WH202 (Jack's) April 2023

Jack's - Warish Hall Farm, Takeley

Ecology Documents Note

Prepared in support of the Full Planning Application
Land at Jack's, Warish Hall Farm, Takeley, Essex.

Table of Contents

Document History

Date	Version	Author	Revision/ Notes
31.03.23	Draft	J.Spencer	
04.04.23	1.0	J.Spencer	

1. Introduction

1.1. This document and the attached documents have been prepared by Weston Homes Plc (The Applicant) in support of a full planning application relating to the land known as Jacks, which is located to the north of Jack's Lane, Takeley, Essex. The Site falls within the jurisdiction of Uttlesford District Council (UDC) and within the parish of Takeley. The Site is situated on the east side of Smiths Green Lane, north of Jacks Lane.

1.2. The application is made under Section 62a of The Town and Country Planning Act 1990, for 40 no. new 2 to 5-bed dwellings. Accordingly, the proposed development description is as follows:

> *"Redevelopment of the Land known as Jack's field for the provision of 40no. dwellings, including parking, open space and associated infrastructure."*

1.3. The following documents are appended to this document, in relation to Ecology Matters in support of a full planning application relating to the land known as Jacks:

- **Essex Biodiversity Validation Checklist – Version 1.3 – June 2015**
- **Ecological Assessment [dated: Oct 2021] by Ecology Solutions**
- **Ecology Update and Walkover Survey [Sept 2022] by Ecology Solutions**
- **Briefing Note: Place Services Comments 13.02.23 [Feb 2023] by Ecology Solutions**
- **Bat Survey Report [Nov 2021] by Ecology Solutions**
- **Woodland Management Plan [Nov 2022] by Ecology Solutions**
- **Bird Hazard Management Plan [June 2021] by Ecology Solutions**

2. Biodiversity Checklist

2.1. The Biodiversity Checklist prepared by Place Services is a validation requirement for major developments submitted to Uttlesford District Council.

2.2. The Biodiversity Checklist can be found at Appendix A

3. Ecological Assessment

3.1. The Ecological Assessment was originally commissioned in October 2020 in relation to an Application (Ref. No. UTT/21/1987/FUL) which related to a wider land holding known as Warish Hall Farm.

3.2. The Land known as Jacks formed part of this Development Site and therefore the Ecological Assessment provides detail relating to this parcel.

3.3. This document has been submitted in support of this Section 62a Application as it is still relevant to the proposals.

3.4. The Ecological Assessment can be found at Appendix B.

4. Ecology Update and Walkover Survey

4.1. The Ecology Update and Walkover Survey was produced in September 2022 in support of the Ecological Assessment and provide an update on the ecological state of the site.

4.2. This should be read in conjunction with the Ecological Assessment.

4.3. The Ecology Update and Walkover Survey can be found at Appendix C.

5. Briefing Note: Place Service Comments 13.02.23

5.1. As set out in the Planning Statement, this Section 62a Application reflects an application which is currently pending determined by Uttlesford District Council (Ref. No. UTT/22/3126/FUL).

5.2. As part of that application, there have be a few rounds of consultation, including with Place Services Ecology Team. The Briefing Note forms the response to the Place Services Ecology Team comments which were received on 13.02.23.

5.3. This document should be read in conjunction with the Ecological Assessment and Ecology Update and Walkover Survey.

5.4. The Briefing Note can be found at Appendix D.

6. Bat Report

6.1. The Bat Survey was originally commissioned in November 2021 in relation to an Application (Ref. No. UTT/21/1987/FUL) which related to a wider land holding known as Warish Hall Farm.

6.2. The Land known as Jacks formed part of this Development Site and therefore the Ecological Assessment provides detail relating to this parcel.

6.3. This document has been submitted in support of this Section 62a Application as it is still relevant to the proposals.

6.4. The Bat Survey can be found at Appendix E.

7. Woodland Management Plan

7.1. As set out in the Planning Statement, this Section 62a Application reflects an application which is currently pending determined by Uttlesford District Council (Ref. No. UTT/22/3126/FUL).

7.2. The Woodland Management Plan has also been submitted alongside the Application which currently sits with UDC.

7.3. The Woodland Management Plan can be found at Appendix F.

8. Bird Hazard Management Plan

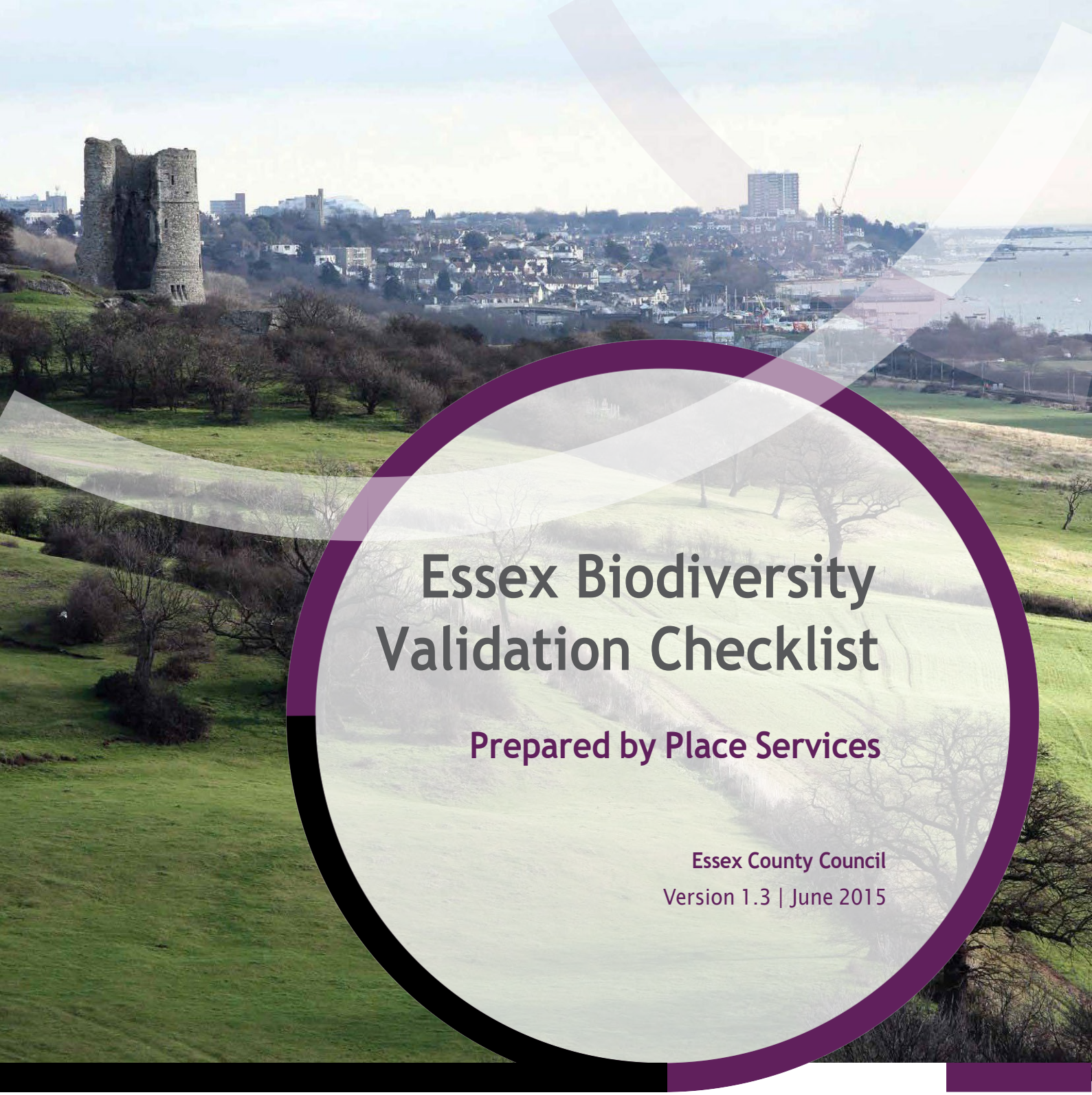
8.1. The Bird Hazard Management Plan was originally commissioned in November 2021 in relation to an Application (Ref. No. UTT/21/1987/FUL) which related to a wider land holding known as Warish Hall Farm.

8.2. The Land known as Jacks formed part of this Development Site and therefore the Bird Hazard Management Plan provides detail relating to this parcel.

8.3. This document has been submitted in support of this Section 62a Application as it is still relevant to the proposals.

8.4. The Bird Hazard Management Plan can be found at Appendix G.

Appendix A - Essex Biodiversity Validation Checklist – Version 1.3 – June 2015



Essex Biodiversity Validation Checklist

Prepared by Place Services

Essex County Council

Version 1.3 | June 2015

Essex Biodiversity PROJECT ...working for a better quality of life

place services

Essex County Council

Introduction

This checklist is a requirement for all planning applications considered a major development as defined by Article 8(7) of The Town and Country Planning (General Development Procedure) Order 1995.

The assistance of a professional ecologist will be necessary to complete the checklist.

For other applications not defined as a major development, applicants are strongly encouraged to use the checklist where there may be adverse effects on the natural environment.

For some developments an Environmental Impact Assessment (EIA) maybe required. In these cases this checklist must still be completed and used to inform the content of the Ecology Chapter of the Environment Statement subject to any Scoping Opinion issued by the planning authority.

This checklist aims to provide a clear, transparent process for both applicant and Local Planning Authority (LPA) and ensure conformity with **British Standard 42020:2013 for Biodiversity (Code of practice for planning and development).** Its correct application will help the applicant and LPA comply with national biodiversity policy and legislation; thereby reducing the likelihood of delays resulting from the submission of inadequate information.

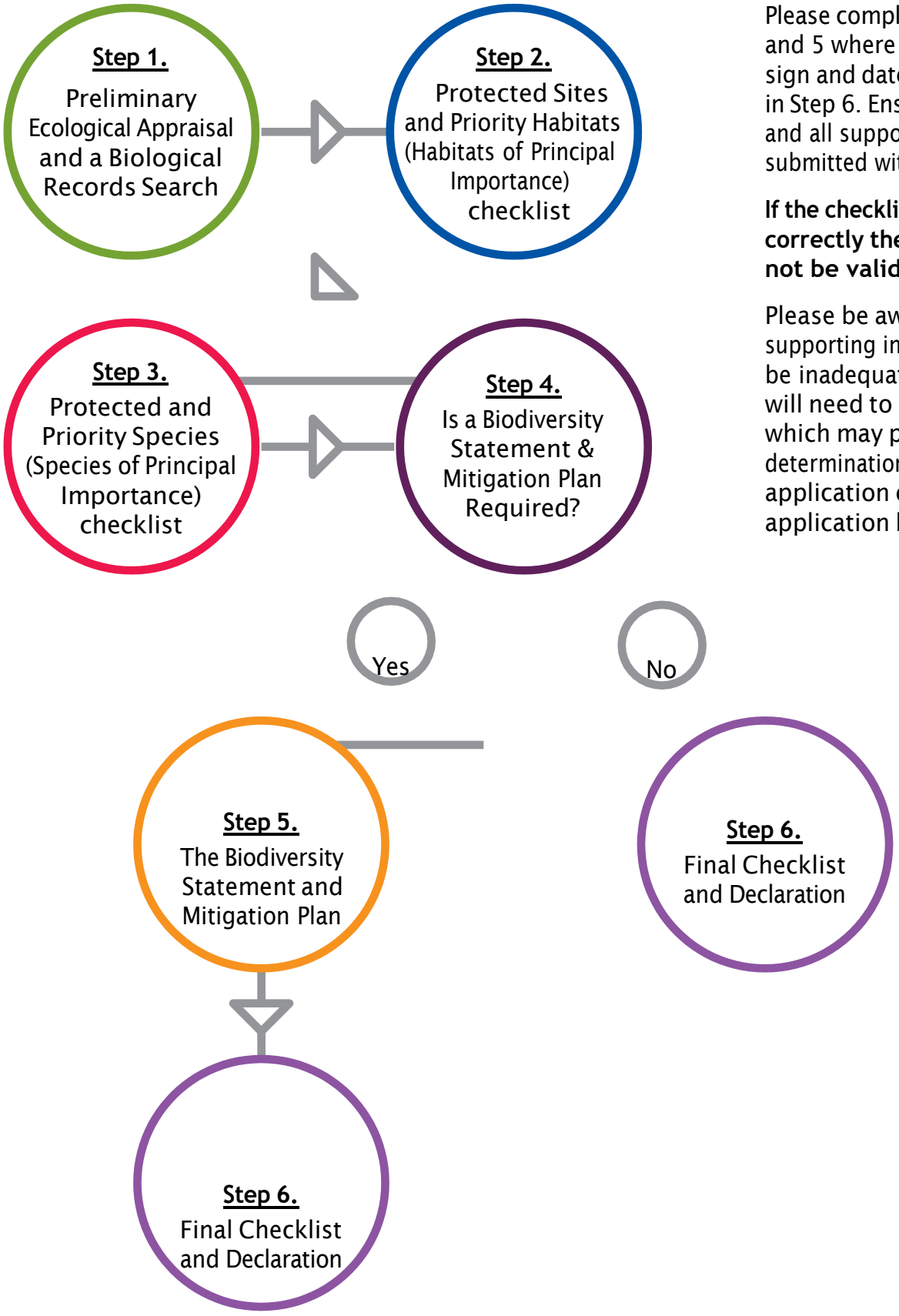
The checklist does not attempt to provide a detailed account of the legislation and policy that underpin biodiversity conservation in England. Further information can be obtained from Natural England and links have been provided in the text to external sources of information where appropriate. A glossary is also included at the end of the checklist.

The checklist is supported by Natural England's local Land Use Operations team and endorsed by the [redacted]

The checklist is a component of Essex County Council's Supplementary Guidance for the Submission of Planning Applications. It has been produced with funding provided by Natural England.

The Six Steps

The checklist comprises 6 steps:



Please complete steps 1 to 4 - and 5 where necessary - then sign and date the declaration in Step 6. Ensure the checklist and all supporting information is submitted with your application.

If the checklist is not completed correctly the application may not be valid.

Please be aware that if the supporting information proves to be inadequate further evidence will need to be provided, which may potentially **delay** determination of the planning application or lead to the application being **refused**.

Return to contents

Step 1. Preliminary Ecological Appraisal and Biological Records Search

A Preliminary Ecological Appraisal (PEA) of the application site must be completed in a format consistent with the [redacted] published by the Chartered Institute of Ecology and Environmental Management (CIEEM).

The PEA and any subsequent Biodiversity Statement & Mitigation Plan should be prepared by a competent and qualified Ecologist. To find a suitable Ecological Consultant please contact [redacted] in the first instance.

The PEA must include a description of any recent works, such as vegetation clearance, that have been undertaken at the application site prior to the ecological appraisal that may affect its findings.

The PEA must include a biological records search of the application site and a 2 kilometre area extending from the sites boundary. It should encompass the following biodiversity features as a minimum:

Protected Sites

- Special Areas of Conservation (SAC), Special Protection Areas (SPA) & Ramsar sites
- Sites of Special Scientific Interest (SSSI)
- Local Sites (i.e. Local Wildlife Sites – LoWS and Special Roadside Verges)

European Protected Species

- Species protected under the Conservation of Habitats and Species Regulations 2010 (as amended)

National Protected Species

- Species protected under the Wildlife & Countryside Act 1981 (as amended)
- Badgers (The Protection of Badgers Act 1992)

Priority Habitats and Species

- Habitats of Principal Importance in England (Priority Habitats)
- Species of Principal Importance in England (Priority Species)

Relevant data can be obtained from the following sources:

- Natural England www.magic.gov.uk
  Interactive map displaying information about SPA, SAC, Ramsar, SSSI and Ancient Woodland sites
- Essex Field Club [redacted]
  Main source of species records
- Essex Wildlife Trust Biological Records Centre [redacted]
  Holds site, habitat and species records including information about Local Wildlife Sites
- Essex Biodiversity Project [redacted]
  The Essex Biodiversity Action Plan can be viewed at this site

Using the results of the Preliminary Ecological Appraisal and Biological Records Search please complete **Steps 2 - 5** which will determine whether further survey and assessment work is required.

Step 2. Protected Sites and Priority Habitats (Habitats of Principal Importance) Checklist

Please complete Column 2 of Table 2.1 below. Links to more information have been provided for each site or habitat in column 1.

Table 2.1 - Sites and Habitats Checklist

1. Question	2. Please tick as appropriate
Is your development within 10km of a Special Area of Conservation (SAC), Special Protection Area (SPA) or Ramsar Site?	*Yes ☐ No ☐
Is your development within 2km of a Site of Special Scientific Interest (SSSI)?	Yes ☐ No ☐
Is your development within 250m of any [redacted]	Yes ☐ No ☐

**If you answer yes to this question additional detail maybe required by the LPA and Natural England to enable the completion of a Habitat Regulations Assessment (HRA). It is strongly recommended that you seek advice from Natural England prior to submitting your application, and submit details of any relevant correspondence with your checklist and application.*

If you have answered **'yes'** to any of the questions above please complete Table 2.2 (Sites and Habitat Evaluation) before proceeding to Step 3.

If you have answered **'no'** to all of the questions above please proceed directly to Step 3.

Please complete Column 2 of Table 2.2 below, followed by Column 3 as appropriate.

Table 2.2 - Sites and Habitats Evaluation

1.	2.	3.
Site/habitat	Is there a 'reasonable likelihood' that the development will affect (either directly or indirectly) a site or habitat in column 1 prior to applying mitigation? (Tick as appropriate)	Where you have answered **'yes'** name the site(s) or habitat(s) and summarise any possible direct or indirect effects that may occur during construction or operation. For SPA's this includes 'qualifying species' occurring outside of the designated site boundary. Where you have answered **'no'** please provide a concise statement to support your answer.
SAC/SPA/ Ramsar site*	Yes ☐ No ☑	The site does not fall within 10km / an impact risk zone associated with any SAC, SPA or Ramsar sites.

1.	2.	3.
SSSI*	Yes ☐ No ☑	The proposals include access to a provision of alternative open space which will not place any recreational pressure on Hatfield Forest SSSI. The SSSI is additionally far enough removed from the site to be affected by negative AQ and hydrological effects resulting from the development.
Priority Habitats	Yes ☑ No ☐	Hedgerows - Prior to mitigation possible direct or indirect effects during construction and operation include potential pollution (dust, noise, surface runoff etc.), accidentally encroachment and elevated lux levels. See Ecology Update and Walkover Survey Note and Ecological Assessment for more information.

**If you have answered 'yes' please seek advice from Natural England.*

Return to contents

1.	2.	3.
Ancient Woodland	Yes ☑ No ☐	Prior's Wood LWS. See Priority Habitats (above) and Ecology Update and Walkover Survey Note and Ecological Assessment for more information.
Local Wildlife Sites	Yes ☑ No ☐	Prior's Wood LWS. See Priority Habitats (above) and Ecology Update and Walkover Survey Note and Ecological Assessment for more information.

Step 3. Protected and Priority Species (Species of Principal Importance) Checklist

Please complete Column 2 in Table 3.1 below. Where **'Yes'** is answered a circle in the corresponding row indicates those species with a **'reasonable likelihood'** of being present, and for which further **surveys** may be required. The table has been adapted from the [redacted]

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)									Priority Species (Link to national List)				
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (Inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (Inc. ferns and bryophytes)
Does the application involve modification, conversion, demolition or removal of any of the following features or types of building: · loft space · any roof with gaps or cracks e.g. through uneven tiling · weather boarding · hanging tiles · gable ends · slate roof · clay-tiled pitched roof · wooden cladding · dense climbing plants · Underground structures including but not limited to cellars, tunnels, mines, kilns, ice-houses, air-raid shelters, all bridge structures, aqueducts and viaducts especially over water and wet ground · Agricultural building particularly but not exclusively those of traditional brick, stone or timber construction? · Buildings of pre-20th or early 20th Century construction	Yes ☐ No ☑	•					•	•			•				•				

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)									Priority Species (Link to national List)				
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (Inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (Inc. ferns and bryophytes)
Does the application site contain or is it adjacent to: a lake; river; canal; stream; ditch; marsh; or reedbed?	Yes ☐ No ☑	-		-	-				-	-				-		-			
Does the application involve new lighting of a building/ structure with features suitable for bats or barn owl (e.g. described in row 1 above); or lighting of green space within 50m of woodland, water, hedgerows or tree lines?	Yes ☑ No ☐	-					-												
Does the application site contain or is it within 200m of: semi-natural woodland; scrub thicket; or is it bounded by or adjacent to hedgerows of predominantly native species that are greater than 1m tall and 0.5m wide?	Yes ☑ No ☐	-	-	-		-		-	-		-		-		-		-	-	
Does the application site contain or is it adjacent to a tree/woodland plantation, including of conifers?	Yes ☐ No ☑	-	-	-		-		-			-		-		-			-	
Does the application site contain trees that are older than 100 years; trees with obvious holes, cracks, cavities, rot, loose bark, woodpecker holes; or trees with a girth greater than 1m at chest height?	Yes ☐ No ☑	-					-	-	-		-				-	-	-		

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)									Priority Species (Link to national List)				
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (Inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (Inc. ferns and bryophytes)
Does the application site involve disturbance, modification, demolition or construction on/in: gravel pits; quarries; natural cliff faces; or rock outcrops?	Yes ☐ No ☑	-		-		-		-	-		-	-	-		-		-	-	-
Does the application site contain or is it within 100m of a pond or other water-body (500m for major developments)? It can be permanent or ephemeral (sometimes dries out)	Yes ☑ No ☐			-					-						-		-		-
Does the application site contain or is it adjacent to grassland such as meadows, parkland or pasture?	Yes ☑ No ☐	-		-		-			-			-	-			-	-	-	-
Does the application site contain previously-developed, derelict or brownfield land; or railway land?	Yes ☐ No ☑	-		-		-	-	-	-		-		-		-		-		
Does the application involve the modification, disturbance or removal of: mature or over-grown gardens; rough grassland; scrubland or allotments?	Yes ☐ No ☑	-	-	-		-		-			-	-	-		-		-	-	-
Does the application involve disturbance or removal of a compost heap?	Yes ☐ No ☑												-						

1.	2. (Yes/No)	European Protected Species				Nationally Protected Species (for species groups links to the relevant legislation are provided)									Priority Species (Link to national List)				
		Bats	Dormouse	Great Crested Newt	Otter	Badger	Barn Owl	Breeding Birds	Invertebrates	Native crayfish	Other Protected Birds	Plants (Inc. fungi, ferns and bryophytes)	Reptiles	Water Vole	Birds	Fungi	Invertebrates	Mammals	Plants (Inc. ferns and bryophytes)
Does the application involve the modification, disturbance or removal of arable field(s) with hedgerow and/or grass margin?	Yes ☑ No ☐							•											•
Does the application site contain or is it within 50m of coastal habitats including estuary, rocky shore, sand dunes and saltmarsh, grazing marsh?	Yes ☐ No ☑				•				•					•			•		
Does the application site contain or is it adjacent to heathland?	Yes ☐ No ☑		•	•		•		•	•		•	•	•		•	•	•	•	•

If you have answered 'yes' to any of the questions above please complete Table 3.2 (Species Evaluation) on the following page.

If you have answered 'no' to all of the questions above please proceed to Step 4.

Please complete column 2 of Table 3.2 below followed by column 3 as appropriate.

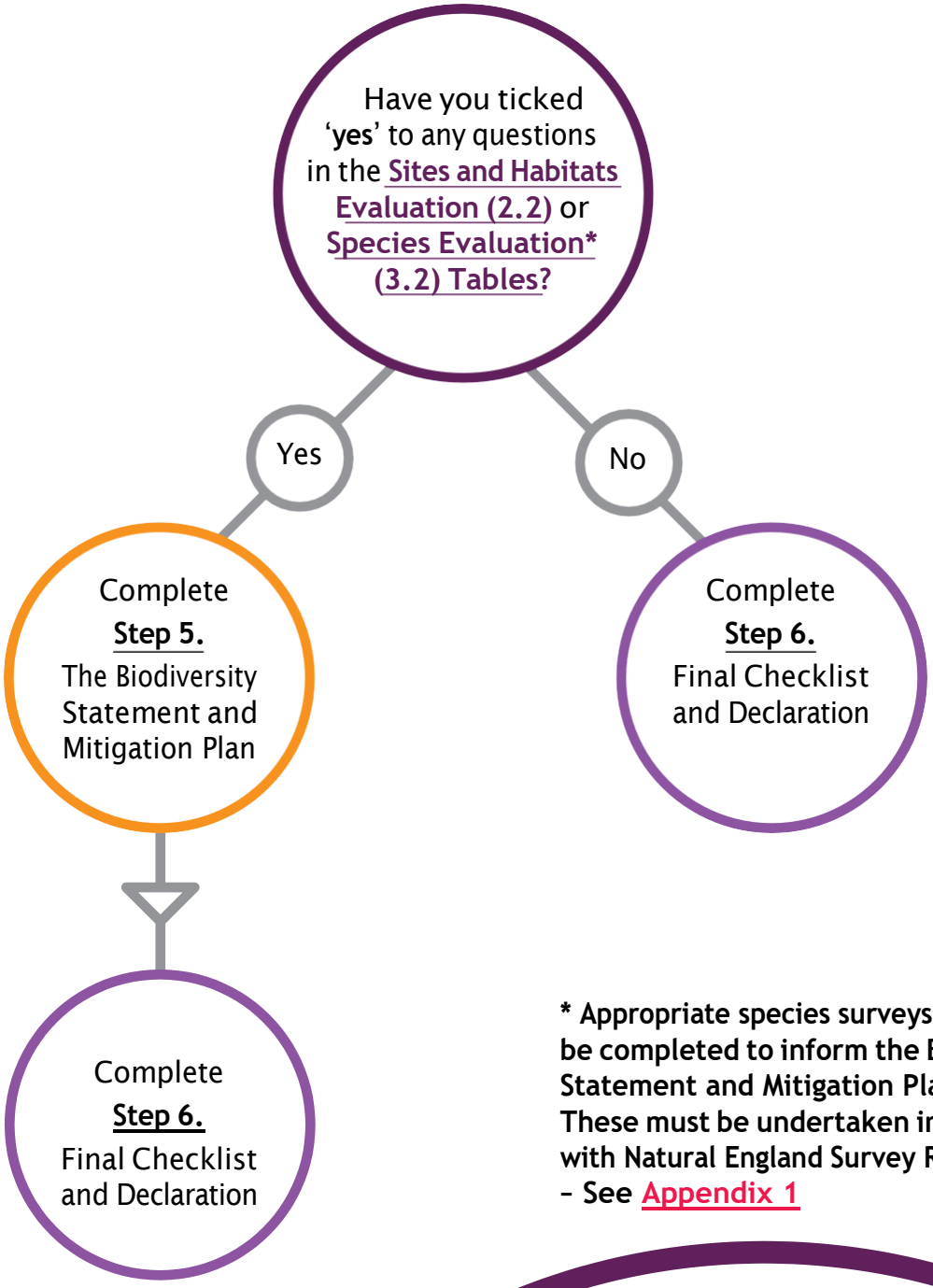
Table 3.2 - Species Evaluation

1.	2.	3.
Species (Identified following the completion of Table 3.1)	Is there a **'reasonable likelihood'** that the development will affect a species in column 1 **prior** to applying mitigation? (Tick as appropriate)	Where you have answered **'yes'** name the species and summarise any possible direct or indirect effects that may occur during construction or operation. **Appropriate species surveys will need to be completed to inform the Biodiversity Statement and Mitigation Plan (Step 5). These must be undertaken in accordance with Natural England Survey Requirements - See Appendix 1** Where you have answered **'no'** please provide a concise statement to support your answer.
European Protected Species	Yes ✓ No ☐	Bats. Prior to mitigation possible effects arising from construction and operation include loss of habitat and increased lux levels. Ecology Update and Walkover Survey Note and Ecological Assessment for more information.

1.	2.	3.
Nationally Protected Species	Yes ☑ No ☐	Hedgehogs, birds and reptiles. Prior to mitigation possible effects arising from construction and operation include death / injury, loss of habitat and increased lux levels. Ecology Update and Walkover Survey Note and Ecological Assessment for more information.
Priority Species	Yes ☑ No ☐	See Nationally Protected Species above, and Ecology Update and Walkover Survey Note and Ecological Assessment for more information.

Return to contents

Step 4. Is a Biodiversity Statement and Mitigation Plan Required?



*** Appropriate species surveys will need to be completed to inform the Biodiversity Statement and Mitigation Plan (Step 5). These must be undertaken in accordance with Natural England Survey Requirements – See Appendix 1**

Step 5. Biodiversity Statement and Mitigation Plan

If you have answered '**yes**' to any questions in the Sites and Habitats Evaluation (2.2) or Species Evaluation (3.2) Tables you must submit a Biodiversity Statement and Mitigation Plan incorporating the findings of the Preliminary Ecological Appraisal.

The Biodiversity Statement and Mitigation Plan must include the following:

1. A map showing the location of protected sites on or within 2km of the application site boundary (see Appendix 2).
2. An Extended Phase 1 Habitat Survey which shows the location and extent of habitats that could be affected by the proposals; together with the features associated with Protected or Priority species.
3. Relevant Protected and/or Priority Species Surveys including results and methods* in accordance with Natural England's Standing Advice for Protected Species Survey Requirements (See Appendix 1).
4. A qualitative evaluation of the value and likely impacts/effects upon each biodiversity feature (habitat, species or, where appropriate, species assemblage). This should adopt the same approach to the evaluation and identification of impacts as recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM) in their [redacted]
5. If you have answered **'yes'** to any questions in **Table 2.2 Sites and Habitats Evaluation** - a quantitative evaluation of the application site's habitats using Defra's Biodiversity Offsetting Metric i.e. a calculation showing the number of Biodiversity Units within the application site boundary before and after development. An **impact calculator** for developers is available on the Environment Bank [redacted]
6. For each biodiversity feature that will be adversely affected a Mitigation Plan detailing:
   a. How adverse impacts will be avoided**, reduced and/or mitigated***.
   b. How any residual impacts that cannot be avoided and/or mitigated will be compensated*** for off-site.
   c. Where appropriate, how mitigation or compensation measures will be managed, resourced and monitored post-permission. Detailed guidance about the format of long-term mitigation and habitat management plans can be provided upon request.
7. Proposals for biodiversity enhancements. This is strongly encouraged for all developments, but especially for applications that occur within recognised local ecological networks such as a [redacted] or the [redacted]

   All habitat creation or restoration measures should be focused upon local conservation priorities as defined by the [redacted]

**This should clearly describe the survey work undertaken. Simply stating national survey guidelines were followed is not sufficient.*

***where the final location or design of the development is not necessarily the least harmful to biodiversity, the overriding technical reasons for this choice must be clearly evidenced.*

****Habitat mitigation and/or compensation measures must be expressed in Biodiversity Units (See Defra's Biodiversity Offsetting Metric).*

Supporting Notes

BS 42020 - a code of practice for biodiversity in planning and development

BS 42020 is a standard developed by the British Standards Institution (BSI) in association with biodiversity experts and stakeholders from across all sectors. The standard provides clear recommendations and guidance to ensure that actions and decisions taken at each stage of the planning process are informed by sufficient and appropriate ecological information. The BSI has produced a smart guide that provides an introduction to the benefits of BS 42020 [redacted]

European Protected Species

Please note that for European Protected Species a mitigation licence may be required – post planning permission - in order to carry out the development should permission be granted. It is important that you refer directly to Natural England the licensing body for further guidance, and submit any relevant correspondence with this checklist.

However, The Conservation of Habitats and Species Regulations 2010 requires the Local Planning Authority (LPA) to consider 'Three Tests' when determining a planning application that may affect a European Protected Species. These 'tests' can be summarised as follows:

- Is there a genuine need and 'purpose' for the proposed development?
- Are there any satisfactory alternatives to delivering and meeting the need in the way proposed?
- Will there be any adverse effect on the conservation status of the species concerned?

If there is a risk of European Protected Species being impacted by the development the applicant must submit sufficient evidence to enable these tests to be satisfactorily addressed by the LPA.

Further guidance is provided in the Natural England publication [redacted]

European Protected Species are those animals listed under Schedule 2 or plants listed under Schedule 5 of the Conservation of Habitats and Species Regulations 2010. The term European Protected has **not** been used for 'Nationally Protected Species' with no protection under the Regulations, but which are listed under Schedule II and/or V of the European Habitats Directive. For example the native crayfish.

Wild Birds

Reg 9A(8) of The Conservation of Habitats and Species Regulations 2010 states that "a competent authority in exercising any function in the UK must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds". Applicants must demonstrate clearly how any such deterioration or pollution of wild bird habitat will be avoided by the proposed development.

Environmental Impact Assessment (EIA)

Where a formal Environmental Impact Assessment (EIA) is required under the EIA Regulations the Biodiversity Statement & Mitigation Plan should be incorporated in to the Ecology chapter of the Environmental Statement subject to any Scoping Opinion issued by the Planning Authority.

Biodiversity Offsetting

The Biodiversity Offsetting Metric provides a standardised and transparent approach to ensuring mitigation and compensation measures are sufficient to secure no-net-loss of biodiversity. The metric is a stand-alone tool – its use does **not** assume a need for off-site compensation. Indeed, it can be used to quantify the positive benefits of onsite mitigation or enhancement measures.

Natural England Discretionary Advice Service.

Natural England has a Discretionary Advice Service (DAS) which operates to provide advice for applications prior to submission. This service includes a limited amount of free Initial Advice, followed by Charged Advice for more complex requests. It is strongly recommended that you contact them to discuss the advice you require prior to submitting your application.

Further details are available on their website.

Please go to Step 6.

Step 6. Final Checklist and Declaration

This must be submitted along with every application to ECC, if the checklist is not completed correctly the application may not be valid.

	Applicant Only		*Office Only*	
Step	**Item**	**Tick if Included**	**Required**	**Included**
Step 1	Preliminary Ecological Appraisal*		✓	
	Biological Records Search *		✓	
Step 2	Table 2.1 Sites & Habitats checklist		✓	
	Table 2.2 Sites & Habitats evaluation		✓	
Step 3	Table 3.1 Species checklist		✓	
	Table 3.2 Species evaluation		✓	
Step 5	Biodiversity Statement & Mitigation Plan **			
	Correspondence from Natural England/Environment Agency/ Other Conservation Body			

**Should be incorporated in to the Biodiversity Statement & Mitigation Plan where one is required.*

***Must be incorporated in to the Ecology chapter of an ES if an EIA is required.*

Signed: Date:

Applicant

Name:

Address:

Please note that in all circumstances legislation pertaining to protected species still applies and it is the responsibility of the developer to ensure that protected species and sites are not adversely affected as a result of development.

Thank you for completing this checklist. Please submit it, along with all supporting information, with your application.

Appendix 1 - Guidelines for Surveys

Links to Natural England's Standing Advice for Protected Species (Survey Requirements):

- What should detailed survey reports for protected species include?
- Great Crested Newt
- Badger
- Bats
- Barn Owl
- Birds
- Dormouse
- Invertebrates

  Due to the recognised value of invertebrate assemblages associated with brownfield sites in Essex, Natural England have produced specific local Standard Advice which is available here.
- Native crayfish
- Otter
- Reptiles
- Water Vole
- Plants

Other Guidance:

Natural England has produced [redacted] and this should be referred to in the preparation of the Biodiversity Statement where Ancient Woodland and/or Veteran Trees are likely to be affected.

The Chartered Institute of Ecology and Environmental Management '[redacted] (SoSM) should be referred to for survey methodologies for Priority Species not covered by Natural England's Standing Advice.

Appendix 2 - Biodiversity features that must be shown on an Ordnance Survey base map at an appropriate scale

- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Ancient Woodland
- Local Wildlife Site (LoWS)
- Special Roadside Verge

Glossary

Ancient or veteran tree: A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape, or culturally.

Ancient woodland: An area that has been wooded continuously since at least 1600 AD.

Biodiversity Action Plan (BAP): Biodiversity Action Plans (BAPs) arose from the signing of the Convention on Biological Diversity in 1992, an international treaty signed by 150 nations including the UK, pledging to conserve biodiversity. BAPS are broken down into Species Action Plans (SAPs) and Habitat Action Plans (HAPs) and cover species and habitats considered threatened. These are known as 'Priority' species and habitats. Each Plan contains a definition of the habitat or species, describes the threats they face and the objectives and targets need to be met to conserve them. BAPS currently cover 1149 Priority species and 65 Priority habitats.

Ecological networks: These link sites of biodiversity importance.

Environmental Impact Assessment (EIA): A procedure to be followed for certain types of project to ensure that decisions are made in full knowledge of any likely significant effects on the environment.

European Protected Site: This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and potential Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2010.

International, national and locally designated sites of importance for biodiversity: All international sites (Special Areas of Conservation, Special Protection Areas, and Ramsar sites), national sites (Sites of Special Scientific Interest) and locally designated sites including Local Wildlife Sites.

Living Landscapes: Living Landscapes are large landscape-scale areas of the countryside, such as river valleys, estuaries, forested ridges, and grass and heath mosaics, which form ecological networks. The networks allow wildlife to move through them and increase their resilience to threats such as climate change, floods, drought, sea-level rise and development pressure. There are 80 Living Landscapes within Essex.

Local planning authority: The public authority whose duty it is to carry out specific planning functions for a particular area. All references to local planning authority apply to the district council, borough council and county council to the extent appropriate to their responsibilities.

Nature Improvement Area: Inter-connected network of wildlife habitats intended to re-establish thriving wildlife populations and help species respond to the challenges of climate change.

NPPF: National Planning Policy Framework. This document sets out the government's planning policies for England and how they are expected to be applied. It provides guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications.

Previously developed land: Land which is or was occupied by a permanent structure, including the curtilage of the developed land (although it should not be assumed that the whole of the curtilage should be developed) and any associated fixed surface infrastructure. This excludes: land that is or has been occupied by agricultural or forestry buildings; land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development control procedures; land in built-up areas such as private residential gardens, parks, recreation grounds and allotments; and land that was previously-developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time.

Priority habitats and species: Species and Habitats of Principal Importance included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act 2006.

Qualifying species: Those plants or animals found on the legal list of qualifying species for which a Special Area of Conservation, Special Protection Area or Ramsar site has been selected and is managed.

Ramsar sites: Wetlands of international importance, designated under the 1971 Ramsar Convention.

Special Areas of Conservation: Areas given special protection under the European Union's Habitats Directive, which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.

Special Protection Areas: Areas which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within European Union countries. They are European designated sites, classified under the Birds Directive.

Site of Special Scientific Interest: Sites designated by Natural England under the Wildlife and Countryside Act 1981.

Stepping stones: Pockets of habitat that, while not necessarily connected, facilitate the movement of species across otherwise inhospitable landscapes.

Wildlife corridor: Areas of habitat connecting wildlife populations.

This information is issued by
Essex County Council, Place Services.
You can contact us in the following ways:

By email:
ecology.placeservices@essex.gov.uk

Visit our website:
[redacted]

By telephone:
03330 136840

By post:
Essex County Council, Place Services
PO Box 11, County Hall, Chelmsford, Essex CM1 1QH

Sign up to Keep Me Posted email updates on topics you want to hear about at [redacted]

Read our online magazine at [redacted]

Follow us on [redacted]

Find us on [redacted]

The information contained in this document can be translated, and/or made available in alternative formats, on request.

Published June 2015

CDS 133289

recycle for Essex

Essex County Council

Appendix B - Ecological Assessment [dated: Oct 2021] by Ecology Solutions

WESTON HOMES PLC

ECOLOGYSOLUTIONS

Part of the ES Group

WARISH HALL FARM, TAKELEY, ESSEX

Ecological Assessment

October 2021
9261.EcoAs.vf2

ecology solutions for planners and developers

CONTENTS

PLANS

PHOTOGRAPHS

APPENDICES

1. INTRODUCTION

1.1. Background & Proposals

1.1.1. Ecology Solutions was commissioned in October 2020 by Weston Homes PLC, following their acquisition of the site in September 2020, to undertake an ecological assessment of the proposed development at Warish Hall Farm, Takeley, Essex (see Plan ECO1).

1.1.2. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

1.2. Site Characteristics

1.2.1. The site is approximately 22.5ha in size and comprises largely arable fields, made up of Bull Field in the south, 7 Acres in the northwest and Jacks Field in the far east, with associated field margins, hedgerows and ditches. Prior's Wood Local Wildlife Site (LWS), an area of ancient and semi-natural woodland dominates the north of the site.

1.2.2. The site is located to the north of Takeley, approximately 1.4km south of London Stansted Airport and approximately 1.6km northeast of Hatfield Forest Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR). It is bounded to the south and east by residential properties. Arable fields and the A120 are present to the north. Weston Homes PLC headquarters border the site to the west.

