LC Ecological Services

ECOLOGICAL IMPACT ASSESSMENT
LAND WEST OF BILSHAM ROAD
YAPTON
WEST SUSSEX

NOVEMBER 2021
UPDATED DECEMBER 2021
UPDATED JANUARY 2022
UPDATED FEBRUARY 2022

ON BEHALF OF LANDLINK ESTATES

ARUN DISTRICT COUNCIL Y/3/22/OUT

The Old Squash Court,
Rempstone Hall,
Rempstone,
Corfe Castle,
Wareham,
Dorset,
BH20 5JQ
www.ecological-services.co.uk

Telephone: 01929 477115
E-mail: enquieries@ecological-services.co.uk

Authorisation

	Name	Date
Report prepared by:	WD	23.11.201
Report checked by:	JS	23.11.201
Report updated by:	AGH	21.12.2021
Report updated by:	WD	04.01.2022
Report updated by:	WD	10.02.2022

The contents of this report were correct at the time of the last survey visit. The report is provided for the sole use of the named client and is confidential.

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without our written permission. Its content and format are for the exclusive use of the addressee in dealing with this. It may not be sold, lent, hired out or divulged to any third party not directly involved in this situation without our written consent.
It is company policy to share species records collected during our surveys with local biological records centres unless instructed otherwise by the client.

CONTENTS

1.0 EXECUTIVE SUMMARY 1
2.0 INTRODUCTION 2
3.0 LEGISLATION AND POLICY CONTEXT 3
4.0 ASSESSMENT METHODOLOGY 5
5.0 BASELINE 9
6.0 IMPACT ASSESSMENT 21
7.0 MITIGATION 26
8.0 RESIDUAL EFFECTS 30
9.0 IN-COMBINATION EFFECTS 30
10.0 CONCLUSION 30
11.0 REFERENCES 32
APPENDIX I: SITE BOUNDARY 34
APPENDIX II: PHASE 1 HABITAT SURVEY 35
APPENDIX III: SITE PHOTOGRAPHS 40
APPENDIX IV: BAT SURVEY RESULTS 41
APPENDIX V: REPTILE SURVEY RESULTS 53
APPENDIX VI: ECOLOGICAL ENHANCEMENTS 56

ARUN DISTRICT COUNCIL Y/3/22/OUT

1.0 EXECUTIVE SUMMARY

1.1 This Ecological Impact Assessment (EcIA), prepared by LC Ecological Services Limited (LCES), was undertaken to assess the potential ecological effects of the proposed residential development at Land West of Bilsham Road, Yapton, West Sussex (approximate central Grid Reference: SU 497488 102433).

1.2 The site was subject to a detailed walkover survey on the 29th July 2021. An assessment of the site to support protected species was also undertaken. This EcIA is based on the survey information and desktop studies of local protected sites and protected species records.

1.3 The scoping information provided by the botanical assessments, protected species potential survey and desktop study, is used to summarise the ecological baseline methods and results; evaluate the Important Ecological Features (IEFs); and indicate the potential impacts and propose mitigation for the construction and operation of the proposed development.

1.4 Phase 2 surveys were undertaken to obtain further information on which protected species were likely to be impacted by the proposed works. Phase 2 surveys undertaken include; bat activity transects and reptile survey.

1.5 Nine IEFs were identified during the EcIA, including two designated sites of national importance, two designated site of regional importance and seven habitats and fauna of local importance. No significant negative impacts to the IEF's were identified during the assessment. The proposed enhancement measures will result in a minor positive impact overall.

1.6 The zone of influence of the project was determined by the sensitivity of the ecological features to environmental change, within the site and the surrounding area in accordance with the guidelines for Ecological Impact Assessment (CIEEM, 2019).

ARUN DISTRICT COUNCIL Y/3/22/OUT

2.0 INTRODUCTION

Project brief

2.1 This Ecological Impact Assessment (EcIA), prepared by LC Ecological Services Limited (LCES), was undertaken to assess the potential ecological effects of the proposed residential development at Land West of Bilsham Road, Yapton, West Sussex (approximate central Grid Reference: SU 497488 102433).

