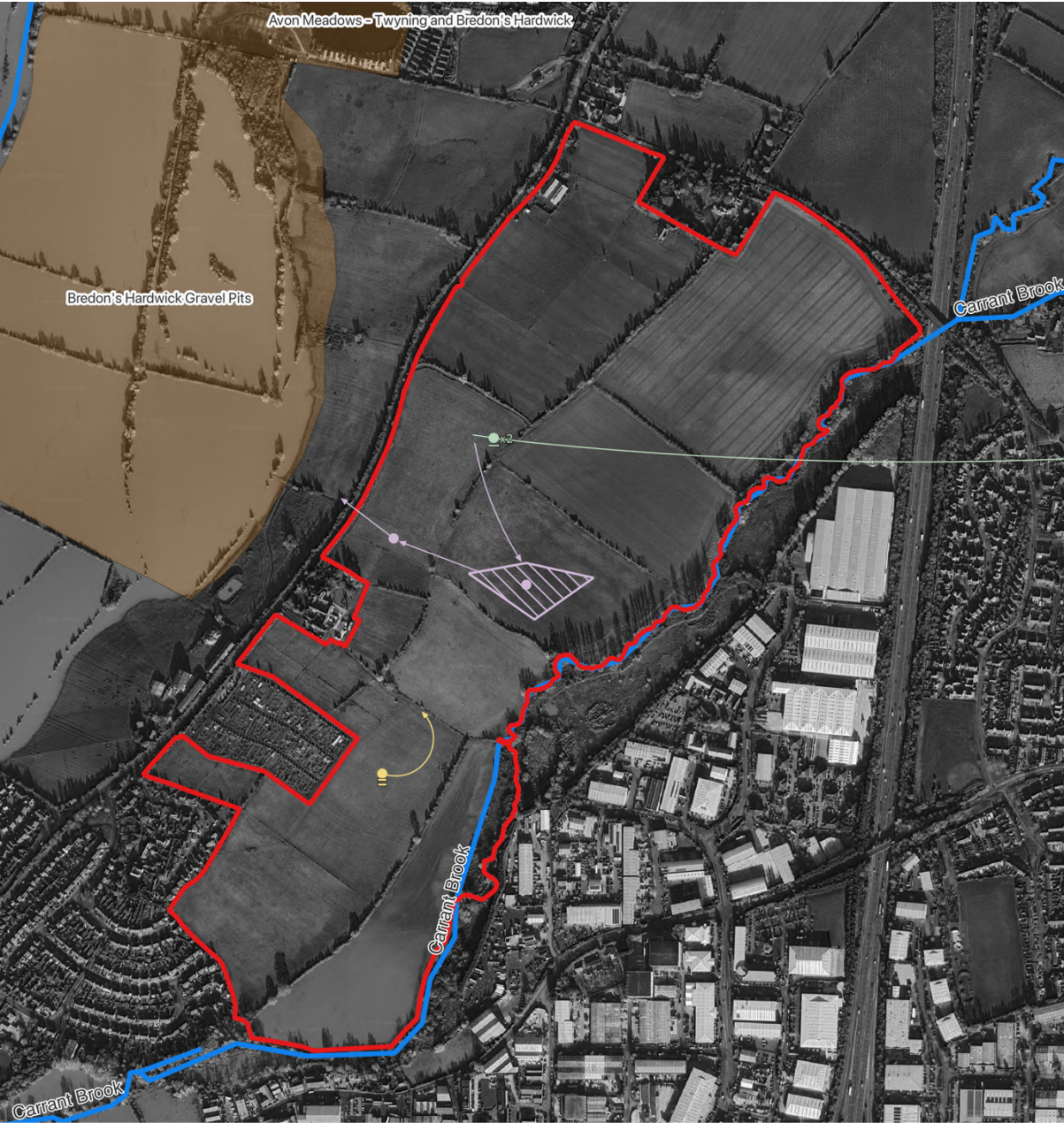
6 Results

6.1 Mitton allocation

6.1.1 Curlew were recorded within the allocation site on three of the ten survey visits. Within the red line boundary, no breeding behaviour was observed, and no signs of breeding were identified. Curlew were recorded foraging within the pasture and in direct flight over the Site. Registrations have been mapped in **Figure 6.1** and each of the three sightings are detailed below:

- **9th May 2025:** From the vantage point at the southern end of the Site adjacent to the Carrant Brook, one bird was recorded taking off from one of the central pasture fields at 05:50am, prior to flying in the direction of the FLL. Alarm calls from the bird were heard but this was not considered breeding behaviour as the bird was likely flushed by a predator or the surveyor.
- **30th May 2025:** One bird was recorded flying into the Mitton allocation from the north-east before landing in one of the pasture fields in the centre of the Site at 06.46am, remaining in this field and foraging for over an hour. At 08:00am the bird was observed flying into one of the northern pasture fields, foraging in this area for 10 minutes before flying east over Bredon Road towards the Bredon's Hardwick Gravel Pits FLL.
- **6th June 2025:** Two birds were recorded calling in direct flight over the centre of the Site at 06:58am. The pair were flying east and were observed crossing the M5 and continuing into the distance. It is worth noting the birds were recorded directly above the surveyor and it is therefore possible the surveyor's presence affected their behaviour.