1.3. Ecological Assessment

1.3.1. This document assesses the ecological interest of the site. The importance of the habitats within the site is evaluated with due consideration given to the guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[1].

1.3.2. Where necessary, mitigation measures are recommended so as to safeguard any significant existing ecological interest within the site and, where appropriate, potential enhancement measures are put forward and reference made to both national and local biodiversity priorities.

[1]CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Version 1.1 – Updated September 2019. Chartered Institute of Ecology and Environmental Management, Winchester.

2. SURVEY METHODOLOGY

2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

2.2. Desk Study

2.2.1. In order to compile background information on the site and the surrounding area, Ecology Solutions contacted Essex Field Club and Essex Wildlife Trust.

2.2.2. Further information on designated sites from a wider search area was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)[2] database. This information is reproduced in Appendix 1 and where appropriate on Plan ECO1.

2.3. Habitat Survey

2.3.1. A habitat survey was carried out by Ecology Solutions in October 2020, with a subsequent walkover survey carried out in April 2021, in order to ascertain the general ecological value of the site and to identify the main habitats and associated plant species.

2.3.2. The site was surveyed based around extended Phase 1 survey methodology[3], as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

2.3.3. Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

2.3.4. All the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent at different seasons. The initial surveys were undertaken outside the optimal period for Phase 1 surveys (which is April to September inclusive) as Weston Homes only acquired the site at the end of this period. Nonetheless, given the habitats present, it is considered an accurate and robust assessment has been made of the botanical interest and further visits have subsequently been made to the site.

2.4. Faunal Survey

2.4.1. Obvious faunal activity, such as birds or mammals observed visually or by call during the course of the surveys, was recorded. Specific attention was

[2]http://www.magic.gov.uk
[3]Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

paid to any potential use of the site by protected species, priority species, or other notable species.

2.4.2. In addition to general observations of faunal activity, special attention was paid to the potential presence of bats, Badgers *Meles meles*, Dormice, wintering and breeding birds, reptiles and Great Crested Newts *Triturus cristatus*.

Bats

2.4.3. All trees within the site were assessed in October 2020 for their potential to support roosting bats. Features typically favoured by bats were searched for, including:

- Obvious holes, e.g. rot holes and old Woodpecker holes;
- Dark staining on the tree, below the hole;
- Tiny scratch marks around a hole from bat claws;
- Cavities, splits and or loose bark from broken or fallen branches, lightning strikes etc.; and
- Very dense covering of mature Ivy over trunk.

2.4.4. On account of the site possessing moderate to high suitability for foraging and commuting bats, bat activity transects were recommended with six transects having been completed monthly from April to September 2021. A further survey will be carried out in October 2021.

2.4.5. The survey was undertaken across set routes (transects) that covered the majority of the site with the aim of identifying any bats using the site for foraging or dispersal.

2.4.6. In order to maximise the encounter rate of bats (i.e. of both early- and late-emerging species), transects commenced around sunset and continued until 120 minutes after sunset.

2.4.7. Surveyors observed the behaviour of any bat recorded (i.e. foraging or commuting) together with noting the species and number of bats present at each location.

2.4.8. Surveys were conducted when the night-time temperature was at least 10°C. The insectivorous diet of bats means there is little or no food available when temperature falls below this level and consequently bat activity levels are low and may not accurately reflect the value of the site for bats. The weather conditions for the surveys were recorded and any limitations noted.

2.4.9. Experienced surveyors were equipped with iPads paired with Echo Meter Touch 2 PRO bat detectors, and all recorded data was subject to analysis via Kaleidoscope software.

2.4.10. Three static SM4BAT detectors were placed within the site for a minimum of five consecutive nights on a monthly basis from April to September 2021. The detectors were programmed to record from 30 minutes before sunset to 30 minutes after sunrise.

2.4.11. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004[4]), the Joint Nature Conservation Committee (2004[5]) and the Bat Conservation Trust (2016[6]).

2.4.12. Weather conditions in April 2021, where temperatures dropped below 10°C, and technical failures of remote detectors deployed in May 2021, are constraints to the survey effort. However, these constraints do not affect the overall conclusions of the comprehensive series of bat surveys undertaken across the season.

Badgers

2.4.13. The surveys comprised two main elements: firstly, searching thoroughly for evidence of Badger setts. If any setts were encountered each sett entrance was noted and plotted, even if the entrance appeared disused. The following information was recorded:

i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.

ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.

iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be together with the remains of the spoil heap.

2.4.14. Secondly, evidence of Badger activity such as well-worn paths, run-throughs, snagged hair, footprints, latrines and foraging signs was recorded so as to build up a picture of the use of the site by Badgers.

Dormice

2.4.15. A nest tube and nest box survey for Dormouse was undertaken in suitable areas of hedgerow and woodland within the site. Surveys were completed monthly between May and September 2021.

2.4.16. Features of importance to Dormice include diverse well-structured hedgerows and woodland offering a range of food sources throughout the year. Good arboreal links through the canopy layer of hedgerows / woodlands are required along with suitably dense cover for nest sites and good hibernation sites. Typical indicator tree / plant species include Hazel *Corylus avellana*, Honeysuckle *Lonicera periclymenum* and Bramble

[4]Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[5]Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[6] Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition. The Bat Conservation Trust, London.

Rubus fruticosus agg.; but a mix of other species (such as Oak *Quercus* sp., Ash *Fraxinus excelsior*, Sycamore *Acer pseudoplatanus*, Blackthorn *Prunus spinosa* and Hawthorn *Crataegus monogyna*) can prove equally important and the presence of food sources throughout the active period for Dormice, coupled with the presence of suitable hibernation sites, is of more importance than the presence / absence of any one key indicator species.

2.4.17. The survey technique involves the installation and checking of nest tubes and nest boxes within all habitats considered to be species-rich or of potential value to Dormice.

2.4.18. The Dormouse nest tubes / boxes utilised were those approved as standard by the Mammal Society. In total, 175 nest tubes and three nest boxes were installed.

2.4.19. Nest tubes / boxes were placed in accordance with the guidance provided by the Mammal Society and Natural England[7]. Typically, tubes are placed within scrub, hedgerows and woodland approximately every 20m where suitable locations can be identified. Nest boxes are placed at lower densities but in similarly selected locations as for nest tubes. The nest tubes were attached with wire ties underneath suitably sturdy horizontal branches and positioned approximately 1.5m above ground level on average.

2.4.20. The survey has been scored for effort according to the method developed from the South West Dormouse Project and carried through in the second edition of The Dormouse Conservation Handbook (English Nature, 2006)[8]. The system used provides an overall score that reflects the chances of Dormice being discovered if present, and thus provides an indicator of the 'thoroughness' of a survey. This score is based on the number of tubes used and the number of months the tubes were in place.

2.4.21. The months of the year are weighted according to the likelihood of recording Dormice, as set out in Table 2.1 below.

Month	Weighting
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Table 2.1. Monthly Score Weighting for Dormouse surveys (Chanin & Woods 2003).

[7] Chanin, P. & Woods, M. (2003). *Surveying Dormice Using Nest Tubes – Results & Experiences from the South West Dormouse Project.* Research Report 524. English Nature, Peterborough.
[8] English Nature (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

2.4.22. Generally speaking, the index of effort is calculated based on the use of 50 nest tubes as a standard minimum. The total number of nest tubes deployed was 175, with a further three nest boxes. Tubes were deployed in suitable habitats at the recommended frequency of approximately every 20m, and therefore this is considered to be reasonable survey effort.

2.4.23. A score of 20 (or above) is deemed a thorough survey and a score of 15 to 19 may be regarded as adequate where circumstances do not permit more time or more tubes (particularly if other survey methods have also given negative results).

2.4.24. A score of 20 has been achieved, meeting the necessary threshold in the survey index.

2.4.25. The site does not contain areas dominated by Hazel and therefore hazelnut searches were not employed as part of the Dormouse survey effort.

2.4.26. In addition to traditional nest tube and box surveys, footprint tunnel surveys were undertaken within the site, following the recommendations of the Suffolk Wildlife Trust[9]. Footprint tunnel surveys were carried out in concert with the nest tube surveys.

2.4.27. Footprint tunnels comprise 65mm square drainpipe tubing containing a plywood insert lined with a sheet of high-quality white card. A non-toxic ink, made from a mix of olive oil and pharmaceutical grade charcoal powder, is applied to ink pads at both entrances, which when passed over will transfer ink from the mammal's feet to the white card. A total of 75 tunnels were deployed along a transect within areas of suitable habitat at approximately 15 to 20m apart, and at a height of approximately 1 to 1.5m off the ground, depending on the habitat present. Tunnels should be checked every two weeks to re-ink the pads and change the white card if required.

2.4.28. Dormice have a distinctive footprint compared to those of other small mammals that may use the tunnels, with Dormice displaying three obvious triangles when a good print is captured.

2.4.29. Currently, footprint tunnel surveys are only used as a presence / likely absence technique and must be used in combination with at least one other verified survey method. Despite this, footprint tunnels have been shown to have a higher detection rate for areas of scrub and hedgerow than nest tube and box surveys alone.

2.4.30. Footprint tunnel surveys should be completed for at least three months, typically between May and October, though the tunnels can be installed as early as late March. As April has a low detection rate, if there are no results recorded for this period then this month should be excluded from the three-month survey period. For areas that are primarily considered to be dispersal corridors, as opposed to permanently occupied by Dormice, the months of September and October should be included.

[9] Bullion, S., Looser, A. and Langton, S. (2018). An Evaluation of the Effectiveness of Footprint Tracking Tunnels for Detecting Hazel Dormice. *In Practice*, (101), pp.36-41.

Wintering Birds

2.4.31. The wintering bird surveys were based on the Common Bird Census (CBC) technique. The CBC involves walking a transect route through the area being studied and recording and plotting all bird species observed or heard and their behaviour.

2.4.32. The transect route is chosen so that the entire site is covered and all features likely to support wintering birds are surveyed. Routes and directions were varied between visits so that there was no tendency to visit a particular part of the site later or earlier in the day.

2.4.33. The surveys were carried out in the earlier mornings from sunrise and lasted for approximately three hours. Three winter visits were carried out, one in each of January, early February and late February 2021.

Breeding Birds

2.4.34. The breeding bird surveys were based on the Common Bird Census (CBC) technique. The CBC involves walking a transect route through the area being studied and recording and plotting all bird species observed or heard and their behaviour.

2.4.35. The transect route is chosen so that the entire site is covered and all features likely to support wintering birds are surveyed. Routes and directions were varied between visits so that there was no tendency to visit a particular part of the site later or earlier in the day.

2.4.36. The surveys were carried out in the early mornings from sunrise and lasted for approximately three hours. Three surveys were carried out in April, May and June 2021.

Reptiles

2.4.37. Specific surveys for reptiles are being carried out across suitable habitat within the site. The methodology utilised principally derived from guidance given in Froglife Advice Sheet 10[10], the Herpetofauna Workers' Manual[11], the Herpetofauna Groups of Britain and Ireland's (HGBI) advisory note[12] and Natural England's Standing Advice for Reptiles[13].

2.4.38. Areas of suitable habitat were surveyed for the presence of reptiles using artificial refugia ("tins"). A total of 190 0.5m x 0.5m roofing felt tins were placed within areas of suitable reptile habitat within the site.

2.4.39. The tins provide shelter and heat up more quickly than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask

[10] Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.
[11] Gent, T and Gibson, S. (2003). *Herpetofauna Workers' Manual*. JNCC, Peterborough.
[12] Herpetofauna Groups of Britain and Ireland (HGBI). (1998). *Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards*.
[13] Natural England (2011). Standing Advice for Reptiles.

under and raise their body temperature which allows them to forage earlier and later in the day.

2.4.40. To determine presence / absence the tins are checked for reptile activity over seven visits at appropriate times of the day (avoiding the middle of the day when the ambient air temperature is at its highest) in accordance with Natural England guidance. Optimum weather conditions for reptile surveying are temperatures between 10°C and 17°C, intermittent or hazy sunshine and little or no wind.

Great Crested Newts

2.4.41. To determine the absence / presence of Great Crested Newts within on-site ponds and ponds within 500m of the site, eDNA testing was undertaken. Water samples were taken in accordance with recognised guidelines.

2.4.42. Testing for eDNA is a relatively new method to establish absence or presence of Great Crested Newts approved by Natural England. While residing within a waterbody, Great Crested Newts deposit traces of DNA which can be detected through sampling the pond water and undergoing analysis within the laboratory. Water samples can be collected between 15 April and 30 June inclusive.

2.4.43. Water samples of any given waterbody are taken in 20 separate locations, with a focus towards areas of high suitability for Great Crested Newts. The samples are then pooled together into a self-supporting Whirl-pak Bag. Once the pooled samples have been mixed thoroughly 15ml of water is removed and transferred into an ethanol filed test tube. This is repeated a further five times leaving six test tubes that contain a mix of the sampled water and ethanol. These are then sent to a laboratory to undergo analysis.

2.4.44. Within the laboratory the samples are pooled together and tested via real time PCR (or q-PCR) in order to amplify select parts of the DNA allowing it to be detected and measured. A result of presence or absence is returned by the laboratory. However, if found to be present, no measure of the population size is obtained through this survey method.

2.4.45. If presence is confirmed a more detailed survey may be required, to inform the Natural England licensing process. This would typically take the form of bottle trapping, torching and egg searches. These surveys are undertaken between mid-March to mid-June.

3. ECOLOGICAL FEATURES

3.1. A habitat survey was undertaken of the site by Ecology Solutions in October 2020, with a subsequent walkover survey completed in April 2021. The following main habitat / vegetation types were identified within the site:

- Arable;
- Field Margin;
- Woodland;
- Hedgerow;
- Pond; and
- Ditch.

3.2. The location of these habitats is shown on Plan ECO2.

3.3. Arable

3.3.1. The majority of the site is dominated by an arable field which was ploughed at the time of the initial habitat survey (see Photograph 1).

3.3.2. Jack's Field in the east of the site had been left fallow at the time of the initial habitat survey completed in October 2020 and comprised a range of recolonising species, with frequently occurring Creeping Buttercup *Ranunculus repens*, Creeping Thistle *Cirsium arvense*, Spear Thistle *Cirsium vulgare*, Broad-leaved Dock *Rumex obtusifolius*, Common Ragwort *Senecio jacobaea*, Yorkshire Fog *Holcus lanatus*, False Oat-grass *Arrhenatherum elatius* and Cocksfoot *Dactylis glomerata*. The grassland was waterlogged in places, with species such as Tufted Hair-Grass *Deschampsia cespitosa*, Common Fleabane *Pulicaria dysenterica* and Pendulous Sedge *Carex pendula* taking greater prevalence in such areas. The field had subsequently been ploughed at the time of the walkover survey completed in April 2021.

3.4. Field Margin

3.4.1. Field margins are present around the arable fields. The majority of the field margins are narrow and subject to heavy footfall. A wider field margin is present to the north of Prior's Wood. All field margins comprise a rough semi-improved grassland sward. Species present include Perennial Rye Grass *Lolium perenne*, Cocksfoot, False Oat-grass, False Brome *Brachypodium sylvaticum*, Cow Parsley *Anthriscus sylvestris*, Cleavers *Galium aparine*, Dandelion *Taraxacum officinale*, Groundsel *Senecio vulgaris*, White Dead-Nettle *Lamium album*, Couch *Elytrigia repens*, Ribwort Plantain *Plantago lanceolata*, Creeping Thistle, Common Field Speedwell *Veronica persica*, Greater Plantain *Plantago major*, Annual Meadow-grass *Poa* annua, Shepherd's-purse *Capsella bursa-pastoris*, Common Nettle *Urtica dioica*, Wood Avens *Geum urbanum*, Bristly Ox-tongue *Helminthotheca echioides*, Oxeye Daisy *Leucanthemum vulgare*, Common Ragwort, Creeping Buttercup, Yarrow *Achillea millefolium*, Dove's-foot Crane's-bill *Geranium molle* and Spear Thistle.

3.5. **Woodland**

3.5.1. Prior's Wood is an area of ancient and semi-natural woodland that lies in the centre of the site (see Photograph 2). The woodland contains no ancient or veteran specimens and primarily consists of Hornbeam *Carpinus betulus*, with significant components of Oak *Quercus robur*, Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna* and Hazel *Corylus avellana*, with Field Maple *Acer campestre*, Elm *Ulmus* sp., Willow *Salix* sp., European Larch *Larix decidua* and Scots Pine *Pinus sylvestris* found in small numbers. The understorey of the woodland is virtually absent and the canopy closed throughout. The field layer lacks variety and is dominated by Bramble *Rubus fruticosus* in most areas with some Dog's Mercury *Mercurialis perennis*, Ivy *Hedera helix*, Wood-sedge *Carex sylvatica*, Pendulous Sedge, Wood Avens, False Brome and Oxlip *Primula elatior* also present. It is clear that the woodland has been unmanaged for many years and suffers from significant browsing by deer.

3.6. **Hedgerow**

3.6.1. Hedgerows are present at the boundaries of the arable fields (see Photographs 3 and 4). Species present include Hawthorn, Blackthorn *Prunus spinosa*, Hazel, Field Maple, Bramble, Dog Rose *Rosa canina*, Ivy, Elder *Sambucus nigra*, and Oak.

3.6.2. The hedgerow in the east of the site that runs parallel to Smiths Green had been cut following routine maintenance back between the initial survey completed in October 2020 and the walkover completed in April 2021.

3.7. **Pond**

3.7.1. Three ponds are present within Prior's Wood, with a further pond present on the eastern boundary of the site. All ponds were wet at the time of the survey in both October and April and lacked aquatic vegetation (see Photograph 5).

3.8. **Ditch**

3.8.1. A mix of wet and dry ditches are present across the site, typically associated with hedgerows that bound the arable fields and the woodland edge (see Photograph 6). Pendulous Sedge is dominant where ditches are wet, but otherwise all ditches lack aquatic vegetation.

3.9. **Background Records**

3.9.1. The desk study returned one record of Bluebell *Hyacinthoides non-scripta* from a location approximately 2.2km west of the site boundary dating from 2018. This species is listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

4. WILDLIFE USE OF THE SITE

4.1. General observations were made during the surveys of any faunal use of the site, with specific attention paid to the potential presence of protected species.

4.2. Bats

4.2.1. Some of the more mature trees are considered to provide bat roosting potential. The woodland and hedgerows at the boundaries of the site, combined with the network of hedgerows and parcels of woodland immediately off-site, are considered to provide good opportunities for foraging and commuting bats.

Activity Transect Surveys

4.2.2. Transect surveys were completed on 29 April, 20 May, 22 June, 15 July, 12 August and 8 September 2021.

4.2.3. The surveys were undertaken in favourable weather conditions. Conditions and timings of the surveys are summarised in Table 4.1 below.

Date	29.04.21	20.05.21	22.06.21	15.07.21	12.08.21	08.09.21
Survey Type	Activity	Activity	Activity	Activity	Activity	Activity
Sunset	20:15	20:53	21:21	21:11	20:28	19:30
Survey Start	20:15	20;53	21:21	21:11	20:28	21:30
Survey End	22:15	22;53	23:21	23:11	22:28	21:30
Cloud Cover (%)	0%	50%	40%	20%	30%	0%
Temperature (°C)	10-6	11-12	9-11	16-14	16-18	20-23
Weather & Wind	Light breeze	Moderate breeze with light shower	Light breeze	Light air	Calm and dry	Light breeze

Table 4.1. Bat survey conditions and timings.

Transect Survey 29.04.21

4.2.4. The activity surveys were carried out across a single route covering the whole of the site. The transect route is illustrated on Plan ECO3a.

4.2.5. No bats were recorded during the activity transect survey.

Transect Survey 20.05.21

4.2.6. The activity surveys were carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 4.2 below and illustrated on Plan ECO3b.

4.2.7. The survey recorded a low level of foraging activity from Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus*, with activity levels highest to the north of Prior's Wood and the southern boundary of the site. A single Barbastelle *Barbastella barbastellus* was also recorded 47 minutes after sunset.

Survey Night	Species	Number of Registrations	First Registration after sunset
20.05.21	Ppip	73	26 mins
	Ppyg	50	29 mins
	Bb	1	47 mins
20.05.21	Ppip	56	54 mins
	Ppyg	52	54 mins
Total	**3**	**232**	

Table 4.2. Summary of transect surveys undertaken on 20.05.21[14].

Transect Survey 22.06.21

4.2.8. The activity surveys were carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 4.3 below and illustrated on Plan ECO3c.

4.2.9. The survey again recorded a low level of foraging activity from Common Pipistrelle and Soprano Pipistrelle, with activity levels highest in and around Prior's Wood. Early registrations for both species suggest that roosts may be present on, or within the vicinity of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
22.06.21	Ppip	40	14 mins
	Ppyg	10	14 mins
22.06.21	Ppip	201	19 mins
	Ppyg	80	18 mins
	Myo	2	1h 25 mins
Total	**3**	**333**	

Table 4.3. Summary of transect surveys undertaken on 22.06.21.

Transect Survey 15.07.21

4.2.10. The activity surveys were carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 4.4 below and illustrated on Plan ECO3d.

4.2.11. As with previous surveys, low levels of foraging activity from Common Pipistrelle and Soprano Pipistrelle were recorded, with activity levels highest in and around Prior's Wood and the west of the site.

[14]In all cases the following abbreviations are used: Bb/Barbastelle *Barbastella barbastellus*; Es/Serotine *Eptesicus serotinus*; Myo/*Myotis* species; Nn/Noctule *Nyctalus noctula*; Nl/Leisler's Bat *Nyctalus leisleri*; Pa/Brown Long-eared Bat *Plecotus auritus*; Psp/Pipistrelle species; Pnat/Nathusius' Pipistrelle *Pipistrellus nathusii*; Ppip/Common Pipistrelle *Pipistrellus pipistrellus*; and Ppyg/Soprano Pipistrelle *Pipistrellus pygmaeus*.

Survey Night	Species	Number of Registrations	First Registration after sunset
15.07.21	Ppip	95	31 mins
	Ppyg	20	35 mins
	Psp	1	1h 40 mins
Total	**3**	**116**	

Table 4.4. Summary of transect survey undertaken on 15.07.21.

Transect Survey 12.08.21

4.2.12. The activity surveys were carried out across a single route covering the whole of the site. The results of the transect are summarised in Table 4.5 below and illustrated on Plan ECO3e.

4.2.13. A greater assemblage of bats was recorded during the August activity survey, with Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri* and Barbastelle recorded in addition to Common and Soprano Pipistrelle. Again, activity levels were highest in and around Prior's Wood and the east of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
12.08.21	Ppip	71	19 mins
	Ppyg	7	41 mins
	Nn	6	35 mins
	Nl	7	37 mins
	Bb	2	1h 5 mins
Total	**5**	**93**	

Table 4.5. Summary of transect survey undertaken on 12.08.21.

Transect Survey 08.09.21

4.2.14. The activity surveys were carried out across a single route covering the whole of the site. The results of the transect are summarised in Table 4.6 below and illustrated on Plan ECO3f.

4.2.15. Again, low numbers of Common and Soprano Pipistrelle were recorded across the site, with very low numbers of Noctule and Brown Long-eared Bat *Plecotus auritus*. Early registrations for Common and Soprano Pipistrelle again suggest there may be roosts for both species either on or within the vicinity of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
08.09.21	Ppip	46	18 mins
	Ppyg	38	8 mins
	Nn	5	1h 3 mins
	Pa	2	54 mins
Total	**4**	**91**	

Table 4.6. Summary of transect survey undertaken on 08.09.21.

Remote Surveys

4.2.16. SM4BAT detectors were deployed in three locations (as shown on Plan ECO3a) on six occasions to monitor activity across consecutive nights. The results of this work are summarised in Tables 4.7 to 4.12 below.

4.2.17. Common Pipistrelle, Soprano Pipistrelle, Noctule, Leisler's Bat and Brown Long-eared Bat were all recorded across the nine nights from 26 April to 4 May.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
26.04.21 – 04.05.21 (9 nights)	Location 1 (E18)	Ppip	87	1 min	
		Ppyg	48	13 mins	
		NI	1	2h 37 mins	
	Total	3	136		
	Location 2 (E24)	Ppip	15	15 mins	4h 49 mins
		Ppyg	1	1h 27 mins	
		NI	3	33 mins	
		Nn	1	30 mins	
		Pa	1	1 hr 29 mins	
	Total	5	21		
	Location 3 (E13)	Ppip	75	18 mins	
		Ppyg	3	36 mins	
		NI	3	24 mins	
	Total	3	81		
	Grand Total	**5**	**238**		

Table 4.7. Summary of static detector results for 26.04.21 to 04.05.21.

4.2.18. A higher level of activity was recorded in May compared to April, though species composition was similar. Owing to technical failures only one static detector (location 2) recorded data.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
20.05.21 – 25.05.21 (5 nights)	Location 2 (E18)	Ppip	507	35 mins	39 mins
		Ppyg	4		20 mins
		Nn	92	6 mins	7 mins
		Myo	2		3h 57 mins
		Pa	1	1h 29 mins	
		Es	1		4h 52 mins
	Total	6	607		
	Grand Total	**6**	**607**		

Table 4.8. Summary of static detector results for 20.05.21 to 25.05.21.

4.2.19. A high level of activity was recorded in all three locations in June, with most of the registrations attributed to Common Pipistrelle.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
22.06.21 – 29.06.21 (7 nights)	Location 1 (E21)	Ppip	2619	1 min	20 mins
		Ppyg	1342	9 mins	28 mins
		Nn	5	1h 54 mins	1h 7 mins
		Nl	38	54 mins	44 mins
		Myo	7	1h 42 mins	1h 33 mins
		Bb	2	57 mins	
	Total	6	4013		
	Location 2 (E20)	Ppip	1689	22 mins	23 mins
		Ppyg	305	22 mins	27 mins
		Nn	14	59 mins	4h 11 mins
		Nl	49	1h	32 mins
		Bb	8	27 mins	37 mins
	Total	5	2065		
	Location 3 (E2)	Ppip	271	1 min	22 mins
		Ppyg	73	20 mins	11 mins
		Nn	6	1h 17 mins	37 mins
		Nl	23	35 mins	39 mins
		Es	6	58 mins	3h 24 mins
	Total	5	379		
	Grand Total	**7**	**6457**		

Table 4.9. Summary of static detector results for 22.06.21 to 29.02.21.

4.2.20. A similar diversity of bats was again recorded across five nights in July, with the majority of the registrations attributed to Common Pipistrelle.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
15.07.21 – 20.07.21 (5 nights)	Location 1 (E6)	Ppip	1961	6 mins	25 mins
		Ppyg	340	21 mins	21 mins
		Pnat	242	2 mins	31 mins
		Nn	3	2h 3 mins	1h 47 mins
		Nl	26	1h 16 mins	1h 48 mins
		Es	2		3h 27 mins
		Myo	2	2h 20 mins	3h 27 mins
		Pa	1		3h 34 mins
		Bb	7	37 mins	1h 44 mins
	Total	9	2584		
	Location 2 (E10)	Ppip	526	12 mins	30 mins
		Ppyg	271	14 mins	27 mins
		Nn	6	1h 31 mins	1h 47 mins
		Nl	2		1h 8 mins
		Myo	1		2h 11 mins
		Bb	1		2h 8 mins
	Total	6	807		
	Location 3 (E2)	Ppip	161	13 mins	34mins
		Ppyg	96	10 mins	40mins
		Pnat	7	25 mins	
		Nn	2	40 mins	
		Es	1		3h 56 mins
		Pa	5	1h 16 mins	4h 4 mins
	Total	6	272		
	Grand Total	**9**	**3663**		

Table 4.10. Summary of static detector results for 15.07.21 to 20.07.21.

4.2.21. The highest level of activity was recorded across seven nights in August, with a total of 8728 registrations. Again, the majority of these registrations were from Common Pipistrelle.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
05.08.21 – 12.08.21 (7 nights)	Location 1 (E21)	Ppip	1800	3 mins	9 mins
		Ppyg	101	18 mins	24 mins
		Nn	75	11 mins	13 mins
		Nl	86	1h 27 mins	57 mins
		Myo	2		5h 38 mins
		Bb	5	2h 17 mins	54 mins
	Total	6	2069		

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
	Location 2 (E18)	Ppip	389	2 mins	18 mins
		Ppyg	980	9 mins	33 mins
		Nn	16	14 mins	30 mins
		NI	20	15 mins	5h 17 mins
	Total	4	1405		
	Location 3 (E5)	Ppip	4668	4 mins	
		Ppyg	581	20 mins	
		Nn	1		2h 54 mins
		NI	4	1h 34 mins	48 mins
	Total	4	5254		
	Grand Total	**7**	**8728**		

Table 4.11. Summary of static detector results for 05.08.21 to 12.08.21.

4.2.22. Species diversity and number of registrations were lower in September compared with August, with a total of 3363 registrations recorded across five nights.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
08.09.21 – 13.09.21 (5 nights)	Location 1 (E24)	Ppip	2317	12mins	19mins
		Ppyg	144	9mins	15mins
		Nn	3	1h 4mins	
		Myo	1	35mins	
	Total	4	2465		
	Location 2 (E12)	Ppip	49	26mins	2h 33mins
		Ppyg	370	6mins	1h 12mins
		Nn	33	1h 18mins	1h 49mins
		Myo	1	57mins	
	Total	4	453		
	Location 3 (E14)	Ppip	102	2mins	28mins
		Ppyg	335	1min	2mins
		Nn	5	29mins	3h 46mins
		Myo	3	1h 25mins	3h 16mins
	Total	4	445		
	Grand Total	**4**	**3363**		

Table 4.12. Summary of static detector results for 08.09.21 to 13.09.21.

4.2.23. Registrations close to sunset and sunrise for both Common and Soprano Pipistrelle suggest that there are roosts for these species either within or close to the site. Additionally, Nathusius' Pipistrelle *Pipistrellus nathusii* was recorded at two minutes past sunset and 31 minutes before sunrise

in the west of the site (static detector location 1) in July. This again would suggest that there is a roost for this species in close proximity to this location.

4.2.24. The earliest registration for Barbastelle was 27 minutes after sunset on the western edge of Prior's Wood (static detector location 2). Barbastelle are a later emerging species and an emergence at this time could indicate that a roost is present within Prior's Wood.

Background Records

4.2.25. A total 114 records were returned from eight species of bat within the past 10 years. Species of bat include Barbastelle, Daubenton's Bat *Myotis daubentonii*, Natterer's Bat *Myotis nattereri*, Leisler's Bat, Noctule, Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared Bat.

4.2.26. Six records of Barbastelle were returned form the data search. The closest record relates to a location approximately 2.1km southwest of the site boundary dating from 2009. The most recent record relates to a location approximately 3.8km northeast of the site boundary dating from 2017.

4.2.27. Fourteen records of Daubenton's Bat were returned from Essex Field Club. The closest record relates to a location approximately 0.5km west of the site boundary dating from 2013. The most recent record relates to a location approximately 3.8km northeast of the site boundary dating from 2017.

4.2.28. Fourteen records of Natterer's Bat were returned from the data search. The closest and most recent record relates to a location approximately 1.1km southeast of the site dating from 2018.

4.2.29. Two records of Leisler's Bat were returned from the desk study. The closest and most recent record relate to a location approximately 2.3km southwest of the site dating from 2015.

4.2.30. Five records of Noctule Bat were returned from the data search. The closest record relates to a location approximately 1.8km west of the site dating from 2014. The most recent record relates to a location approximately 2.5km southwest of the site boundary dating from 2018.

4.2.31. Thirty-seven records were returned for Common Pipistrelle from the desk study. The closest record relates to a location approximately 0.2km south of the site boundary dating from 2017. The most recent record relates to a location approximately 1km south of the site boundary dating from 2019.

4.2.32. Nineteen records of Soprano Pipistrelle were returned from the data search. The closest and most recent record relates to a location approximately 0.9km northeast of the site boundary dating from 2018.

4.2.33. Seventeen records of Brown Long-eared Bat were returned from the data search. The closest record relates to a location approximately 0.3km northeast of the site boundary dating from 2013. The most recent record relates to a location approximately 1km southeast of the site boundary dating from 2019.

4.3. **Badgers**

4.3.1. No signs of Badger were recorded during the survey. Prior's Wood offers suitable habitat for foraging and sett building, whilst the network of hedgerows offer further foraging and commuting opportunities.

4.3.2. Several records of Badger were returned from the desk study within the past 10 years. The closest record relates to a location 0.2km north of the site boundary dating from 2017. The most recent record relates to a location approximately 0.8km east of the site boundary dating from 2019.

4.4. **Dormice**

4.4.1. The woodland and extensive network of hedgerows with good structure provide opportunities for Dormouse dispersal and foraging.

Nest Tube and Box Surveys

4.4.2. Nest tube and box surveys for Dormice were undertaken monthly from May to September 2021. No evidence of their presence was recorded. The distribution of the Dormouse tubes is shown on Plan ECO4.

Footprint Tracking Tunnel Surveys

4.4.3. A footprint tunnel survey was undertaken monthly from May to July 2021 with no evidence of Dormouse presence recorded. The distribution of the footprint tracking tunnels is shown on Plan ECO4.

4.4.4. No records for Dormice were returned by the data search.

4.5. **Hedgehogs**

4.5.1. Owing to the varied habitats present it is considered that the site would support a range of common mammal species. While no evidence was recorded while undertaking surveys, it is considered that the woodland and boundary habitats are suitable for Hedgehog *Erinaceus europaeus* and use by this species cannot be eliminated.

4.5.2. Eighteen records of Hedgehog were returned from the data search. The closest record relates to a location approximately 0.2km south of the site boundary dating from 2015. The most recent record relates to a location 0.3km southwest of the site boundary dating from 2016.

4.6. **Other Mammals**

4.6.1. A group of seven Fallow Deer *Dama dama* were observed in Jack's Field during the survey. Given the habitats present on site it is thought likely that a range of large and small mammals that are not protected under wildlife legislation, including other species of Deer, will be present.

4.6.2. At the request of Place Services (in a letter dated 8 July 2021), consideration has been given to species of principal importance for the conservation of biodiversity under Section 41 (England) of the Natural Environment & Rural Communities (NERC) Act 2006.

4.6.3. The site supports suitable habitat for Brown Hare *Lepus europaeus*, though none were observed on site during surveys completed April to September 2021.

4.6.4. For the most part, the field margins are narrow and well-trodden and lack the structure necessary for Harvest Mouse *Micromys minutus*; however, Jack's Field, which receives less footfall, does support some limited opportunities at the boundaries.

4.6.5. Seventeen records were returned for mammal species including Stoat *Mustela erminea*, Weasel *Mustela nivalis*, Common Shrew *Sorex Araneus*, Pygmy Shrew *Sorex minutus* and Brown Hare. The closest of these records relates to a Stoat approximately 1.9km south west of the site boundary dating from 2018. The most recent record relates to Brown Hare approximately 2.5km east of the site boundary dating from 2019.

4.7. Birds

Wintering Bird Surveys

4.7.1. Wintering bird surveys were conducted in January and February 2021. The prevalent weather conditions and the timings of these surveys are shown below in Table 4.13.

Date	Time	Cloud (%)	Precipitation	Temp (°C)	Wind
22.01.21	08:00 – 11:30	0	Dry	0 - 4	Light breeze
10.02.21	07:30 – 10:20	30	Dry	-2 - -1	Light air
23.02.21	07:10 – 10:05	50	Dry	6 - 9	Light breeze

Table 4.13. Wintering bird survey conditions and timings.

4.7.2. The results of the wintering bird surveys are detailed below and at Appendix 2 as well as Plans ECO5a to ECO5c.

4.7.3. Fifty-two bird species were observed on, flying over or immediately adjacent to the site during the wintering bird surveys. A number of species protected under Section 41 of the NERC Act 2006 and / or listed on the Red List were recorded on site. These include Fieldfare *Turdus pilaris*, House Sparrow *Passer domesticus*, Linnet *Carduelis cannabina*, Mistle Thrush *Turdus viscivorus*, Redwing *Turdus iliacus*, Reed Bunting *Emberiza schoeniclus*, Skylark *Alauda arvensis*, Starling *Sturnus vulgaris*, Song Thrush *Turdus philomelos*, Woodcock *Scolopax rusticola* and Yellowhammer *Emberiza citrinella*.

Breeding Bird Surveys

4.7.4. Three breeding bird surveys were carried out in April, May and June 2021. The prevalent weather conditions and the timings of these surveys are shown in Table 4.14. Weather conditions were considered suitable for observing bird activity.

Date	Time	Cloud (%)	Precipitation	Temp (°C)	Wind
16.04.21	07:30 – 10:15	40	Dry	-1 - 4	Light breeze
25.05.21	06:00 – 08:00	50	Occasional light showers	9	Light breeze
23.06.21	05:00 – 07:00	10	Dry	8 - 10	

Table 4.14. Breeding Bird Survey Conditions and Timings.

4.7.5. The results of the breeding bird surveys are detailed below and at Appendix 3 as well as Plans ECO6a to ECO6c.

4.7.6. Twenty-six bird species were observed on, flying over or immediately adjacent to the site, during the breeding bird surveys. A number of species protected under Section 41 of the NERC Act 2006 and / or listed on the Red List were recorded on site. These include Dunnock *Prunella modularis*, House Sparrow, Mistle Thrush, Starling, Song Thrush and Yellowhammer.

4.7.7. The woodland and hedgerows at the boundaries of the site are considered suitable for foraging and nesting birds, and the majority of sightings were recorded within these areas where suitability is favourable, with many notable species present.

4.7.8. Recently ploughed and arable fields generally offer negligible ground nesting opportunities for common species.

4.7.9. Two pairs of Great Spotted Woodpecker *Dendrocopos major* were confirmed nesting in Prior's Wood. Blue Tit *Cyanistes caeruleus* pairs were recorded as possible breeders nesting adjacent to south woodland boundary. House Sparrow was noted carrying nesting material along southwest field margins.

Background Records

4.7.10. Several notable bird records from within 5km of the site were returned by the data search including 233 records of 19 species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Protected species include Kingfisher *Alcedo atthis*, Pintail *Anas acuta*, Garganey *Anas querquedula*, Greylag Goose *Anser anser*, Goldeneye *Bucephala clangula*, Little Ringed Plover *Charadrius dubius*, Black Tern *Chlidonias niger*, Peregrine *Falco peregrinus*, Hobby *Falco Subbuteo*, Brambling *Fringilla montifringilla*, Mediterranean Gull *Larus melanocephalus*, Black-tailed Godwit *Limosa limosa*, Red Kite *Milvus milvus*, Black-necked Grebe *Podiceps nigricollis*, Greenshank *Tringa nebularia*, Green Sandpiper *Tringa ochropus*, Redwing *Turdus iliacus*, Fieldfare, Whimbrel *Numenius phaeopus* and Barn Owl *Tyto alba*.

4.7.11. Kingfisher, Little Ringed Plover, Peregrine, Red Kite, Black-necked Grebe and Green Sandpiper are also designated under Annex 1 of the Birds Directive (as amended).

4.7.12. Four of the species listed above were recorded in the southwest corner of site including Red Kite, Fieldfare, Barn Owl and Redwing all dating from 2018. All other records were recorded at distances greater than 0.6km from the site boundary.

4.7.13. Owing to the lack of large waterbodies within the site, the site is not considered suitable for many of the species listed above.

4.8. Reptiles

4.8.1. The field margins on site are considered to provide suitable opportunities for reptiles.

4.8.2. A presence / absence survey for reptiles was completed in May and June 2021. The results of the surveys show that low populations of Grass Snake *Natrix helvetica* and Common Lizard *Zootoca vivipara* are present, with the main areas of interest being the boundaries of Jack's Field and the southern and northern boundaries of Prior's Wood. The results of the surveys undertaken are summarised in Table 4.15 below. The distribution of the reptile tins as well as the location of the reptiles found are shown on Plan ECO7.

Date	Survey	Temp. (°C)	Cloud Cover (%)	Reptiles Recorded
22.05.21	1	18	90	0
25.05.21	2	10 - 12	60	3 aCL
04.06.21	3	17	95	3 jGS, 4 aCL
10.06.21	4	17 - 22	100	4 jGS, 2 aCL
22.06.21	5	15	100	1 jGS, 1 aCL
24.06.21	6	19	5	2 jGS
30.06.21	7	16	100	1 jGS, 3 aCL

Table 4.15. Reptile survey results. GS: Grass Snake; CL: Common Lizard; a: adult; m: male; f: female; j: juvenile; u: unsexed.

4.8.3. Two records of Common Lizard were returned from the data search approximately 1.6km west of the site boundary dating from 2016.