2.2 Landlink Estates Ltd proposals include a residential development including creation of natural greenspace on arable land. The proposed development will be within the confined of one existing arable field measuring approximately 9.65 hectares in size.

Site context and location

2.3 The proposed development lies within an area of low ecological sensitivity. It is over three and a half kilometres from the nearest statutory site with no non-statutory sites are located within 2 kilometres of the site. The habitats present on site are common and widespread within the local area.

Purpose of the report

2.4 The purpose of this report is to outline the following:

- To provide a summary of the existing ecological baseline for the Application Site and a wider study area.
- To identify and describe all potentially significant ecological effects associated with the proposed works.
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects.
- To identify how mitigation measures will/could be secured.
- To provide an assessment of the significance of any residual effects.
- To identify appropriate enhancement measures.
- To set out any requirements for post-construction monitoring.

ARUN DISTRICT COUNCIL Y/3/22/OUT

3.0 LEGISLATION AND POLICY CONTEXT

Legislation

3.1 Full details of statutory obligations with respect to biodiversity and the planning system can be found in DEFRA Circular 06/2005. Relevant legislation to this application site includes the following:

- **Internationally Designated Sites:** SPAs and SACs are protected under the *Conservation of Habitats and Species (Amendment) Regulations 2017* and Ramsar sites are protected under the *Ramsar Convention (1971)*.
- **Nationally Designated Sites:** SSSIs are protected under section 28 of the *Wildlife and Countryside Act (WCA) 1981* (*as amended).*
- **Badgers:** *Protection of Badgers Act 1992*.
- **Bats**: all species of British bats and their roosts are fully protected under the *Wildlife and Countryside Act (WCA) 1981 (as amended)* and the *Conservation of Habitats and Species (Amendment) Regulations 2017*.
- **Birds:** all birds, their nests, eggs and young are protected by the *WCA 1981 (as amended).*
- **Mammals:** *Wild Mammals (Protection) Act 1996*.
- **Reptiles:** the adder (*Viper berus*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*) and slow worm (*Anguis fragilis*) receive protection under the *WCA 1981 (as amended).*

National Planning Policy

3.2 Chapter 15 of the National Planning Policy Framework (NPPF 2021) '*Conserving and enhancing the natural environment*' sets out the Government's policies on biodiversity, landscape and geological conservation. Relevant paragraphs within this chapter include:

- **Paragraph 174:** Recognise the wider benefits of ecosystem services and minimise impacts on biodiversity, providing net gains in biodiversity;
- **Paragraph 175:** Planning positively and distinguishing between the hierarchy of designated sites and allocating land with the least environmental value, and maintaining and enhancing networks of habitats and green infrastructure;
- **Paragraph 179:** Protect and enhance biodiversity and geodiversity by safeguarding wildlife-rich habitats and wider ecological networks; promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and securing biodiversity net gain;

ARUN DISTRICT COUNCIL Y/3/22/OUT

- **Paragraph 180:** Refuse development if found to have significant harm to biodiversity; is on land within or outside a SSSI (Site of Special Scientific Interest) which is likely to have an adverse effect; if results in the loss of deterioration of irreplaceable habitats. Developments with the primary objective to conserve or enhance biodiversity will be supported, while opportunities to improve biodiversity in and around developments should be integrated as part of their design and can secure measurable net gains for biodiversity or enhance public access to nature.
- **Paragraph 181:** Protection to be given to potential SPA and possible SACs, proposed Ramsar sites, and sites identified or required as compensatory measures for impacts to these sites.