6.1.2 Overall, across the suite of ten surveys, totaling approximately 27 survey hours, Curlew were recorded on three occasions. Results confirm that Curlew were not breeding within the Mitton allocation itself, however, it is clear the pasture fields within the RLB are used for foraging. Since the birds recorded within the allocation were observed entering and exiting the Site from the east, towards the FLL, it is likely that these birds were those from the breeding population within the FLL.



Map data © 2025 Google

Key

- Functionally Linked Land

Mitton Allocation Boundary

Watercourse

Foraging Area
- Curlew Registration
- Singing
- Calling
- =

Alarm Calling
- In Flight
- Landing
- Flushed

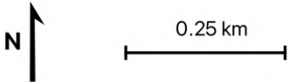
●

06/06/2025

●

30/05/2025

●

09/05/2025

PROJECT	Breeding Curlew Surveys	DRAWN	JM
CLIENT	Wychavon District Council	CHECKED	ND
TITLE	Mitton Allocation Survey Results	SCALE@A4	1:9000
VERSION	LC-1353_Mitton Allocation_1_080725	DATE	08/07/2025

**LEPUS CONSULTING**
LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Lepus Consulting, Eagle Tower
Montpellier Drive, Cheltenham, GL50 1TA
T: +44 (0)1242 525222 | E: enquiries@lepusconsulting.com
www.lepusconsulting.com

Figure 6.1. Mitton allocation breeding Curlew survey results

6.2 Functionally Linked Land

Tier 1:

- 6.2.1 During the Tier 1 surveys, Curlew were consistently recorded throughout the survey area, highlighting that Site occupancy within the FLL is high. Singing and display flights were recorded across all three survey visits showing the potential formation of breeding pairs and territories. The registrations are represented in **Figure 6.2**.
- 6.2.2 No Curlew were recorded within the Mitton FLL, however, one bird was recorded foraging on a field to the west of the Mitton FLL on the other side of the River Avon.

Tier 2:

- 6.2.3 During the Tier 2 surveys, Curlew were consistently recorded throughout the FLL during all survey visits. **Figure 6.3** shows the registrations recorded during these surveys.
- 6.2.4 No Curlew were recorded within the Mitton FLL. As mentioned in the limitations (**Section 5.4**), the Tewkesbury Cruising & Sailing Club blocks the view into the Mitton FLL from the PRoW, however, display flights and calling would have still been heard from the transect route and it is therefore unlikely that birds are breeding within this field.
- 6.2.5 Breeding behaviour, including singing and display flights, were consistently recorded within the Bredon's Hardwick Gravel pits and Avon Meadows FLL. Breeding activity was also repeatedly recorded in the flood meadows north of Fleet Lane and adjacent to the western bank of the River Avon. **Figure 6.3** presents the results of the territory mapping, where 'clusters' have been drawn around registrations to signify the estimated breeding territories. Generally, the results show that there are five to seven Curlew territories within the survey area, with **Figure 6.3** showing the maximum possible number of estimated territories. The territory mapping does not confirm the exact number of nests and their locations; it provides only an estimate of the number of breeding pairs and established breeding territories. Furthermore, the limitations described in **Section 5.4** may have caused bias in the location of registrations and is likely to have reduced the accuracy of the territory mapping approach.

Tier 3:

- 6.2.6 The results from Tier 3 surveys are presented in **Figure 6.4**. Curlew activity was high on the 6th June survey, with breeding behaviour being observed across the Bredon's Hardwick Gravel pits and Avon Meadows FLL. However, Curlew activity was drastically lower during the final two surveys compared with all other survey visits across all three Tiers. Only five Curlew registrations were recorded between both survey visits, four of which were of non-breeding behaviours (i.e., passage flight and foraging). As mentioned in **Section 5.4**, many of the fields where curlew were estimated to be breeding were mown prior to the penultimate survey (**Figure 6.5**). It is highly likely this will have negatively affected fledgling survival, and this is therefore a likely explanation behind the reduced Curlew activity recorded during the final two surveys.
- 6.2.7 No Curlew fledglings were observed during the three Tier 3 surveys, and it is not possible to estimate fledgling or breeding success from the collected data. However, productivity was likely low due to the early cutting of the fields within the survey area.



Key

Functionally Linked Land

Mitton Allocation Boundary

Watercourse

Curlew Registration

26/04/2025

04/04/2025

27/03/2025

Singing

Calling

Alarm Calling

In Flight

Landing

Flushed

N

0.25 0.5 km

PROJECT	Breeding Curlew Surveys	DRAWN	JM
CLIENT	Wychavon District Council	CHECKED	ND
TITLE	FLL Tier 1 Survey Results	SCALE@A4	1:13000
VERSION	LC-1355_FLL Tier 1_1_080725	DATE	08/07/2025

LEPUS CONSULTING

LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Lepus Consulting, Eagle Tower