4.8.4. Twenty records for Slow Worm *Anguis fragilis* were returned from the data search. The closest and most recent record relates to a location approximately 0.3km south of the site boundary dating from 2020.

4.9. Amphibians

4.9.1. Four ponds are located within the site boundary, with several other ponds falling within 500m of the site boundary. Additionally, the field boundaries provide opportunities for amphibians during their terrestrial phase.

4.9.2. The on-site ponds and ponds within 500m of the site were subject to eDNA testing for Great Crested Newt where permission was granted. Due to the current company policy pertaining to Covid-19, ponds that fell within the curtilage of private residencies were not tested (see Plan ECO8). The results of the eDNA testing were returned as negative (see Appendix 4), indicating the likely absence of this species.

4.9.3. Two records of Great Crested Newt were returned from the data search. The closest and most recent record relates to a location approximately 0.7km north of the site boundary dating from 2018.

4.9.4. Four records of Common Toad *Bufo bufo* were returned from the data search. The closest and most recent record relates to a location approximately 1.1km east of the site boundary dating from 2016.

4.10. **Invertebrates**

4.10.1. Given the habitats present it is likely a varied assemblage of common invertebrate species would be present within the site.

4.10.2. The desk study returned 54 records of protected species listed under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Species included Purple Emperor *Apatura iris* and White-letter Hairstreak *Satyrium w-album*.

4.10.3. Forty-eight records for Purple Emperor were returned from the data search. The closest record relates to a location approximately 1.8km south of the site boundary dating from 2015. The most recent record relates to a location approximately 2.6km west of the site boundary dating from 2019.

4.10.4. Six records for White-letter Hairstreak were returned from the data search. The closest record relates to a location approximately 2.3km west of the site boundary dating from 2011. The most recent record relates to a location approximately 2.8km west of the site boundary dating from 2019.

4.10.5. A large dataset of 1506 records were returned for species listed under Schedule 41 of the NERC Act 2006. Species include Knotgrass *Polygonum aviculare*, Brown-spot Pinion *Agrochola litura*, Beaded Chestnut *Agrochola lychnidis*, Green-brindled Crescent *Allophyes oxyacanthae*, Ear Moth *Amphipoea oculea,* Mouse Moth *Amphipyra tragopoginis*, Large Nutmeg *Apamea anceps*, Dusky Brocade *Apamea remissa*, Deep-brown Dart *Aporophyla lutulenta*, Sprawler *Asteroscopus sphinx*, Centre-barred Sallow *Atethmia centrago*, Mottled Rustic *Caradrina Morpheus*, Streak *Chesias legatella*, Latticed Heath *Chiasmia clathrate*, Small Heath *Coenonympha pamphilus*, Small Square-spot *Diarsia rubi*, Figure of Eight *Diloba caeruleocephala*, Small Phoenix *Ecliptopera silaceata*, Dusky Thorn *Ennomos fuscantaria*, Spinach *Eulithis mellinata*, Garden Dart *Euxoa nigricans*, Small Emerald *Hemistola chrysoprasaria*, Ghost Moth *Hepialus humuli*, Rustic *Hoplodrina blanda*, Rosy Rustic *Hydraecia micacea*, White Admiral *Limenitis Camilla*, Brindled Beauty *Lycia hirtaria*, Dot Moth *Melanchra persicariae*, Pretty Chalk Carpet *Melanthia procellata*, Powdered Quaker *Orthosia gracilis*, Dark Spinach *Pelurga comitata*, Large Wainscot *Rhizedra lutosa*, White-letter Hairstreak, Shaded Broad-bar *Scotopteryx chenopodiata*, White Ermine *Spilosoma lubricipeda*, Hedge Rustic *Tholera cespitis*, Feathered Gothic *Tholera decimalis*, Blood-Vein *Timandra comae*, Pale Eggar *Trichiura crataegi*, Cinnabar *Tyria jacobaeae* and Oak Hook-tip *Watsonalla binaria*.

4.10.6. The closest of these records relates to Small Heath from a location approximately 0.9km southeast of the site boundary dating from 2015. The most recent of these records also relates to Small Heath from a location approximately 1.6km southwest of the site boundary dating from 2019.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Ecological Evaluation

5.1.1. The guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.

5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe[15]. These are broadly used across the United Kingdom to rank sites so priorities for nature conservation can be attained. For example, current Sites of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.

5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.

5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.

5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with a comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say, in the border country.

5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Essex BAP has been considered as part of this assessment and is referenced where relevant.

5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the international level.

5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

5.2. Habitat Evaluation

Designated Sites

5.2.1. **Statutory Sites:** There are no statutory designations of nature conservation value within the site or immediately adjacent to it. The closest statutory designated site is Hatfield Forest SSSI, which lies approximately 1.6km southwest of the site and also incorporates Hatfield Forest NNR.

[15] Ratcliffe, D A (1977). *A Nature Conservation Review: The Selection of Biological Sites of National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

5.2.2. Hatfield Forest is the only Royal Hunting Forest to remain virtually intact in character and composition. Approximately 403.2ha in size, Hatfield Forest contains mixed ancient coppice woodland, scrub, unimproved grassland chases and plains with ancient pollards, and herb-rich marshland bordering a large lake. The woodland is predominantly wet Ash-Maple and the Ash-Maple variant of Oak-Hornbeam. Over four hundred species of higher plants have been recorded, including thirty trees and shrubs, and many county rarities with Stinking Hellebore *Helleborus foetidus* and Oxlip *Primula elatior* of national importance. It is comparatively rich in bryophytes and lichens and has locally important insect populations and breeding bird communities, including Nightingale *Luscinia megarhynchos*, Grasshopper Warbler *Locustella naevia*, Water Rail *Rallus aquaticus* and Snipe *Gallinago gallinago*.

5.2.3. Uttlesford District Council have published interim advice relating to the emerging strategic approach to Hatfield Forest SSSI and NNR, pending the examination of emerging Local Plans. The interim advice considers recreational impacts and the zone of influence of the designation.

5.2.4. The National Trust is in the process of formulating Strategic Access Management Measures (SAMM) which new housing projects can contribute towards. Once this package of measures has been finalised and costed, it will enable a tariff-based system to be worked up, towards calculating proportionate financial contributions to be secured (e.g., within s106 agreements). At the current time, packages are being negotiated on a case-by-case basis, and only the largest schemes (projects of 50 or more units) within the zone of influence of 10.4km are required to contribute in this way.

5.2.5. For larger strategic housing sites (100+ units), Natural England further advises that recreational pressure impacts to Hatfield Forest SSSI and NNR are additionally mitigated via the provision of Accessible Natural Greenspace (ANG) to be provided within the red line boundary of the proposed development. The greenspace should be designed to absorb significant proportions of the day-to-day recreational needs of new residents, such as walking, dog walking, jogging / exercise, children's play facilities, and other informal recreation. It should also aim to provide a semi-natural character, with significant proportion of tree / woodland cover.

5.2.6. The landscape strategy being provided by the proposed development includes a large area of open space in the east of the site, as well as enhancements and an extension of the woodland. The landscape proposals offer significant and easily accessible recreational resources for new and existing residents, with walking routes that will connect to the existing footpath network.

5.2.7. **Non-statutory Sites:** Prior's Wood LWS falls within the site boundary. Prior's Wood LWS is designated for its ancient and semi-natural woodland habitat.

5.2.8. Owing to the location of Prior's Wood LWS within the site boundary it is recommended that best practice methods are employed during the construction phase of development to limit potential pollution (dust, noise, surface runoff etc.). Potential effects on the woodland are discussed in more detail in the habitats section below.

5.2.9. A number of other non-statutory sites are located in the vicinity and are shown in Plan ECO1.

Habitats

5.2.10. The site is dominated by arable fields of negligible intrinsic nature conservation interest. The hedgerows and ancient woodland are of elevated ecological interest within the context of the site.

5.2.11. An Air Quality Assessment for the site has been completed by Aether and includes an assessment of the proposed critical levels upon the ancient woodland.

5.2.12. The results of the Air Quality Assessment show that the levels in the southwestern corner of the woodland where the access road will be located are below a Process Contribution (PC) of 0.3 µg /m^3.

5.2.13. The latest Institute of Air Quality Management (IAQM) guidance suggests that the long-term PC should be less than 1% of the long-term environmental standard to be considered to have an insignificant impact on ecological receptors.

5.2.14. The impact of the development on the adjacent woodland is considered to fall just below the level of significance (1%), with NO_x concentrations increases of 0.8% of the critical level, as shown in Figure 5.1 below. The development is therefore not considered to have a significant impact on Prior's Wood.

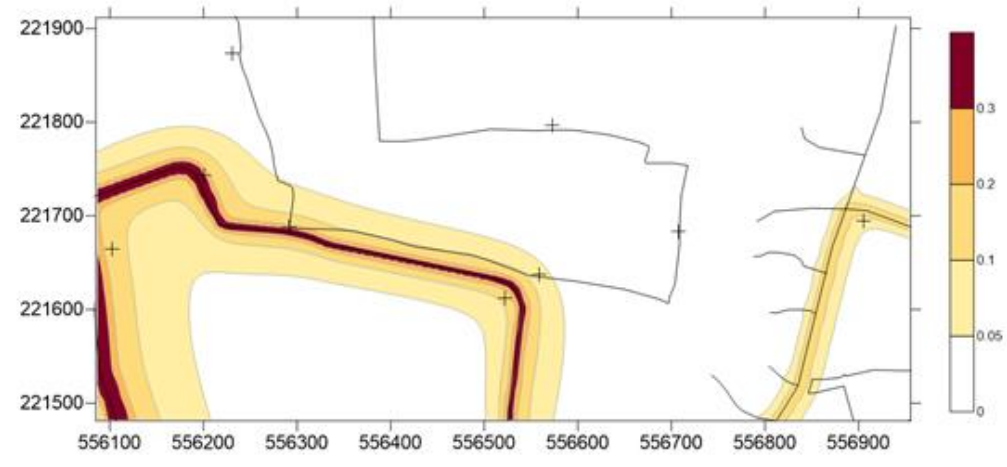


Figure 5.1. Estimated NO_x concentrations due to the development (process contribution) in 2024 (µg/m3); reproduced from the Aether Air Quality Assessment.

5.2.15. An exclusion zone would be marked out with road pins and hazard tape / Heras fencing around the retained woodland, which would be enforced so that the woodland is not damaged during the construction of the road. Safeguarding of retained trees and vegetation would be fully compliant with BS5837:2012 guidance. Contractors would be made aware of which vegetation is to be retained and of their responsibilities. Such detail is able

to be secured through the imposition of a suitable planning condition imposed on the grant of any permission.

5.2.16. In the medium to long term proposal is for the woodland to be enhanced through selective thinning of the canopy to create glades and rides, promoting natural regeneration of the understorey and field layer. Selected areas will also include fencing to prevent deer browsing. New planting will extend the woodland into the east of the site, and a management strategy for the woodland as a whole will be provided. The boundary features of the site will be retained and enhanced as part of the proposals.

5.2.17. The landscape strategy for the proposed development includes significant enhancements to the site including a large area of new open space comprising native wildflower meadow grassland and wetland habitats, new native hedgerow, scrub and tree planting and a woodland extension on the eastern side of Prior's Wood.

5.3. Faunal Evaluation

Bats

5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"). These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to:-
  (i) be likely to impair their ability to survive, to breed or rear or nurture their young; or to hibernate or migrate; or
  (ii) affect significantly the local distribution or abundance of the species to which they belong;
- To damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

5.3.2. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

5.3.3. The offence of damaging (making worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

5.3.4. **Site Usage.** Some of the more mature trees are considered to provide bat roosting potential. The woodland and hedgerows at the boundaries of the site are considered to provide good opportunities for foraging and commuting bats.

5.3.5. The results of the activity transect surveys and remote detectors deployed between April and September 2021 show that Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Myotis, Noctule, Leisler's Bat, Serotine, Brown Long-eared Bat and Barbastelle Bat are using the boundary habitats and Prior's Wood for foraging and commuting.

5.3.6. Additionally, early registrations for Common, Soprano and Nathusius' Pipistrelle and Barbastelle would indicate that roosts for these species are present within or in close proximity to the site.

5.3.7. **Mitigation and Enhancements.** In line with current guidelines and best practice, a final survey would further inform the level of interest. However, specific mitigation is able to be delivered based on the findings to date. A Natural England licence is not required to implement the proposed development.

5.3.8. The site is considered to have moderate to high suitability for bats and a final transect has been undertaken in early October 2021. The survey was again bolstered by the deployment of three static detectors deployed in suitable locations for five consecutive nights. This information will be supplied in an addendum report.

5.3.9. The woodland and mature vegetation at the boundaries of the site will be retained to allow continued dispersal and foraging opportunities post-development. Additionally, the woodland will be extended in the east of the site and new native hedgerow and trees will be planted throughout the development. New tree and hedgerow planting across the site will supplement and enhance the current boundary habitats and provide new foraging habitat for locally present bat species. New landscaping will use native species to provide new foraging opportunities for bats.

5.3.10. The central open space will provide grassland and wetland habitats that will encourage greater use of the site by invertebrates and increase the foraging opportunities for the local bat population.

5.3.11. Lighting during the construction phase of the development will adhere to the Institute of Lighting Professionals (ILP) *Guidance Note 8 Bats and Artificial Lighting* to limit light spill onto areas considered of most interest to bats. Lighting outside of construction timeframes will be reduced to solely core areas to limit the duration of lighting magnitude across the site. The final lighting strategy will be reviewed by the project ecologist and subject to amendment if necessary, to avoid adverse effects on any ecological receptors. This can be secured by a suitable planning condition.

5.3.12. To offer further enhancements for the site, bat boxes on retained trees or integrated into new buildings could be provided as part of the redevelopment.

Badgers

5.3.13. **Legislation.** The Protection of Badgers Act 1992 consolidates the previous Badgers Acts of 1973 and 1991. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is, in fact, common over most of Britain, with particularly high populations in the southwest.

5.3.14. As well as protecting the animal itself, the 1992 Act also makes the intentional or reckless destruction, damage or obstruction of Badger setts an offence. A sett is defined as, *"any structure or place which displays*

signs indicating current use by a Badger", by current Natural England guidance.

5.3.15. In addition, the intentional elimination of sufficient foraging area used to support a known social group of Badgers may, in certain circumstances, be construed as an offence by constituting 'cruel ill treatment' of a Badger.

5.3.16. **Site Usage.** No evidence of Badger was recorded on site during the survey, but the habitats on site provide suitable sett building, foraging and dispersal opportunities and they are known to be in the vicinity.

5.3.17. **Mitigation.** Further work for Badgers will involve continued checks of the site to ensure no setts have been excavated prior to the proposed development. Proposed landscape planting will provide new foraging opportunities for Badgers.

5.3.18. The potential exists for Badgers to roam into areas where construction is underway and become trapped in trenches and / or excavate new setts in piles of subsoil or disturb chemicals that may be being used for development. The following measures will be followed throughout the construction phase of the proposed development:

- All site personnel will be made aware of the potential presence of this species and the appropriate steps required to ensure the safety of Badgers while on site;
- Inclines and mounds of loose soil present ideal habitats for Badgers seeking to establish setts; therefore, during the construction process, all dug ground and loose soil will be levelled and compacted wherever possible. This will prevent Badgers from attempting to excavate setts prior to completion of the works and causing potential disruption;
- Any mounds of material will be regularly checked for signs of Badgers, especially before disturbance or movement;
- Planks will be left in any uncovered trenches to provide any Badger that may stray onto the site with an escape route;
- Any open trenches will be checked at the beginning of each day, to ensure that Badgers are not present, and at the end of each day, to ensure that the means of escape remain in place;
- Tools and loose materials will be stored in an appropriate container in order to reduce the risk of Badgers coming onto site and injuring themselves;
- No fires or chemicals should be left unsupervised anywhere on the site;
- Any open pipework greater than 150mm outside diameter will be blanked off at the end of each working day to prevent Badgers from entering the pipework.

5.3.19. In the event that any suspected Badger activity is observed during construction, work in the area would cease and Ecology Solutions would be contacted for advice.

Dormice

5.3.20. **Legislation.** Dormice are subject to the same level of legislative protection as bats (see above).

5.3.21. **Site Usage.** No evidence of Dormouse was recorded during the surveys completed between May and September 2021; however, the woodland and hedgerows provide opportunities for Dormouse dispersal and foraging.

5.3.22. **Mitigation and Enhancements.** Dormouse are not present on site and no mitigation is required for this species.

5.3.23. The landscape proposals include enhancements to the woodland that will significantly improve the understorey, providing better opportunities for Dormice if they colonise the site in the future. Additionally, the woodland will be extended, and new native hedgerow planting provided to elevate the on-site opportunities for this species.

Hedgehogs

5.3.24. **Legislation.** Hedgehog is a species of principal importance for the conservation of biodiversity under Section 41 (England) of the NERC Act 2006.

5.3.25. The NERC Act 2006 requires the Secretary of State to:

… take such steps as appear… to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or… promote the taking by others of such steps.

5.3.26. **Site Usage.** No evidence of Hedgehogs was recorded during the survey work undertaken. Hedgehogs are known to be in the locality and the site contains suitable habitats for Hedgehog foraging, dispersal and hibernation, including woodland and hedgerows.

5.3.27. **Mitigation and Enhancements.** Any clearance of log piles or other Hedgehog shelter features will be subject to inspection to ensure that Hedgehogs are absent. In the event that an individual is encountered, it will be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas. Any vegetation clearance should be carried out in a systematic and controlled manner to allow Hedgehogs to disperse.

5.3.28. Any trenches or deep pits associated with construction that are to be left open overnight will be provided with a means of escape in case a Hedgehog enters. This is particularly important if the trench fills with water, and will take the form of a roughened plank of wood placed in the trench as a ramp to the surface.

5.3.29. New native hedgerow, woodland and grassland habitats will provide enhanced opportunities for commuting and foraging Hedgehogs.

5.3.30. A log pile could be installed in a discreet location within the woodland to offer shelter and hibernation opportunities post development.

5.3.31. New residential gardens will offer new potential habitat for Hedgehogs and other small mammals. Across the site garden fences can be provided with a 'Hedgehog Gateway', a 13cm x 13cm section of fence cut out at the base, to facilitate dispersal for Hedgehogs and other small animals. This will enhance the permeability of the new development for wildlife.

Birds

5.3.32. **Legislation.** Section 1 of the Wildlife and Countryside Act 1981 (as amended) is concerned with the protection of wild birds, whilst Schedule 1 lists species that are protected by special penalties. All species of birds receive general protection whilst nesting.

5.3.33. **Site Usage.** The woodland and hedgerows are considered suitable for foraging and nesting birds. A number of species protected under Section 41 of the NERC Act 2006 and / or listed on the Red List, as well as more common species have been recorded across these areas during wintering and breeding bird surveys. No ground nesting birds were recorded nesting on site during the surveys. Based on the survey results obtained, due to the low numbers of these species and recommended landscaping, the proposed development of the site is not expected to significantly affect these species.

5.3.34. **Mitigation and Enhancements.** It is recommended that any clearance of trees, shrub and hedgerow takes place outside the nesting season (which is typically March to July inclusive) to avoid a potential offence under the legislation. Where this cannot be achieved a check survey for nesting birds should be undertaken by an ecologist, with any confirmed nests left in place until the young have fledged.

5.3.35. New landscaping will include native species with known value for wildlife, such as fruit bearing trees. Areas of dense vegetation will be avoided to prevent a significant additional attraction of the site to flocking species such as Starling, which may pose a birdstrike hazard to aircraft using Stansted Airport.

5.3.36. As an additional enhancement, a variety of bird boxes could be provided on retained trees and / or incorporated into the new dwellings on the site. Such measures could be designed to provide new on-site opportunities for Swift *Apus apus* and House Sparrow *Passer domesticus* together with other species of conservation concern.

Reptiles

5.3.37. **Legislation.** All reptile species receive protection under legislation in the UK. Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis* receive full legal protection in England due to their status as scarce, rather local species. Owing to the specific habitat requirements of these species they are not likely to be present in the local area.

5.3.38. The other reptile species, namely Slow Worm *Anguis fragilis*, Common Lizard, Grass Snake and Adder *Vipera berus*, are common and

widespread across the country. As such, these species receive only partial protection under the Wildlife and Countryside Act 1981 (as amended) being protected from deliberate killing or injury, their habitat receiving no statutory protection.

5.3.39. **Site Usage.** The semi-improved grassland margins provide suitable opportunities for reptiles. A presence / absence survey completed in May and June 2021 identified low populations of Grass Snake and Common Lizard.

5.3.40. **Mitigation and Enhancements.** Where habitats used by reptiles exist, mitigation measures will be put into place to ensure that no offence is caused. This will include passive displacement during favourable weather condition and during the reptile active season and dispersal fencing of sensitive areas, where considered necessary.

5.3.41. Passive displacement will involve the intensive management of the existing habitats favourable to reptiles, through a cutting regime which will encourage reptiles to move away from such areas. Cuts will be undertaken using a hand strimmer with an initial cut of 200mm followed by a cut of 100mm 24 hours later and then cut as short as possible. Displacement will occur ahead of development, when reptiles are active (between mid-March and October) and during favourable weather conditions. All cuttings and other debris will be removed to avoid creating places of refuge. Following the passive displacement exercise, topsoil will be stripped to remove any suitability for reptiles. All works will be undertaken under the supervision of a suitably qualified ecologist.

5.3.42. The vegetation at the boundaries of the site will be retained and enhanced as part of the landscape proposals. The central open space proposed for the site includes areas of open wildflower meadow grassland and wetland habitats that will significantly enhance the site for reptiles above what is currently present.

Amphibians

5.3.43. **Legislation.** Great Crested Newts are subject to the same level of legislative protection as bats and Dormice (see above).

5.3.44. Common Toads are listed as a species of principal importance under Section 41 of the NERC Act 2006 and are afforded the same level of protection as Hedgehogs.

5.3.45. **Site Usage.** Four ponds are located within the site boundary, with several other ponds falling within 500m of the site boundary. Additionally, the field boundaries provide opportunities for amphibians during their terrestrial phase.

5.3.46. The on-site ponds and ponds within 500m of the site were subject to eDNA testing for Great Crested Newt where permission was granted. The results of the eDNA testing were returned as negative, indicating the likely absence of this species.

5.3.47. **Mitigation and Enhancements.** Measures to passively displace common reptiles from suitable habitat on site will also benefit amphibians utilising the site during their terrestrial phase.

5.3.48. The woodland ponds and vegetation at the boundaries of the site will be retained and enhanced as part of the landscape proposals. The central open space proposed for the site includes areas of open wildflower meadow grassland and wetland habitats that will significantly enhance the site for amphibians above what is currently present.

Invertebrates

5.3.49. **Site Usage.** Given the habitats present it is likely a varied assemblage of common invertebrate species would be present within the site.

5.3.50. **Mitigation and Enhancements.** The landscape proposals include the retention, enhancement and extension of the woodland, as well the retention and enhancement of boundary features. The central open space will include grassland and wetland habitats providing new habitats for a range of invertebrates. The new grassland will be subject to a beneficial management scheme to benefit a range of invertebrate species.

6. PLANNING POLICY CONTEXT

6.1. Planning policy for development at the site is administrated at two levels, nationally through the National Planning Policy Framework (NPPF) and locally through the planning policies of Uttlesford District Council.

6.2. National Policy

National Planning Policy Framework (July 2021)

6.2.1. Guidance on national policy for biodiversity and geological conservation is provided by the National Planning Policy Framework (NPPF), published in March 2012, revised on 24 July 2018, 19 February 2019 and again on 20 July 2021. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA / ODPM, 2005) accompanying the now-defunct Planning Policy Statement 9 (PPS9).

6.2.2. The key element of the NPPF is that there should be *"a presumption in favour of sustainable development"* (paragraphs 10 to 11). It is important to note that this presumption *"does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site"* (paragraph 182). 'Habitats site' has the same meaning as the term 'European site' as used in the Habitats Regulations 2017.

6.2.3. Hence, the direction of Government policy is clear. That is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.

6.2.4. A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 174).

6.2.5. The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.

6.2.6. Paragraphs 179 to 181 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential Special Protected Areas (SPA), possible Special Areas of Conservation (SAC), listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats – unless there are 'wholly exceptional reasons' (for instance, infrastructure projects where the public

benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

6.2.7. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.3. Local Policy

Uttlesford Local Plan 2005 (Adopted 2005)

6.3.1. The Uttlesford Local Plan was adopted on 20 January 2005 and is the principal development plan document guiding development in Uttlesford. It updates and replaces the "Uttlesford Futures" Community Plan which was adopted in 2003 and covered the period up to 2007. Policies relevant to nature conservation are set out below.

6.3.2. **Policy GEN7: Nature Conservation** states that developments will not be permitted which have a harmful effect on wildlife, unless the need for the development outweighs the importance of the feature to nature conservation. In addition, a nature conservation survey is required where the site includes protected species or habitats suitable for protected species. Mitigation will be required, and habitat creation as an enhancement will be required.

6.3.3. **Policy ENV7: The Protection of the Natural Environment – Designated Sites** is concerned with the adverse effects upon areas of nationally important nature conservation concern or local areas of nature conservation significance, as development proposals will not be permitted unless the need for the development outweighs the particular importance of the nature conservation value of the site or reserve or the local significance of the site to the biodiversity of the District.

6.3.4. **Policy ENV8: Other Landscape Elements of Importance for Nature Conservation** is concerned with developments which may have an adverse impact on hedgerows, linear tree belts, semi-natural grasslands, orchards, ponds, reservoirs, river corridors, larger semi-natural or ancient woodlands or other landscape elements. Developments which do affect these elements will only be permitted where the need outweighs the need to retain the elements for their importance to wild fauna and flora or mitigation measures are provided.

Emerging New Local Plan

6.3.5. Uttlesford District Council withdrew the draft Local Plan early in 2020 following significant concerns raised by the Inspector during an examination of the documents. To adhere to the Government's requirement to have up-to-date Local Plans in place by December 2023, Uttlesford District Council are now focused on providing a new Local Plan. A programme of works and timetable setting out the steps to deliver this is underway by the Council although at an early stage.

6.4. **Discussion**

6.4.1. The development proposals for the site should be judged against the policies summarised above. The collection of baseline ecological data for bats, Dormice, birds, reptiles and amphibians has informed the wider design proposals, incorporating necessary mitigation and compensation measures. Taking these measures into account, it is considered that the proposed development has the capacity to accord fully with national and local policy and avoid any significant impacts on nearby designated sites for nature conservation.

7. SUMMARY AND CONCLUSIONS

7.1. Ecology Solutions was commissioned in October 2020 by Weston Homes PLC to undertake an ecological assessment of the proposed development at Warish Hall Farm, Takeley.

7.2. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

7.3. The site comprises arable fields with associated field margins, hedgerows and ditches. Prior's Wood LWS, an area of ancient and semi-natural woodland dominates the north of the site.

7.4. The site is located to the north of Takeley, approximately 1.4km south of London Stansted Airport and approximately 1.6km northeast of Hatfield Forest SSSI and NNR. It is bounded to the south and east by residential properties. Arable fields and the A120 are present to the north. Weston Homes PLC headquarters border the site to the west.

7.5. A habitat survey was initially carried out by Ecology Solutions in October 2020, with a further walkover survey carried out in April 2021, in order to ascertain the general ecological value of the site and to identify the main habitats and associated plant species. Bat and bird surveys have also been undertaken, with further species surveys being undertaken in the intervening period.

7.6. **Statutory Sites.** There are no statutory designations of nature conservation value within the site or immediately adjacent to the site. The nearest statutory site is Hatfield Forest SSSI, which lies approximately 1.6km southwest of the site and also incorporates Hatfield Forest NNR.

7.7. The proposed scheme will be expected to contribute towards mitigating towards the potential increase in recreational pressure on Hatfield Forest SSSI. This will be achieved through a financial contribution towards the SAMM and the provision of on-site ANG.

7.8. The landscape strategy being provided by the proposed development includes a large area of open space (circa 2.4ha) in the east of the site, as well as enhancements and an extension of the woodland by approximately 10%. The landscape proposals therefore offer significant and easily accessible recreational resources for new and existing residents, with walking routes that will connect to the existing footpath network.

7.9. **Non-statutory Sites.** Prior's Wood LWS, which is designated for its ancient and semi-natural woodland habitat, lies within the site boundary. Owing to the location of Prior's Wood LWS it is recommended that best practice methods are employed during the construction phase of development to limit potential pollution (dust, noise, surface runoff etc.) in close proximity.

7.10. **Habitats.** The site is dominated by arable fields of negligible intrinsic nature conservation interest. The ancient woodland and hedgerows are of elevated ecological interest within the context of the site and will be retained and enhanced as part of the proposed development. This will be beneficial in ecology terms.

7.11. The impact of the development on the adjacent woodland is considered to fall just below the level of significance (1%), with NO_x concentrations increases of 0.8% of the critical level.

7.12. An exclusion zone would be marked out around the retained woodland, which would be enforced so that the woodland is not damaged during the construction of the road. Safeguarding of retained trees and vegetation would be fully compliant with BS5837:2012 guidance. Such detail is able to be secured through the imposition of a suitable planning condition imposed on the grant of any permission.

7.13. The detailed landscape strategy for the proposed development includes significant enhancements to the site including new open space comprising grassland and wetland habitats, new native hedgerow and tree planting and a woodland extension.

7.14. **Bats.** Some of the more mature trees are considered to provide bat roosting potential. The woodland and hedgerows at the boundaries of the site are considered to provide good opportunities for foraging and commuting bats.

7.15. The results of the activity transect surveys and remote detectors deployed between April and September 2021 show that Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Myotis, Noctule, Leisler's Bat, Serotine, Brown Long-eared Bat and Barbastelle are using the boundary habitats and Prior's Wood for foraging and commuting. Additionally, roosts for Common, Soprano and Nathusius' Pipistrelle and Barbastelle may be present within or in close proximity to the site.

7.16. As the site is considered to have moderate to high suitability for bats, a final activity transect survey has been undertaken in October 2021. This information will be supplied in an addendum report, but it is considered that the site has been appropriately characterised to date and that the mitigation strategy is appropriate.

7.17. In order to safeguard local bat populations, the woodland and mature vegetation at the boundaries of the site will be retained to allow continued dispersal and foraging opportunities post-development. Additionally, new woodland, native hedgerows, trees, grassland and wetland habitats will be provided throughout the development.

7.18. A sensitive final lighting scheme should be designed to ensure that no adverse increase in light spill occurs as a result of the development. The landscape proposals have allowed for these recommendations to be considered and a sensitive lighting scheme has been worked up in principle with detail set out as part of the application proposals. Further enhancements will include the provision of new bat boxes to offer new roosting opportunities.

7.19. **Badgers.** No evidence of Badger was recorded on site during the survey, but the habitats on site provide suitable sett building, foraging and dispersal opportunities and they are known to be in the vicinity. Continued checks of the site will be undertaken to ensure no new setts have been excavated prior to the proposed development. Best practice measures would be adopted during construction (in terms of site management, storage of materials, etc.) to avoid any harm to Badgers.

7.20. **Dormice.** No evidence of Dormouse was recorded during the surveys undertaken between May and September 2021; however, the woodland and hedgerows provide opportunities for Dormouse dispersal and foraging, and these will be retained and enhanced.

7.21. The landscape proposals include significant beneficial and long-term enhancements to the woodland that will improve the understorey and provide better opportunities for Dormice should they colonise the site. Additionally, the woodland will be extended, and new native hedgerow planting provided to elevate the on-site opportunities for this species.

7.22. **Hedgehogs.** No evidence of Hedgehogs was recorded during the survey work undertaken. Hedgehogs are known to be in the locality and the site contains suitable habitats for Hedgehog foraging, dispersal and hibernation, including woodland and hedgerows. Any clearance of log piles or other Hedgehog shelter features will be subject to inspection to ensure that Hedgehogs are absent. In the event that an individual is encountered, it will be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas. Any vegetation clearance should be carried out in a systematic and controlled manner to allow Hedgehogs to disperse.

7.23. Additionally, any trenches or deep pits associated with construction that are to be left open overnight will be provided with a means of escape in case a Hedgehog enters.

7.24. New native hedgerows, woodland and grassland habitats will provide enhanced opportunities for commuting and foraging Hedgehogs, whilst 'Hedgehog Gateways' provided in garden fences will facilitate dispersal for Hedgehogs and other small animals and enhance the permeability of the new development. A log pile could be installed in a discreet location to offer shelter and hibernation opportunities post development.

7.25. **Birds.** The woodland and hedgerows are considered suitable for foraging and nesting birds. A number of species protected under Section 41 of the NERC Act 2006 and / or listed on the Red List, as well as more common species have been recorded across these areas during wintering and breeding bird surveys. No ground nesting birds were recorded nesting on site during the surveys. Any clearance of suitable bird nesting habitats will take place outside the nesting season or only during this period following checks to confirm absence to avoid a potential offence under the legislation. New landscaping will include native species with known value for wildlife, such as fruit bearing trees but mindful for airport safeguarding limitations so as not to encourage flocking birds in close proximity to the airport.

7.26. As an additional enhancement, a variety of bird boxes could be provided on retained trees including within the woodland.

7.27. **Reptiles.** The semi-improved grassland margins provide suitable opportunities for reptiles and low populations of Grass Snake and Common Lizard were recorded during presence / absence surveys.

7.28. Where necessary, vegetation removal and a full destructive search will be undertaken to passively displace reptiles from areas where they have been recorded on site to suitable retained on-site and off-site habitats. Displacement

will occur ahead of development, when reptiles are active (between mid-March and October) and during favourable weather conditions. All works will be undertaken under the supervision of a suitably qualified ecologist.

7.29. The vegetation at the boundaries of the site will be retained and enhanced as part of the landscape proposals. The central open space proposed for the site includes areas of open grassland and wetland habitats that will significantly enhance the site for reptiles above what is currently present.

7.30. **Amphibians.** Four ponds are located within the site boundary, with several other ponds falling within 500m of the site boundary. Additionally, the field boundaries provide opportunities for amphibians during their terrestrial phase.

7.31. The on-site ponds and ponds within 500 metres of the site were subject to eDNA testing for Great Crested Newt where permission was granted. The results of the eDNA testing were returned as negative, indicating the likely absence of this species.

7.32. The mitigation measures recommended for common reptiles will also benefit amphibians utilising the site during their terrestrial phase. The woodland ponds and vegetation at the boundaries of the site will be retained and enhanced as part of the landscape proposals. The central open space proposed for the site includes areas of open grassland and wetland habitats that will significantly enhance the site for amphibians above what is currently present.

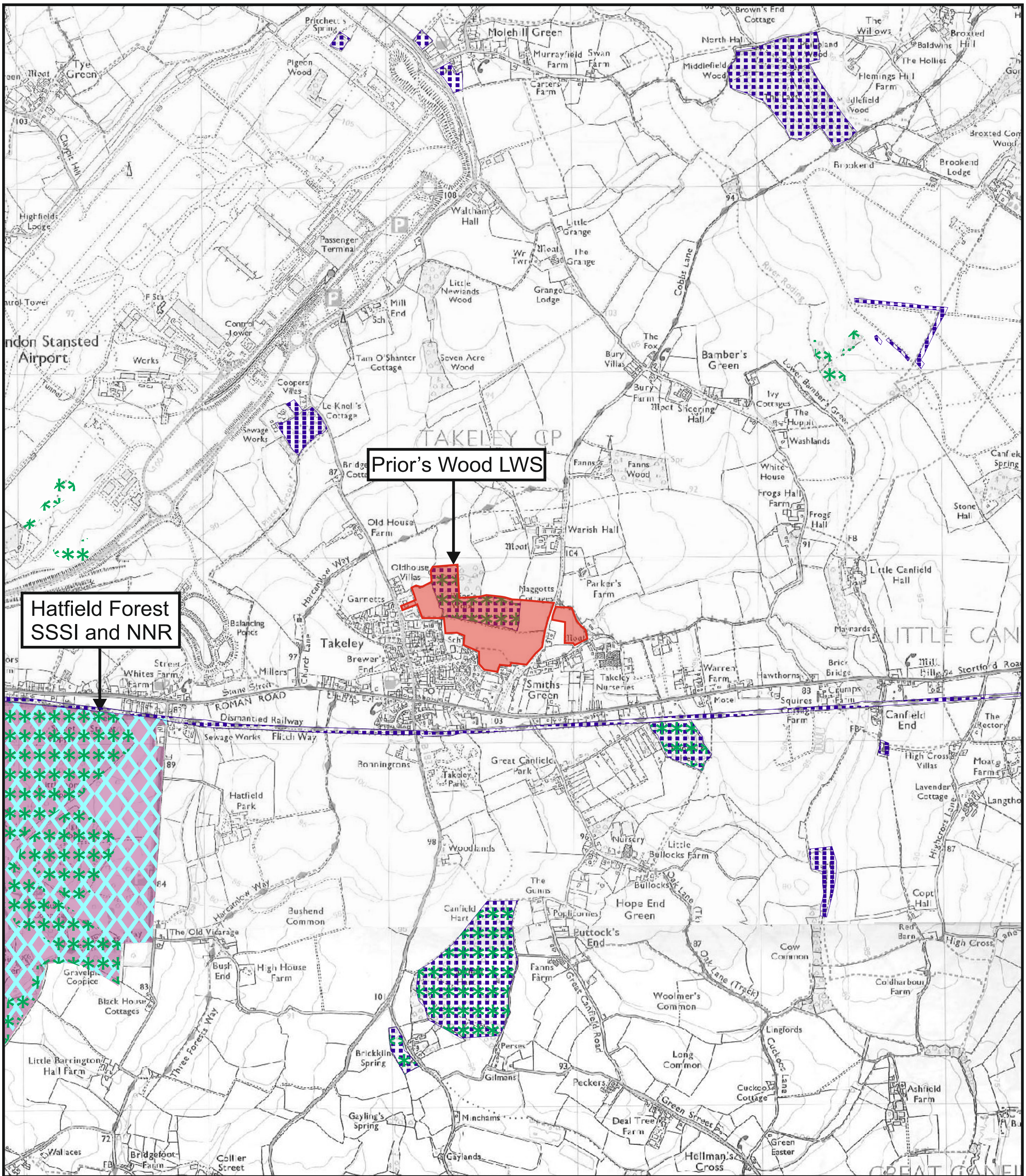
7.33. **Invertebrates.** Given the habitats present it is likely a varied assemblage of common invertebrate species would be present within the site. The landscape proposals include the retention, enhancement and extension of the woodland, as well the retention and enhancement of boundary features. The central open space will include grassland and wetland habitats providing new habitats for a range of invertebrates. The new grassland will be subject to a management scheme to benefit a range of invertebrate species.