Local Planning Policy

3.3 Relevant planning policies within the adopted Arun Local Plan include:

- Policy GI SP1: Green Infrastructure and development
- Policy ENV SP1: Natural Environment
- Policy ENV DM1: Designated Sites of biodiversity or geological Importance
- Policy ENV DM2 Pagham Harbour
- Policy ENV DM3: Biodiversity Opportunity Areas
- Policy ENV DM5: Development and Biodiversity

Biodiversity Action Plans

3.4 Relevant Biodiversity Action plans (BAPs) are as follows:

- UK Biodiversity Action Plans (UK BAP)
- Slow worm (UK BAP)
- Soprano pipistrelle bat (*Pipistrellus pygmaeus*) (UK BAP)
- Brown long-eared bat (*Plecotus auritus*) (UK BAP)
- Hedgerow (UK BAP)
- Brown hare (*Lepus europaeus*) (UK BAP)

ARUN DISTRICT COUNCIL Y/3/22/OUT

4.0 ASSESSMENT METHODOLOGY

Study Area

4.1 The site is located at central Ordnance Survey (OS) grid reference SU 497488 102433 and the study area comprises the site plus an additional:

- 5 kilometres for statutory designated sites;
- 2 kilometres for non-statutory designated sites
- 2 kilometres for all bat species and
- 30 metres for badgers (*Meles meles*).

Sources of Information

4.2 The following sources of information were used to inform the impact assessment:

Table 1: Summary of survey work and sources of information for Land West of Bilsham Road.

Survey type	Year(s)	Comment
Environmental record searches	2021	Records obtained from Sussex Biodiversity Record Centre (SxBRC)
Desk study - Statutory sites designated for nature conservation	2021	Records obtained from Natural England's web-based Multi-Agency Geographic Information for the Countryside (MAGIC)
Ecological appraisal and phase 1 habitat survey	2021	LC Ecological Services July 2021
Badger walkover survey	2021	Completed during the ecological appraisal. Sett is considered to be inactive.
Bats – assessment of site suitability for foraging and commuting	2021	Seasonal activity surveys combined static monitoring was undertaken in 2021.
Breeding birds	2021	An assessment of the sites suitability to support nesting birds
Great crested newt	2021	Completed during the ecological appraisal. No evidence was recorded, and the habitat is considered to be sub-optimal and isolated

ARUN DISTRICT COUNCIL Y/3/22/OUT

Survey type	Year(s)	Comment
		from known populations. This species has not been considered further.
Hazel dormouse	2021	Completed during the ecological appraisal. No evidence was recorded, and the habitat is considered to be sub-optimal. This species has not been considered further.
Reptiles	2021	Presence/absence survey was undertaken.

Assessment Process

4.3 The EcIA is in accordance with the CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2019).

4.4 The starting point was to determine which features should be subject to detailed assessment, that is, those Important Ecological Features (IEFs):

a) Of sufficient value that impacts upon them may be significant (in terms of legislation or policy); and

b) Potentially vulnerable to significant impacts arising from the development.

4.5 This approach is consistent with the EIA Regulations, which only require investigation of likely significant effects.

4.6 The CIEEM guidelines recommend that the value of IEFs is determined based on a geographic frame of reference that includes the following levels:

Table 2: Level of Value Assigned to IEFs (adapted from CIEEM, 2019)

Level of Value	Example of Definitions
International	An internationally important site e.g. SPA, SAC, Ramsar (or a site considered worthy of such a designation). A viable area of a habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitats which are essential to maintain the viability of a larger whole. A regularly occurring population of an internationally important species (listed on Annex IV of the Habitats Directive).
UK / National	A nationally designated site e.g. SSSI or a site considered worthy of such designation. A viable area of a priority habitat identified within the UK BAP, or

ARUN DISTRICT COUNCIL Y/3/22/OUT

Level of Value	Example of Definitions
	of smaller areas of such habitat which are essential to maintain the larger whole. Any recurring population of a nationally important species e.g. listed on Schedules 5 and 8 of the Wildlife and Countryside Act 1981 (as amended). A feature identified as of critical importance in the UK BAP.
Regional (West Sussex)	A site designated as a Local Wildlife Site (LWS) or habitats that meet the designation criteria for LWS's in East and West Sussex and Brighton and Hove. Areas of internationally or nationally important habitats which are degraded but are considered readily restored. A regularly occurring, locally significant population of a species listed as being nationally scarce. A regularly occurring, locally significant number of a regionally important species.
Local (the zone of influence including the site and its immediate vicinity, including habitats within or linked to those on site)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the region.