Montpellier Drive, Cheltenham, GL50 1TA

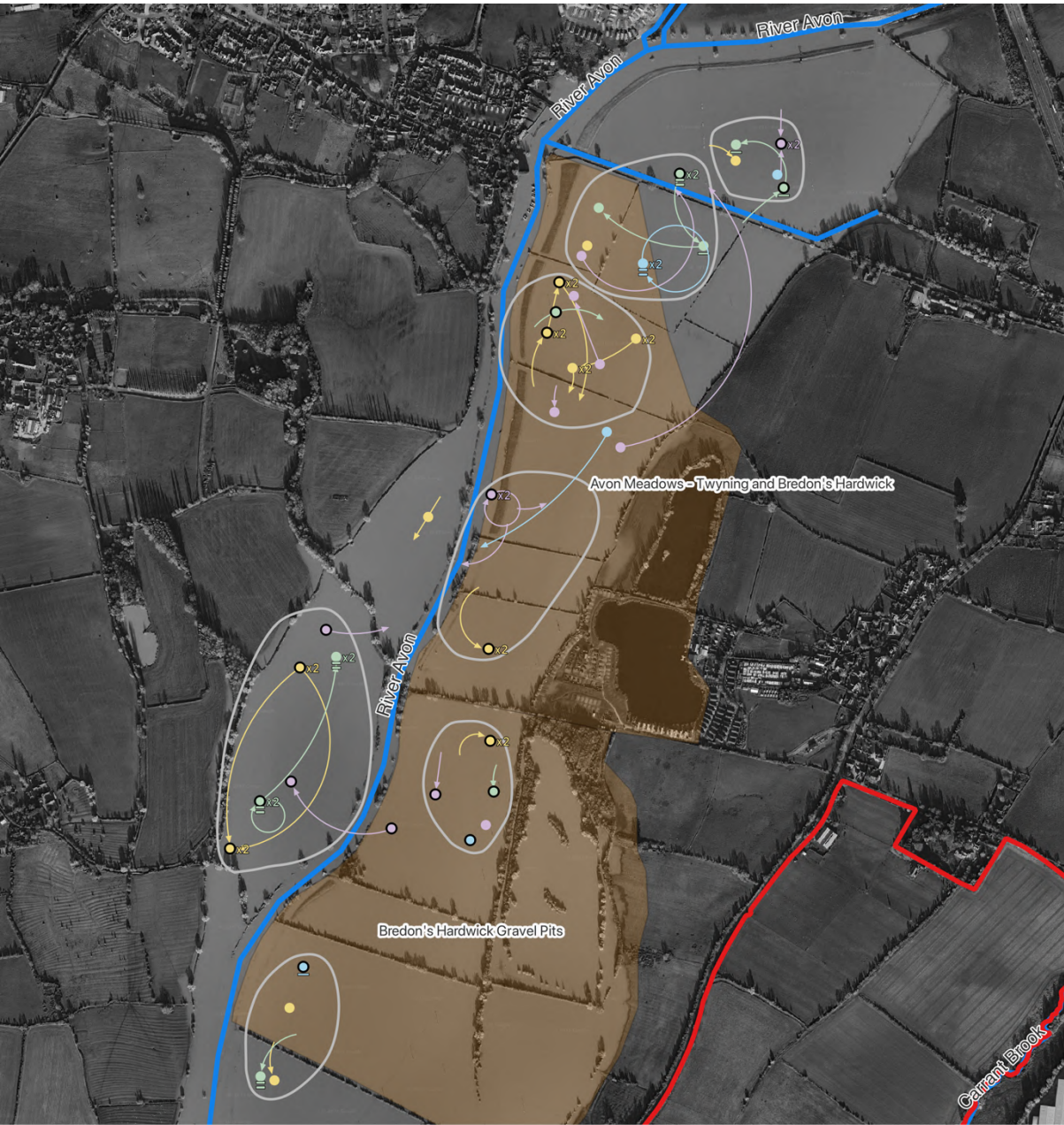
T: +44 (0)1242 525222 | E: enquiries@lepusconsulting.com

www.lepusconsulting.com

Figure 6.2. FLL Tier 1 breeding Curlew survey results

© Lepus Consulting for Wychavon District Council

21



Map data © 2025 Google

Key

Functionally Linked Land

Mitton Allocation Boundary

Watercourse

Curlew Territory

Curlew Registration

30/05/2025

23/05/2025

09/05/2025

23/04/2025

Singing

Calling

Alarm Calling

In Flight

Landing

Flushed

PROJECT	Breeding Curlew Surveys	DRAWN	JM
CLIENT	Wychavon District Council	CHECKED	ND
TITLE	FLL Tier 2 Survey Results - Territory Mapping	SCALE@A4	1:11000
VERSION	LC-1355_Tier 2_1_080725	DATE	08/07/2025

LEPUS CONSULTING

LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Lepus Consulting, Eagle Tower