7.34. In conclusion, the comprehensive series of surveys completed has identified that the site provides good opportunities for local wildlife. These results have informed the design of the scheme, which takes full account of Prior's Wood LWS. Through the adoption of appropriate safeguards and enhancements, effects on protected and priority species and habitats will be avoided or adequately mitigated. The proposed development will facilitate significant habitat enhancement and future management, with consequent benefits for wildlife. A separate biodiversity net gain assessment has been undertaken. Overall, the scheme is considered to be in line with relevant planning policy and legislation.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- NATIONAL NATURE RESERVE (NNR)
- LOCAL WILDLIFE SITE (LWS)
- ANCIENT WOODLAND

N

ECOLOGY SOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

Mar 2021

PLAN ECO2

Ecological Features

KEY:

- SITE BOUNDARY
- LOCAL WILDLIFE SITE
- ANCIENT AND SEMI-NATURAL WOODLAND
- ARABLE
- HEDGEROW
- DITCH
- POND

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

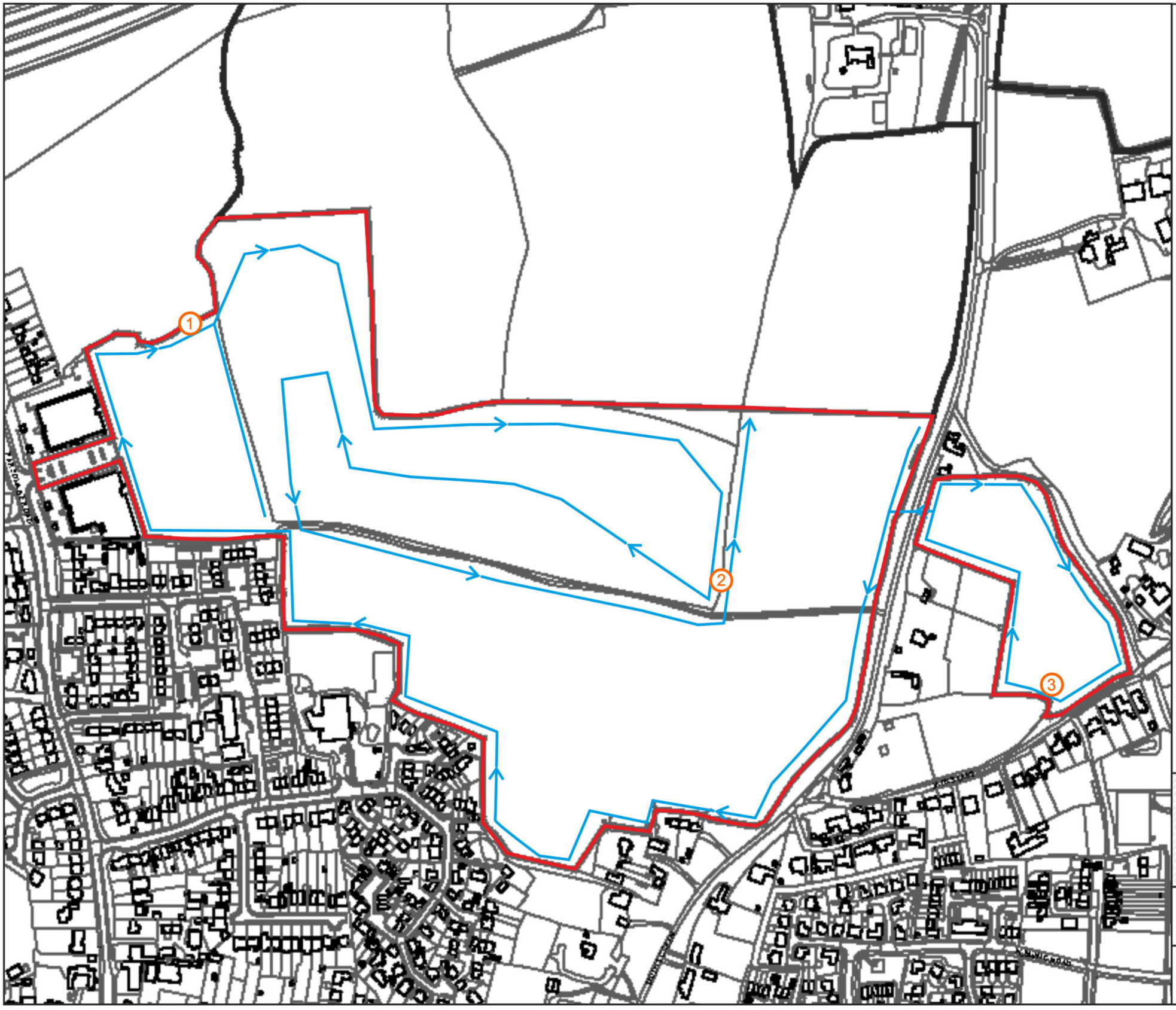
PLAN ECO2: ECOLOGICAL FEATURES

Rev: A

May 2021

PLAN ECO3a

Bat Activity Transect and Remote Detector Locations



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- REMOTE STATIC DETECTOR LOCATION

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO3a: BAT ACTIVITY TRANSECT AND REMOTE DETECTOR LOCATIONS

Rev: A

May 2021

PLAN ECO3b

Bat Activity Survey Results 20.05.21

KEY:

- SITE BOUNDARY
- TRANSECT ROUTE - WALKED BY TWO SURVEYORS IN OPPOSITE DIRECTIONS
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- FLIGHT PATH

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM,
TAKELEY, ESSEX

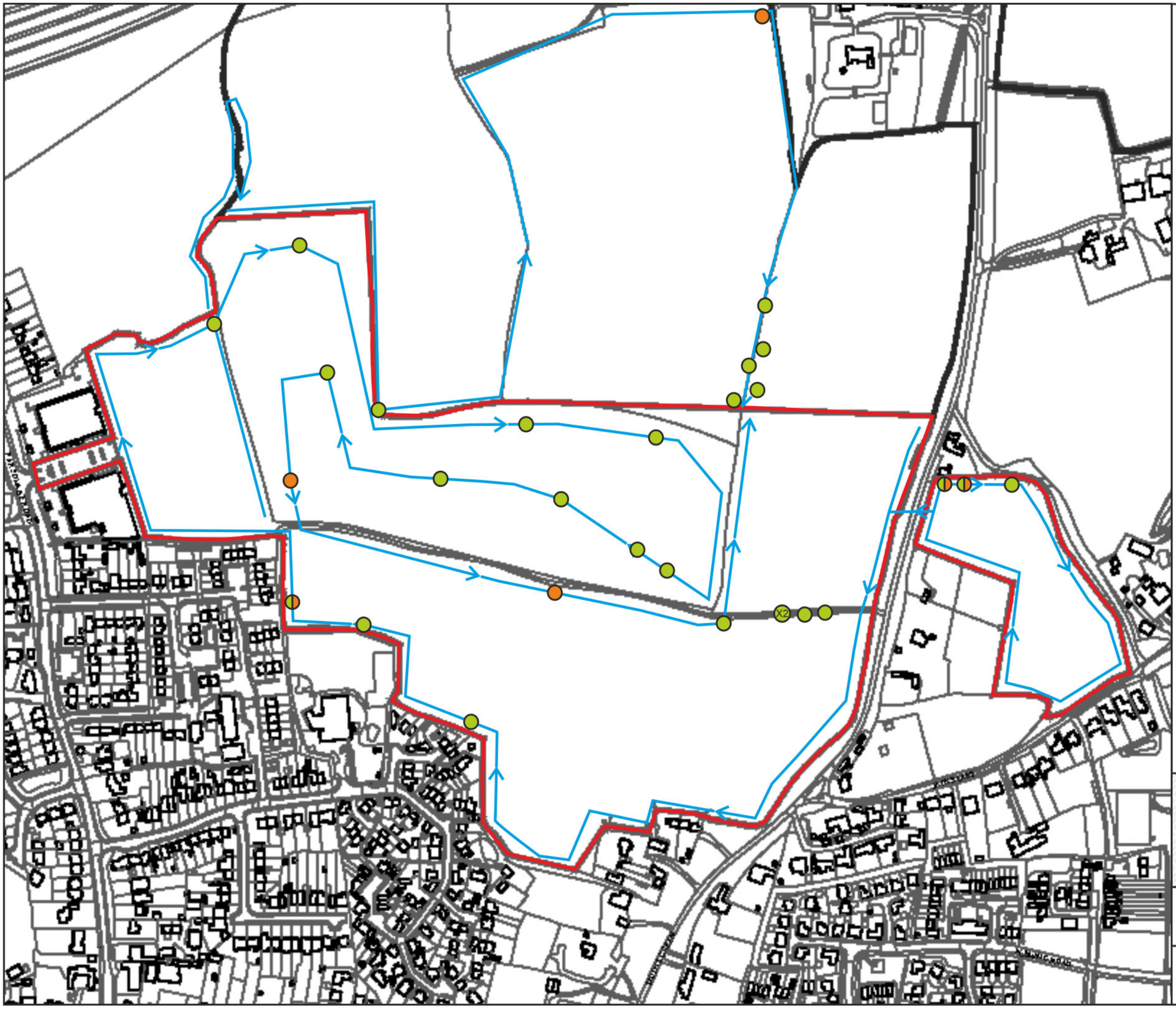
PLAN ECO3b:
BAT ACTIVITY SURVEY
RESULTS 20.05.21

Rev: A

Jun 2021

PLAN ECO3c

Bat Activity Survey Results 22.06.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE - WALKED BY TWO SURVEYORS IN OPPOSITE DIRECTIONS
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

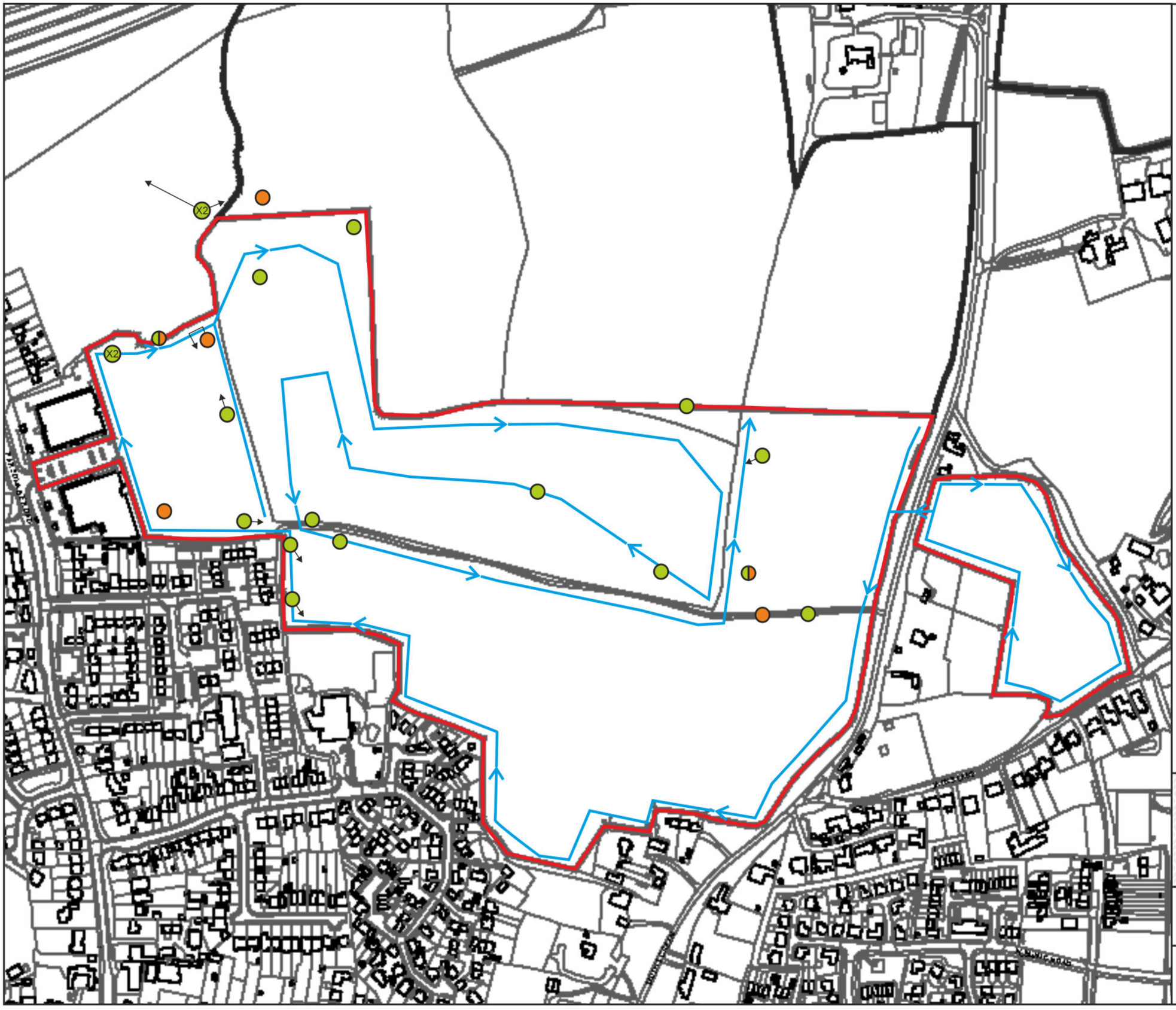
PLAN ECO3c:
BAT ACTIVITY SURVEY
RESULTS 22.06.21

Rev: A

Sep 2021

PLAN ECO3d

Bat Activity Survey Results 15.07.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- FLIGHT PATH

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

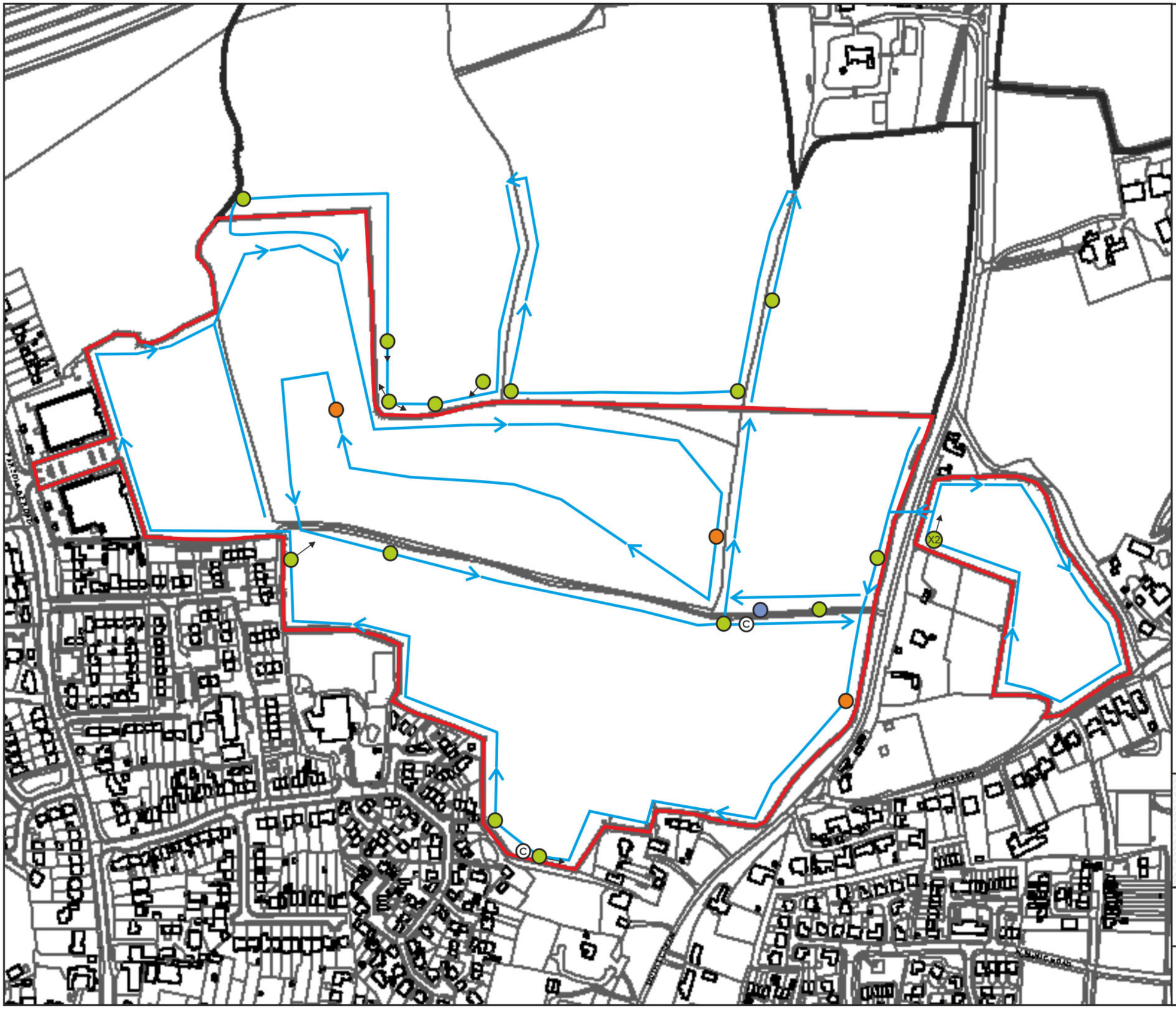
PLAN ECO3d:
BAT ACTIVITY SURVEY
RESULTS 15.07.21

Rev: A

Sep 2021

PLAN ECO3e

Bat Activity Survey Results 12.08.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- NOCTULE BAT REGISTRATION
- FLIGHT PATH
- CHECKPOINT

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM,
TAKELEY, ESSEX

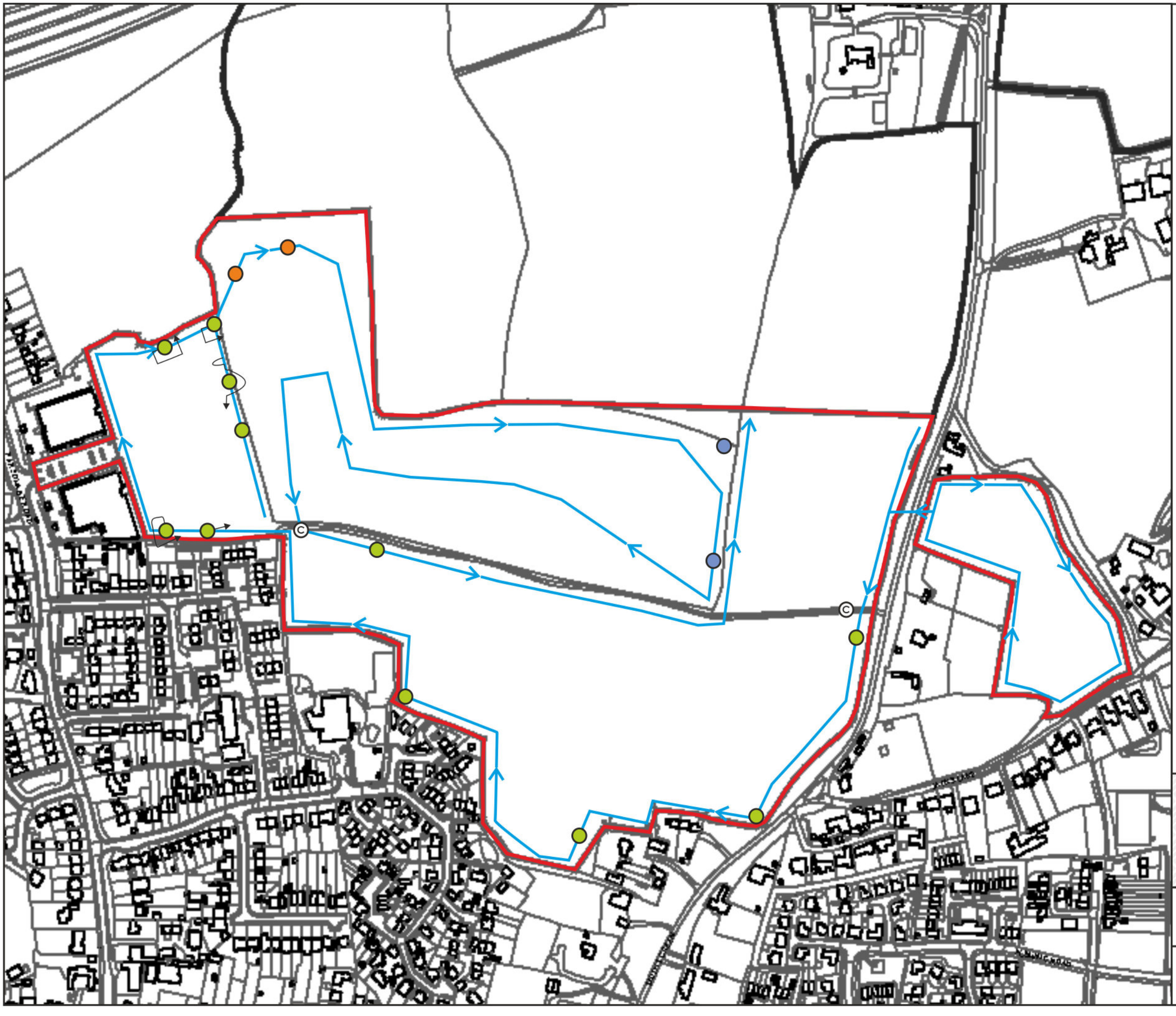
PLAN ECO3e:
BAT ACTIVITY SURVEY
RESULTS 12.08.21

Rev: A

Sep 2021

PLAN ECO3f

Bat Activity Survey Results 08.09.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- NOCTULE BAT REGISTRATION
- FLIGHT PATH
- CHECKPOINT

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM,
TAKELEY, ESSEX

PLAN ECO3f:
BAT ACTIVITY SURVEY
RESULTS 08.09.21

Rev: A

Sep 2021

PLAN ECO4

Dormouse Equipment Distribution

KEY:

- SITE BOUNDARY
- DORMOUSE TUBE LOCATION
- DORMOUSE FOOTPRINT TRACKING TUNNEL LOCATION
- NEST BOX LOCATION

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

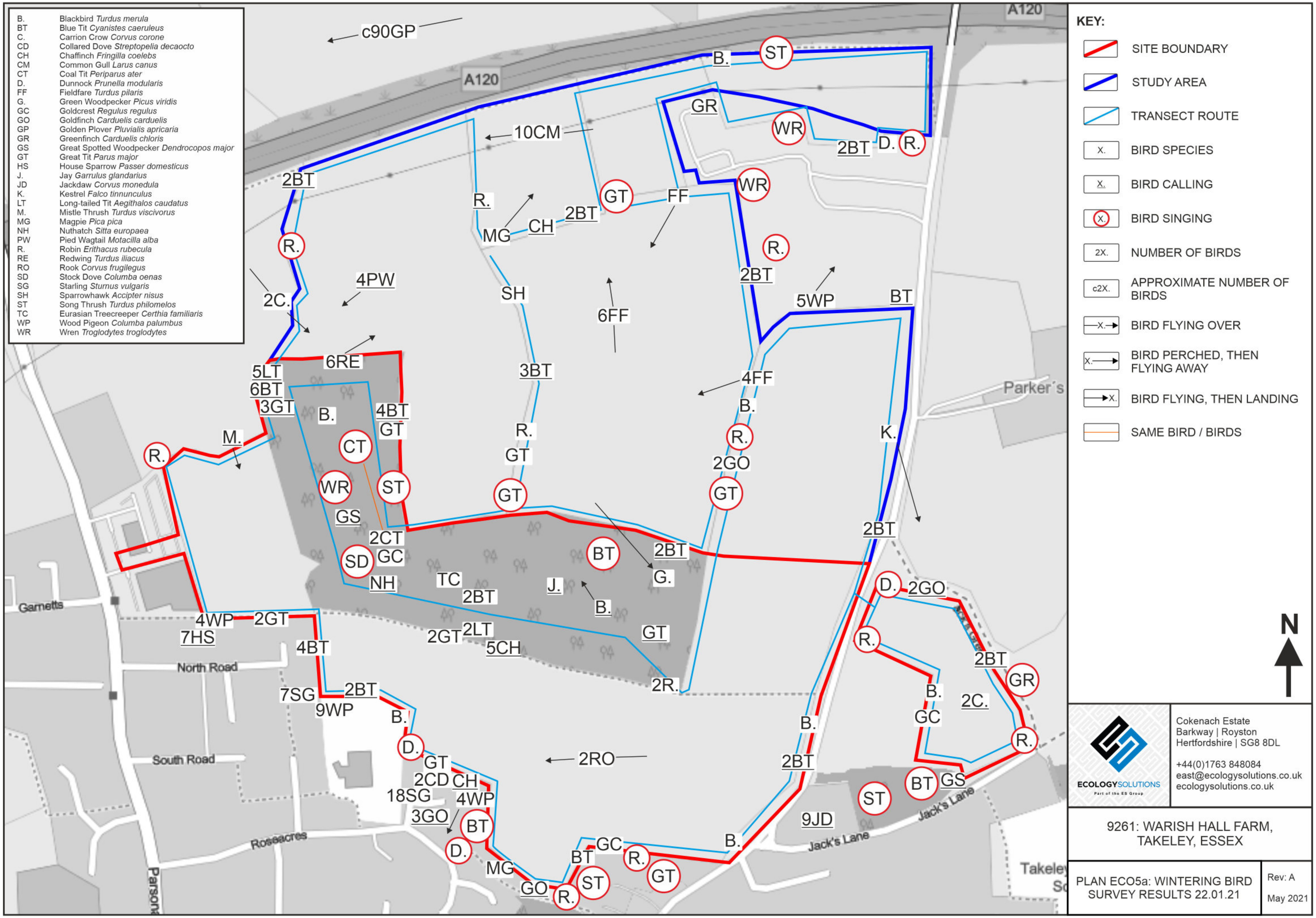
PLAN ECO4: DORMOUSE EQUIPMENT DISTRIBUTION

Rev: A

Jun 2021

PLAN ECO5a

Wintering Bird Survey Results 22.01.21


B. Blackbird Turdus merula
BT Blue Tit Cyanistes caeruleus
C. Carrion Crow Corvus corone
CD Collared Dove Streptopelia decaocto
CH Chaffinch Fringilla coelebs
CM Common Gull Larus canus
CT Coal Tit Periparus ater
D. Dunnock Prunella modularis
FF Fieldfare Turdus pilaris
G. Green Woodpecker Picus viridis
GC Goldcrest Regulus regulus
GO Goldfinch Carduelis carduelis
GP Golden Plover Pluvialis apricaria
GR Greenfinch Carduelis chloris
GS Great Spotted Woodpecker Dendrocopos major
GT Great Tit Parus major
HS House Sparrow Passer domesticus
J. Jay Garrulus glandarius
JD Jackdaw Corvus monedula
K. Kestrel Falco tinnunculus
LT Long-tailed Tit Aegithalos caudatus
M. Mistle Thrush Turdus viscivorus
MG Magpie Pica pica
NH Nuthatch Sitta europaea
PW Pied Wagtail Motacilla alba
R. Robin Erithacus rubecula
RE Redwing Turdus iliacus
RO Rook Corvus frugilegus
SD Stock Dove Columba oenas
SG Starling Sturnus vulgaris
SH Sparrowhawk Accipter nisus
ST Song Thrush Turdus philomelos
TC Eurasian Treecreeper Certhia familiaris
WP Wood Pigeon Columba palumbus
WR Wren Troglodytes troglodytes
A120
c90GP
10CM
Garnetts
North Road
South Road
Roseacres
Parsonage
Jack's Lane
Parker's
Takeley
N
KEY:
SITE BOUNDARY
STUDY AREA
TRANSECT ROUTE
BIRD SPECIES
BIRD CALLING
BIRD SINGING
NUMBER OF BIRDS
APPROXIMATE NUMBER OF BIRDS
BIRD FLYING OVER
BIRD PERCHED, THEN FLYING AWAY
BIRD FLYING, THEN LANDING
SAME BIRD / BIRDS
ECOLOGYSOLUTIONS
Part of the ES Group
Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL
+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk
9261: WARISH HALL FARM, TAKELEY, ESSEX
PLAN ECO5a: WINTERING BIRD SURVEY RESULTS 22.01.21
Rev: A
May 2021

PLAN ECO5b

Wintering Bird Survey Results 10.02.21

B.	Blackbird *Turdus merula*
BT	Blue Tit *Cyanistes caeruleus*
C.	Carrion Crow *Corvus corone*
CH	Chaffinch *Fringilla coelebs*
D.	Dunnock *Prunella modularis*
FF	Fieldfare *Turdus pilaris*
G.	Green Woodpecker *Picus viridis*
GO	Goldfinch *Carduelis carduelis*
GR	Greenfinch *Carduelis chloris*
GT	Great Tit *Parus major*
HS	House Sparrow *Passer domesticus*
J.	Jay *Garrulus glandarius*
LT	Long-tailed Tit *Aegithalos caudatus*
MG	Magpie *Pica pica*
NH	Nuthatch *Sitta europaea*
PH	Pheasant *Phasianus colchicus*
PW	Pied Wagtail *Motacilla alba*
R.	Robin *Erithacus rubecula*
RE	Redwing *Turdus iliacus*
S.	Skylark *Alauda arvensis*
SD	Stock Dove *Columba oenas*
SG	Starling *Sturnus vulgaris*
SH	Sparrowhawk *Accipter nisus*
WP	Wood Pigeon *Columba palumbus*
WR	Wren *Troglodytes troglodytes*
Y.	Yellowhammer *Emberiza citrinella*

KEY:

- SITE BOUNDARY
- STUDY AREA
- TRANSECT ROUTE
- X. BIRD SPECIES
- X. BIRD CALLING
- X. BIRD SINGING
- 2X. NUMBER OF BIRDS
- c2X. APPROXIMATE NUMBER OF BIRDS
- X. BIRD FLYING OVER
- X. BIRD PERCHED, THEN FLYING AWAY
- X. BIRD FLYING, THEN LANDING
- SAME BIRD / BIRDS

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO5b: WINTERING BIRD SURVEY RESULTS 10.02.21

Rev: A

May 2021

PLAN ECO5c

Wintering Bird Survey Results 23.02.21

B.	Blackbird *Turdus merula*
BH	Black-headed Gull *Chroicocephalus ridibundus*
BT	Blue Tit *Cyanistes caeruleus*
BZ	Buzzard *Buteo buteo*
C.	Carrion Crow *Corvus corone*
CD	Collared Dove *Streptopelia decaocto*
CH	Chaffinch *Fringilla coelebs*
CT	Coal Tit *Periparus ater*
D.	Dunnock *Prunella modularis*
FF	Fieldfare *Turdus pilaris*
G.	Green Woodpecker *Picus viridis*
GC	Goldcrest *Regulus regulus*
GO	Goldfinch *Carduelis carduelis*
GR	Greenfinch *Carduelis chloris*
GS	Great Spotted Woodpecker *Dendrocopos major*
GT	Great Tit *Parus major*
H.	Grey Heron *Ardea cinerea*
HS	House Sparrow *Passer domesticus*
J.	Jay *Garrulus glandarius*
JD	Jackdaw *Corvus monedula*
LB	Lesser Black-backed Gull *Larus fuscus*
LI	Linnet *Carduelis cannabina*
LT	Long-tailed Tit *Aegithalos caudatus*
M.	Mistle Thrush *Turdus viscivorus*
MA	Mallard *Anas platyrhynchos*
MG	Magpie *Pica pica*
MP	Meadow Pipit *Anthus pratensis*
NH	Nuthatch *Sitta europaea*
PH	Pheasant *Phasianus colchicus*
PW	Pied Wagtail *Motacilla alba*

R.	Robin *Erithacus rubecula*
RE	Redwing *Turdus iliacus*
S.	Skylark *Alauda arvensis*
SG	Starling *Sturnus vulgaris*
ST	Song Thrush *Turdus philomelos*
WK	Woodcock *Scolopax rusticola*
WP	Wood Pigeon *Columba palumbus*
WR	Wren *Troglodytes troglodytes*
Y.	Yellowhammer *Emberiza citrinella*

KEY:

- SITE BOUNDARY
- STUDY AREA
- TRANSECT ROUTE
- X. BIRD SPECIES
- X. BIRD CALLING
- X. BIRD SINGING
- 2X. NUMBER OF BIRDS
- c2X. APPROXIMATE NUMBER OF BIRDS
- —X.→ BIRD FLYING OVER
- X.→ BIRD PERCHED, THEN FLYING AWAY
- →X. BIRD FLYING, THEN LANDING
- SAME BIRD / BIRDS

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO5c: WINTERING BIRD SURVEY RESULTS 23.02.21

Rev: A

May 2021

PLAN ECO6a

Breeding Bird Survey Results 16.04.21

B.	Blackbird *Turdus merula*
BC	Blackcap *Sylvia atricapilla*
BT	Blue Tit *Cyanistes caeruleus*
C.	Carrion Crow *Corvus corone*
CH	Chaffinch *Fringilla coelebs*
CC	Chiffchaff *Phylloscopus collybita*
CD	Collared Dove *Streptopelia decaocto*
CH	Chaffinch *Fringilla coelebs*
D.	Dunnock *Prunella modularis*
GS	Great Spotted Woodpecker *Dendrocops major*
GT	Great Tit *Parus major*
HS	House Sparrow *Passer domesticus*
J.	Jay *Garrulus glandarius*
LT	Lesser Black-Headed Gull *Larus fuscus*
LT	Long-tailed Tit *Aegithalos caudatus*
M.	Mistle Thrush *Turdus viscivorus*
MG	Magpie *Pica pica*
R.	Robin *Erithacus rubecula*
SG	Starling *Sturnus vulgaris*
ST	Song Thrush *Turdus philomelos*
WP	*Woodpigeon Columba palumbus*
WR	Wren *Troglodytes troglodytes*
Y.	Yellowhammer *Emberiza citrinella*

KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- X. — BIRD SPECIES
- X. — BIRD CALLING
- X. — BIRD SINGING
- 2X. — NUMBER OF BIRDS
- c2X. — APPROXIMATE NUMBER OF BIRDS
- X.→ — BIRD FLYING OVER
- X.→ — BIRD PERCHED, THEN FLYING AWAY
- →X. — BIRD FLYING, THEN LANDING
- SAME BIRD / BIRDS
- X.pair — PAIR OF BIRDS

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

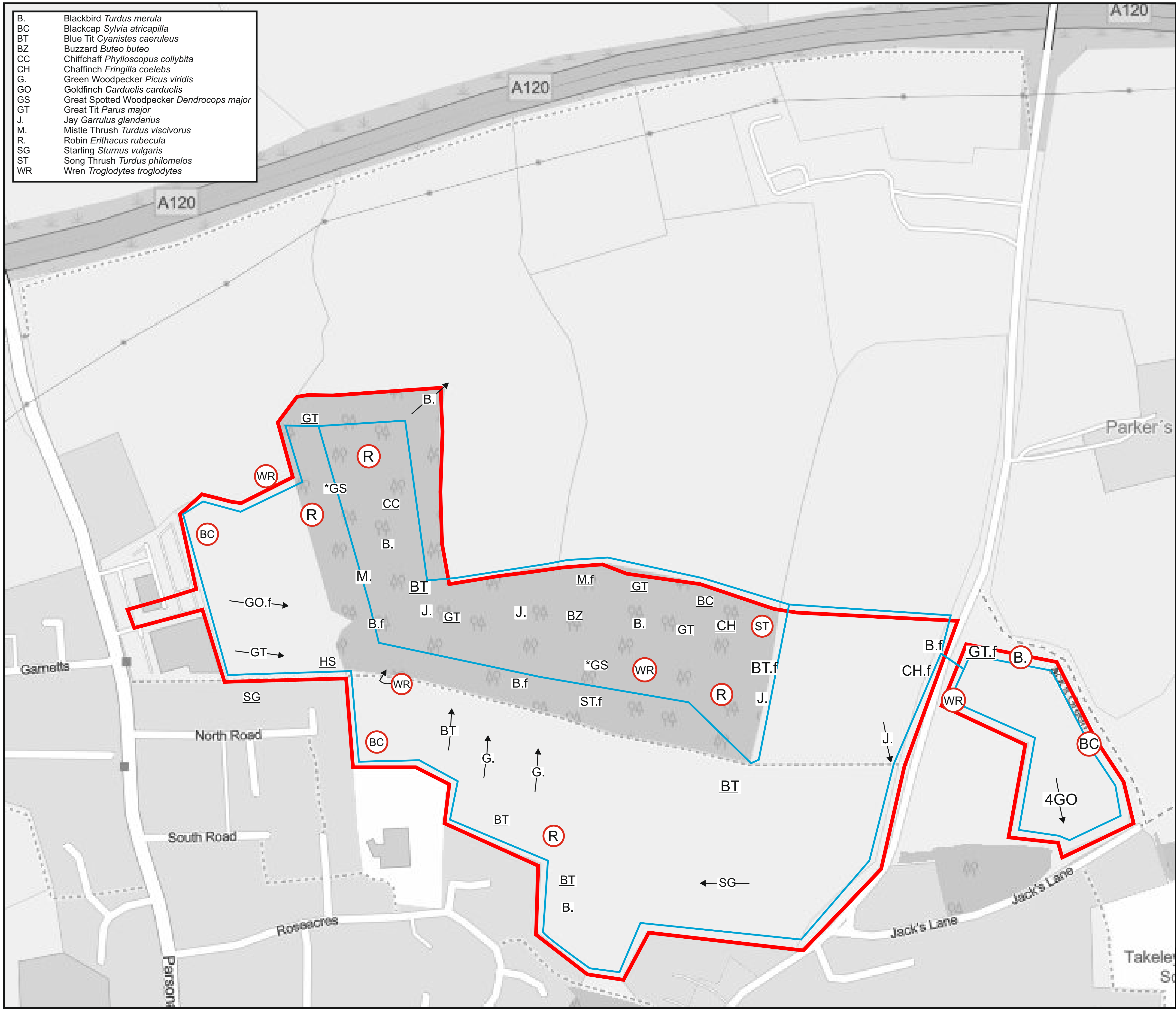
PLAN ECO6a: BREEDING BIRD SURVEY RESULTS 16.04.21

Rev: A

May 2021

PLAN ECO6b

Breeding Bird Survey Results 25.05.21


B. Blackbird Turdus merula
BC Blackcap Sylvia atricapilla
BT Blue Tit Cyanistes caeruleus
BZ Buzzard Buteo buteo
CC Chiffchaff Phylloscopus collybita
CH Chaffinch Fringilla coelebs
G. Green Woodpecker Picus viridis
GO Goldfinch Carduelis carduelis
GS Great Spotted Woodpecker Dendrocops major
GT Great Tit Parus major
J. Jay Garrulus glandarius
M. Mistle Thrush Turdus viscivorus
R. Robin Erithacus rubecula
SG Starling Sturnus vulgaris
ST Song Thrush Turdus philomelos
WR Wren Troglodytes troglodytes
A120
Parker's
Garnetts
North Road
South Road
Roseacres
Jack's Lane
Takeley
4GO
N

KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- X. BIRD SPECIES
- X. BIRD CALLING
- X. BIRD SINGING
- 2X. NUMBER OF BIRDS
- c2X. APPROXIMATE NUMBER OF BIRDS
- —X.→ BIRD FLYING OVER
- X.→ BIRD PERCHED, THEN FLYING AWAY
- →X. BIRD FLYING, THEN LANDING
- X.pair PAIR OF BIRDS
- X.f FEMALE BIRD SPECIES
- *X. BIRD NEST

ECOLOGYSOLUTIONS
Part of the ES Group
Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL
+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

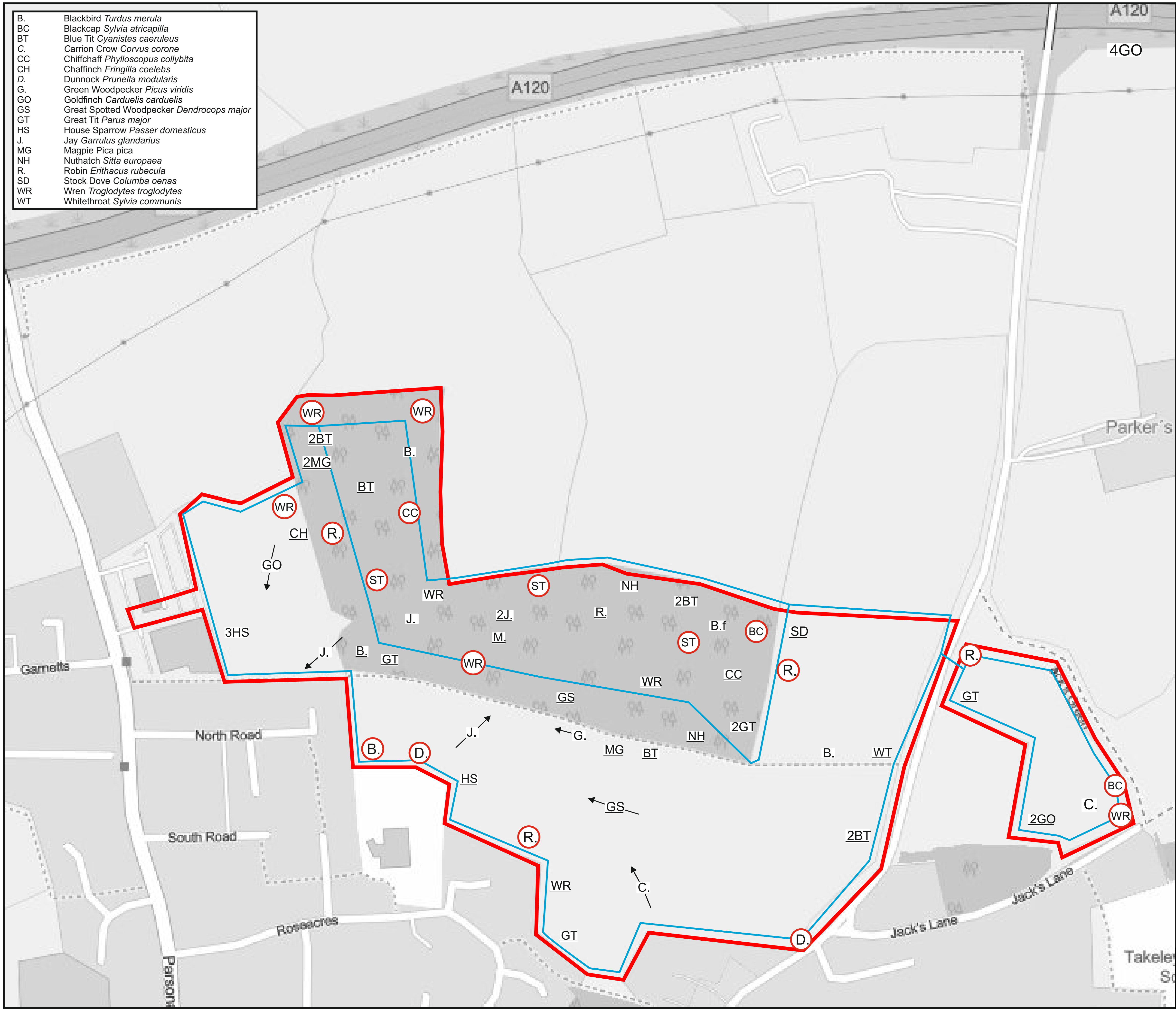
PLAN ECO6b: BREEDING BIRD SURVEY RESULTS 25.05.21