Assessment Criteria

Predicting and Characterising Ecological Impacts

4.7 The assessment of magnitude of effect assesses whether an impact will be positive or negative; its extent; duration; reversibility and timing and frequency as well as the cumulative effect. A combination of quantitative information and qualitative assessment based on professional judgment was used whilst considering all of these factors to assign effects on the IEFs to one of four categories as detailed in table 3 below.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Table 3: Assessment of Magnitude of Effects

Category	Definition
High	A permanent or long-term effect on the extent/size or integrity of a site, habitat, species assemblage or community, population or group. If adverse this is likely to threaten its sustainability. If beneficial this is likely to enhance its conservation status.
Medium	A permanent or long-term effect on extent/size or integrity of a site, habitat, species assemblage or community, population or group. If adverse this is unlikely to threaten its sustainability. If beneficial this is likely to be sustainable but is unlikely to enhance its conservation status.
Low	A short-term but reversible effect on the extent/size or integrity of a site, habitat or species assemblage or community, population or group that is within the range of variation normally experienced between years.
Negligible	A short-term but reversible effect on the extent/size or integrity of a site, habitat or species assemblage or community, population or group that is within the normal range or annual variation.

4.8 For each IEF, the significance of the effects of the proposed development during construction and operation are assessed and the type of impacts are characterised according to their importance and magnitude. Where there is uncertainty over the appropriate level of significance to assign, this will be stated but as a precautionary measure the higher level of significance will be applied. Where impacts will arise, mitigation and enhancement measures are provided.

Direct and Indirect Ecological Impacts

4.9 Both direct and indirect impacts are considered within this assessment. A direct impact is a defined action such as the physical loss of a habitat or the immediate mortality of an individual of a particular species. Indirect impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or IEFs e.g. the loss of an important prey species for a predator.

Limitations

4.10 Seasonal bat activity surveys were not undertaken in the spring as we did not attend site until July 2021. This is not considered to be a significant limitation as bat activity was low across the site and it is considered disproportionate to delay the project to obtain the survey results which are not considered likely to alter the proposed mitigation required on site.

4.11 During the reptile survey there was a period of grass management which disrupted the survey and required it to restart. As there was not a significant change in the recorded reptile numbers before and after management it is considered that the works did not result in significant impacts to the findings of the reptile survey.

ARUN DISTRICT COUNCIL Y/3/22/OUT

5.0 BASELINE

5.1 Factual reports presenting the full details of these surveys are provided in appendices II to VI. However, the methods and the key findings are summarised in this section to inform the nature conservation evaluation for each of the IEFs identified.

Statutory Sites

5.2 The following statutory designated sites were identified and described below in table 4:

Table 4: Statutory designated sites within a five kilometre radius of Land West of Bilsham Road and non-statutory sites within a two kilometre radius

Site name	Conservation status	Distance from site (km)	Level of Value	Habitat description or species meeting selection criteria
Felpham	SSSI	3.8 south west	National	Site of geological significance
Climping Beach	SSSI[1]	4.6 south east	National	The predominant habitat within the site is vegetated shingle beach with associated sand dune system.
The Brooks	LNR[2]	3.7 west	Regional	Wide areas of meadow, narrow reedbeds and ditches, permanent and temporary ponds, and an extensive newly planted floodplain woodland.
West Beach	LNR	3.9 south east	Regional	The West Beach LNR is part of the Climping Beach, Site of Special Scientific Interest (SSSI), which has national protection. The LNR designation related to mud flat habitats.

[1] SSSI: Sites of Special Scientific Interest
[2] LNR: Local Nature Reserve

ARUN DISTRICT COUNCIL Y/3/22/OUT

Habitats

- 5.3 The survey was carried out in accordance with guidelines provided in the JNCC (2016) Handbook for Phase 1 habitat survey and CIEEM (2017) Guidelines for Preliminary Ecological Appraisal by experienced ecologist Andrew Heideman ACIEEM (Level 4 Field Identification Skills Certificate (FISC) on the 29th July 2021. Plant species were recorded using nomenclature according to Stace (2010).