Montpellier Drive, Cheltenham, GL50 1TA

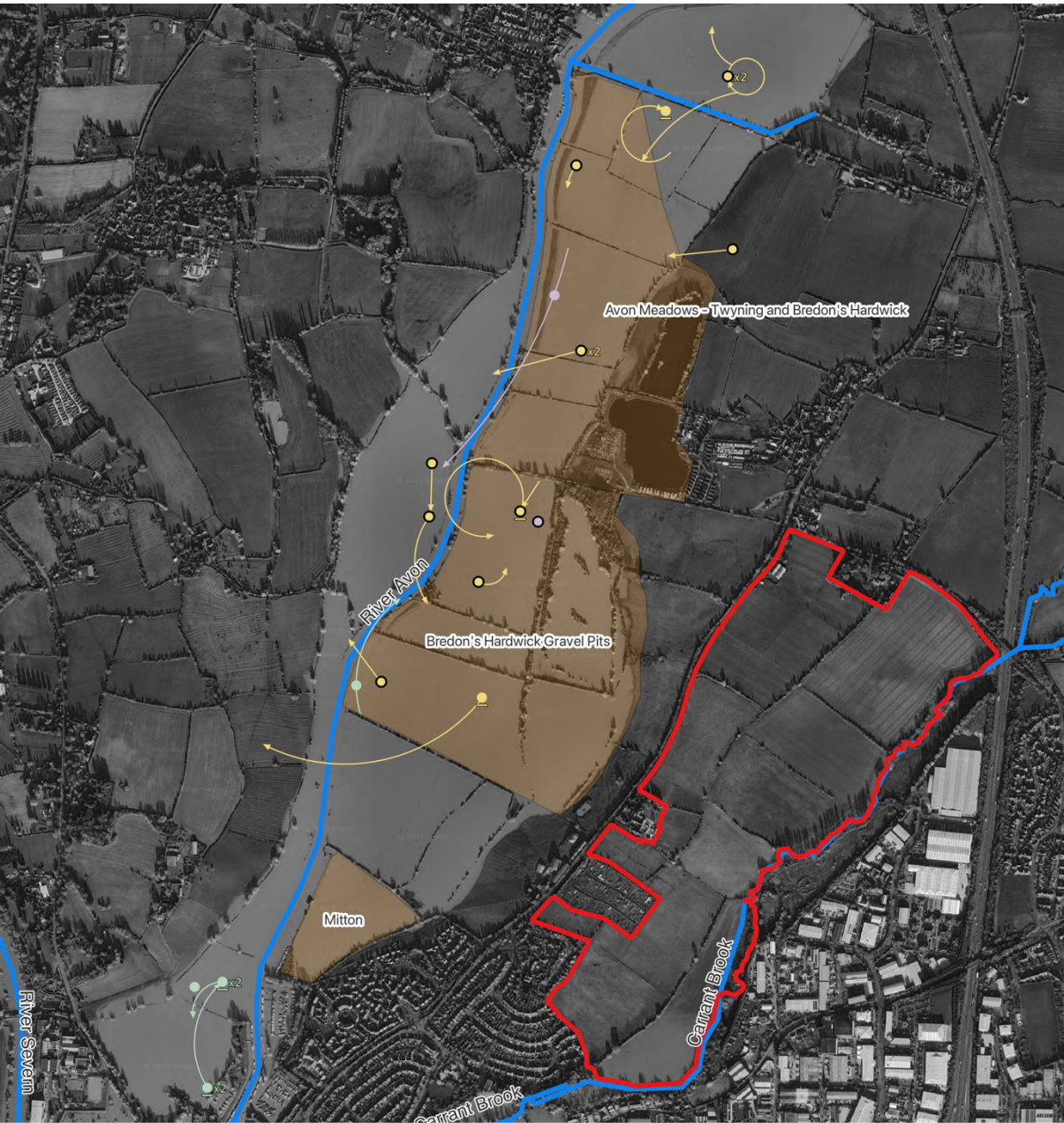
T: +44 (0)1242 525222 | E: enquiries@lepusconsulting.com

www.lepusconsulting.com

Figure 6.3. FLL Tier 2 breeding Curlew survey and territory mapping results

© Lepus Consulting for Wychavon District Council

22



Map data © 2025 Google

Key

- Functionally Linked Land
- Mitton Allocation Boundary
- Watercourse

Curlew Registration

- 04/07/2025
- 27/06/2025
- 06/06/2025

o Singing

- Calling

= Alarm Calling

↗ In Flight

→ Landing

→ Flushed

N

0.25 0.5 km

PROJECT	Breeding Curlew Surveys	DRAWN	JM
CLIENT	Wychavon District Council	CHECKED	ND
TITLE	FLL Tier 3 Survey Results	SCALE@A4	1:15000
VERSION	LC-1355_Tier 3_1_080725	DATE	08/07/2025

LEPUS CONSULTING

LANDSCAPE, ECOLOGY, PLANNING & URBAN SUSTAINABILITY

Lepus Consulting, Eagle Tower
Montpellier Drive, Cheltenham, GL50 1TA
T: +44 (0)1242 525222 | E: enquiries@lepusconsulting.com
www.lepusconsulting.com

Figure 6.4. FLL Tier 3 breeding Curlew survey results



Figure 6.5. Field adjacent to the western bank of the River Avon after being mown

6.3 Incidental records of non-target species

6.3.1 Incidental sightings of notable protected or red/amber listed species recorded within the Mitton allocation during the curlew surveys are detailed below:

- **Cuckoo** (*Cuculus canorus*) (Section 41, BoCC Red): Recorded singing in the southern field of the Site and in Cowfield marsh on the 23rd May.
- **Lapwing** (*Vanellus Vanellus*) (Section 41, BoCC Red): Consistently recorded across multiple visits, with a peak count of 15 birds in the centre of the Site on the 23rd May. Foraging and breeding behaviours were observed. As previously noted during the breeding bird surveys conducted by EDP, this is at least a locally significant population.
- **Kestrel** (*Falco tinnunculus*) (BoCC Amber): Consistently recorded across multiple visits foraging within the Site.
- **Cetti's Warbler** (*Cettia cetti*) (Schedule 1): Consistently recorded across multiple visits singing in Cowfield marsh.
- **Sedge Warbler** (*Acrocephalus schoenobaenus*) (BoCC Amber): Consistently recorded across multiple visits singing in Cowfield marsh.

7 Discussion

7.1 Functional linkage to the Severn Estuary SPA

- 7.1.1 Habitats adjacent or in proximity to European sites may be considered to be FLL if the habitat provides a significant role in supporting the integrity of the Site and the conservation objectives for the Site.
- 7.1.2 This report has been informed by advice and findings published by NE²⁰ which provides an analysis of authoritative decisions which considered effects from projects being evaluated for authorisation on areas of land or sea that were deemed to be functionally linked to a European site, but which lay outside the boundaries of the Site.
- 7.1.3 NE recognises that the term 'functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European site might fulfil in terms of ecologically supporting the populations for which the Site was designated or classified. Such land is therefore 'linked' to the European site in question because it provides an important role in maintaining or restoring the population of qualifying species at favourable conservation status. This report has only looked at areas which are functionally linked for Curlew rather than qualifying habitats.
- 7.1.4 As a constituent bird species of the Severn Estuary SPA under the waterfowl assemblage, land parcels could be considered functionally linked to an SPA if they contribute towards maintaining the assemblage species' favourable conservation status. A report published by NE⁹, as part of their Defining Favourable Conservation Status project, details what needs to be done to achieve Favourable Conservation Status for the Curlew in England. The report sets out nationwide targets regarding the species' natural range and distribution, population size, and available habitat.

7.2 Favourable Conservation Status

- 7.2.1 The Curlew Favourable Conservation Status report has identified favourable range as follows: 'As the conservation of the Curlew is of the highest priority (reflecting the international significance of the GB population and the level of threat it faces here and abroad) and there is good technical potential for reversing historic losses, it is considered appropriate to recover at least 75% of historic losses. Accordingly, a breeding range which represents FCS is considered to be approximately 620 10 km squares. The non-breeding range should be maintained as described by the 2007 to 2011 Atlas. Range should be measured by a repeat of the BTO atlas (normally repeated at around twenty year intervals and next due around 2027).'
- 7.2.2 The report acknowledges that there are gaps in data due to recording frequency. It also recommends that survey granularity (the report recommends that tetrads rather than hectads be used to present a clearer picture of numbers) could be improved to better understand trends in population status.

- 7.2.3 The report suggests that Favourable Conservation Status can be achieved by having habitats located both within and outside of designated nature conservation sites as follows: 'the area for the habitat when in Favourable Conservation Status should be around 620 10 km squares supporting extensive areas of habitat suitable for breeding birds, measured using the same methods employed by earlier breeding bird atlases. For non-breeding birds we need to maintain the extent and quality of existing habitats i.e. coastal intertidal habitats and wet grassland.'

7.3 Functional linkage and the proposed Mitton allocation

- 7.3.1 Ten breeding Curlew surveys between March and July 2025 were conducted at the Site, totalling approximately 27 survey hours. Across these surveys, Curlew were recorded on three occasions, namely foraging within the sheep pasture on the 9th and 30th May, and in direct/passage flight on the 6th June. These results show that whilst the Site provides foraging opportunities for Curlew, no evidence of breeding within the RLB was revealed.
- 7.3.2 Furthermore, although Curlew will breed within grazing land, the high stocking capacity of sheep and the resulting low sward height within the allocation make it largely unfavourable for breeding Curlew. It is therefore unlikely Curlew will breed on the Site if the Site's character remains unchanged.
- 7.3.3 Overall, it is unlikely that the land at the proposed allocation represents a functional linkage to the Severn Estuary SPA.

7.4 Habitats Regulations Assessment

- 7.4.1 Notwithstanding the fact that the land is unlikely to be functionally linked to the SPA, there are a number of potential direct and indirect impacts which are likely to arise by virtue of introducing up to 1000 new homes at the Site. The Habitats Regulations Assessment process associated with the preparation of the local plan will need to fully investigate these matters. And findings must be shared with NE.