Rev: A

Jun 2021

PLAN ECO6c

Breeding Bird Survey Results 23.06.21


B. Blackbird *Turdus merula*
BC Blackcap *Sylvia atricapilla*
BT Blue Tit *Cyanistes caeruleus*
C. Carrion Crow *Corvus corone*
CC Chiffchaff *Phylloscopus collybita*
CH Chaffinch *Fringilla coelebs*
D. Dunnock *Prunella modularis*
G. Green Woodpecker *Picus viridis*
GO Goldfinch *Carduelis carduelis*
GS Great Spotted Woodpecker *Dendrocops major*
GT Great Tit *Parus major*
HS House Sparrow *Passer domesticus*
J. Jay *Garrulus glandarius*
MG Magpie Pica pica
NH Nuthatch *Sitta europaea*
R. Robin *Erithacus rubecula*
SD Stock Dove *Columba oenas*
WR Wren *Troglodytes troglodytes*
WT Whitethroat *Sylvia communis*
A120
A120
4GO
Parker's
Garnetts
North Road
South Road
Roseacres
Jack's Lane
Jack's Lane
Takeley
WR
WR
2BT
2MG
B.
BT
WR
CC
CH
R.
GO
ST
WR
ST
NH
2BT
3HS
J.
2J.
R.
B.f
BC
SD
M.
ST
J.
B.
GT
WR
WR
CC
R.
GS
2GT
NH
J.
G.
MG
BT
B.
WT
B.
D.
HS
GS
R.
2BT
WR
C.
GT
D.
R.
GT
BC
C.
2GO
WR

KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- X. BIRD SPECIES
- X. BIRD CALLING
- (X.) BIRD SINGING
- 2X. NUMBER OF BIRDS
- —X.→ BIRD FLYING OVER
- X.——→ BIRD PERCHED, THEN FLYING AWAY
- X.f FEMALE BIRD SPECIES

N

ECOLOGY SOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

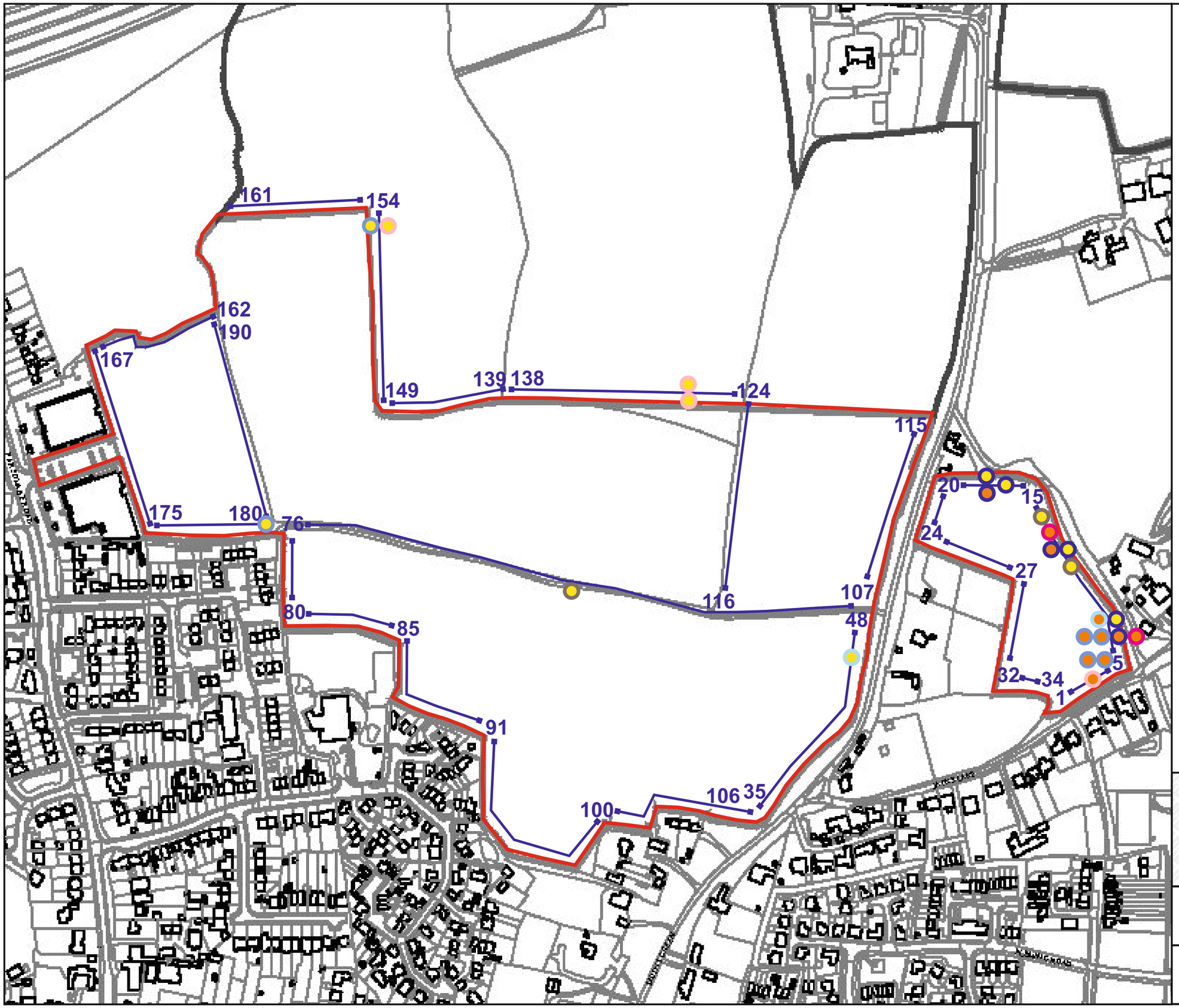
PLAN ECO6c: BREEDING BIRD SURVEY RESULTS 23.06.21

Rev: A

Oct 2021

PLAN ECO7

Reptile Survey Results



KEY:

- SITE BOUNDARY
- ARTIFICIAL REFUGIA LOCATION

DATE OF REPTILE SURVEY

- 22.05.21
- 25.05.21
- 04.06.21
- 10.06.21
- 22.06.21
- 24.06.21
- 30.06.21

REPTILE SPECIES

- JUVENILE GRASS SNAKE
- ADULT COMMON LIZARD

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

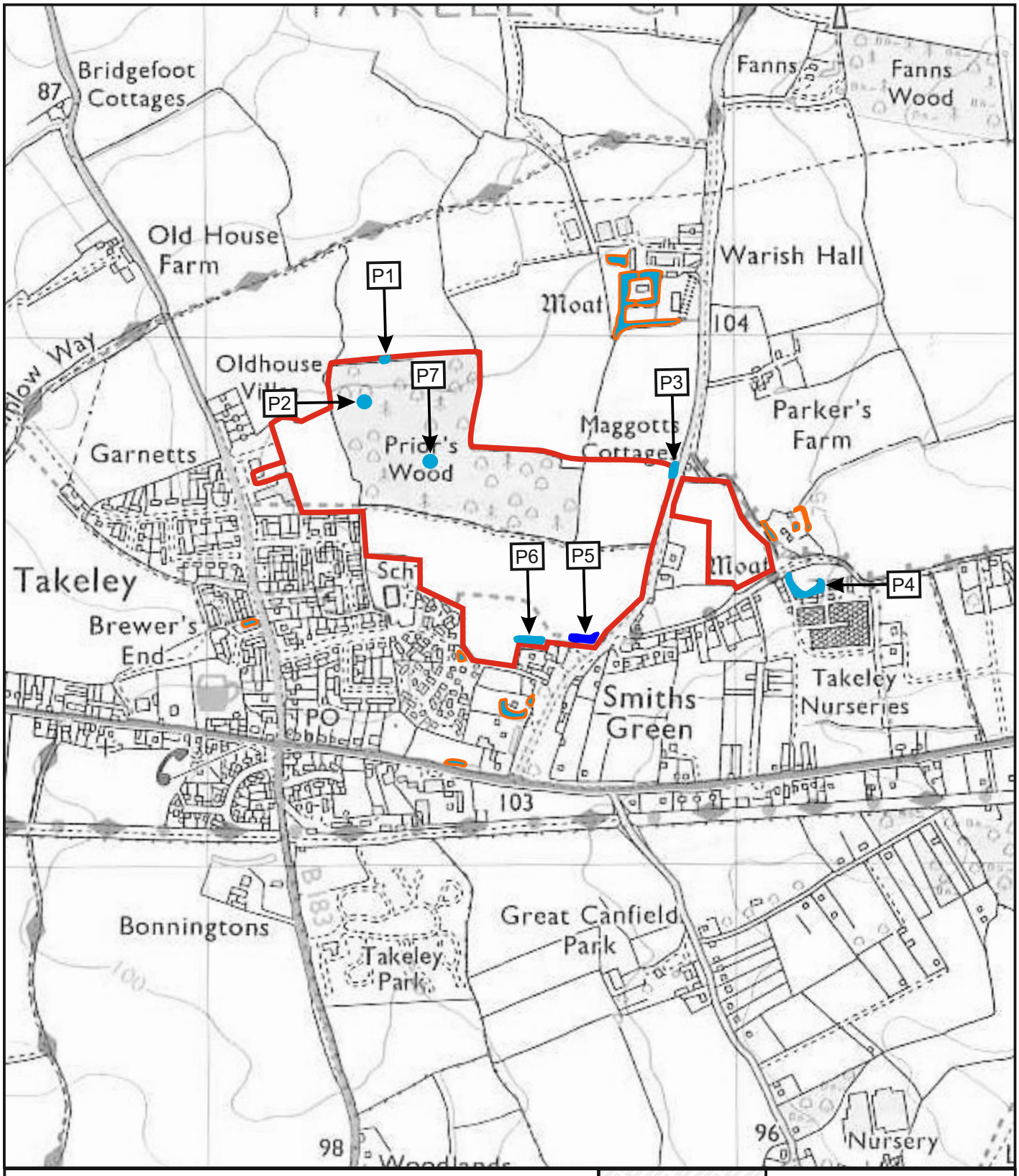
PLAN ECO7: REPTILE SURVEY RESULTS

Rev: B

Oct 2021

PLAN ECO8

Pond Locations and Results of eDNA Testing



KEY:

- SITE BOUNDARY
- PONDS WITH NEGATIVE GREAT CRESTED NEWT eDNA TEST RESULT
- POND DRY AT TIME OF SURVEY
- PONDS WITH ACCESS NOT PERMITTED

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO8: POND LOCATIONS AND RESULTS OF eDNA TESTING

Rev: A

May 2021

PHOTOGRAPHS

PHOTOGRAPH 1: Arable Field

PHOTOGRAPH 2: Broadleaved Woodland

PHOTOGRAPH 3: Eastern Hedgerow

PHOTOGRAPH 4: Southern Hedgerow

PHOTOGRAPH 5: Pond 7

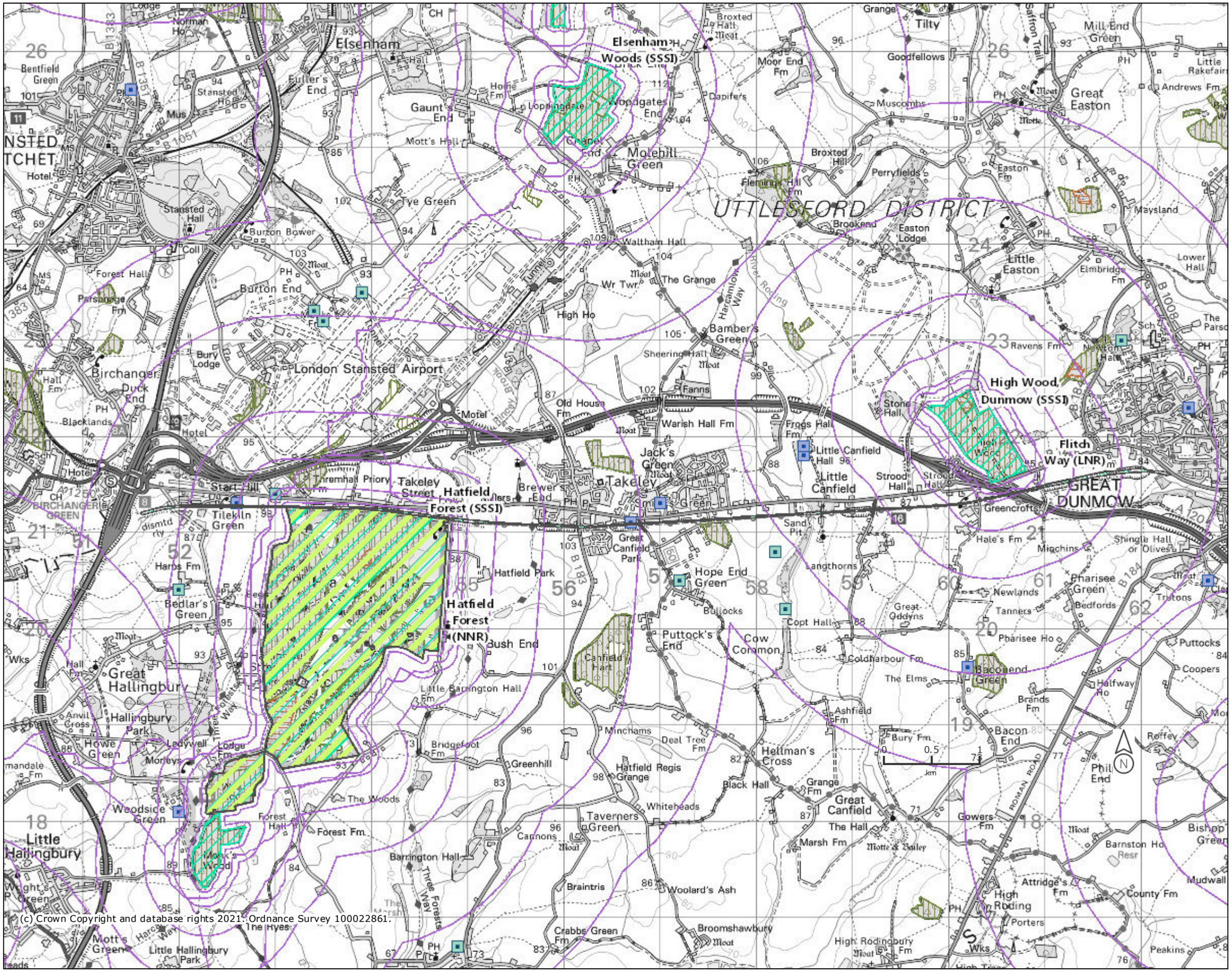
PHOTOGRAPH 6: Drainage Ditch

APPENDICES

APPENDIX 1

Information downloaded from Multi-Agency
Geographic Information for the Countryside (MAGIC)

9612 - Warish Hall Farm, Takeley



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)

Ancient Woodland (England)

- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile

Projection = OSGB36
xmin = 546500
ymin = 216400
xmax = 566600
ymax = 226600

Map produced by MAGIC on 19 May, 2021.

APPENDIX 2

Wintering Bird Survey Results

APPENDIX 2: WINTERING BIRD SURVEY RESULTS 2021

Summary of 2021 wintering bird surveys. Legislation and designation. National: R = Red List of Birds of Conservation Concern; A = Amber List of Birds of Conservation Concern; UKBAP = UK BAP Priority List of Species; S1 = Schedule 1 of the Wildlife and Countryside Act 1981; S41 = Section 41 of the NERC Act 2006.

BTO Code	Species	Date			National Legislation and Designation
		22.01.21	10.02.21	23.02.21	
B.	Blackbird *Turdus merula*	11	20	30	
BH	Black-headed Gull *Chroicocephalus ridibundus*			18	A
BT	Blue Tit *Cyanistes caeruleus*	59	46	45	
BZ	Buzzard *Buteo buteo*			1	
C.	Carrion Crow *Corvus corone*	4	3	5	
CA	Cormorant *Phalacrocorax carbo*	2			
CD	Collared Dove *Streptopelia decaocto*	2		2	
CH	Chaffinch *Fringilla coelebs*	14	11	18	
CM	Common Gull *Larus canus*	10		1	A
CT	Coal Tit *Periparus ater*	2		1	
D.	Dunnock *Prunella modularis*	4	4	8	A, UKBAP, S41
FF	Fieldfare *Turdus pilaris*	11	11	28	R, S1

BTO Code	Species	Date			National Legislation and Designation
		22.01.21	10.02.21	23.02.21	
FP	Feral Pigeon *Columba livia*			2	
G.	Green Woodpecker *Picus viridis*	1	1	1	
GC	Goldcrest *Regulus regulus*	3		1	
GO	Goldfinch *Carduelis carduelis*	9	11	3	
GP	Golden Plover *Pluvialis apricaria*	c90			
GR	Greenfinch *Carduelis chloris*	2	2	3	
GS	Great Spotted Woodpecker *Dendrocopos major*	2		2	
GT	Great Tit *Parus major*	19	14	20	
H.	Grey Heron *Ardea cinerea*			1	
HS	House Sparrow *Passer domesticus*	7	19	14	R, UKBAP, S41
J.	Jay *Garrulus glandarius*	1	3	5	
JD	Jackdaw *Corvus monedula*	9		5	
K.	Kestrel *Falco tinnunculus*	1	1		
KT	Red Kite *Milvus milvus*	1			S1
LB	Lesser Black-backed Gull *Larus fuscus*			2	
LI	Linnet *Carduelis cannabina*			3	R, UKBAP, S41

BTO Code	Species	Date			National Legislation and Designation
		22.01.21	10.02.21	23.02.21	
LT	Long-tailed Tit *Aegithalos caudatus*	7	9	9	
M.	Mistle Thrush *Turdus viscivorus*	1		2	R
MA	Mallard *Anas platyrhynchos*			4	A
MG	Magpie *Pica pica*	7	5	6	
MH	Moorhen *Gallinula chloropus*	1			
MP	Meadow Pipit *Anthus pratensis*	2		2	A
NH	Nuthatch *Sitta europaea*	1	1	1	
PH	Pheasant *Phasianus colchicus*	1	1	4	
PW	Pied Wagtail *Motacilla alba*	5	1	2	
R.	Robin *Erithacus rubecula*	17	11	18	
RB	Reed Bunting *Emberiza schoeniclus*	1	3	3	A, UKBAP, S41
RE	Redwing *Turdus iliacus*	6	41	38	R, S1
RO	Rook *Corvus frugilegus*	2			
S.	Skylark *Alauda arvensis*	10	1	6	R, UKBAP, S41
SD	Stock Dove *Columba oenas*	1	1	1	A
SG	Starling *Sturnus vulgaris*	25	12	5	R, UKBAP, S41

BTO Code	Species	Date			National Legislation and Designation
		22.01.21	10.02.21	23.02.21	
SH	Sparrowhawk *Accipiter nisus*	1	1	1	
SN	Snipe *Gallinago gallinago*	2	2	2	A
ST	Song Thrush *Turdus philomelos*	4		20	R, UKBAP, S41
TC	Eurasian Treecreeper *Certhia familiaris*	1			
WK	Woodcock *Scolopax rusticola*			1	R
WP	Wood Pigeon *Columba palumbus*	24	94	77	
WR	Wren *Troglodytes troglodytes*	3	4	10	
Y.	Yellowhammer *Emberiza citrinella*		1	10	R, UKBAP, S41

APPENDIX 3

Breeding Bird Survey Results

APPENDIX 3: BREEDING BIRD SURVEY RESULTS 2021

Summary of 2021 Breeding bird surveys. Legislation and designation. National: R = Red List of Birds of Conservation Concern; A = Amber List of Birds of Conservation Concern; UKBAP = UK BAP Priority List of Species; S1 = Schedule 1 of the Wildlife and Countryside Act 1981; S41 = Section 41 of the NERC Act 2006.

BTO Code	Species	Date			National Legislation and Designation
		16.04.21	25.05.21	23.06.21	
B.	Blackbird *Turdus merula*	15	5	6	
BC	Blackcap *Sylvia atricapilla*	5	4	2	S1
BT	Blue Tit *Cyanistes caeruleus*	31	6	8	
C.	Carrion Crow *Corvus corone*	6		2	
CH	Chaffinch *Fringilla coelebs*	2	2	1	
CC	Chiffchaff *Phylloscopus collybita*	3	1	2	S1
D.	Dunnock *Prunella modularis*	2		2	A, UKBAP, S41
G.	Green Woodpecker *Picus viridis*		2	1	
GO	Goldfinch *Carduelis carduelis*		5	3	
GS	Great Spotted Woodpecker *Dendrocopos major*	3	2	1	
GT	Great Tit *Parus major*	9	6	5	
HS	House Sparrow *Passer domesticus*	4		4	R, UKBAP, S41

BTO Code	Species	Date			National Legislation and Designation
		16.04.21	25.05.21	23.06.21	
J.	Jay *Garrulus glandarius*	5	4	4	
LB	Lesser Black-backed Gull *Larus fuscus*	1			
LT	Long-tailed Tit *Aegithalos caudatus*	2			
M.	Mistle Thrush *Turdus viscivorus*	1	2	1	R
MG	Magpie *Pica pica*	5		3	
NH	Nuthatch *Sitta europaea*			2	
R.	Robin *Erithacus rubecula*	9	4	5	
SD	Stock Dove *Columba oenas*			1	A
SG	Starling *Sturnus vulgaris*	5	2		R, UKBAP, S41
ST	Song Thrush *Turdus philomelos*	2	1		R, UKBAP, S41
WH	Whitethroat *Sylvia communis*			1	
WP	Wood Pigeon *Columba palumbus*	25			
WR	Wren *Troglodytes troglodytes*	7	4	7	
Y.	Yellowhammer *Emberiza citrinella*	2			R, UKBAP, S41

APPENDIX 4

Great Crested Newt eDNA Survey Results

SureScreen Scientifics

Folio No: E9299
Report No: 1
Purchase Order: 926IE/NW
Client: ECOLOGY SOLUTIONS LTD
Contact: Nicole Watts

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 19/04/2021
Date Reported: 28/04/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1347	POND P2	TL 562 218	Pass	Pass	Pass	Negative	0
1348	POND P3	TL 568 217	Pass	Pass	Pass	Negative	0
1349	POND P6	TL 566 214	Pass	Pass	Pass	Negative	0
1353	POND P1	TL 562 219	Pass	Pass	Pass	Negative	0
1354	POND P4	TL 571215	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Chris Troth

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

SureScreen Scientifics

Folio No: E10793
Report No: 1
Purchase Order: 9261E
Client: ECOLOGY SOLUTIONS LTD
Contact: Nicole Watts

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 07/06/2021
Date Reported: 08/06/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1358	Warish Hall Farm P6	TL564217	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Gabriela Danickova **Approved by:** Gabriela Danickova

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

01763 848084 | east@ecologysolutions.co.uk | [redacted]

Appendix C - Ecology Update and Walkover Survey [Sept 2022] by Ecology Solutions

Ecology Solutions Limited
Cokenach Estate
Barkway
Royston
Hertfordshire
SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk

JACK'S FIELD, WARISH HALL FARM, TAKELEY

ECOLOGY UPDATE AND WALKOVER SURVEY

Introduction

1. Ecology Solutions was commissioned in October 2020 by Weston Homes to undertake an ecological appraisal of land at Warish Hall Farm, Takeley, Essex. A Phase 1 habitat survey and protected species surveys were undertaken throughout 2021 and the results are included in the Ecological Assessment dated October 2021.

2. The Jack's Field parcel is being brought forward for a planning application for residential development. This note sets out the results of a walkover survey undertaken on 30 August 2022 to update the results of the existing Ecological Assessment of October 2021, insofar as they relate to the Jack's Field parcel.

3. The Jack's Field parcel is considered in terms of its intrinsic ecological interest, the opportunities offered for protected and notable species, and the potential for suitable ecological mitigation measures.

4. This update should be read in conjunction with the 2021 Ecological Assessment.

Arable

5. The Jack's Field parcel consists of a single arable field supporting homogeneous, managed grassland which appears to have been cut during the 2022 harvest season. The sward was approximately 10 cm in height. This habitat is of negligible ecological interest. During the initial habitat survey completed in October 2020, Jack's Field had been left fallow and comprised a range of recolonising species. During the walkover survey completed in April 2021, the field was found to have been ploughed.

Hedgerows

6. A mature species rich hedgerow bounds the east of the site and is comprised of the species Field Maple *Acer campestre*, Elm *Ulmus* sp., Blackthorn *Prunus spinosa*, Hawthorn *Crataegus monogyna*, Goat Willow *Salix caprea*, Ash *Fraxinus excelsior*, Hazel *Corylus avellana*, Crab Apple *Malus sylvestris*, Holly *Ilex aquifolium*, Dogwood *Cornus sanguinea* and Honeysuckle *Lonicera periclymenum*.

7. A mature species rich hedgerow bounds the south of the site along Jack's Lane and is comprised of the species Field Maple, Ash, Hawthorn, Blackthorn, Elm, Hazel, Dogwood, Dog Rose *Rosa canina* and Ivy *Hedera helix*. A mature Oak *Quercus robur* is present in this hedgerow towards the south-eastern corner of the site. This tree was assessed to not support any features suitable for roosting bats.

8. A mature hedgerow bounds the north-west of the site along Smiths Green and is comprised of the species Field Maple, Blackthorn, Elder, Hawthorn, Dogwood, Elm and Honeysuckle. A mature Oak is present within this hedgerow on the north-west corner of the site. This tree was assessed to not support any features suitable for roosting bats.

9. The hedgerows form important corridors connecting the Jack's Field parcel to surrounding valuable habitats identified in the October 2021 Ecological Assessment including the ditch and hedgerow network in the wider landscape.

10. The hedgerows may be classed as 'important' under the Hedgerows Regulations 1997 and would be considered priority habitats under the Natural Environment and Rural Communities Act 2006.

Field Margin

11. Dry conditions throughout the 2022 summer season meant grass and herb species were difficult to identify however species identified during the August 2022 walkover include Cocksfoot *Dactylis glomerata*, Yarrow *Achillea millefolium*, Broad-leaved Dock *Rumex obtusifolius*, Ground Ivy *Glechoma hederacea* and Pendulous Sedge *Carex pendula*. A more comprehensive list of species previously recorded within the field margins across the Warish Hall Farm scheme can be found in the Ecological Assessment.

Ditch

12. A ditch is present along the eastern boundary of Jack's Field, associated with the hedgerow. The ditch appears to be dry throughout the large majority of the year and lacks aquatic vegetation.

Semi-natural Mature Woodland

13. Immediately to the south-west of the site is a small area of semi-natural woodland predominantly comprised of the species Ash, Oak, Field Maple, Hazel, Blackthorn and Elm. Immediately adjacent to the site boundary is situated a mature Oak tree with features considered to be suitable for supporting a bat roost, including a large split in the bark likely resulting from a fallen limb. A mature Ash tree somewhat set back from the site boundary was considered also to be suitable for supporting a bat roost due to the presence of such features as deadwood and rot holes.

Faunal Evaluation

14. Full results of detailed protected species surveys are included with the Ecological Assessment of October 2021. The habitats of greatest value to protected species are the boundary hedgerows and mature trees.

15. The mature trees present on the site boundary within the offsite semi-natural mature woodland support features suitable for roosting bats. Foraging and

commuting bats were confirmed to be present within the site following bat activity surveys undertaken in 2021.

16. No evidence of Badgers, Dormice or Hedgehogs were found during the surveys of 2021 or during the update survey of 2022, but Hedgehogs are known to be present in the locality.

17. In 2021, wintering and breeding bird surveys identified the presence of a number of species protected under Section 41 of the Natural Environment and Rural Communities Act 2006 and / or listed on the Red List. These species were associated with the hedgerows which provide suitable nesting, foraging and commuting habitats.

18. In 2021, a presence / absence survey for reptiles identified a low population of Common Lizard *Zootoca vivipara* and Grass Snake *Natrix helvetica*, predominantly concentrated within Jack's Field. The hedgerows and associated field margins of the Jack's Field parcel provide suitable foraging, commuting and hibernating habitat for common and widespread reptile species.

19. eDNA tests for Great Crested Newt *Triturus cristatus* undertaken in 2021 on the waterbodies considered within the October 2021 Ecological Assessment were returned as negative. The species is not likely to be present within the Jack's Field parcel, though some of the habitats are suitable.

20. It is likely a varied assemblage of common invertebrate species are supported by the hedgerows and, to a lesser extent, the arable grassland.

21. With the exception of the common bird species Blue Tit *Cyanistes caeruleus*, Goldfinch *Carduelis carduelis* Long-tailed Tit *Aegithalos caudatus,* Blackbird *Turdus merula*, Carrion Crow *Corvus corone* and Magpie *Pica pica*, which were active in the hedgerows, no evidence of protected species was recorded during the August 2022 survey.

Mitigation Recommendations

22. The existing boundary vegetation will be retained as part of the development. The landscape scheme includes new tree and shrub planting, as well as the establishment of gardens and communal open space.

23. Any lighting required throughout the works should be managed sensitively to prevent adverse impacts upon bats. Lighting should be directed into the working area with limited overspill into the surrounding landscape and the site should be illuminated for the minimum period required by the works. The lighting scheme for the completed development should be sensitively designed to protect bats. Lighting should be installed at a low level and illuminate only the areas necessary, with limited overspill into the surrounding landscape.

24. As suitable Badger habitats are present within the site, checks should be undertaken by an ecologist prior to works commencing to determine that Badger setts remain absent from the site and within 30 metres of the boundary. Precautionary working methods for the prevention of harm to Badgers should be adhered to during the works. The same precautionary working methods for Badgers are recommended for the protection of Hedgehogs, for which the habitats are suitable. In addition, an ecologist should inspect any features suitable for Hedgehog sheltering prior to their removal.

25. Any clearance of trees, shrubs or hedgerows should be undertaken outside the breeding bird season (March-July inclusive). Where this cannot be achieved, a check for nesting birds should be undertaken by an ecologist immediately prior to vegetation removal.

26. Passive displacement will be used when removing habitats suitable for active reptiles. This involves a cutting regime of the potential reptile habitats to be impacted by the works, designed to encourage reptiles away from these areas and into the nearest suitable habitat. The regime of passive displacement will also be sufficient to protect any possible amphibian species present.

Summary and Conclusions

27. A Phase 1 habitat survey and protected species surveys were undertaken throughout 2021 to produce an Ecological Assessment in October 2021. The Jack's Field parcel, considered within the assessment, is being brought forward for a planning application for residential development and a walkover survey was undertaken in August 2022 to update the results of the original assessment. This update should be read in conjunction with the 2021 Ecological Assessment.

28. The ecological interest of the site remains as it was at the time of the 2021 Ecological Assessment, with no new constraints or features of ecological interest identified. New planting is proposed as part of the proposals. Incorporating the mitigation measures recommended, the proposals are not likely to have a significant adverse effect on wildlife.

29. In conclusion, there are no overriding reasons of an ecological nature why the site could not be developed, subject to implementation of the mitigation measures described.

Ecology Solutions
September 2022

Appendix D - Briefing Note: Place Services Comments 13.02.23 [Feb 2023] by Ecology Solutions

Ecology Solutions Limited
Cokenach Estate
Barkway
Royston
Hertfordshire
SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk

9283: LAND AT WARISH HALL FARM, NORTH OF JACKS LANE, TAKELEY

BRIEFING NOTE: PLACE SERVICE COMMENTS 13.02.23

1. Comments dated 13 February 2023 have been received from Ella Gibbs, Senior Ecological Consultant with Place Services, in relation to the planning application for the land north of Jack's Lane, Takeley (Planning ref: UTT/22/3126/FUL). A response to the points made is set out below.

2. Firstly, it should be noted that the consultation response was based on a review of outdated documentation relating to the wider Land at Warish Hall Farm (Planning Ref: UTT/21/1987/FUL), supported by an Ecology Update and Walkover Survey note (September 2022). The Ecological Assessment dated June 2021 as referenced within the consultation response was superseded by a revised Ecological Assessment (October 2021) and subsequent Bat Survey Report (November 2021) to support the planning application for Land at Warish Hall Farm.

3. Together these documents set out the full assessment of the Warish Hall Farm site, with the June 2021 version being only an interim assessment submitted in error. The correct documents are supplied with this note.

4. Each of the Place Services points are addressed below.

   The Ecological Assessment (Ecology Solutions, June 2021) states that 'Some of the more mature trees are considered to provide bat roosting potential' and goes on to state that 'Owing to the potential [bat] interest on site it is advised that further surveys adhering to current guidelines would be required to inform the level of interest and allow for any specific mitigation to be delivered'.

5. As detailed above, the consultation response was based on a review of outdated documentation in relation to the wider Land at Warish Hall Farm planning application. Further bat surveys were subsequently undertaken. The results of the surveys, along with recommended mitigation and enhancement measures are detailed within the Bat Report (November 2021). This updated report relates to the wider site, including the land north of Jack's Lane.

   The Ecology Update and Walkover Survey (Ecology Solutions, September 2022) also says that 'Immediately adjacent to the site boundary is situated a mature Oak tree with features considered to be suitable for supporting a bat roost, including a large split in the bark likely resulting from a fallen limb'. The Arboricultural Impact

Assessment (Barton Hyett Associates, November 2022) highlights tree T13, an Oak with a vertical stem wound in south-west of the site, is due to be removed as part of the proposed works. If any trees with moderate or high potential to support roosting bats are to be removed as part of the proposed development, further surveys, in line with best practice guidance (Collins, 2016), including aerial inspection and/or emergence/re-entry surveys should be undertaken to determine the presence/likely absence of bat roosts. It should be confirmed, with appropriate justification, what level of potential the trees mentioned in the report have to support roosting bats, in line with best practice guidance (Collins, 2016).

6. A further assessment of Tree T13 will be undertaken to ensure that the removal of this tree will not result in any loss of a roosting site. In the first instance this would involve a ground-based inspection using an endoscope and climbing if necessary. Should the tree be considered to have moderate or high potential to support roosting bats, further presence / likely absence surveys will be undertaken.

In addition, full survey results for bat activity surveys, breeding bird surveys and reptile surveys have not been submitted with this application.

We recommend that the results of the above surveys and details of any necessary additional mitigation & enhancement measures are required to make this proposal acceptable and will need to be provided prior to determination

7. Full survey results for the breeding bird surveys and reptile surveys are provided in the updated Ecological Assessment (October 2021); and the bat activity survey results are provided in the Bat Report (November 2021).

We note that the site lies adjacent to Priority habitat, Lowland Mixed Deciduous Woodland, and has native hedgerows at its boundary which are also considered Priority habitats and are potentially Important for biodiversity under the Hedgerow Regulations 1997. It is noted that where these hedgerows are adjacent to proposed gardens they have been separated by a 1.8m metal mesh fence which will prevent residents from removing or inappropriately managing the Priority habitat hedgerows. It is also noted that some sections of hedgerow are to be removed to facilitate the proposed development. Loss of hedgerows should be compensated on a 'like for like' or 'like for better' basis. New or restored habitats should aim to achieve a higher distinctiveness and/or condition than those lost. This can be calculated through the Defra Metric v 3.1 (or any successor).

8. The small loss of hedgerow to facilitate the development will be compensated for through new hedgerow planting along the access road. The landscape landscaping will aim to achieve as high a condition and distinctiveness as possible whilst still providing a visually desirable landscape setting.

In line with the Ecological Assessment (Ecology Solutions, June 2021), we recommend a Wildlife Sensitive Lighting Strategy should be delivered for this scheme and secured by a condition of any consent to avoid impacts to foraging and commuting bats, especially on the adjacent woodland and vegetated boundaries. This must follow the Guidance Note 8 Bats and artificial lighting (The Institute of Lighting Professionals & Bat Conservation Trust, 2018). In summary, it is highlighted that the following measures should be implemented for the lighting design, which could be informed by a professional ecologist:

- **Light levels should be as low as possible as required to fulfil the lighting need.**
- **Warm-White lights should be used preferably at 2700k. This is necessary as lighting which emit an ultraviolet component or that have a blue spectral**

content have a high attraction effect on insects. This may lead in a reduction in prey availability for some light sensitive bat species.

- **If light columns are required, they should be as short as possible as light at a low level reduces the likelihood of any ecological impact. However, the use of cowls, hoods, reflector skirts or shields could also be used to prevent horizontal spill.**
- **Movement sensors and timers could be used to minimise the 'lit time'.**

9. Comments relating to a sensitive lighting strategy by way of condition are noted and agreed.

Although eDNA surveys undertaken for Great Crested Newt (GCN) came back negative, given not all ponds within 500m were surveyed and the site lies within an Amber Risk Zone for the GCN District Level Licensing (GCN Risk Zones (Essex) | Natural England Open Data Geoportal (arcgis.com)) and suitable habitats are present at the boundary of the site, it is considered possible that GCN will be present. GCN should therefore be considered as part of this planning application, however, due to the habitats to be impacted, it may be possible to manage potential impacts upon GCN using a precautionary method statement for GCN for the construction stage, including storage of materials. This precautionary method statement should be secured by a condition of any consent.

10. A precautionary method statement for Great Crested Newts secured by a condition is accepted and mitigation will be tied to that already proposed for common reptiles. The Ecological Assessment (October 2021) states that measures to passively displace common reptiles from suitable habitat on site will also benefit amphibians utilising the site during their terrestrial phase.

Subject to the further information required, we support the proposed reasonable biodiversity enhancement measures including installation of bird and bat boxes, provision of a log pile, the provision of new native hedgerows, woodland, permeable fencing for Hedgehog and creation of an open wildflower meadow grassland which have been recommended to secure measurable net gains for biodiversity, as outlined under Paragraph 174d and 180d of the National Planning Policy Framework 2021. These should be secured by a condition of any consent.

11. These supporting comments are noted, and while the enhancement measures relate to the wider Land at Warish Hall Farm application, many of these measures including those proposed for bats, birds and hedgehogs, can and will be implemented within the proposed development at land north of Jack's Lane.

The Ecological Assessment (Ecology Solutions, June 2021) also mentions that wetland habitats are to be provided on site, but this cannot be seen on the Landscape Strategy (Allen Pyke, October 2022) or Masterplan – Jacks Parcel Coloured, drawing no. WH202.WST.P1.ZZ.DR.PL.10.00 (Weston Homes, August 2022).

12. The wetland habitats referenced within the Ecological Assessment refer to the wider Land at Warish Hall Farm and will not be provided within land north of Jack's Lane.

It is recommended that a Landscape and Ecological Management Plan (LEMP) is submitted to outline how retained and proposed habitats will be managed to benefit biodiversity. This LEMP should be secured by a condition of any consent.

13. A LEMP secured by condition is accepted, though it should again be acknowledged that not all retained and proposed habitats referenced with the Ecological Assessment will be delivered at land north of Jack's Lane, with habitats

falling outside of private ownership being far less extensive than those proposed for the wider site.

We note that the development site is situated within the 10.4km evidenced Zone of Influence for recreational impacts at Hatfield Forest Site of Special Scientific Interest (SSSI)/National Nature Reserve (NNR) as shown on MAGIC map (www.magic.gov.uk). Therefore, Natural England's letter to Uttlesford DC relating to Strategic Access Management and Monitoring Strategy (SAMM) – Hatfield Forest Mitigation Strategy (28 June 2021) should be followed to ensure that impacts are minimised to this site from new residential development. As a first step towards a comprehensive mitigation package, the visitor management measures required within Hatfield Forest SSSI / NNR have been finalised in a Hatfield Forest Mitigation Strategy. Natural England are now working with the LPA to consider what level of developer contribution towards a package of funded Strategic Access Management Measures (SAMMs) at Hatfield Forest is appropriate for all residential development within the evidenced Zone of Influence. Natural England's advice is that during this interim period before a co-ordinated strategic solution has been established by all authorities, housing projects of 50 units or greater should provide a proportionate mitigation contribution to be agreed with the National Trust. Although only providing 40 units, we note that the Ecological Assessment (Ecology Solutions, June 2021) states that the proposed scheme will be expected to contribute towards mitigating towards potential increase in recreational pressure on Hatfield Forest SSSI, to be achieved through a financial contribution towards the SAMM and the provision of onsite ANG. We support this contribution.