5.4 The following habitats were recorded on the site and are described below:

- Arable
- Tall ruderal
- Hedgerows
- Scrub
- Wet ditch (boundary feature)

Arable

5.5 This habitat comprises a monoculture of winter-sown cereal (likely to be wheat or barley). This was harvested later in the year to convert this area of habitat to bare ground.

Tall ruderal

5.6 The western field boundaries comprised tall ruderal habitat. The boundary varied in width from 2 to 4 metres and held a number of tall herb species which included; black knapweed (*Centaurea nigra*), fat hen (*Chenopodium album*), hedge bedstraw (*Galium mollugo*), greater willow herb (*Epilobium hirsutum*), board leaved dock (*Rumex obtusifolius*), common ragwort (*Jacobaea vulgaris*), yarrow (*Achillea millefolium*), cleavers (*Galium aparine*) and common nettle (*Urtica dioica*). Grass species included, creeping bent (*Agrostis stolonifera*), black bent (Agrostis gigantea), sterile brome (*Bromus sterilis*), cock's foot (*Dactylus glomerata*) Yorkshire fog (*Holcus lanatus*) and false oat-grass (*Arrhenatherum elatius*). There was a high proportion of common herb species commonly considered to be arable weeds throughout the margins which represented unmanaged habitats between the arable land and the hedges. A full list of species recorded is presented in appendix III.

Hedgerow

5.7 A single hedgerow was recorded within the development area. This hedgerow is located along the boundary adjacent to Bilsham Road. Hedgerow 1 (H1 in appendix III) was a native defunct hedgerow with a number of substantial gaps. H1 is approximately three metres tall and 2.5 to 3 metres wide. The hedge is dominated by blackthorn (*Prunus spinosa*) with, field maple (*Acer campestre*),

ARUN DISTRICT COUNCIL Y/3/22/OUT

goat willow (*Salix caprea*), buddleia (*Buddleja davidii*), dog rose (*Rosa canina*) and elder (*Sambucus nigra*). The ground flora included; common nettle (*Urtica dioica*), bramble (*Rubus fruticosus agg*.), cleavers (Galium aparine), false oat-grass (*Arrhenatherum elatius*) and ivy (*Hedera helix*). The hedgerow contained two mature oak (*Quercus robur*) standards.

Scrub

5.8 A dense area of scrub formed from grey willow (*Salix cinerea subsp. oleifolia*) and goat willow was located along the south eastern boundary of the site in front of a fence line. This area also contained field maple, bramble, blackthorn, buddleia, dog rose and elder.

Wet ditch

5.9 A wet ditch is located adjacent to the northern boundary of the development area. It is a wet ditch with steep banks that are approximately three metres deep. The water level at the time of survey was approximately 13 centimetres deep. It was colonised with ivy, common nettle, cleavers, pendulous sedge (*Carex pendula*), hemlock-water-dropwort (*Oenanthe crocata*), timothy (*Phleum pratense*) and charlock (*Sinapis arvensis*).

Assessment of habitats

5.10 The level of value of these habitats is summarised in table 5 below.

Table 5: Level of value of habitats recorded within the site

IEF	Evaluation rationale	Value of IEF
Tall ruderal	This is a common habitat at local, county and national levels which can support a range of fauna and flora.	Local
Hedgerows	This is a common habitat at local, county and national levels which can support a range of fauna and flora.	Local
Scrub	This is a common habitat at local, county and national levels which can support a range of fauna and flora.	Local
Wet ditch	This is a common habitat at local, county and national levels which can support a range of fauna and flora.	Local

ARUN DISTRICT COUNCIL Y/3/22/OUT

Protected and Notable Species

5.11 Table 6 below lists any protected and notable species records within two kilometres from SxBRC with potential to be present on site.

Table 6: Protected and notable species within a two kilometre radius of the site.