7.5 Conclusions and recommendations

- 7.5.1 Results from the breeding Curlew surveys confirm the presence of a breeding population of Curlew, that is of potentially county importance, within the known areas of FLL adjacent to the River Avon. However, due to early hay cutting taking place in June 2025 before the penultimate survey, the productivity of nests within this population was likely negatively impacted. This supports the results set out in NE report NERC401¹, which suggests Curlew nests along the Severn and Avon, north of Gloucester, are often lost due to habitat change, early hay cutting, and predation.
- 7.5.2 Furthermore, although there was no evidence that Curlew were breeding within the Site itself, the pasture within the RLB evidently provides foraging opportunities for Curlew. The observed flightlines suggest that the allocation is used for foraging by the local breeding population within the nearby FLL, although this is unlikely to be confirmed without ringing sightings/recoveries or satellite tracking data.

- 7.5.3 Although it is unlikely that the proposed allocation site represents a functional linkage to the Severn Estuary SPA, it is necessary to consider the potential adverse impacts of introducing approximately 1,000 homes at the Site upon foraging Curlew and indeed proximate impacts that might affect the nearby breeding population at established FLL along the Avon to the north and west of the Site.
- 7.5.4 This report should be used to help inform the ongoing Habitats Regulations Assessment process being undertaken to inform the SW DPR. Likewise, it can also be used to help inform the determination of various planning applications associated with land at the Site. Part of these processes will be to evaluate impacts on Curlew and where appropriate, consider effective mitigation solutions.
- 7.5.5 As a starting point for further consideration, a high-level summary of potential impacts that might affect Curlew as a consequence of introducing development, as well as consideration of potential mitigation solutions are outlined below. Further research should be undertaken through the appropriate assessment of the local plan, including ongoing liaison with NE.

Increased recreational disturbance from dogs

- 7.5.6 The introduction of approximately 1000 homes will increase the footfall and volume of dog walkers within the local area. Generally, Curlew have a high sensitivity to disturbance and do not habituate rapidly to novel sources of disturbance. Guidance published by NatureScot suggests a buffer distance of 200-300m from breeding areas to minimise disturbance²⁶. Increased recreational disturbance along the local PRoW is therefore a significant threat to the local Curlew population, especially in sensitive areas such as the PRoW crossing the Avon Meadows FLL where Curlew are known to breed.
- 7.5.7 Off-lead dogs in particular pose a significant threat through increased nest disturbance, direct destruction of eggs/nestlings, and increasing chicks' vulnerability to predation from other species.
- 7.5.8 It is therefore important to plan for dog owners' needs within the development, such as inclusion of well-designed greenspaces, to attract owners away from the sensitive areas where Curlew breed. Generally, greenspaces suitable for dogs should be within walking distance from home, provide a range of walking routes and safe off-lead access, maximise enjoyment for dogs, and be located away from traffic. If a development does not accommodate this, owners will more frequently travel to greenspaces outside of the development²⁷.

²⁶ NatureScot (2022) Disturbance distances in selected Scottish bird species. Available at: <https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance> [Date accessed: 14/07/2025]

²⁷ Jenkinson, S. (2013) Planning for dog ownership in new developments: Reducing conflict – adding value. Available at: <https://www.eastsuffolk.gov.uk/assets/Planning/Rendlesham/Folder-9/9.14-Jenkinson-S.-2013.-Planning-for-dog-ownership-in-new-development-adding-value.pdf> [Date accessed: 11/07/2025]

- 7.5.9 A development can also promote responsible dog ownership through access and visitor management measures. Clear information, signage, and community engagement are needed to ensure dog owners are not only aware of the areas they should and should not walk their dogs off-lead but are educated on the reasons behind such restrictions and the issues surrounding bird disturbance. Examples of community engagement on the effects of dogs and bird disturbance run by local authorities and/or conservation organisations include the 'Good Dog Guide' at the Thames Basin Heaths SPA²⁸, 'Bird Wise' at the Thanet Coast and Sandwich Bay SPA²⁹, 'Bird Aware Solent' along the Solent coastline³⁰, and 'Paws on the Hill' at Crickley Hill and Barrow Wake SSSI³¹.

Loss of foraging habitat

- 7.5.10 The Mitton allocation provides foraging opportunities for Curlew which will no longer be available after the proposed development has been constructed. Loss of such foraging habitat may put further stress the nearby breeding population within the established FLL.
- 7.5.11 Local compensation for the residual effects arising from loss of Curlew habitat in the form of new and/or enhanced habitat for Curlew is therefore crucial to help support the breeding population within the established FLL. Habitat enhancement could include liaison with landowners and farmers to provide education on the effects of certain agricultural practices that negatively impact Curlew productivity (e.g. early hay cutting and overstocking of livestock) and to establish means of maintaining both breeding Curlew and agricultural productivity.

Increased cat predation

- 7.5.12 Cats are opportunistic hunters and pose a significant threat to Curlew nests, particularly during the nestling period. Cats can be known to catch a higher density of prey items per month than wild carnivores, and such ecological effects are amplified by the high density of cats in housing developments³².
- 7.5.13 The approach to mitigating cat predation of breeding Curlew will likely involve a combination of both a buffer zone from the FLL that is absent of any development and the provision of cat-deterrents including thorny scrub hedgerows and wet ditches which could deter cats from crossing the B4080 into the FLL.