14. Financial contributions towards the SAMM as referenced within the Ecological Assessment refer to the proposed development of the wider Land at Warish Hall Farm, which at the time of submission sought to deliver greater than 50 units. The current proposal is for less than 50 units and is thus not required to contribute towards the SAMM.

Enclosures:

- Warish Hall Farm, Takeley, Essex; Ecological Assessment; October 2021; ref: 9261.EcoAs.vf2
- Warish Hall Farm, Takeley, Essex; Bat Survey Report; November 2021; ref: 9261.BatReport.vf

Ecology Solutions
February 2023

Appendix E - Bat Survey Report [Nov 2021] by Ecology Solutions

WESTON HOMES PLC

ECOLOGYSOLUTIONS

Part of the ES Group

WARISH HALL FARM,
TAKELEY,
ESSEX

Bat Survey Report

November 2021
9261.BatReport.vf

ecology solutions for planners and developers

PROTECTED SPECIES

This report contains sensitive information
relating to protected species.
The information contained herein
should not be disseminated without the
prior consent of Ecology Solutions.

CONTENTS

PLANS

PLAN ECO1	Site Location
PLAN ECO2	Ecological Features
PLAN ECO3a	Bat Activity Transect and Remote Static Locations
PLAN ECO3b	Bat Activity Survey Results 20.05.21
PLAN ECO3c	Bat Activity Survey Results 22.06.21
PLAN ECO3d	Bat Activity Survey Results 15.07.21
PLAN ECO3e	Bat Activity Survey Results 12.08.21
PLAN ECO3f	Bat Activity Survey Results 08.09.21
PLAN ECO3g	Bat Activity Survey Results 11.10.21
PLAN ECO4	Tree Assessment

APPENDICES

Appendix 1	Bat Boxes
Appendix 2	Bat Access Tiles

1. INTRODUCTION

1.1. Background

1.1.1. Ecology Solutions was commissioned in October 2020 by Weston Homes PLC, following their acquisition of the site in September 2020, to undertake an ecological assessment of the proposed development at Warish Hall Farm, Takeley, Essex (see Plan ECO1).

1.1.2. An ecological assessment of the site was undertaken by Ecology Solutions in October 2020 including an extended Phase 1 habitat survey, with a further walkover survey carried out in April 2021. Subsequent surveys for Badger *Meles meles*, bats, Dormice *Muscardinus avellanarius*, birds, reptiles and Great Crested Newts *Triturus cristatus* were completed between January and September 2021. A report of the findings has been submitted to Uttlesford District Council[1].

1.1.3. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

1.2. Site Characteristics

1.2.1. The site is approximately 22.5ha in size and comprises largely arable fields, made up of Bull Field in the south, 7 Acres in the northwest and Jacks Field in the far east, with associated field margins, hedgerows and ditches. Prior's Wood Local Wildlife Site (LWS), an area of ancient and semi-natural woodland dominates the north of the site.

1.2.2. The site is located to the north of Takeley, approximately 1.4km south of London Stansted Airport and approximately 1.6km northeast of Hatfield Forest Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR). It is bounded to the south and east by residential properties. Arable fields and the A120 are present to the north. Weston Homes PLC headquarters border the site to the west.

1.3. Purpose of this Report

1.3.1. This report sets out the results of the bat survey work undertaken by Ecology Solutions from April to October 2021, collating the results of the work previously set out in the ecological assessment and the work undertaken in October 2021. Reference is made to mitigation and enhancements measures based on the full set of bat surveys completed in 2021.

[1] Ecology Solutions (2021). *Warish Hall Farm, Takeley, Essex – Ecological Assessment*.

2. LEGISLATION AND ECOLOGY

2.1. Legislation and Licensing

2.1.1. All bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"). These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to:-
  - (i) be likely to impair their ability to survive, to breed or rear or nurture their young; or to hibernate or migrate; or
  - (ii) affect significantly the local distribution or abundance of the species to which they belong;
- To damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

2.1.2. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

2.1.3. The offence of damaging (making it worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

2.1.4. In accordance with the Habitats Regulations, the licensing authority (Natural England) must apply the three derogation tests as part of the process of considering a licence application. These tests are that:

1. the activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
2. there must be no satisfactory alternative; and
3. the favourable conservation status of the species concerned must be maintained.

2.1.5. Licences can usually only be granted if the development is in receipt of full planning permission.

2.2. Ecology

2.2.1. There are seventeen breeding bat species in Britain. Many of them are considered threatened due to a variety of factors including habitat loss and disturbance / damage to roosts. Of these seventeen species, a number regularly use buildings as roost sites.

2.2.2. Bats are highly mobile flying mammals, which, in Britain, feed entirely on insects. They are able to fly and feed in the dark by using a system of echolocation that gives them a 'sound picture' of their surroundings.

2.2.3. In winter when prey is scarce, British bats hibernate in humid parts of buildings, caves or hollow trees where temperatures are typically stable.

They may wake occasionally but only become fully active again in the spring.

2.2.4. Female bats gather together in maternity roosts in summer to give birth and rear their single offspring. Like other mammals, bats have fur and give birth to live young. Infant bats suckle on their mother's milk for several weeks until they can fly and hunt insects for themselves. Bats are long-lived mammals and some British species are known to live to over twenty-five years of age.

3. SURVEY METHODOLOGY

3.1. Desk Study

3.1.1. In order to compile background information on the site and the surrounding area, Ecology Solutions contacted Essex Field Club and Essex Wildlife Trust.

3.2. Field Survey

3.2.1. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004[2]), the Joint Nature Conservation Committee (2004[3]) and the Bat Conservation Trust (2016[4]).

3.2.2. Trees within the site were assessed for their potential to support roosting bats in October 2020 and 2021. Features typically favoured by bats or evidence of past use by bats were searched for including:

- Obvious holes, e.g. rot holes and old Woodpecker holes;
- Dark staining on the tree, below the hole;
- Tiny scratch marks around a hole from bat claws
- Cavities, splits and or loose bark from broken or fallen branches, lightning strikes etc.; and
- Very dense covering of mature Ivy *Hedera helix* over trunk

3.2.3. On account of the site possessing moderate to high suitability for foraging and commuting bats, bat activity transects were recommended with seven transects having been completed monthly from April to October 2021.

3.2.4. The survey was undertaken across set routes (transects) that covered the majority of the site with the aim of identifying any bats using the site for foraging or dispersal.

3.2.5. In order to maximise the encounter rate of bats (i.e. of both early- and late-emerging species), transects commenced around sunset and continued until 120 minutes after sunset.

3.2.6. Surveyors observed the behaviour of any bat recorded (i.e. foraging or commuting) together with noting the species and number of bats present at each location.

3.2.7. Surveys were conducted when the night-time temperature was at least 10°C. The insectivorous diet of bats means there is little or no food available when temperature falls below this level and consequently bat activity levels are low and may not accurately reflect the value of the site for bats. The weather conditions for the surveys were recorded and any limitations noted.

[2] Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[3] Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[4] Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition. The Bat Conservation Trust, London.

3.2.8. Experienced surveyors were equipped with iPads paired with Echo Meter Touch 2 PRO bat detectors, and all recorded data was subject to analysis via Kaleidoscope software.

3.2.9. Three static SM4BAT detectors were placed within the site for a minimum of five consecutive nights on a monthly basis from April to October 2021. The detectors were programmed to record from 30 minutes before sunset to 30 minutes after sunrise.

3.2.10. Following completion of the surveys all of the recorded data was analysed using the Kaleidoscope computer program.

3.3. **Constraints**

3.3.1. Weather conditions in April 2021, where temperatures dropped below 10°C, and technical failures of remote detectors deployed in May 2021, are constraints to the survey effort. However, these constraints do not affect the overall conclusions of the comprehensive series of bat surveys undertaken across the season.

4. SITE DESCRIPTION

4.1. The Site

4.1.1. The site is approximately 22.5ha in size and comprises largely arable fields, made up of Bull Field in the south, 7 Acres in the northwest and Jacks Field in the far east, with associated field margins, hedgerows and ditches. Prior's Wood LWS, an area of ancient and semi-natural woodland dominates the north of the site.

4.2. Prior's Wood

4.2.1. Prior's Wood is an area of ancient and semi-natural woodland that lies in the centre of the site. The woodland contains no ancient or veteran specimens and primarily consists of Hornbeam *Carpinus betulus*, with significant components of Oak *Quercus robur*, Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna* and Hazel *Corylus avellana*, with Field Maple *Acer campestre*, Elm *Ulmus* sp., Willow *Salix* sp., European Larch *Larix decidua* and Scots Pine *Pinus sylvestris* found in small numbers. The understorey of the woodland is virtually absent and the canopy closed throughout. The field layer lacks variety and is dominated by Bramble *Rubus fruticosus* in most areas with some Dog's Mercury *Mercurialis perennis*, Ivy, Wood-sedge *Carex sylvatica*, Pendulous Sedge *Carex pendula*, Wood Avens *Geum urbanum*, False Brome *Brachypodium sylvaticum* and Oxlip *Primula elatior* also present. It is clear that the woodland has been unmanaged for many years and suffers from significant browsing by deer.

4.3. Hedgerows

4.3.1. Hedgerows are present at the boundaries of the arable fields. Species present include Hawthorn, Blackthorn *Prunus spinosa*, Hazel, Field Maple, Bramble, Dog Rose *Rosa canina*, Ivy, Elder *Sambucus nigra* and Oak.

5. SURVEY RESULTS

5.1. Desk Study

5.1.1. A total 114 records were returned from eight species of bat within the past 10 years. Species of bat include Barbastelle *Barbastella barbastellus*, Daubenton's Bat *Myotis daubentonii*, Natterer's Bat *Myotis nattereri*, Leisler's Bat *Nyctalus leisleri*, Noctule *Nyctalus noctula*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Brown Long-eared Bat *Plecotus auritus*.

5.1.2. Six records of Barbastelle were returned form the data search. The closest record relates to a location approximately 2.1km southwest of the site boundary dating from 2009. The most recent record relates to a location approximately 3.8km northeast of the site boundary dating from 2017.

5.1.3. Fourteen records of Daubenton's Bat were returned from Essex Field Club. The closest record relates to a location approximately 0.5km west of the site boundary dating from 2013. The most recent record relates to a location approximately 3.8km northeast of the site boundary dating from 2017.

5.1.4. Fourteen records of Natterer's Bat were returned from the data search. The closest and most recent record relates to a location approximately 1.1km southeast of the site dating from 2018.

5.1.5. Two records of Leisler's Bat were returned from the desk study. The closest and most recent record relate to a location approximately 2.3km southwest of the site dating from 2015.

5.1.6. Five records of Noctule Bat were returned from the data search. The closest record relates to a location approximately 1.8km west of the site dating from 2014. The most recent record relates to a location approximately 2.5km southwest of the site boundary dating from 2018.

5.1.7. Thirty-seven records were returned for Common Pipistrelle from the desk study. The closest record relates to a location approximately 0.2km south of the site boundary dating from 2017. The most recent record relates to a location approximately 1km south of the site boundary dating from 2019.

5.1.8. Nineteen records of Soprano Pipistrelle were returned from the data search. The closest and most recent record relates to a location approximately 0.9km northeast of the site boundary dating from 2018.

5.1.9. Seventeen records of Brown Long-eared Bat were returned from the data search. The closest record relates to a location approximately 0.3km northeast of the site boundary dating from 2013. The most recent record relates to a location approximately 1km southeast of the site boundary dating from 2019.

5.2. Activity Transect Surveys

5.2.1. Seven activity surveys were completed on 29 April, 20 May, 22 June, 15 July, 12 August, 8 September and 11 October 2021. The timings and weather conditions are shown in Table 5.1 below.

Date	29.04.21	20.05.21	22.06.21	15.07.21	12.08.21	08.09.21	11.10.21
Survey Type	Activity	Activity	Activity	Activity	Activity	Activity	Activity
Sunset	20:15	20:53	21:21	21:11	20:28	19:30	18:14
Survey Start	20:15	20;53	21:21	21:11	20:28	21:30	18:14
Survey End	22:15	22;53	23:21	23:11	22:28	21:30	20:14
Cloud Cover (%)	0%	50%	40%	20%	30%	0%	20%
Temperature (°C)	10-6	11-12	9-11	16-14	16-18	20-23	12-13
Weather & Wind	Light breeze	Moderate breeze with light shower	Light breeze	Light air	Calm and dry	Light breeze	Light air

Table 5.1. Activity survey conditions and timings.

5.2.2. The findings of the activity surveys are illustrated on Plans ECO3a to ECO3g. Note that the full set of plans has been reviewed and updated to correct some clerical errors apparent on earlier versions included with the October 2021 Ecological Assessment. The results of each survey are detailed below.

Activity Survey 29.04.21

5.2.3. The activity survey was carried out across a single route covering the whole of the site. The transect route is illustrated on Plan ECO3a.

5.2.4. No bats were recorded during the activity transect survey.

Activity Survey 20.05.21

5.2.5. The activity survey was carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 5.2 below and illustrated on Plan ECO3b.

5.2.6. The survey recorded a low level of foraging activity from Common Pipistrelle and Soprano Pipistrelle, with activity levels highest to the north of Prior's Wood and the southern boundary of the site. A single Barbastelle was also recorded 47 minutes after sunset along the western boundary of Prior's Wood.

Survey Night	Species	Number of Registrations	First Registration after sunset
20.05.21	Ppip	73	26 mins
	Ppyg	50	29 mins
	Bb	1	47 mins
20.05.21	Ppip	56	54 mins
	Ppyg	52	54 mins
Total	**3**	**232**	

Table 5.2. Activity survey results 20.05.21[5].

Activity Survey 22.06.21

5.2.7. The activity survey was carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 5.3 below and illustrated on Plan ECO3c.

5.2.8. The survey again recorded a low level of foraging activity from Common Pipistrelle and Soprano Pipistrelle, with activity levels highest in and around Prior's Wood. Early registrations for both species suggest that roosts may be present on, or within the vicinity of the site. *Myotis* sp. was also recorded one hour 25 minutes after sunset in Prior's Wood.

Survey Night	Species	Number of Registrations	First Registration after sunset
22.06.21	Ppip	40	14 mins
	Ppyg	10	14 mins
22.06.21	Ppip	201	19 mins
	Ppyg	80	18 mins
	Myo	2	1h 25 mins
Total	**3**	**333**	

Table 5.3. Activity survey results 22.06.21.

Activity Survey 15.07.21

5.2.9. The activity survey was carried out across a single route walked in opposite directions by two surveyors covering the whole of the site. The results of the transect are summarised in Table 5.4 below and illustrated on Plan ECO3d.

5.2.10. As with previous surveys, low levels of foraging activity from Common Pipistrelle and Soprano Pipistrelle were recorded, with activity levels highest in and around Prior's Wood.

[5] In all cases the following abbreviations are used: Bb/Barbastelle *Barbastella barbastellus*; Es/Serotine *Eptesicus serotinus*; Myo/*Myotis* species; Nn/Noctule *Nyctalus noctula*; Nl/Leisler's Bat *Nyctalus leisleri*; Pa/Brown Long-eared Bat *Plecotus auritus*; Psp/Pipistrelle species; Pnat/Nathusius' Pipistrelle *Pipistrellus nathusii*; Ppip/Common Pipistrelle *Pipistrellus pipistrellus*; and Ppyg/Soprano Pipistrelle *Pipistrellus pygmaeus*.

Survey Night	Species	Number of Registrations	First Registration after sunset
15.07.21	Ppip	95	31 mins
	Ppyg	20	35 mins
	Psp	1	1h 40 mins
Total	**3**	**116**	

Table 5.4. Activity survey results 15.07.21.

Activity Survey 12.08.21

5.2.11. The activity survey was carried out across a single route covering the whole of the site. The results of the transect are summarised in Table 5.5 below and illustrated on Plan ECO3e.

5.2.12. A greater assemblage of bats was recorded during the August activity survey, with Noctule, Leisler's Bat and Barbastelle recorded in addition to Common and Soprano Pipistrelle. Again, activity levels were highest in and around Prior's Wood. Barbastelle registrations were concentrated along the western boundary of Prior's Wood, with additional Leisler's Bat registrations along the southern boundary of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
12.08.21	Ppip	71	19 mins
	Ppyg	7	41 mins
	Nn	6	35 mins
	Nl	7	37 mins
	Bb	2	1h 5 mins
Total	**5**	**93**	

Table 5.5. Activity survey results 12.08.21.

Activity Survey 08.09.21

5.2.13. The activity survey was carried out across a single route covering the whole of the site. The results of the transect are summarised in Table 5.6 below and illustrated on Plan ECO3f.

5.2.14. Again, low numbers of Common and Soprano Pipistrelle were recorded across the site, with very low numbers of Noctule and Brown Long-eared Bat. Early registrations for Common and Soprano Pipistrelle again suggest there may be roosts for both species either on or in the vicinity of the site. Brown Long-eared Bat registrations were recorded along the southern boundary of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
08.09.21	Ppip	46	18 mins
	Ppyg	38	8 mins
	Nn	5	1h 3 mins
	Pa	2	54 mins
Total	**4**	**91**	

Table 5.6. Activity survey results 08.09.21.

Activity Survey 11.10.21

5.2.15. The activity survey was carried out across a single route covering the whole of the site. The results of the transect are summarised in Table 5.7 below and illustrated on Plan ECO3g.

5.2.16. Again, low numbers of Common and Soprano Pipistrelle were recorded across the site, with early registrations for Common and Soprano Pipistrelle suggesting there may be roosts for both species either on or in the vicinity of the site.

Survey Night	Species	Number of Registrations	First Registration after sunset
11.10.21	Ppip	20	35 mins
	Ppyg	14	35 mins
Total	**2**	**34**	

Table 5.7. Activity survey results 11.10.21.

5.3. Remote Surveys

5.3.1. SM4BAT detectors were deployed in three locations (as shown on Plan ECO3a) on seven occasions to monitor activity across consecutive nights. The results of this work are summarised in Tables 5.8 to 5.14 below.

April 2021

5.3.2. Common Pipistrelle, Soprano Pipistrelle, Noctule, Leisler's Bat and Brown Long-eared Bat were all recorded across the nine nights from 26 April to 4 May.

5.3.3. The first registration was attributed to Common Pipistrelle recorded one minute after sunset at location 1 in the northwest of the site.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
26.04.21 – 04.05.21 (9 nights)	Location 1 (E18)	Ppip	87	1 min	
		Ppyg	48	13 mins	
		NI	1	2h 37 mins	
	Total	3	136		

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
	Location 2 (E24)	Ppip	15	15 mins	4h 49 mins
		Ppyg	1	1h 27 mins	
		NI	3	33 mins	
		Nn	1	30 mins	
		Pa	1	1 hr 29 mins	
	Total	5	21		
	Location 3 (E13)	Ppip	75	18 mins	
		Ppyg	3	36 mins	
		NI	3	24 mins	
	Total	3	81		
	Grand Total	**5**	**238**		

Table 5.8. Static SM4BAT detector results 26.04.21 – 04.05.21.

May 2021

5.3.4. A higher level of activity was recorded in May compared to April, though species composition was similar. Owing to technical failures, only one static detector (location 2) recorded data.

5.3.5. The detector deployed adjacent to Prior's Wood recorded a total of 507 Common Pipistrelle with consistent social calls recorded, suggesting constant foraging within vicinity of woodland boundary. The first registration was attributed to Noctule six minutes after sunset with the last registration associated with Noctule seven minutes before sunrise. Serotine *Eptesicus serotinus* and Brown Long-eared Bat were also recorded at location 2. Given the low number and timing of registrations these are most likely from bats commuting across the site.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
20.05.21 – 25.05.21 (5 nights)	Location 2 (E18)	Ppip	507	35 mins	39 mins
		Ppyg	4		20 mins
		Nn	92	6 mins	7 mins
		Myo	2		3h 57 mins
		Pa	1	1h 29 mins	
		Es	1		4h 52 mins
	Total	6	607		
	Grand Total	**6**	**607**		

Table 5.9. Static SM4BAT detector results 20.05.21 – 25.05.21.

June 2021

5.3.6. A high level of activity was recorded in all three locations in June, with most of the registrations attributed to Common Pipistrelle.

5.3.7. The detector deployed in location 1 recorded the highest total of registrations in June. Common Pipistrelle were the most recorded species with 4579 registrations. Low numbers of *Myotis* sp. and Barbastelle were recorded near Prior's Wood, with the earliest registration attributed to Barbastelle 27 minutes after sunset.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
22.06.21 – 29.06.21 (7 nights)	Location 1 (E21)	Ppip	2619	1 min	20 mins
		Ppyg	1342	9 mins	28 mins
		Nn	5	1h 54 mins	1h 7 mins
		Nl	38	54 mins	44 mins
		Myo	7	1h 42 mins	1h 33 mins
		Bb	2	57 mins	
	Total	6	4013		
	Location 2 (E20)	Ppip	1689	22 mins	23 mins
		Ppyg	305	22 mins	27 mins
		Nn	14	59 mins	4h 11 mins
		Nl	49	1h	32 mins
		Bb	8	27 mins	37 mins
	Total	5	2065		
	Location 3 (E2)	Ppip	271	1 min	22 mins
		Ppyg	73	20 mins	11 mins
		Nn	6	1h 17 mins	37 mins
		Nl	23	35 mins	39 mins
		Es	6	58 mins	3h 24 mins
	Total	5	379		
	Grand Total	**7**	**6457**		

Table 5.10. Static SM4BAT detector results 22.06.21 – 29.06.21.

July 2021

5.3.8. A similar diversity of bats was again recorded across five nights in July, with the majority of the registrations attributed to Common Pipistrelle.

5.3.9. Nathusius' Pipistrelle *Pipistrellus nathusii* was the earliest recorded species within the site, with the earliest registration two minutes after sunset.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
15.07.21 – 20.07.21 (5 nights)	Location 1 (E6)	Ppip	1961	6 mins	25 mins
		Ppyg	340	21 mins	21 mins
		Pnat	242	2 mins	31 mins
		Nn	3	2h 3 mins	1h 47 mins
		Nl	26	1h 16 mins	1h 48 mins
		Es	2		3h 27 mins
		Myo	2	2h 20 mins	3h 27 mins
		Pa	1		3h 34 mins
		Bb	7	37 mins	1h 44 mins
	Total	9	2584		
	Location 2 (E10)	Ppip	526	12 mins	30 mins
		Ppyg	271	14 mins	27 mins
		Nn	6	1h 31 mins	1h 47 mins
		Nl	2		1h 8 mins
		Myo	1		2h 11 mins
		Bb	1		2h 8 mins
	Total	6	807		
	Location 3 (E2)	Ppip	161	13 mins	34mins
		Ppyg	96	10 mins	40mins
		Pnat	7	25 mins	
		Nn	2	40 mins	
		Es	1		3h 56 mins
		Pa	5	1h 16 mins	4h 4 mins
	Total	6	272		
	Grand Total	**9**	**3663**		

Table 5.11. Static SM4BAT detector results 15.07.21 – 20.07.21.

August 2021

5.3.10. The highest level of activity was recorded across seven nights in August, with a total of 8728 registrations. Again, the majority of these registrations were from Common Pipistrelle.

5.3.11. *Myotis* sp. and Barbastelle were recorded at location 1, adjacent to Prior's Wood. Noctule and Leisler's Bats were common throughout the site, with early registrations recorded near location 2.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
05.08.21 – 12.08.21 (7 nights)	Location 1 (E21)	Ppip	1800	3 mins	9 mins
		Ppyg	101	18 mins	24 mins
		Nn	75	11 mins	13 mins

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
		NI	86	1h 27 mins	57 mins
		Myo	2		5h 38 mins
		Bb	5	2h 17 mins	54 mins
	Total	6	2069		
	Location 2 (E18)	Ppip	389	2 mins	18 mins
		Ppyg	980	9 mins	33 mins
		Nn	16	14 mins	30 mins
		NI	20	15 mins	5h 17 mins
	Total	4	1405		
	Location 3 (E5)	Ppip	4668	4 mins	
		Ppyg	581	20 mins	
		Nn	1		2h 54 mins
		NI	4	1h 34 mins	48 mins
	Total	4	5254		
	Grand Total	**7**	**8728**		

Table 5.12. Static SM4BAT detector results 05.08.21 – 12.08.21.

September 2021

5.3.12. Species diversity and number of registrations were lower in September compared with August, with a total of 3363 registrations recorded across five nights.

5.3.13. Common Pipistrelle was the most abundant species recorded in September with 2468 registrations recorded across the site. Low numbers of *Myotis* sp. were recorded with five registrations recorded across the site. The earliest registration was attributed to Soprano Pipistrelle recorded one minute after sunset near location 3.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
08.09.21 – 13.09.21 (5 nights)	Location 1 (E24)	Ppip	2317	12mins	19mins
		Ppyg	144	9mins	15mins
		Nn	3	1h 4mins	
		Myo	1	35mins	
	Total	4	2465		
	Location 2 (E12)	Ppip	49	26mins	2h 33mins
		Ppyg	370	6mins	1h 12mins
		Nn	33	1h 18mins	1h 49mins
		Myo	1	57mins	
	Total	4	453		
	Location 3	Ppip	102	2mins	28mins

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
	(E14)	Ppyg	335	1min	2mins
		Nn	5	29mins	3h 46mins
		Myo	3	1h 25mins	3h 16mins
	Total	4	445		
	Grand Total	**4**	**3363**		

Table 5.13. Static SM4BAT detector results 08.09.21 – 13.09.21.

October 2021

5.3.14. A total of 4562 registrations were attributed to Common Pipistrelle and Soprano Pipistrelle. The earliest registration was for Common Pipistrelle one minute after sunset and two minutes before sunrise in the vicinity of location 3. Barbastelle and *Myotis* sp. were again recorded at location 1, near Prior's Wood.

Survey Nights	Location	Species	No. Registrations	First Registration after sunset	Last Registration before sunrise
11.10.21 – 18.10.21 (7 nights)	Location 1 (E17)	Ppip	404	9mins	2h 58mins
		Ppyg	413	1mins	3mins
		Nn	1	28mins	
		NI	4	18mins	
		Myo	1	37mins	
		Bb	1	3h 36mins	
		Es	1	1h 10mins	
	Total	7	825		
	Location 2 (E18)	Ppip	1330	17mins	1h 4mins
		Ppyg	1108	25mins	1h 8mins
		Nn	13	26mins	
		NI	13	27mins	1h 43mins
	Total	4	2464		
	Location 3 (E5)	Ppip	1116	1mins	2mins
		Ppyg	191	7mins	13mins
	Total	2	1307		
	Grand Total	**7**	**4596**		

Table 5.14. Static SM4BAT detector results 11.10.21 – 18.10.21.

5.3.15. Registrations close to sunset and sunrise for both Common and Soprano Pipistrelle suggest that there are roosts for these species either within or close to the site. Additionally, Nathusius' Pipistrelle was recorded at two minutes past sunset and 31 minutes before sunrise in the west of the site (static detector location 1) in July. This again would suggest that there is a roost for this species in close proximity to this location.

5.3.16. The earliest registration for Barbastelle was 27 minutes after sunset on the western edge of Prior's Wood (static detector location 2). Barbastelle is a later emerging species and an emergence at this time could indicate that a roost is present within Prior's Wood.

5.4. Tree Inspection

5.4.1. Trees within the site that could have been impacted by the development, namely those along hedgerows and the edge of Prior's Wood, were subject to a ground-based assessment to check for Potential Roosting Features (PRFs).

5.4.2. Several trees within the site have features suitable for roosting bats. Most of these are located along the southern woodland boundary of the site, and adjacent to the woodland edge in the northwest of the site. Some of these, notably two mature Oaks (T1 and T2), are considered to have high potential for roosting bats, with several other trees classed as having moderate and low potential. All trees are being retained as part of the development. A summary of the trees with high and moderate bat potential is set out in Table 5.15 below, with the trees illustrated on Plan ECO4.

Tree Ref	Species	Potential Roost Features	Evidence of Bats	Notes
T1	Oak	Large cavity running down trunk	No	High bat potential
T2	Oak	Overgrown Ivy and large split	No	High bat potential
T3	Oak	Overgrown Ivy and knotholes	No	Moderate bat potential
T4	Ash	Multiple woodpecker holes	No	Moderate bat potential
T5	Oak	Knotholes	No	Moderate bat potential
T6	Maple	Exposed stump and overgrown Ivy	No	Moderate bat potential
T7	Hornbeam	Multiple holes and overgrown Ivy	No	Moderate bat potential
T8	Oak	Knotholes and loose bark	No	Moderate bat potential
T9	Oak (dead)	Split in branches	No	Moderate bat potential
T10	Oak	Splits along branches and overgrown Ivy	No	Moderate bat potential
T11	Maple	Overgrown Ivy and loose branches	No	Moderate bat potential

Table 5.15. Tree Inspection Summary.

6. DISCUSSION AND RECOMMENDATIONS

6.1. Use of Site

6.1.1. Prior's Wood and hedgerows across the site offer suitable opportunities for foraging and commuting bats, whilst some of the more mature trees are considered to provide bat roosting potential.

6.1.2. The results of the activity transect surveys and remote detectors deployed between April and October 2021 show that Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Myotis* sp., Noctule, Leisler's Bat, Serotine, Brown Long-eared Bat and Barbastelle Bat are using Prior's Wood, hedgerows and the boundary habitats for foraging and commuting.

6.1.3. Additionally, early registrations for Common, Soprano and Nathusius' Pipistrelle and Barbastelle would indicate that roosts for these species are present within or in close proximity to the site.

6.1.4. The site supports a number of trees with features suitable for roosting bats. Overall, there are 24 with considered low potential, nine with moderate potential, and two with high potential.

6.2. Proposals and Effect

6.2.1. Prior's Wood and suitable habitat at the boundaries of the site, including all trees with roosting potential, will be retained and enhanced as part of the development. Additionally, all hedgerows throughout the site, including those utilised by Barbastelle, and therefore considered important under the Hedgerows Regulations 1997, will be retained and enhanced. A sensitive final lighting scheme will be designed to ensure that no adverse increase in light spill occurs on Prior's Wood, hedgerows and boundary vegetation as a result of the development.

6.3. Mitigation and Enhancement

6.3.1. Trees listed in Table 5.15 noted for their potential roosting features will be retained as part of the proposed development, and a Natural England licence is not required.

6.3.2. The woodland, hedgerows and mature vegetation at the boundaries of the site will be retained and enhanced to allow continued dispersal and foraging opportunities post-development.

6.3.3. Prior's Wood will be extended in the east of the site and new native hedgerow and trees will be planted throughout the development. New tree and hedgerow planting across the site will supplement and enhance the current boundary habitats and provide new foraging habitat for locally present bat species. New landscaping will use native species to provide new foraging opportunities for bats.

6.3.4. The central open space will provide grassland and wetland habitats that will encourage greater use of the site by invertebrates and increase the foraging opportunities for the local bat population.

6.3.5. As a further enhancement, provision of bat boxes such as Schwegler 2F Universal Bat Boxes, Schwegler 1FF and Multi chambered 1FQ boxes (see Appendix 1) should be provided on retained trees across the site. This would represent a biodiversity gain over the current conditions. Boxes will be located in sheltered spots and placed at a height of at least three metres from the ground. Boxes will also be arranged around the site so that a number of different aspects are covered. In addition, Habibat access tiles could be installed on new dwellings providing further roosting opportunities across the site (See Appendix 2).

6.3.6. Lighting during the construction phase of the development will adhere to the Institute of Lighting Professionals (ILP) *Guidance Note 8 Bats and Artificial Lighting* to limit light spill onto areas considered of most interest to bats. Lighting outside of construction timeframes will be reduced to solely core areas to limit the duration of lighting magnitude across the site. The final lighting strategy will be reviewed by the project ecologist and subject to amendment, if necessary, to avoid adverse effects on any ecological receptors. This can be secured by a suitable planning condition.

6.3.7. Security lighting on properties backing on to sensitive habitat could be low wattage LED provided on the properties at construction to forestall a future homeowner installing unsuitable lighting which could impact on bats.

7. SUMMARY AND CONCLUSIONS

7.1. Ecology Solutions was commissioned in October 2020 by Weston Homes PLC to undertake an ecological assessment of the proposed development at Warish Hall Farm, Takeley.

7.2. An Ecological Assessment of the site was undertaken by Ecology Solutions in May 2021 including an extended Phase 1 habitat survey and a ground-based appraisal of the trees for bats. A report of the findings, dated October 2021, has been submitted to Uttlesford District Council.

7.3. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

7.4. The results of the activity transect surveys and remote detectors deployed between April and October 2021 show that Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Myotis* sp., Noctule, Leisler's Bat, Serotine, Brown Long-eared Bat and Barbastelle are using the boundary habitats and Prior's Wood for foraging and commuting. Additionally, roosts for Common, Soprano and Nathusius' Pipistrelle and Barbastelle may be present within or in close proximity to the site.

7.5. Trees present on the site were subject to a ground-based assessment, with a total of 35 trees classed as offering roosting potential for bats. The development plans require no tree removal, and a Natural England licence is not required.

7.6. In order to safeguard local bat populations, the woodland, hedgerows and mature vegetation at the boundaries of the site will be retained to allow continued dispersal and foraging opportunities post-development. Additionally, the woodland will be extended in the east of the site and new native hedgerow and trees will be planted throughout the development. New tree and hedgerow planting across the site will supplement and enhance the current boundary habitats and provide new foraging habitat for locally present bat species. New landscaping will use native species to provide new foraging opportunities for bats.

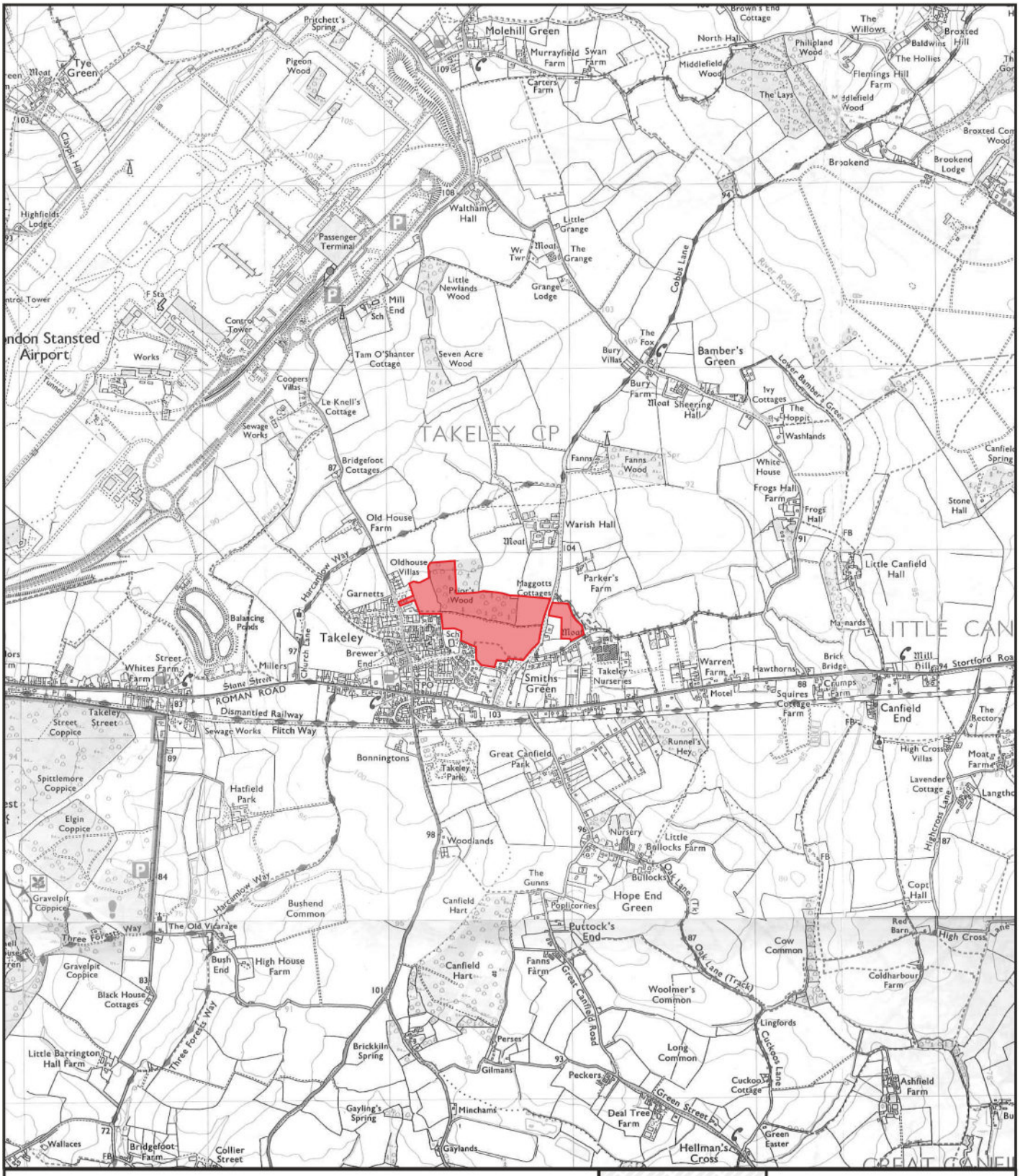
7.7. A sensitive final lighting scheme should be designed to ensure that no adverse increase in light spill occurs as a result of the development. The landscape proposals have allowed for these recommendations to be considered and a sensitive lighting scheme has been worked up in principle with detail set out as part of the application proposals. Further enhancements will include the provision of new bat boxes to offer new roosting opportunities.

7.8. In conclusion, the latest survey results do not alter the recommendations of the Ecological Assessment, with no further survey work required on the site. A suitable mitigation strategy has been set out and will ensure that the favourable conservation status of species concerned is maintained in the locality.