Common Name	Scientific name	Status	Location
Amphibians and reptiles			
Slow worm	*Anguis fragilis*	Schedule 5, WCA[3], NERC[4]	17 records within a 2 km radius of the site.
Common toad	*Bufo bufo*	WCA, NERC	3 records within a 2 km radius of the site.
Grass snake	*Natrix helvetica*	Schedule 5, WCA, UK BAP[5], NERC	8 records within a 2 km radius of the site.
Great crested newt	*Triturus cristatus*	Schedule 2 Habs Regs[6], Schedule 5 WCA, UK BAP	3 records within a 2 km radius of the site.
Adder	*Viper berus*	Schedule 5 WCA, UK BAP, NERC	1 record within a 2 km radius of the site.
Common lizard	*Zootoca vivipara*	Schedule 5 WCA, UK BAP, NERC	12 records within a 2 km radius of the site.
Mammals (non-bats)			
European water vole	*Arvicola amphibius*	Schedule 5 WCA, UK BAP, NERC	21 records within a 2 km radius of the site.
Hedgehog	*Erinaceus europaeus*	NERC	36 records within a 2 km radius of the site.
Brown hare	*Lepus europaeus*	NERC	2 records within a 2 km radius of the site.
Harvest mouse	*Micromys minutus*	NERC	1 record within a 2 km radius of the site.
Mammals (bats)			

[3] WCA: Wildlife and Countryside Act 1981(as amended)
[4] NERC: Species listed under section 41 of the Natural Environment and Rural Communities Act 1981 (as amended)
[5] UKBAP: UK Biodiversity Action Plan
[6] Hab Regs: The Conservation of Habitats and Species Regulations (amendments) 2017

ARUN DISTRICT COUNCIL Y/3/22/OUT

Common Name	Scientific name	Status	Location
Western Barbastelle	*Barbastella barbastellus*	Annex II[7], Schedule 2 Habs Regs, Schedule 5 WCA, NERC	7 records within a 2 km radius of the site.
Bat species	*Chiroptera sp.*	Schedule 2 Habs Regs, Schedule 5 WCA	3 records within a 2 km radius of the site.
Serotine	*Eptesicus serotinus*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	8 records within a 2 km radius of the site.
Myotis sp.	*Myotis sp.*	Schedule 2 Habs Regs, Schedule 5 WCA, NERC	4 records within a 2 km radius of the site.
Daubenton's bat	*Myotis daubentonii*	Schedule 2 Habs Regs, Schedule 5 WCA	1 record within a 2 km radius of the site.
Whiskered bat	*Myotis mystacinus*	Schedule 2 Habs Regs, Schedule 5 WCA	1 record within a 2 km radius of the site.
Natterer's Bat	*Myotis nattereri*	Schedule 2 Habs Regs, Schedule 5 WCA	2 records within a 2 km radius of the site
Nyctalus Bat species	*Nyctalus sp.*	Schedule 2 Habs Regs, Schedule 5 WCA	1 record within a 2 km radius of the site.
Lesser noctule	*Nyctalus leisleri*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP, NERC	1 record within a 2 km radius of the site.
Noctule	*Nyctalus noctula*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP, NERC	2 records within a 2 km radius of the site.
Pipistrelle species	*Pipistrellus* sp.	Schedule 2, Habs Regs, Schedule 5, WCA	2 records within a 2 km radius of the site.
Nathusius' pipistrelle	*Pipistrellus nathusii*	Schedule 2 Habs Regs, Schedule 5 WCA	2 record within a 2 km radius of the site.