²⁸ Available at: <https://www.tbhpartnership.org.uk/heathland-hounds/good-dog-guide/> [Date accessed: 11/07/2025]

²⁹ Available at: https://eastkent.birdwise.org.uk/?_gl=1%2A1ar80f7%2A_ga%2AMT11OTU5NTMxNS4xNzQ5NzlwMzcw%2A_ga_D85RBQ4X0V%2AczE3NTlyNDQ3OTgkbzlkZzAkdDE3NTlyNDQ3OTgkajYwJGwwJGgw [Date accessed: 11/07/2025]

³⁰ Available at: <https://birdaware.org/solent/> [Date accessed: 11/07/2025]

³¹ Available at: <https://www.gloucestershirewildlifetrust.co.uk/sites/default/files/2020-06/Crickley%20Hill%20-%20Paws%20on%20the%20Hill.pdf> [Date accessed: 11/07/2025]

³² Kays et al. 2020. The small home ranges and large local ecological impacts of pet cats. Animal Conservation ZSL

- 7.5.14 Based on scientific studies and drawing on examples elsewhere in the UK, it is sometimes recommended that an exclusionary zone of 300-400m be created around residential areas to manage the direct and indirect effects of cat predation^{33,34,35}. However, the B4080 may prove to be a significant barrier to cats. Further evaluation is required to better understand the suitability or indeed necessity for such an exclusion zone.

³³ Hanmer, Thomas and Fellowes. (2017). Urbanisation influences range size of the domestic cat (*Felis catus*): consequences for conservation.

Journal of Urban Ecology, 3 (1).

³⁴ Thomas et al. (2014). Ranging Characteristics of the Domestic Cat (*Felis catus*) in an Urban Environment. *Urban Ecosystems*, 17. pp. 911-921.

³⁵ Lilith, Calver and Garkaklis. 2008. Roaming habits of pet cats on the suburban fringe in Perth, Western Australia: what size buffer zone is needed to protect wildlife in reserves?

Appendix A Site photos



Figure A.1. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 1-5 were taken on 14/07/25.



Figure A.2. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 6-10 were taken on 14/07/25