PLANS

PLAN ECO1

Site Location



KEY:

SITE LOCATION

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

N

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO1: SITE LOCATION

Rev: B

Oct 2021

PLAN ECO2

Ecological Features

KEY:

- SITE BOUNDARY
- LOCAL WILDLIFE SITE
- ANCIENT AND SEMI-NATURAL WOODLAND
- ARABLE
- HEDGEROW
- DITCH
- POND

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

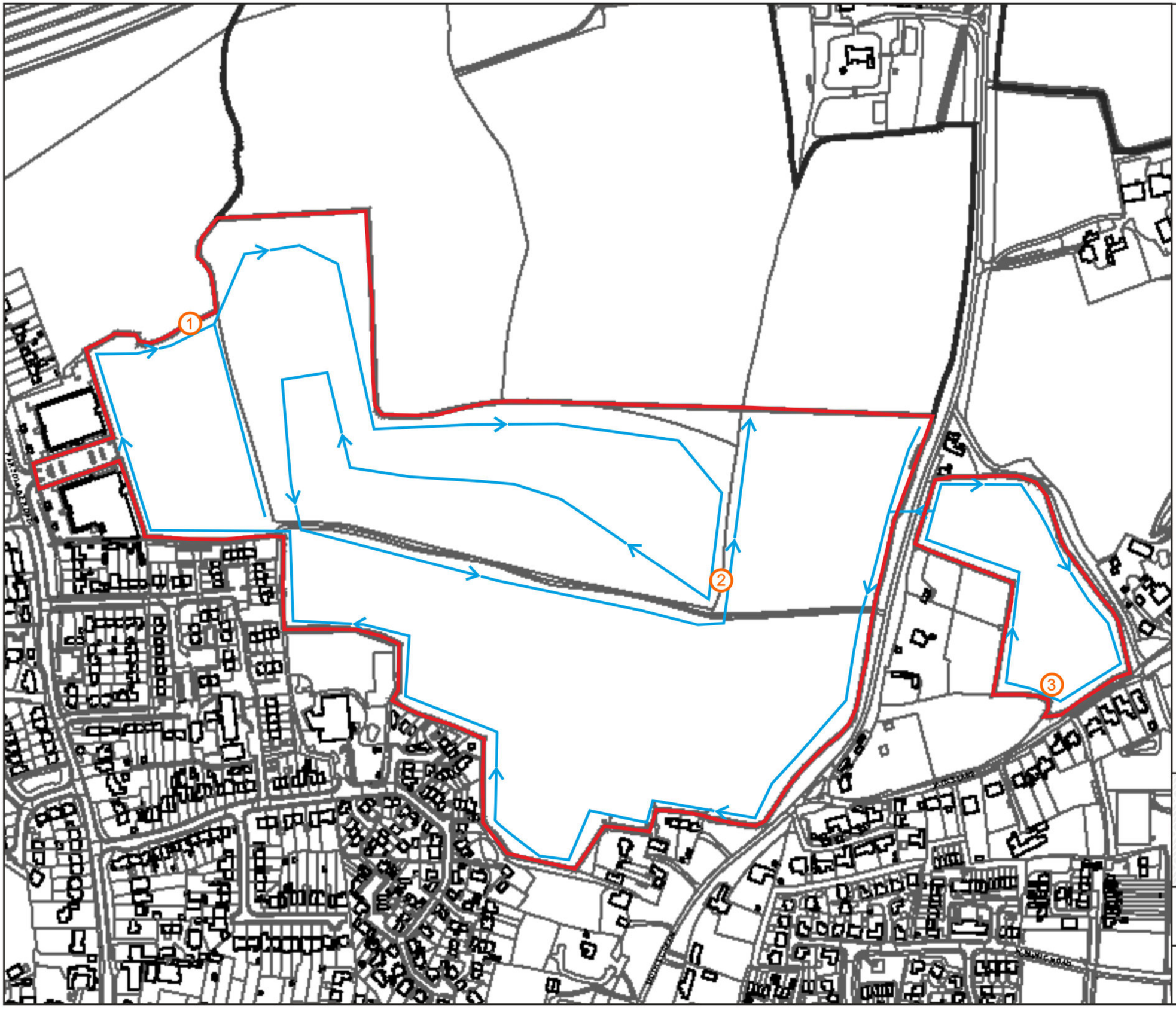
PLAN ECO2: ECOLOGICAL FEATURES

Rev: A

May 2021

PLAN ECO3a

Bat Activity Transect and Remote Detector Locations



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- REMOTE STATIC DETECTOR LOCATION

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

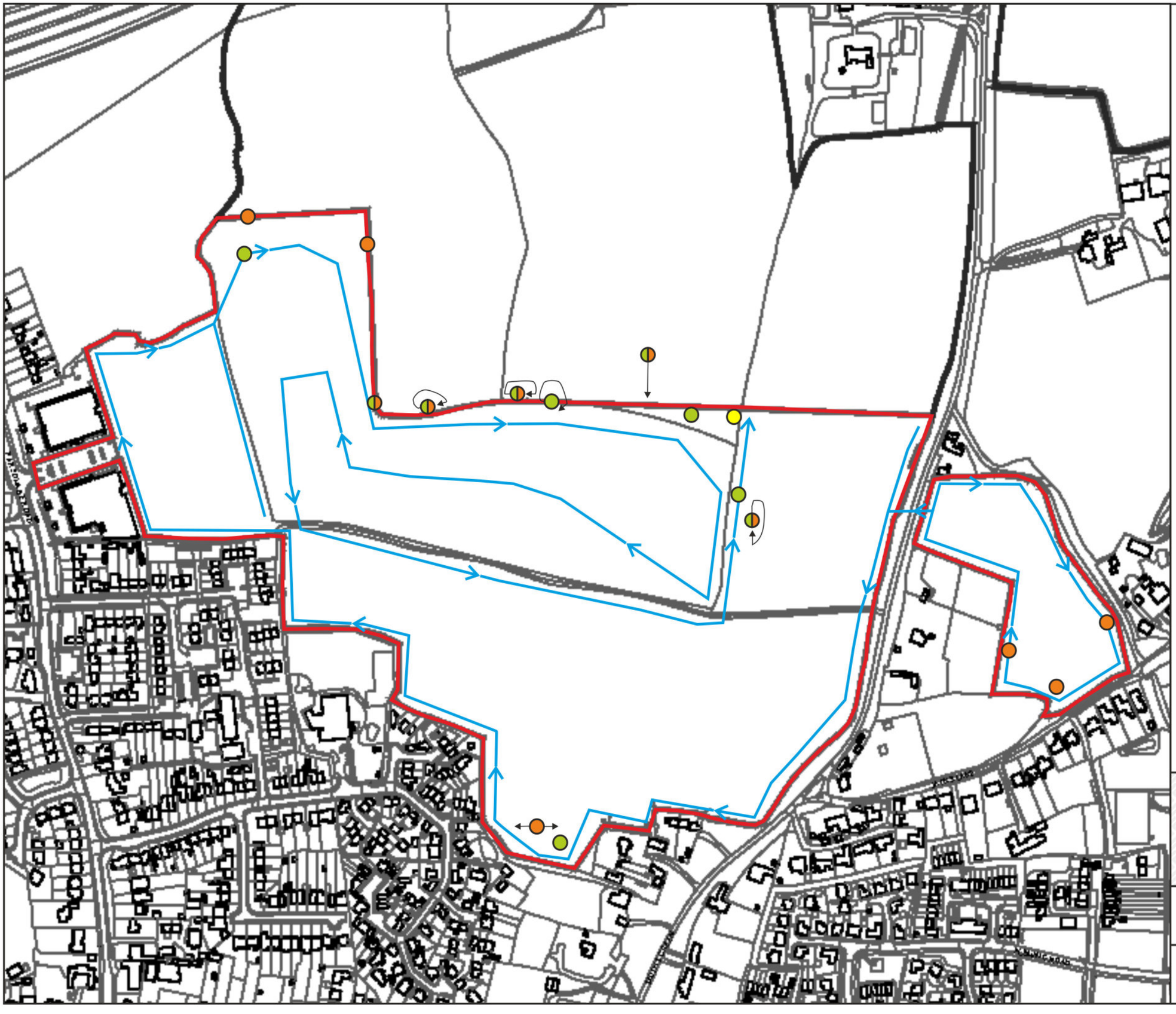
PLAN ECO3a: BAT ACTIVITY TRANSECT AND REMOTE DETECTOR LOCATIONS

Rev: A

May 2021

PLAN ECO3b

Bat Activity Survey Results 20.05.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE - WALKED BY TWO SURVEYORS IN OPPOSITE DIRECTIONS
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- BARBASTELLE REGISTRATION
- FLIGHT PATH

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

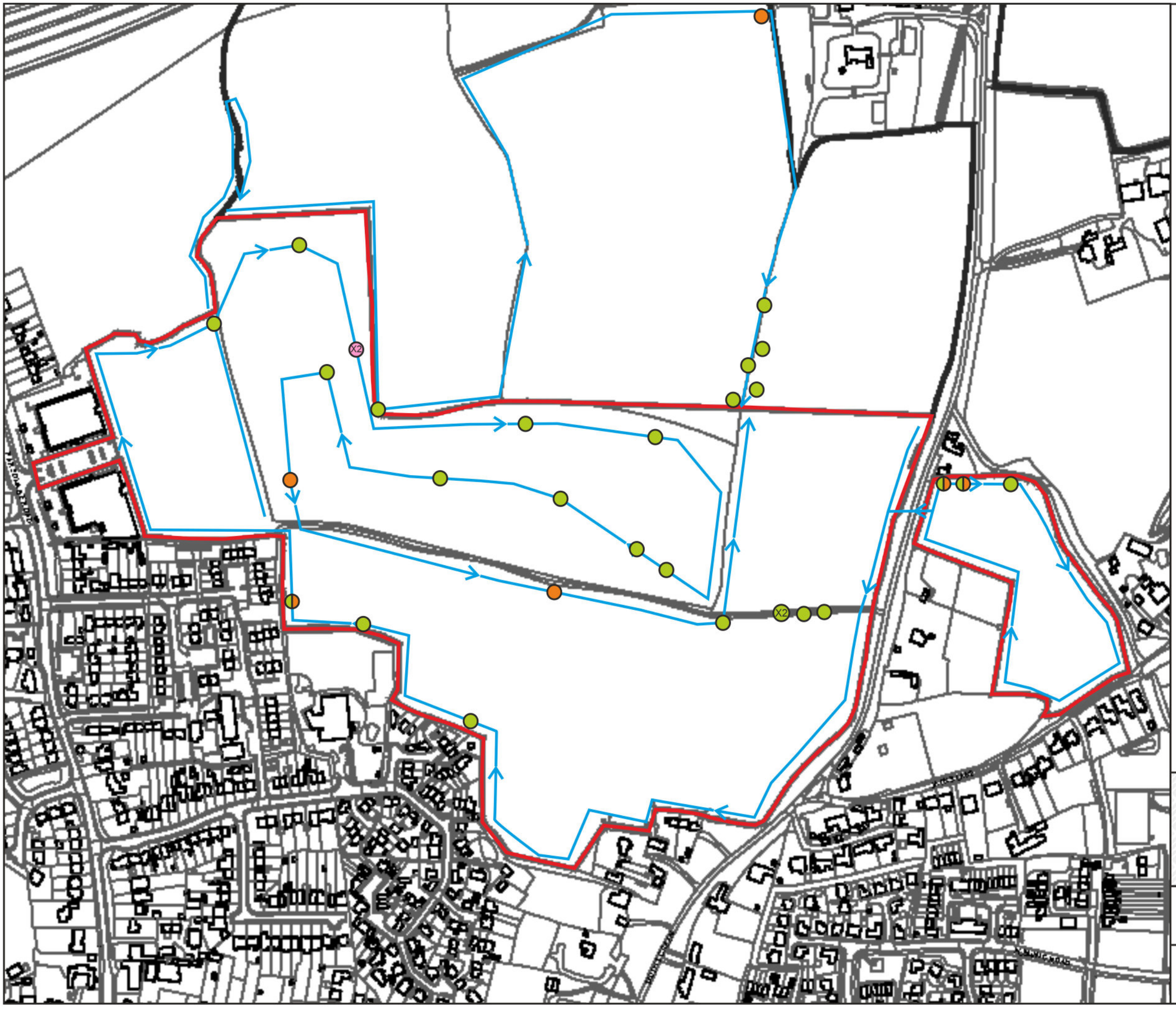
PLAN ECO3b:
BAT ACTIVITY SURVEY
RESULTS 20.05.21

Rev: B

Oct 2021

PLAN ECO3c

Bat Activity Survey Results 22.06.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE - WALKED BY TWO SURVEYORS IN OPPOSITE DIRECTIONS
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- MYOTIS REGISTRATION

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

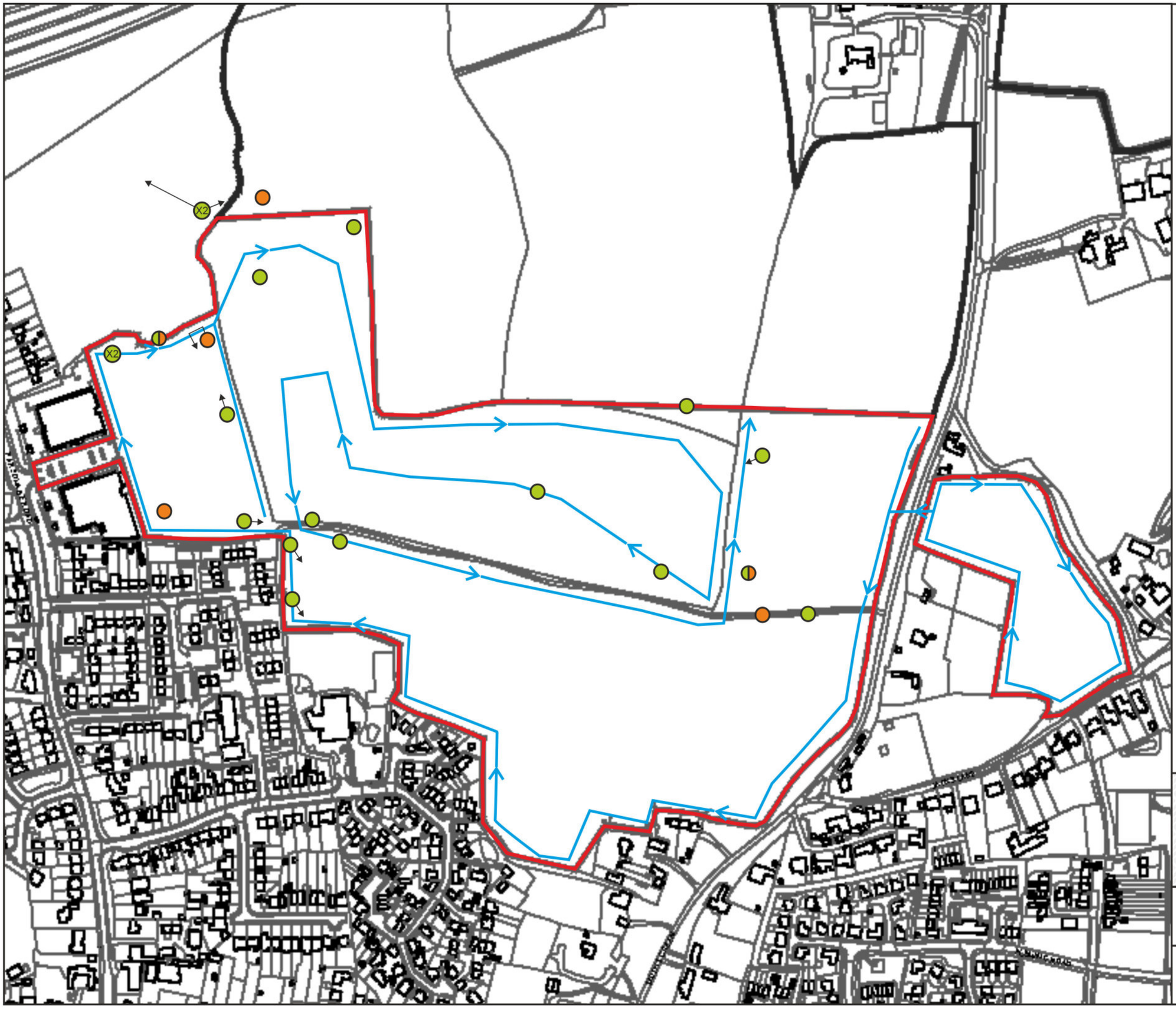
PLAN ECO3c:
BAT ACTIVITY SURVEY
RESULTS 22.06.21

Rev: B

Oct 2021

PLAN ECO3d

Bat Activity Survey Results 15.07.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- FLIGHT PATH

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

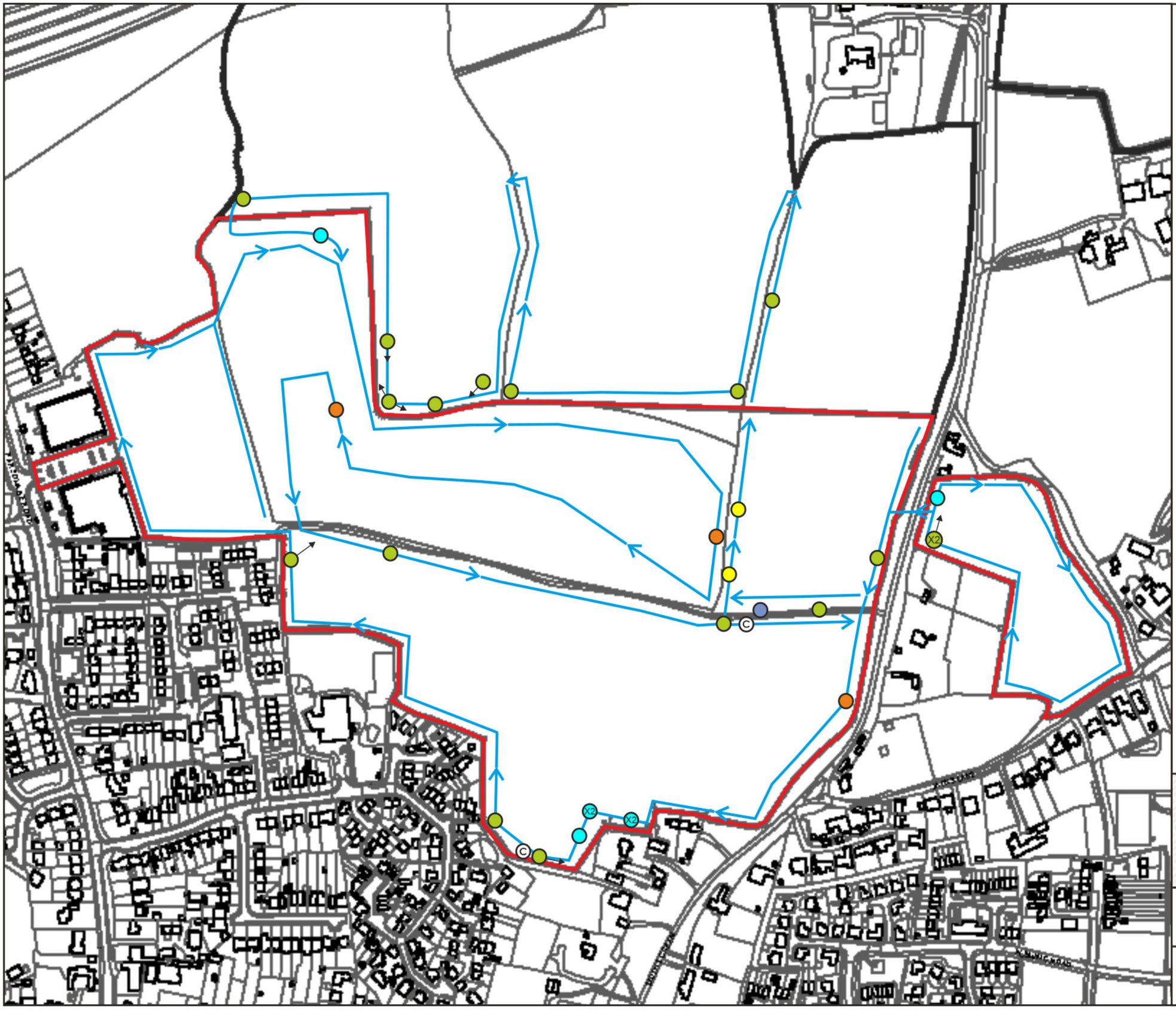
PLAN ECO3d:
BAT ACTIVITY SURVEY
RESULTS 15.07.21

Rev: A

Sep 2021

PLAN ECO3e

Bat Activity Survey Results 12.08.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- NOCTULE BAT REGISTRATION
- LEISLER'S BAT REGISTRATION
- BARBASTELLE REGISTRATION
- FLIGHT PATH
- CHECKPOINT

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM,
TAKELEY, ESSEX

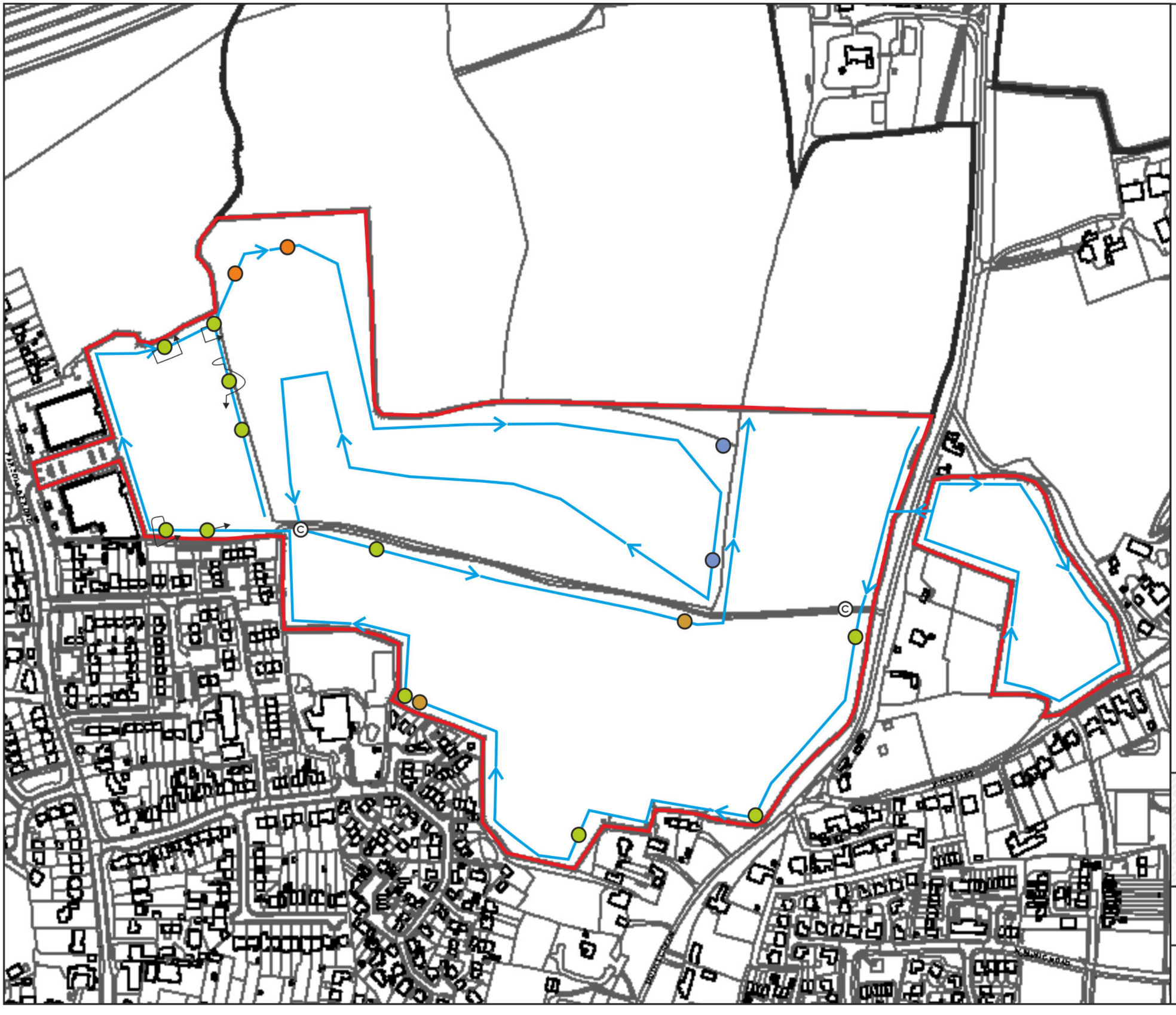
PLAN ECO3e:
BAT ACTIVITY SURVEY
RESULTS 12.08.21

Rev: B

Oct 2021

PLAN ECO3f

Bat Activity Survey Results 08.09.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- NOCTULE BAT REGISTRATION
- BROWN LONG-EARED BAT REGISTRATION
- FLIGHT PATH
- CHECKPOINT

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM,
TAKELEY, ESSEX

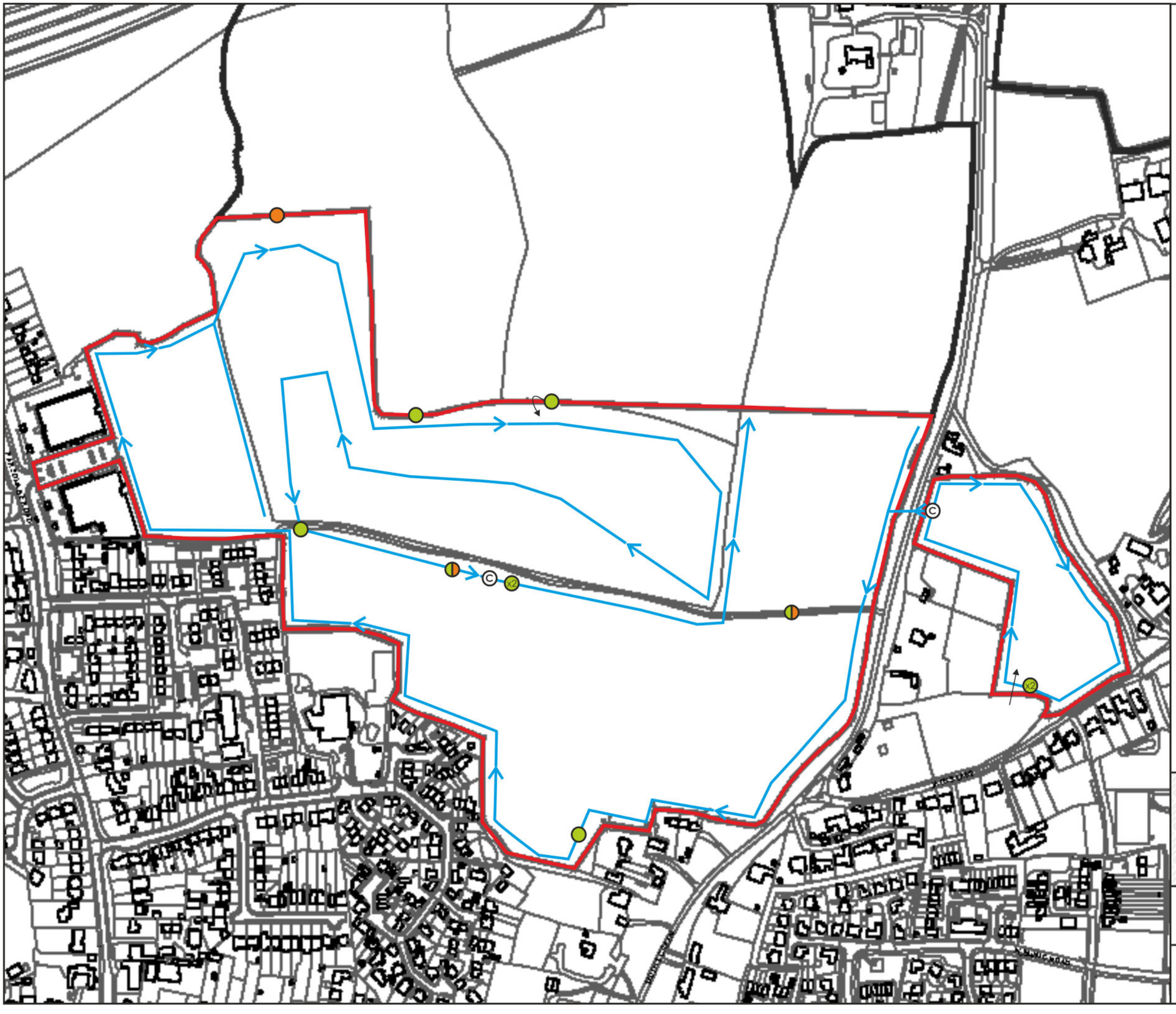
PLAN ECO3f:
BAT ACTIVITY SURVEY
RESULTS 08.09.21

Rev: B

Oct 2021

PLAN ECO3g

Bat Activity Survey Results 11.10.21



KEY:

- SITE BOUNDARY
- TRANSECT ROUTE
- COMMON PIPISTRELLE REGISTRATION
- SOPRANO PIPISTRELLE REGISTRATION
- COMMON PIPISTRELLE & SOPRANO PIPISTRELLE
- FLIGHT PATH
- CHECKPOINT

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

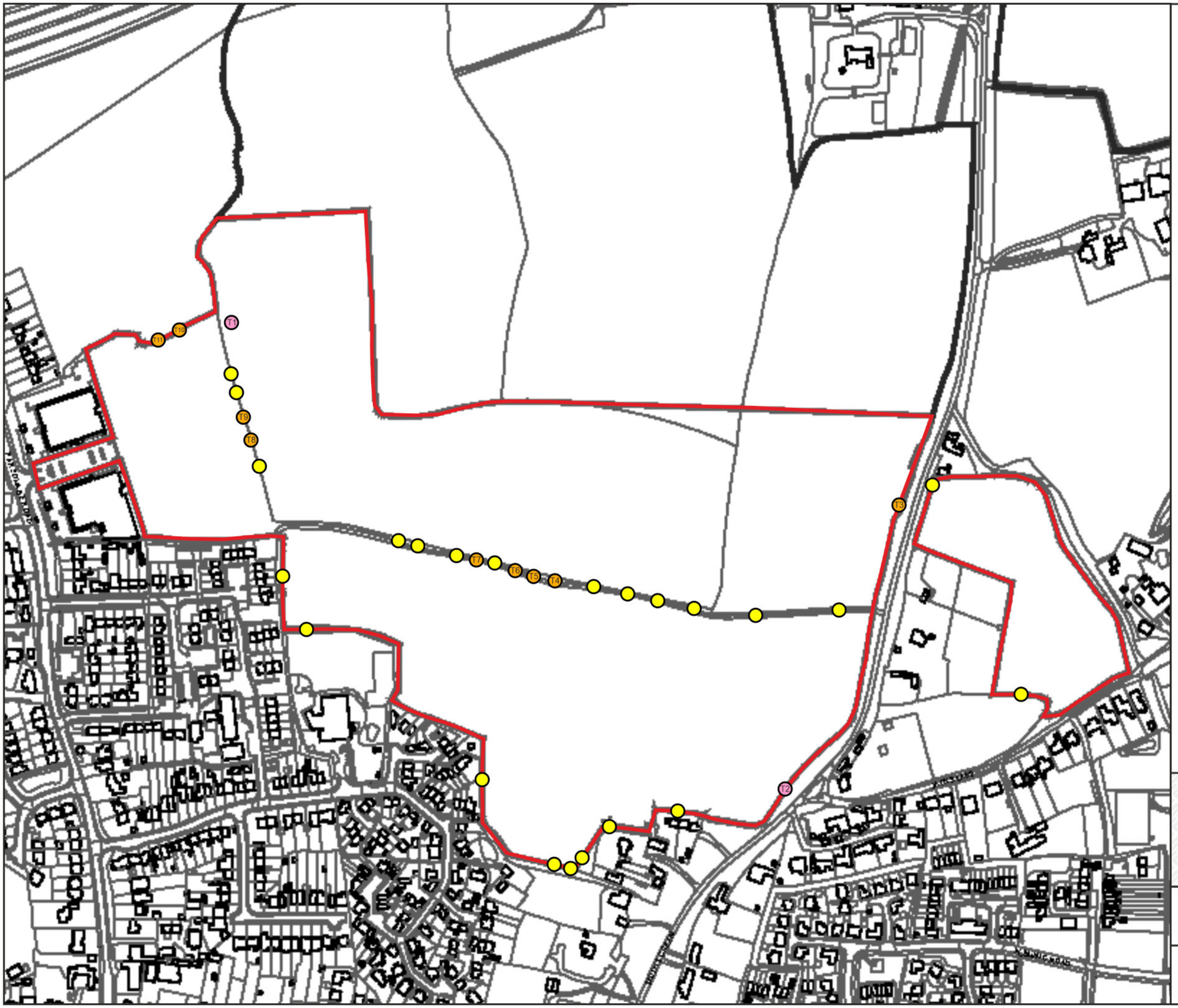
PLAN ECO3g:
BAT ACTIVITY SURVEY
RESULTS 11.10.21

Rev: A

Oct 2021

PLAN ECO4

Tree Assessment



KEY:

- SITE BOUNDARY
- TREE WITH LOW SUITABILITY FOR ROOSTING BATS
- TREE WITH MODERATE SUITABILITY FOR ROOSTING BATS
- TREE WITH HIGH SUITABILITY FOR ROOSTING BATS

N

ECOLOGYSOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO4:
TREE ASSESSMENT

Rev: A

Nov 2021

APPENDICES

APPENDIX 1

Bat Boxes

Bat Boxes

Schwegler bat boxes are made from woodcrete and have the highest rates of occupation of all types of box.
The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot- and predator-proof and extremely long lasting.

1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete construction.
Width: 27cm
Height: 43cm
Weight: 8.3kg

2F Bat Box

A standard bat box, attractive to the smaller British bat species. Simple design with a narrow entrance slit on the front.

Woodcrete construction.
Diameter: 16cm
Height: 33cm
Weight: 4kg

ECOLOGYSOLUTIONS
Part of the ES Group

Bat Boxes

Woodstone bat boxes are constructed using Woodstone which is a mix of concrete and wood shavings. The material has excellent thermal properties that ensure the inside of the box will maintain a consistent temperature.
Boxes can be hung from a branch near the tree trunk or fixed using ‘tree-friendly’ aluminum nails.

This multi-chambered bat box has a large internal space that can accommodate a large colony of bats. It can be used as a summer roost, maternity roost or hibernation box during mild winters.

The box can be mounted onto trees and is best positioned at a height of 3 to 6 metres and be orientated to a south to southeast elevation.

Specifications:

External dimensions: 15cm x 27.5cm x 16cm
weight: 4kg

ECOLOGYSOLUTIONS
Part of the ES Group

APPENDIX 2

Bat Access Tiles

Bat Access Tile

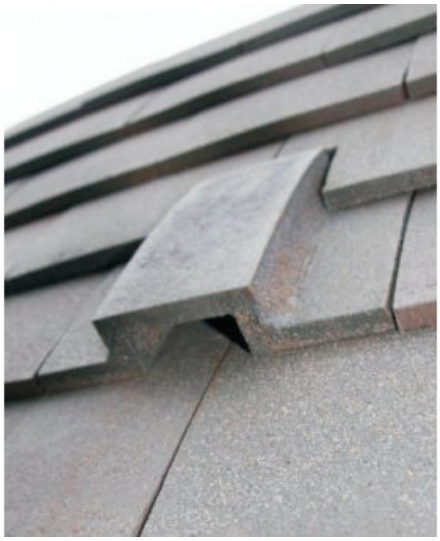
Habibat Slate Access Tile

The Habibat Bat Access Standard Slate has been carefully designed to provide much needed access to roof space for our protected bat species. The Bat Access Slate consists of a standard sized slate, with a capped vent which allows access to roof felt or roof space.

Width: 37.5cm
Height: 41.8cm
Depth: 0.8cm
Weight: 8.3kg

Habibat Access Clay Tile

As with the slate access tile, the Habibat Bat Access clay tile has been carefully designed to provide much needed access to roof space for our protected bat species. The Bat Access clay tile package includes a set of five tiles that fits seamlessly on any roof with plain clay tiles to provide access for bats either behind the tiles or into the roof space.



ECOLOGYSOLUTIONS
Part of the ES Group

ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

01763 848084 | east@ecologysolutions.co.uk | [redacted]

Appendix F - Woodland Management Plan [Nov 2022] by Ecology Solutions

WESTON HOMES PLC

ECOLOGYSOLUTIONS

Part of the ES Group

PRIOR'S WOOD,
WARISH HALL FARM,
TAKELEY,
ESSEX

Woodland Management Plan

in respect of the Proposed Development at Jack's Field

November 2022
9261.WMP(Jacks).vf

ecology solutions for planners and developers

CONTENTS

APPENDICES

1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Weston Homes Plc to prepare a management plan for Prior's Wood in relation to the proposed residential development of Jack's Field, Warish Hall Farm, Takeley, Essex. Prior's Wood is some 180m to the west of Jack's Field, and is owned by Weston Homes.

1.2. This report sets out the management prescriptions of features of ecological interest and describes the wildlife enhancements to be implemented. In particular, it considers the potential for increase in visitor numbers, in terms of both new and existing residents.

1.3. It is envisaged that the positive management strategy outlined in this report will provide the basis for an improvement in the condition of the habitat that will lead to beneficial changes over time, while managing access to the woodland. In this context, the proposals set out within this report are intended to form the basis of suitable control that can be secured through the provision of a planning condition.

1.4. It should be read in conjunction with the Ecological Assessment for Warish Hall Farm (dated October 2021) and the Ecology Update and Walkover Survey note (dated September 2022) produced by Ecology Solutions, and materials on arboricultural matters produced by Barton Hyett Associates.

2. BASELINE CONDITIONS

2.1. Designations

2.1.1. The locations of statutory and non-statutory designations in the locality are shown on Plan ECO1.

Statutory Sites

2.1.2. There are no statutory designations of nature conservation value within the site or immediately adjacent to it. The closest statutory designated site is Hatfield Forest Site of Special Scientific Interest (SSSI), which lies approximately 2.2km southwest of the site and also incorporates Hatfield Forest National Nature Reserve (NNR).

Non-statutory Sites

2.1.3. Prior's Wood is designated as a Local Wildlife Site (LWS), on account of its ancient and semi-natural woodland habitat.

Priority Habitat

2.1.4. Prior's Wood is shown as Priority Habitat on the MAGIC website. Priority Habitats are also defined as Habitats of Principal Importance for the Conservation of Biodiversity in England under Section 41 of the Natural Environment & Rural Communities Act 2006. The Act requires that decision-makers such as public bodies, including local authorities, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

2.1.5. The NERC Act 2006 requires the Secretary of State to:

…take such steps as appear… to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any published under this section, or…promote the taking by others of such steps.

2.1.6. It is noted that the term Priority Habitat is simply descriptive, and does not give any indication of quality. Virtually all deciduous woodland will be designated Priority Habitat.

Essex Biodiversity Action Plan

2.1.7. The Essex Biodiversity Action Plan (EBAP) lists a number of species that are associated with woodland or woodland edge, namely Oxlip *Primula elatior*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Dormouse *Muscardinus avellanarius*, Song Thrush *Turdus philomelos* and Stag Beetle *Lucanus cervus*.

2.1.8. Ancient Woodland is listed as a Priority Habitat within the EBAP.

2.2. Habitats

2.2.1. Prior's Wood is an area of broadleaved woodland some 8.22ha in size. It is included on the Ancient Woodland Inventory as an area of ancient and semi-natural woodland and designated as a non-statutory LWS.

2.2.2. The woodland has a historical link with the moated remains of Takeley Priory (a scheduled monument), approximately 300m to the northeast. The woodland has been reduced in size from the 10.3ha shown on Ordnance Survey six-inch map of 1956, with a portion in the north of the woodland (well away from the currently proposed development areas) having been changed to an arable field at some point in the past.

2.2.3. The woodland contains no ancient or veteran trees and primarily consists of Hornbeam *Carpinus betulus*, with significant components of Oak *Quercus robur*, Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna* and Hazel *Corylus avellana*, with Field Maple *Acer campestre*, Elm *Ulmus* spp., Willow *Salix* spp., European Larch *Larix decidua* and Scots Pine *Pinus sylvestris* found in small numbers. The understorey of the woodland is virtually absent and the canopy closed throughout (below the optimum 30% open canopy). The field layer lacks variety and is dominated by Bramble *Rubus fruticosus* in most areas, with some Dog's Mercury *Mercurialis perennis*, Ivy *Hedera helix*, Wood-sedge *Carex sylvatica*, Pendulous Sedge *Carex pendula*, Wood Avens *Geum urbanum*, False Brome *Brachypodium sylvaticum* and Oxlip also present.

2.2.4. At the eastern end of the woodland is a small area (approximately 20m by 30m) that has a high proportion of young to semi mature Elm spp. and Willow spp. The northern end of the woodland has a much lower density of Hornbeam and a more established understorey of Field Maple, Hazel and Ash. The centre of the woodland, around the 'elbow' where north/south and east/west sections meet, has an area dominated by smaller Ash of up to 250mm diameter, and Hazel coppice.

2.2.5. Many of the Hornbeams and Field Maples appear to have been coppiced in the past, but it is clear that the woodland has been unmanaged for many years and suffers from significant browsing by deer. There is limited dead wood habitat present, particularly standing deadwood. There are no rides or open glades, but desire-line footpaths are present throughout. The woodland is framed by agricultural ditches.

2.2.6. Three ponds are present within Prior's Wood. All ponds were wet at the time of the survey in both October 2020 and April 2021 and lacked aquatic vegetation.

2.3. Protected and Notable Species

Bats

2.3.1. The results of the activity transect surveys and remote detectors deployed between April and October 2021 show that Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle *Pipistrellus nathusii*, *Myotis* sp., Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri*, Serotine *Eptesicus serotinus*, Brown Long-eared Bat *Plecotus auritus* and Barbastelle *Barbastellus barbastellus* are using the boundary habitats in the wider area and Prior's Wood for foraging and commuting.

2.3.2. Additionally, early registrations for Common, Soprano and Nathusius' Pipistrelle and Barbastelle would indicate that roosts for these species are present in the immediate area.

2.3.3. Overall, Prior's Wood is considered to offer good foraging and dispersal habitat, as well as potentially some roost sites.

Badgers

2.3.4. No signs of Badgers *Meles meles* were recorded during survey work. Prior's Wood offers suitable habitat for foraging and sett building, whilst the network of hedgerows offer further foraging and commuting opportunities.

Dormice

2.3.5. Survey work completed found no signs of Dormice.

Other Mammals

2.3.6. Owing to the varied habitats present, it is considered that the site would support a range of common mammal species. While no evidence was recorded while undertaking surveys, it is considered that the woodland and boundary habitats are suitable for Hedgehog *Erinaceus europaeus.*

Birds

2.3.7. The woodland presents foraging and nesting opportunities for a range of species. The following species were recorded within the woodland during the breeding bird surveys: Song Thrush, Blackcap *Sylvia atricapilla*, Chiffchaff *Phylloscopus collybita*, Wren *Troglodytes troglodytes*, Jay *Garrulus glandarius*, Wood Pigeon *Columba palumbus*, Robin *Erithacus rubecula*, Blue Tit *Cyanistes caeruleus*, Great Tit *Parus major*, Blackbird *Turdus merula*, Green Woodpecker *Picus viridis*, Great Spotted Woodpecker *Dendrocopos major*, Mistle Thrush *Turdus viscivorus*, Buzzard *Buteo buteo*, Magpie *Pica pica*, Nuthatch *Sitta europaea*, Treecreeper *Certhia familiaris* and Chaffinch *Fringilla coelebs*. The following further species were recorded during the wintering bird surveys: Long-tailed Tit *Aegithalos caudatus*, Redwing *Turdus iliacus* and Dunnock *Prunella modularis*.