[7] Annex II: Annex II of the Habitats Directive

ARUN DISTRICT COUNCIL Y/3/22/OUT

Common Name	Scientific name	Status	Location
Common pipistrelle	*Pipistrellus pipistrellus*	Schedule 2 Habs Regs, Schedule 5 WCA	11 records within a 2km radius of the site.
Soprano pipistrelle	*Pipistrellus pygmaeuss*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP, NERC	6 records within a 2km radius of the site.
Long-eared bats species	*Plecotus sp.*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP, NERC	1 record within a 2 km radius of the site.
Brown long-eared	*Plecotus auritus*	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP, NERC	2 records within a 2km radius of the site.
Birds			
Skylark	*Alauda arvensis*	Red List BoCC[8], NERC	203 records within a 2km radius of the site.
Kingfisher	*Alcedo atthis*	Schedule 1, Annex 1, Amber List BoCC	20 records within a 2km radius of the site.
Short-eared owl	*Asio flammeus*	Annex 1, Amber List BoCC	100 records within a 2 km radius of the site.
Brent goose	*Branta bernicla*	Amber List BoCC, UK BAP	9 records within a 2 km radius of the site.
Bewick's Swan	*Cygnus columbianus*	Schedule 1, Amber List BoCC, UK BAP	3 records within a 2km radius of the site.
Whooper Swan	*Cygnus cygnus*	Schedule 1, Amber List BoCC, UK BAP	2 records within a 2km radius of the site.
Little egret	*Egretta garzetta*	Annex 1	60 records within a 2km radius of the site.
Corn bunting	*Emberiza calandra*	Red List BoCC, UK BAP	70 records within a 2km radius of the site.
Yellowhammer	*Emberiza citrinella*	Red List BoCC, UK BAP	200 records within a 2km radius of the site.
Reed bunting	*Emberiza schoeniclus*	Amber List BoCC, UK BAP	164 records within a 2km radius of the site.
Merlin	*Falco columbarius*	Schedule 1, Annex 1	16 records within a 2km radius of the site.

[8] BoCC: Bird of Conservation Concern

ARUN DISTRICT COUNCIL Y/3/22/OUT

Common Name	Scientific name	Status	Location
Peregrine	*Falco peregrinus*	Schedule 1, Annex 1	30 records within a 2km radius of the site.
Snipe	*Gallinago gallinago*	Amber List BoCC	69 records within a 2 km radius of the site between 2012 and 2013
Herring gull	*Larus argentatus*	Red List BoCC, UK BAP	214 records within a 2km radius of the site.
Linnet	*Linaria cannabina*	Red List BoCC, UK BAP	67 records within a 2km radius of the site.
Curlew	*Numenius arquata*	Red List BoCC, UK BAP	36 records within a 2 km radius of the site.
House sparrow	*Passer domesticus*	Red List BoCC, UK BAP	248 records within a 2km radius of the site.
Grey partridge	*Perdix perdix*	Red List BoCC, UK BAP	73 records within a 2km radius of the site.
Song thrush	*Turdus philomelos*	Red List BoCC, UK BAP	175 records within a 2km radius of the site.
Barn owl	*Tyto alba*	Schedule 1,	61 records within a 2 km radius of the site.
Lapwing	*Vanellus vanellus*	Red List BoCC, UK BAP	118 records within a 2 km radius of the site.

5.12 Based on the habitat suitability on the site and records returned by SxBRC, protected species surveys were subsequently completed in order to inform the EcIA and include:

- Badger activity survey
- Bat activity and foraging habitat suitability assessment
- Breeding bird assessment (nesting bird survey)
- Great crested newt habitat suitability assessment
- Hazel dormouse habitat suitability assessment
- Reptile habitat suitability assessment and targeted surveys

5.13 The results of the protected/notable species data search and surveys together with an evaluation of each species, are referred to by their common and scientific names.

Badger

5.14 The site, its boundaries and a 30 metre buffer zone around the site (where access was possible), were surveyed for badger evidence such as setts, latrines, pathways, footprints, snuffle holes and badger fur (English Nature, 2002). The survey was

ARUN DISTRICT COUNCIL Y/3/22/OUT

undertaken by experienced ecologist Stuart Woodley. Any setts recorded were classified according to published criteria (Harris, Cresswell and Jefferies, 1989).

5.15 Badger records are confidential and were not included within the data search obtained from SxBRC. During the July 2021 survey no signs of badger activity such as latrines, hair or footprints were noted. A potential sett was recorded within the scrub on the southern site boundary. The hole showed indications of recent excavation. The hole was "sticked" and monitored whilst undertaking reptile and bat activity surveys on site. The sticks remained in situ throughout this survey period therefore the hole was considered not to be in use. Badgers have therefore been screened out of this assessment.