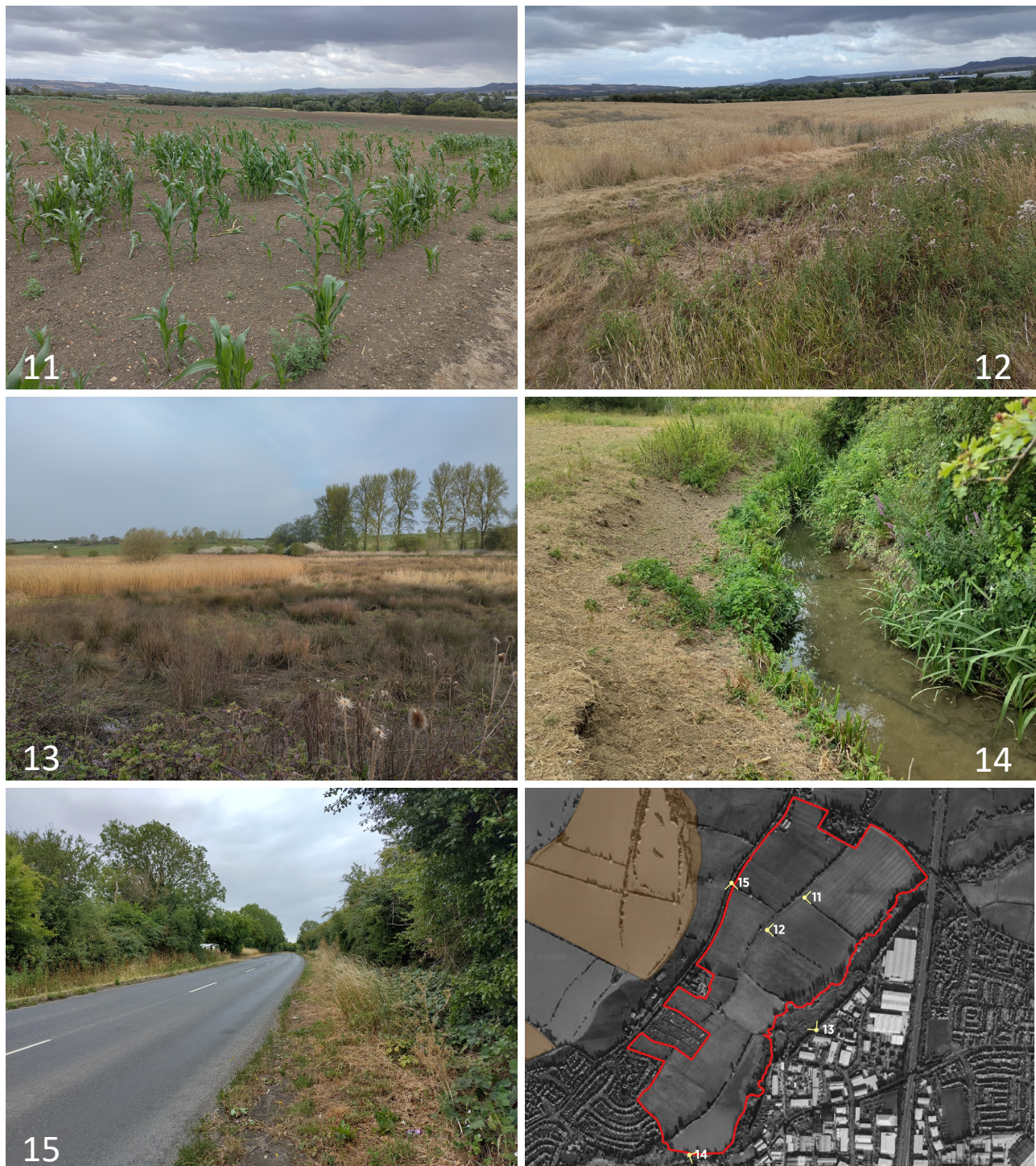


Figure A.3. Mitton allocation site photos. The location and direction of photos are shown in the bottom right image. Photos 11,12,14, and 15 were taken on 14/07/25. Photo 13 was taken on 04/04/25.



Figure A.4. FLL site photos. The location and direction of photos are shown in the bottom right image. Photos 16,18, and 20 were taken on 14/07/25 after hay cutting had taken place. Photo 19 was taken on 14/07/25. Photo 17 was taken on 04/04/25.

Appendix B Survey metadata

Table B.1. Survey dates, times, and weather conditions of the breeding Curlew surveys at the Mitton Allocation.

	Date	Start Time	End Time	Sunrise	Sunset	Weather conditions (Start – End)				
						Temperature (°C)	Wind Speed (Beaufort)	Wind Direction	Cloud Cover (Oktas)	Precipitation
Tier 1	27/03/25	12:20	13:20	n/a	n/a	15 – 15	2 – 2	SW – SW	2 – 3	None – None
	04/04/25	06:40	09:15	06:37	n/a	10 – 12	1 – 2	NE – NE	7 – 7	None – None
	16/04/25	06:30	09:20	06:10	n/a	6 – 8	4 – 5	SW – SW	8 – 6	Light Showers – None
Tier 2	23/04/25	06:15	08:25	05:55	n/a	8 – 10	3 – 2	NE – NE	8 – 8	Drizzle – Drizzle
	09/05/25	05:40	08:20	05:25	n/a	4 – 10	1 – 2	NE – NE	2 – 4	None – None
	23/05/25	05:00	08:00	05:04	n/a	6 – 13	1 – 1	SW – SW	3 – 2	None – None
	30/05/25	05:00	08:20	04:57	n/a	14 – 17	3 – 4	SW – SW	6 – 5	None – None
Tier 3	06/06/25	05:00	08:00	04:51	n/a	10 – 15	2 – 2	W – W	8 – 5	Light Showers – None
	27/06/25	19:30	22:30	n/a	21:32	22 – 20	3 – 3	SW – SW	7 – 6	None – None
	04/07/25	05:00	08:00	04:56	n/a	13 – 16	1 – 2	SW – SW	6 – 7	None – None

Table B.2. Survey dates, times, and weather conditions of the breeding Curlew surveys at land functionally linked to The Severn Estuary SPA

Date		Start Time	End Time	Weather conditions (Start – End)				
				Temperature (°C)	Wind Speed (Beaufort)	Wind Direction	Cloud Cover (Oktas)	Precipitation
Tier 1	27/03/25	13:30	15:00	15 – 14	3 – 3	SW – SW	2 – 2	None – None
	04/04/25	09:50	12:30	12 – 17	2 – 2	NE – NE	6 – 6	None – None
	16/04/25	09:40	13:30	8 – 12	5 – 5	SW – SW	6 – 7	Drizzle – None
Tier 2	23/04/25	09:05	12:55	10 – 13	3 – 2	E – E	8 – 6	Drizzle – None
	09/05/25	08:40	12:15	11 – 18	2 – 1	NE – NE	3 – 2	None – None
	23/05/25	08:30	11:30	14 – 17	1 – 1	SW – SW	2 – 3	None – None
	30/05/25	08:40	11:40	18 – 20	3 – 4	SW – SW	6 – 7	None – None
Tier 3	06/06/25	08:30	11:30	13 – 16	2 – 2	W – W	7 – 4	Light Showers – None
	27/06/25	12:20	15:20	23 – 26	4 – 4	SW – SW	7 – 4	None – None
	04/07/25	08:10	11:15	16 – 23	2 – 3	SW – SW	7 – 6	None – None

Biodiversity Net Gain

Habitat and Ecology Surveys

Ecological Impact Assessments

Habitats Regulations Assessments

Sustainability Appraisals

Strategic Environmental Assessments

Landscape Character Assessments

Landscape and Visual Impact Assessments

Green Belt Reviews

Expert Witness



© Lepus Consulting Ltd

Eagle Tower

Montpellier Drive

Cheltenham

GL50 1TA

T: 01242 525222

E: enquiries@lepusconsulting.com

www.lepusconsulting.com

CHEL TENHAM



Lepus Consulting
Eagle Tower
Montpellier Drive
Cheltenham
Gloucestershire GL50 1TA

t: 01242 525222
w: www.lepusconsulting.com
e: enquiries@lepusconsulting.com