Reptiles

2.3.8. Small numbers of Common Lizard *Zootoca vivipara* are present on the southern and northern boundaries of Prior's Wood.

Amphibians

2.3.9. No amphibians were recorded within the woodland during the survey work. Testing of waterbodies did not record presence of Great Crested Newt *Triturus cristatus.*

Invertebrates

2.3.10. It is likely an assemblage of common invertebrate species would be present.

3. WOODLAND MANAGEMENT STRATEGY

3.1. Conservation Objectives

To establish greater structural diversity within the woodland
To promote new growth in the herbaceous layer
To promote greater deadwood resources

3.2. Enhancement and Management

Coppicing

3.2.1. The recommended coppicing method is to make cuts using a chainsaw at knee height on the stem. Once the tree has been felled, a further cut should be made at an angle: this will allow water to run off the exposed stump and prevent decay. A selection system should be used to target younger specimens. Whole areas will not be coppiced, since the aim is not to create open areas of even age which would not be appropriate for a site of this size, rather it is to create structural diversity.

Deadwood Habitats

3.2.2. An increase in standing and fallen deadwood resources will be encouraged, since this has significant benefits for woodland biodiversity, including invertebrates and fungi, and by extension mammals and birds. The woodland will not in any sense be 'tidied', but newly cut wood and brash arising from management works will be used to establish log piles and dead hedges along existing path edges.

Bramble Control

3.2.3. Though an important part of the woodland ecosystem, Bramble can be invasive and come to dominate the woodland field layer, at the expense of species diversity. The extent of Bramble cover will be checked on an annual basis, particularly in areas where the canopy of opened up, and if the species is coming to predominate stems will be strategically cut to limit growth. Cut vegetation will be left in situ to continue to provide resources for small mammals, birds and invertebrates.

4. VISITOR MANAGEMENT STRATEGY

4.1. Conservation Objectives

To manage use and encourage sense of ownership of Prior's Wood by new and existing residents

To avoid and minimise potential adverse effects of use on the woodland ecosystem

4.2. Approach

4.2.1. There is no requirement to deliver a Suitable Alternative Natural Greenspace (SANG) as part of the development; however, new residents will be encouraged to use the woodland for walking and dog walking as part of short and longer walks through the wider countryside to help alleviate pressure on Hatfield Forest SSSI and NNR. It is acknowledged that there is already a good level of existing use by local residents for these purposes, albeit this is on an informal basis since there are no Public Rights of Way through the woodland.

4.2.2. A public footpath (PRoW 48_40) runs along the southern edge of the woodland and will be retained in its current alignment. Notwithstanding the lack of formal public access, a loose network of informal paths is present within the woodland, linked to the PRoW. This existing informal network is to be retained, but with discreet and sympathetic measures taken to mitigate ongoing use.

Woodland Paths and Dead Hedges

4.2.3. The paths will remain as earth paths (rather than be subject to any formal surfacing) but will be edged in fallen or cut timber and / or brash in key locations to discourage deviation from the path. The 'dead hedge' formed by the timber / brash will have intrinsic wildlife benefit, being a resource for invertebrates as well as a shelter for birds and small mammals, but importantly it will aim to keep visitors on the path where there is already a disturbance effect rather than wandering from the path and trampling ground flora. This will help to allow the woodland field layer to regenerate.

4.2.4. These dead hedges will be replenished as necessary with materials arising from woodland management. Advice will be given by the ecologist in conjunction with the land manager.

Litter Removal

4.2.5. Litter will be removed on a monthly basis.

5. BATS

5.1. Conservation Objectives

To provide enhanced roosting opportunities. To enhance opportunities for foraging and dispersal. To reduce disturbance effects, where possible.

5.2. Enhancement and Management

Habitats

5.2.1. Enhancement and ongoing management of the woodland as described in previous sections will promote new foraging and dispersal opportunities for bats.

Dark Corridors

5.2.2. The woodland is currently relatively dark. No lighting is proposed for the woodland, and the surrounding network of hedgerows will be maintained as dark corridors for bat foraging and dispersal.

Bat Boxes

5.2.3. The inclusion of bat boxes on suitable trees across the site and within woodland will provide new potential roosting sites for bats within the local area. Boxes will be located in sheltered spots and placed at a height of at least three metres from the ground. Boxes will also be arranged around the site so that a number of different aspects are covered.

5.2.4. The locations of the boxes will be determined on the ground by the ecologist, who will ensure that the orientation and position of the boxes is appropriate, and that suitable trees are chosen.

5.3. Type and Source of Materials

5.3.1. Three bat boxes, such as Schwegler 2F Universal Bat Boxes, Schwegler 1FF Flat Bat Box, or similar (see Appendix 1) will be installed on suitable trees throughout the site.

5.4. Initial Aftercare and Long-term Management and Maintenance

5.4.1. Bat boxes will be checked periodically (once per year in March) for the first five years following installation, by a suitably experienced and licensed ecologist, to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

6. BIRDS

6.1. Conservation Objectives

To enhance foraging opportunities for birds.

To provide greater nesting opportunities for birds.

6.2. Enhancement and Management

Habitats

6.2.1. Enhancement and ongoing management of the woodland as described in previous sections will promote new foraging and nesting opportunities for woodland birds.

Nesting Bird Checks

6.2.2. In order to avoid impacts on nesting birds, and to avoid a potential offence under the Wildlife & Countryside Act 1981, any vegetation management would be undertaken outside of the bird breeding season (March to July inclusive) wherever possible. Where this is not possible, a check survey of vegetation by an experienced ecologist would be undertaken immediately prior to clearance. In the event that a nest was found to be present, the vegetation would be left in situ with an appropriate exclusion zone until the young had fledged.

Bird Boxes

6.2.3. Bird boxes will be provided to enhance nesting opportunities for birds within the site. Boxes will be positioned on suitable mature trees under the direction of the ecologist.

6.3. Type and Source of Materials

6.3.1. Three bird boxes, such as Schwegler 2H Open Front Bird Boxes, Schwegler 1N General Purpose Deep Bird Boxes, Schwegler 1B Bird Boxes, or similar, will be installed on suitable trees throughout the site (see Appendix 2).

6.4. Initial Aftercare and Long-term Management and Maintenance

6.4.1. Bird boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist, to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

7. INVERTEBRATES

7.1. Conservation Objectives

To enhance habitats and provide greater opportunities for invertebrates within the woodland.

7.2. Enhancement and Management

Habitats

7.2.1. Enhancement and ongoing management of the woodland as described in previous sections would encourage greater use of the site by invertebrates.

Log Piles

7.2.2. As a further enhancement, invertebrate nesting aids and log piles will be established within the woodland, using materials derived from woodland management. These features will provide new opportunities for invertebrates.

7.3. Type and Source of Materials

7.3.1. Log piles and 'loggeries' will be created from materials sourced on site from tree management activities (see Appendix 3).

7.4. Initial Aftercare and Long-term Management and Maintenance

7.4.1. Log piles will be checked annually for the first five years following establishment, by a suitably experienced ecologist, to ensure that they are still in situ and are not damaged. Log piles will be replenished and replaced by ongoing management.

8. RESPONSIBILITY FOR IMPLEMENTATION AND DELIVERY

8.1. Weston Homes has ultimate responsibility for implementation of this strategy. A suitable individual will be appointed to lead delivery for the company.

8.2. It is the responsibility of the appointed individual to instruct appropriate experienced contractors to establish the various management processes and features proposed, and to instruct appropriate experienced professionals to check the work where necessary.

9. FIFTEEN-YEAR WORK PROGRAMME

9.1. The table below sets out the outline timetable for implementation of the works set out in the previous sections.

Receptor	Action	Timing
Woodland Management	Coppicing Hornbeam and Hazel	Annually from Year 1 onwards, autumn / winter
	Establishment of deadwood habitats	Annually from Year 1 onwards, using brash arising
	Bramble Control	Annually from Year 2 onwards, autumn / winter
Visitor Management	Footpath management	Initial works Year 1, autumn / winter, then as required to maintain dead hedges
	Litter Removal	By Management Company from Year 1
Bats	Bat box installation	On suitable trees, spring / summer Year 1
Birds	Nesting bird checks of vegetation to be removed	March to July inclusive, as required
	Bird box installation	On suitable trees, spring / summer Year 1
Invertebrates	Loggery installation	Year 1 winter, then ongoing, depending on availability of material

Table 9.1. Fifteen-Year Work Programme.

10. MONITORING, REPORTING AND REVIEW PROCESS

10.1. The site will be subject to an annual walkover by an ecologist, in conjunction with the land manager. This will review work undertaken over the previous year, discuss work proposed for the coming year, and inspect particular features (bat boxes, etc.) to determine whether replacements are necessary.

10.2. The effectiveness of the measures set out in this document will be reviewed and, where necessary, alternative approaches will be adopted. Where this is the case an updated version of this management plan will be prepared. A summary note of the review would be written, detailing any actions.

10.3. A comprehensive review will be completed at the end of Year 5.

10.4. A further review would be completed at the end of Year 10.

10.5. At the end of Year 15 a concluding review will be completed and the way forward would be discussed.

APPENDICES

APPENDIX 1

Bat Boxes

Bat Boxes

Schwegler bat boxes are made from woodcrete and have the highest rates of occupation of all types of box.
The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot- and predator-proof and extremely long lasting.

1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete construction.
Width: 27cm
Height: 43cm
Weight: 8.3kg

2F Bat Box

A standard bat box, attractive to the smaller British bat species. Simple design with a narrow entrance slit on the front.

Woodcrete construction.
Diameter: 16cm
Height: 33cm
Weight: 4kg

ECOLOGYSOLUTIONS
Part of the ES Group

APPENDIX 2

Bird Boxes

Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box.
They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting.
Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes. 26mm for small tits, 32mm standard size and oval, for redstarts for example.

2H Bird Box

This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and black redstarts.

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.

1N Deep Nest Box

A deeper than standard nest box which is ideal for robins, spotted flycatchers, pied wagtails, tits and sparrows. Its depth offers protection from cats, magpies, jays and martens.

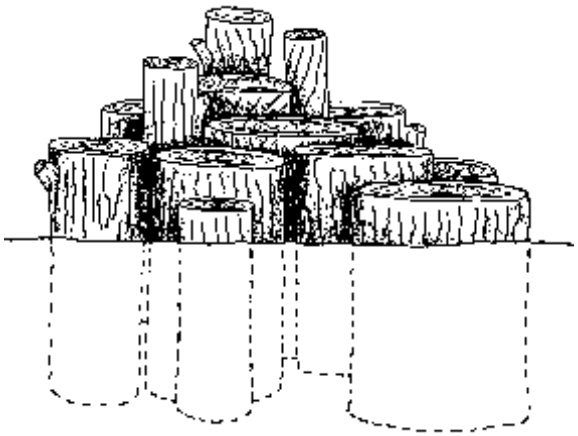
Two entrance holes, 30 x 50mm. Nesting area 15 x 21cm.

ECOLOGYSOLUTIONS
Part of the ES Group

APPENDIX 3

Loggery Design

Invertebrate Loggery



Loggery

Large logs (10-50cm diameter) of hardwood (e.g.Oak, Beech, Sycamore, Ash) with bark still attached sunk c. 60cm into the ground, in partially shaded areas. Treated wood should not be used.

Information derived from *Stag Beetle: An advice note for its conservation in London.* London Wildlife Trust.

[redacted]

ECOLOGYSOLUTIONS
Part of the ES Group

ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

01763 848084 | east@ecologysolutions.co.uk | [redacted]

Appendix G - Bird Hazard Management Plan [June 2021] by Ecology Solutions

WESTON HOMES PLC

ECOLOGYSOLUTIONS

Part of the ES Group

WARISH HALL FARM, TAKELEY, ESSEX

Bird Hazard Management Plan

June 2021
9261.BHMP.vf

ecology solutions for planners and developers

CONTENTS

PLANS

APPENDICES

1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Weston Homes PLC Limited in October 2020 to complete a Bird Hazard Management Plan for the development land at Warish Hall Farm, Takeley, Essex (see Plan ECO1 for the location of the site).

1.2. The site is located to the north of Takeley, approximately 3km southeast of the runway at Stansted Airport. Given that the site is within 13km of Stansted Airport, it lies within the aerodrome safeguarding zone where aircraft are at lower altitudes and thus at increased risk of birdstrikes. All developments within the 13km radius require consultation to ensure no potential increases in birdstrike risk.

1.3. The site is approximately 22.5ha in size and comprises largely arable fields, made up of Bull Field in the south, 7 Acres in the northwest and Jack's Field in the far east, with associated field margins, hedgerows and ditches. Prior's Wood Local Wildlife Site (LWS), an area of ancient and semi-natural woodland, dominates the north of the site.

1.4. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

1.5. The purpose of this document is to ensure that the risk of birdstrike as a direct result of the development does not significantly increase.

1.6. The proposals have been assessed in the context of the regulatory framework published by the Convention on International Civil Aviation and European Commission Regulation 139/2014, and guidelines set out in the UK Government DfT / ODPM Circular 1/2003 and CAP 772 Wildlife Hazard Management at Aerodromes, produced by the Civil Aviation Authority (CAA, 2014).

1.7. The information contained within this document identifies the potential hazards resulting from the proposed development, considers the likelihood of that potential and illustrates how risks of bird hazard will be minimised through implementation of measures during construction, through good design, and through management and monitoring during the operational phase, with the aim of reducing any residual risk to as low as reasonably practicable.

2. CONVENTION ON INTERNATIONAL CIVIL AVIATION ANNEX 14

2.1. Guidance on wildlife strike hazard reduction is provided by Annex 14 to the Convention on International Civil Aviation, published by the International Civil Aviation Organization (ICAO).

2.2. This is as follows[1]:

9.4 Wildlife strike hazard reduction

Note.—The presence of wildlife (birds and animals) on and in the aerodrome vicinity poses a serious threat to aircraft operational safety.

9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
c) an ongoing evaluation of the wildlife hazard by competent personnel.

9.4.2 Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

9.4.3 Action shall be taken to decrease the risk to aircraft operations by adopting measures to minimize the likelihood of collisions between wildlife and aircraft.

9.4.4 The appropriate authority shall take action to eliminate or to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity, unless an appropriate wildlife assessment indicates that they are unlikely to create conditions conducive to a wildlife hazard problem. Where the elimination of existing sites is not possible, the appropriate authority shall ensure that any risk to aircraft posed by these sites is assessed and reduced to as low as reasonably practicable.

9.4.5 Recommendation.— ***States should give due consideration to aviation safety concerns related to land developments in the vicinity of the aerodrome that may attract wildlife.***

2.3. Paragraphs 9.4.4 and 9.4.5 of this guidance are most relevant to the development, with the stipulation *to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity*.

[1] American English text retained from the original.

3. EUROPEAN COMMISSION REGULATION 139/2014

3.1. Regulation 139/2014 sets out the regulatory framework at the European level, and is administered by the European Aviation Safety Agency (EASA). Sections relevant to wildlife management at aerodromes are as follows:

Article 9

Monitoring of aerodrome surroundings

Member States shall ensure that consultations are conducted with regard to human activities and land use such as:

…

(e) the creation of areas that might encourage wildlife activity harmful to aircraft operations;

…

Article 10

Wildlife hazard management

1. Member States shall ensure that wildlife strike hazards are assessed through:

(a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;

(b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife constituting a potential hazard to aircraft operations; and

(c) an ongoing evaluation of the wildlife hazard by competent personnel.

2. Member States shall ensure that wildlife strike reports are collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

3.2. This document considers the potential hazards arising as a result of the development and the means by which they will be addressed.

4. DfT / ODPM CIRCULAR 1/2003

4.1. Department for Transport / Office of the Deputy Prime Minister Circular 1/2003 places responsibility for aerodrome safeguards with the aerodrome operators and introduces a consultation process for any development proposals which may affect an aerodrome.

4.2. Stansted Airport Limited (STAL), owned by Manchester Airport Group (MAG) is a relevant aerodrome operator and so must be consulted on any planning application within the safeguarding area (13km).

4.3. It is the responsibility of the aerodrome operator to take all *reasonable* steps to ensure that the aerodrome and its surrounding airspace are safe at all times for use by aircraft.

4.4. One of the purposes of safeguarding of aerodromes in this way is to "…*ensure that their operation and development are not inhibited…by developments which have the potential to increase the number of birds or the bird hazard risk"* [Circ 1/2003 Annex 2 para 3].

4.5. Notwithstanding this reference, it is important to note that an increase in the number of birds in the vicinity of an aerodrome is not in itself a problem; it is the possible increase in birdstrike risk that is the issue of concern which plans are required to address. An increase in non-problem bird species is of no significance to the overall birdstrike risk.

4.6. Annex 2 to Circ 1/2003 sets out particular advice on birdstrike hazard and identifies particular forms of development which are most important and where the primary aim is to guard against new or increased hazards. These are: *"…facilities intended for the handling, compaction, treatment or disposal of household or commercial wastes; the creation or modification of areas of water such as reservoirs, lakes, ponds, wetlands and marshes; nature reserves and bird sanctuaries; and sewage disposal and treatment plant and outfalls"* [Circ 1/2003 Annex 2 para 8].

4.7. Annex 2 also advises that *"…A local planning authority will need to consider not only the individual potential bird attractant features of a proposed development but also whether the development, when combined with existing land features, will make the safeguarded area, or parts of it, more attractive to birds or create a hazard such as bird flightlines across aircraft flightpaths"* [para 9].

4.8. For the types of development described in paragraph 8 of the Circular, a Local Planning Authority is advised to ask an applicant to demonstrate by means of a risk assessment that the development would not be likely to increase the bird hazard risk to aircraft. This Statement therefore sets out the detail of this risk assessment.

5. CAP 772 WILDLIFE HAZARD MANAGEMENT AT AERODROMES

5.1. CAP 772 sets out guidelines for the control of bird hazards in and around aerodromes. Whilst the document concentrates on bird control on aerodromes there is some relevant guidance for landscape areas in the vicinity.

5.2. The principal hazards are gulls, wading birds, pigeons and Starlings *Sturnus vulgaris*, and to a lesser extent corvids. Other species such as Canada Geese *Branta canadensis* and Greylag Geese *Anser anser* are considered in the CAA Safety Regulation Group document *Large Flocking Birds – An International Conflict Between Conservation and Air Safety*, but are of lower concern in a UK context. The objective of CAP 772 is to reduce the potential for roosting and to make sure that landscape areas are not attractive to such large flocking bird species. Smaller birds that do not form dense flocks have a low hazard potential.

5.3. Typical measures to accommodate the recommendations of CAP 772 are:

- Reduce tree planting density to 4m centres or lower, use open rides and thin existing stands to avoid formation of Starling roosts;
- Reduce species providing abundant winter food source, the most attractive of which are Holly *Ilex aquifolium* (female), Rowan S*orbus aucuparia*, Hawthorn *Crataegus monogyna*, *Viburnum* spp. and *Cotoneaster* spp. together with Crab Apple *Malus sylvestris* and Honeysuckle *Lonicera* spp.;
- Pay attention to normal management programmes such as trimming Hawthorn hedges, which can limit berry production and thereby form part of a mitigation strategy; and
- Avoid larger, permanent open water sites.

6. SAFEGUARDING OF AERODROMES ADVICE NOTE 8

6.1. Advice Note 8 sets out the hazards which may arise from building design and advises on measures to avoid them, or where this is not possible to mitigate and manage these hazards to reduce them to acceptable levels.

6.2. Section 4 of Advice Note 8 states that the following features should be considered when designing a building:

- Roof overhangs should be kept to a minimum;
- Ledges beneath overhangs and external protrusions should be avoided where possible;
- Steeply pitched roofs should be used to deter gulls from nesting, roosting and loafing;
- The roof space be designed in such a way as to prevent access by birds;
- Self-closing doors to prevent access to birds or openings should have plastic strip curtains fitted; and
- Where flat and / or shallow pitched roofs greater than 10m x 10m cannot be avoided in the design, there must be access available by foot to all areas of the roof to ensure that any hazardous birds, nesting, roosting and loafing can be dispersed and where necessary any nests and eggs can be removed (see note below regarding licences).

6.3. Prevention, inspection and dispersal measures are included at Section 5, and comprise the following:

- Netting;
- Bird spikes;
- Pyrotechnics;
- Distress Calls;
- Removal of Nests and / or Eggs (under the relevant Natural England licence as appropriate); and
- Inspections, where flat or shallow pitched roofs are present.

6.4. Management of birds relating to flat or shallow pitched roofs would include the following measures:

- Confirmation that access to all areas of the roof is available and by what method, to ensure that inspections can be carried out;
- Confirmation that inspections will be carried out year-round with increased frequency during the breeding season;
- Confirmation that any nests / eggs will be removed, with the appropriate licences first being obtained;
- Confirmation that any hazardous birds found nesting, roosting and loafing will be dispersed when detected or when requested by Airfield Operations staff. In some instances, it may be necessary to contact Airfield Operations staff before bird dispersal takes place;
- Details of any dispersal methods to be used; and
- A log to be kept of bird numbers and species utilising the roof(s).

7. SAFEGUARDING OF AERODROMES ADVICE NOTE 3

7.1. Advice Note 3 considers the types of development that may come forward in the vicinity of an aerodrome and the particular issues that can arise. Parts of the advice are similar to that provided in the (earlier) Advice Note 8.

7.2. Developments such as housing, factories, industrial estates / units, mineral extraction and green roofs can provide food and shelter for urban species such as pigeons, gulls, corvids, Starlings etc..

7.3. Buildings with flat roofs can provide nesting opportunities for gull colonies; Feral Pigeons *Columba livia*, Jackdaws *Corvus monedula* and Starlings can take advantage of ledges and gullies for nesting sites and perching areas.

7.4. The advice sets out ways in which these potential risks could be reduced, as follows:

- Netting to proof roofs and exclude hazardous species;
- Roof overhangs kept to a minimum;
- Ledges beneath overhangs and external protrusions avoided where possible;
- Redesign roof to steeply pitched to deter gulls from loafing, roosting and resting;
- Lighting structures proofed to prevent perching;
- Choice of roof material to reduce attractiveness (smooth surfaces with minimal protrusions or vents to reduce breeding opportunities);
- Roof spaces to be designed in such a way as to prevent access by birds;
- Self-closing doors to prevent access to birds or openings fitted with netting or plastic strip enclosure materials;
- Safe access by foot access to all areas of roof that cannot be proofed;
- Outside dining areas enclosed or avoided in close proximity to an aerodrome.

7.5. Advice is provided with regards to monitoring and inspection of gulls, as follows:

During the breeding season for Gulls, for example, inspections to assure compliance with a 'no breeding' BHMPs should be carried out at least weekly during the breeding season, (e.g. Gulls typically April to June). To ensure that all hazardous birds found nesting are dispersed and any nests and / or eggs are removed. This process should be fully documented to provide an audit trail.

For roosting or loafing (resting) birds, regular inspections should be carried out and if the threshold level is exceeded then birds should be dispersed. The frequency of inspections should be dictated by the presence of hazardous birds and be sufficient as to ensure the efficacy of the plan. This process should be fully documented to provide an audit trail and compliance site visits from the aerodrome operator may be required, subject to the necessary Health and Safety considerations.

8. RISK ASSESSMENT OF LAND AT WARISH HALL FARM, TAKELEY

8.1. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

8.2. This does not constitute one of the 'most important' types of development that create new or increased birdstrike hazards, such as landfill and mineral extraction as set out in DfT / ODPM Circular 1/2003 Annex 2 paragraph 8.

8.3. New landscape planting is proposed as part of the development. Factors such as planting of trees and bushes are referred to in Paragraph 8 of Annex 2 to Circular 1/2003.

8.4. A source of potential risk for the development is the proposed landscaping scheme, which includes a small extension to the existing ancient and semi-natural woodland in the north of the site. Species composition will be based on the existing woodland, with dominant Hornbeam *Carpinus betulus* and smaller components of Oak *Quercus robur*, Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana* and Elm *Ulmus* sp..

8.5. Whilst this area of woodland planting will provide new nesting and foraging opportunities for birds it is not expected that the new planting will increase levels of flocking species such as Starling within the site. The guidance set out in previous section is concerned with avoiding *additional* risk.

8.6. Small areas of flat roof will also be a source of potential risk for the development. Shallow and flat roofs are attractive to species such as gulls to roost, nest and loaf. Portacabin buildings typically used to serve as an ancillary office for administration and amenity facilities for staff welfare purposes, will provide small areas of flat roofs, which provide the potential to attract gulls and Feral Pigeons.

8.7. Given the pre-development status of the site it is not likely that the construction phase would give rise to any significant additional risk. Significant areas of topsoil are already annually exposed through agricultural practices, and no significant areas of standing water are expected to establish.

8.8. Chapter 4 of CAP 772 identifies the various risks that can arise within and adjacent to an aerodrome, which include the presence of food sources, nest and roost sites and the presence of open water.

8.9. Certain plant species, generally berry-bearing species, are considered to be greater attractants for birds, and it is recommended that such species be avoided.

8.10. CAP 772 states that buildings and structures with access holes and crevices provide nest sites and roosts, especially for Feral Pigeons and Starlings, but also gulls. Pigeons roost and nest inside buildings and on ledges on their exteriors. It is recommended that, wherever possible, flat roofs be avoided, and that where they are constructed, they be fully accessible for inspection purposes.

8.11. Section 5 of Chapter 4 lists off-aerodrome bird attractant habitats. The proposed development is not located on *The Coast* and does not include *Landfills for Food Wastes; Sewage Treatment and Disposal*; or *Sand Gravel and Clay Pits*.

8.12. Overall, the development of the site has the potential to increase bird hazards in the vicinity of Stansted Airport if not subject to appropriate avoidance and mitigation measures.

8.13. The Bird Hazard Management Plan is concerned with managing potential risks that may arise during the operational phase.

9. BIRD HAZARD MANAGEMENT PLAN

9.1. Taking into account the regulations and guidance reviewed in the previous sections, this section sets out the means by which bird hazards will be addressed and monitored as part of the development.

9.2. The overarching principle of this plan is that the developer implements all reasonable endeavours to maintain the birdstrike risk associated with the development as low as reasonably practicable, in line with published guidance and legislation.

Operational Phase

Roof Overhangs

9.3. The design of the roof of any portacabin buildings or the extent of any neighbouring buildings placed adjacent to one another is to be such that these are kept to a minimum to reduce nesting opportunities. Any openable skylights will be fitted with appropriate grilles or netting to prevent nesting opportunities.

Roof Inspections

9.4. Portacabin roofs will be accessible for safe inspection and will be inspected on a weekly basis (or sooner if bird activity dictates) during the nesting bird season (March to July inclusive). Inspections will be undertaken by a designated person or company. During the remainder of the year inspections would be undertaken on a monthly basis. In the event that bird activity during any given period is found to be high, the frequency of inspections would increase.

9.5. All accessible roof or void spaces would be searched for roosting, loafing and nesting birds such as gulls and Feral Pigeon. Any roosting or loafing birds would be dispersed by means of human presence and activity.

9.6. Where nesting birds are found, an ecologist would be contacted for advice. All wild birds are protected while nesting and removal of nests and eggs may require a Natural England licence. If it is clear that eggs are not present, then any nest in the process of being constructed can be cleared away without the need for further advice or intervention. As a general principle the roof area should be kept free of material at all times.

Bird Spikes

9.7. Wherever possible, bird spikes would be affixed to the top of temporary lighting columns. These would be inspected, and replaced if necessary, as part of annual site maintenance.

Log of Activity

9.8. A paper and electronic log of monitoring activity will be kept by the designated individual or company and will be available for inspection by interested parties. Details of activities undertaken and of birds recorded

will be kept, together with views on the efficacy of measures taken. An example of a recording sheet is included at Appendix 1.

Reassessment

9.9. The effectiveness of these measures will be reassessed on a six-monthly basis. Where they are considered to be lacking then additional methods such as netting of roofs and use of installed sonic deterrents will be considered.

Trees and Shrubs

9.10. CAP 772 cites formation of Starling roosts as being a significant potentially hazardous consequence of landscape proposals within a development. Such risks are only seasonal, with the huge communal roosts of this bird species forming between late summer and winter. These roosts are commonly found in *"… dense vegetation, such as thorn thickets, game coverts [and] young un-thinned conifer screening belts."*

9.11. New woodland extension and landscape planting is proposed as part of the development. The new woodland extension planting will consist of the same species composition of the existing woodland with Hornbeam being the dominant species. High proportions of berry-bearing understorey planting will be avoided.

9.12. The establishment of dense vegetation throughout the open green space and housing parcels shall also be avoided in favour of individual street trees and scattered shrub planting. These measures will prevent additional attraction to flocking species.

Water Features

9.13. Drainage will be attenuated in shallow SUDs basins designed to slow down storm water. These depressions will not hold standing water for long periods of time (over 72 hours) and are not therefore intended to create new standing water features within the site.

9.14. The woodland ponds will be enhanced through silt removal and native species planting. They will not be made larger or their existing setting altered in any way that would increase use by flocks of waders, gulls or water fowl. Thus, no *additional* risk is envisaged in this regard.

Waste Imports and Monitoring

9.15. As the proposals do not feature use of the site for landfill, incineration or the treatment of hazardous wastes, no wastes are to be brought onto the site.

Waste Collection and Storage

9.16. Chapter 5 of CAP 772 states that:

Waste food is an attractant to gulls, corvids, pigeon species and starlings in particular and should not be tolerated [...]. Where food waste could

occur, all bins and skips provided should be of designs that prevent animals (such as foxes and rodents) and birds getting in; for example, with drop-down or swinging lids. They should be emptied before they overflow.

9.17. Any food, garden or other putrescible wastes produced within the proposed development will be disposed of in appropriate refuse bins, which will be installed at suitable locations.

9.18. Bins will be of designs that exclude birds (e.g. with drop-down or swinging lids), as will any skips used for refuse. Bins will be subject to standard collections.

Obligations and Undertaking

9.19. The following section sets out the commitment of the end user of the development to implement the Bird Hazard Management Plan as set out in this section. The wording will be agreed with Stansted Airport and Uttlesford Borough Council.

10. OBLIGATIONS AND UNDERTAKING

I / we can confirm the following:

- That the roofs are constructed in such a manner so that all areas are safely accessible to enable any nests and eggs to be cleared and birds to be dispersed.

- Checks will be made weekly or sooner if bird activity dictates, during the breeding season by an appointed person / company. The breeding seasons for gulls typically runs from March to June.

- Any birds found nesting and / or roosting and / or loafing during the breeding season will be dispersed when detected and / or when requested by Stansted Airport Airfield Operations staff.

- Any nests or eggs found will be removed, the appropriate licence(s) will be obtained from Natural England beforehand if required.

- Checks will be made on a regular basis, as dictated by bird activity, outside of the breeding season by a nominated person/company.

- Any birds found roosting and / or loafing outside of the breeding season will be dispersed when detected and / or when requested by Stansted Airport Operations Staff.

- The methods of dispersal used will be as follows:

    - Physical disturbance through human presence

- A log will be kept which will detail the following:

    - Dates and times of inspections
    - Who carried out the inspections
    - Bird numbers and species seen
    - Details of any dispersal action taken along with details of any nests/eggs removed.
    - The log must be available to Stansted Airport Airfield Operations to view upon request.

Review of the Management Plan

The management plan shall be subject to review to reflect changes in habitat or populations of bird species. Should the airport deem it necessary, a meeting between Stansted Airport Limited, the developer / operator and / or Uttlesford District Council will be convened at the earliest opportunity to discuss and agree any changes which may be necessary.

Inspection & Site Access

Stansted Airport Limited, or their nominated representatives, will be allowed access to the site by prior arrangement, to evaluate the success of the Management Plan and to review any remaining birdstrike hazard.

Long Term Management

This Management Plan will remain enforceable by Stansted Airport Limited, Uttlesford District Council, the CAA or any successor to these bodies throughout the existence of the buildings. These obligations will be passed to any subsequent owners/operators of these buildings and land.

Signed:

On Behalf of: **Weston Homes**

Date:

11. SUMMARY AND CONCLUSIONS

11.1. Ecology Solutions was commissioned by Weston Homes PLC Limited in October 2020 to complete a Bird Hazard Management Plan for the development land at Warish Hall Farm, Takeley, Essex.

11.2. The site is located to the north of Takeley, approximately 3kmkm south of the runway at Stansted Airport. Given that the site is within 13km of Stansted Airport, it lies within the aerodrome safeguarding zone where aircraft are at lower altitudes and at increased risk of birdstrikes. All developments within the 13km radius require consultation to ensure no potential increases in birdstrike risk.

11.3. The site is approximately 22.5ha in size and comprises largely arable fields, made up of Bull Field in the south, 7 Acres in the northwest and Jack's Field in the far east, with associated field margins, hedgerows and ditches. Prior's Wood Local Wildlife Site (LWS), an area of ancient and semi-natural woodland dominates the north of the site.

11.4. The proposals for the site are for a mixed-use development including residential and employment areas, as well as local amenities.

11.5. The purpose of this document is to ensure that the risk of birdstrike as a direct result of the proposed development does not significantly increase. The proposals have been considered in the context of the relevant regulations and guidelines.

11.6. The effect of the construction phase on birdstrike risk is considered to be negligible. The landscape scheme includes new woodland and landscape planting, but this is not likely to represent a significant additional attraction of the site to flocking species such as Starling.

11.7. During the construction period, the roofs of new portacabin buildings may also be attractive to problem bird species, particularly roosting, nesting and loafing gulls. All roof areas will be safely accessible and will be subject to regular inspection to disperse any birds that may be present. A log of activity will be kept.

11.8. The end user of the development, Weston Homes PLC, will be given an undertaking to implement the Bird Hazard Management Plan.

11.9. Overall, with these measures in place it is considered that the development of the site would not result in an additional significant birdstrike risk to Stansted Airport during the construction or operational phases.

12. REFERENCES AND BIBLIOGRAPHY

Anon (2003). *Department for Transport (DfT) / Office of the Deputy Prime Minister (ODPM) Circular 1/2003 – Advice to Local Planning Authorities on Safeguarding Aerodromes and Military Explosives Storage Areas*. HMSO, London.

Airport Operators Association & General Aviation Awareness Council (2008). *Safeguarding of Aerodromes Advice Note 8: Potential Bird Hazards from Building Design*.

Airport Operators Association in Association with Civil Aviation Authority (2016). *Safeguarding of Aerodromes Advice Note 3: Wildlife Hazards around Aerodromes.*

Civil Aviation Authority. *Large Flocking Birds – An International Conflict Between Conservation and Air Safety.* Civil Aviation Authority, London.

Civil Aviation Authority (2002). *CAP 680 Aerodrome Bird Control*. Civil Aviation Authority, London.

Civil Aviation Authority (2003). *CAP 738 Safeguarding of Aerodromes.* Civil Aviation Authority, London.

Civil Aviation Authority (2008). *CAP 772 Birdstrike Risk Management for Aerodromes.* Civil Aviation Authority, London.

Civil Aviation Authority (2014). *CAP 772 Wildlife Hazard Management at Aerodromes.* Civil Aviation Authority, Gatwick.

East Midlands Airport (2016). *Wildlife Hazard Management: Airside Operational Instruction 15*. Manchester Airports Group.

European Commission (2014). *Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council*.

ICAO (2013). *Annex 14 to the Convention on International Civil Aviation*. Sixth Edition. Volume I Aerodrome Design and Operations. International Standards and Recommended Practices. International Civil Aviation Organization, Montréal.

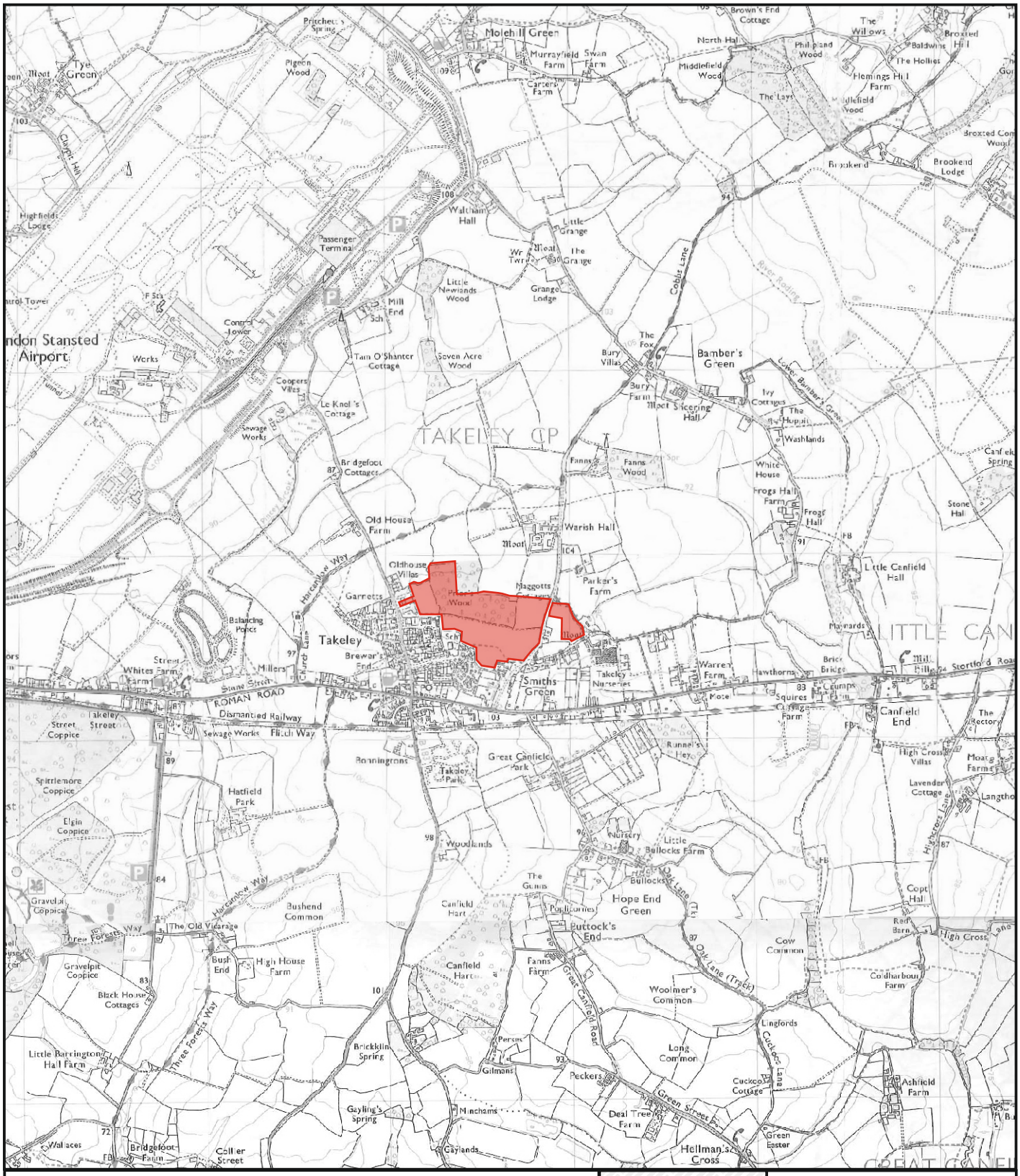
International Bird Strike Committee (2006). *Recommended Practices No. 1: Standards For Aerodrome Bird / Wildlife Control.*

Stefanioros, V and Olah, Z (2014). *Requirements for wildlife control at aerodromes*. Powerpoint presentation. European Aviation Safety Agency, Cologne.

PLANS

PLAN ECO1

Site Location



KEY:

SITE LOCATION

N

ECOLOGY SOLUTIONS
Part of the ES Group

Cokenach Estate
Barkway | Royston
Hertfordshire | SG8 8DL

+44(0)1763 848084
east@ecologysolutions.co.uk
ecologysolutions.co.uk

9261: WARISH HALL FARM, TAKELEY, ESSEX

PLAN ECO1: SITE LOCATION

Rev: A

Mar 2021

APPENDICES

APPENDIX 1

Example Bird Hazard Management Log

Bird Hazard Management Log

DATE	TIME	INITIALS	BIRD SPECIES AND NUMBERS			ACTION TAKEN
			GULLS			

ECOLOGYSOLUTIONS

Part of the ES Group

Ecology Solutions Limited | Cokenach Estate | Barkway | Royston | Hertfordshire | SG8 8DL

01763 848084 | east@ecologysolutions.co.uk | [redacted]