Bats: Foraging and Commuting

5.16 The habitats on site, and the habitats they connect to, in accordance with the Bat Conservation Trust are considered to be of low quality for foraging and commuting bats. As such, seasonal bat activity transects surveys were undertaken. The transect was walked by a pair of surveyors using an Echo Meter touch bat detectors who recorded bat activity along the route on the 25th August 2021. Surveyors included Stuart Woodley and Alfie Wardle and William Davis (ACIEEM, Natural England licence number: 2020-49616-CLS-CLS) and Craig Stevens on the 27th September 2021. The full results are provided in appendix V, along with a map illustrating the route walked.

5.17 The activity transects recorded low numbers of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, noctule (*Nyctalus noctula*) and serotine (*Eptesicus serotinus*) bats. The key foraging areas were along the hedgerow to the north of the development area.

5.18 Static detectors were also deployed with two statics left on site between the 25th August and 1st September and between the 27th September and 7th October 2021. The data was later analysed using Anabat Insight. The data was run through a decision tree created by LC Ecological Services. Where a bat passed each filter they were tagged accordingly. Every third call was then reviewed manually checking the calls had been tagged correctly and any mislabelled calls identified were relabelled. Any calls which were not labelled were checked individually. Following the completion of the bat analysis the results were input into EcoBat.

5.19 During the static monitoring a total of six species were recorded on the site. Species include common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), serotine (*Eptesicus serotinus*), long-eared and *Myotis* species. The highest peaks of activity comprised a median of 0.9 passes by common pipistrelle recorded at both statics in differing months. General activity was found to be low at both detector location during period monitored. The bat

ARUN DISTRICT COUNCIL Y/3/22/OUT

activity at each static was compared to the percentile level of bat activity for each species at each static.

5.20 When reviewed over the entire survey period, the level of activity was low without any peaks. Given that the median number of bat passes for all other species in the other survey points is between 0.1 and 0.8 passes per night this would indicate a low bat utilisation of the site. In all cases a low number of calls were recorded and the range within the percentile activity was generally high which would indicate that bats were recorded infrequently. In general activity around static 2 was much lower than static 1, but a high volume of insects were recorded throughout the survey period which would indicate the static was functioning correctly. A summary of key findings has been provided below:

- Serotine percentile activity on site was moderate and between the 60th and 40th percentile on both statics.
- Nathusius' pipistrelle activity was very low but was recorded in August and October.
- Common pipistrelle percentile activity was consistently medium on static 1 and very low on static 2.
- Soprano pipistrelle percentile activity was consistently medium on static 1 and very low on static 2.
- Myotis species percentile activity was held a high range but was generally low with a small peak in the 60th percentile.
- Long-eared species percentile activity was very low on both statics.

5.21 The Ecobat software was used to determine if the activity recorded represented a low, moderate or high level of bat activity. When compared to known bat activity for each species in the surrounding area this is considered to be typical activity for the survey period.

Table 7: The nights of bat activity recorded for each species throughout the survey period.

Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Eptesicus serotinus	0	0	6	1	4
Myotis	0	0	1	1	2
Pipistrellus nathusii	0	0	0	2	3
Pipistrellus pipistrellus	0	5	5	2	3

ARUN DISTRICT COUNCIL Y/3/22/OUT

Pipistrellus pygmaeus	0	2	5	4	2
Plecotus	0	0	0	5	4

5.22 The species emergence times were also compared to the timings of recordings taken on site to determine if roosting is occurring on site. This is illustrated in graph 4 in appendix V.

5.23 As indicated by graph 4 it is likely that static 1 was deployed near a roost used by *Myotis* bats which were recorded near the emergence time for this genus. Soprano pipistrelles passed the detectors shortly after their average emergence times which would indicate they left a nearby roost and travelled a short distance to the site.

5.24 The majority of the species recorded on site are common and widespread species, and the habitat recorded on site suitable for foraging bats is limited to the boundary features. Nathusius' pipistrelle was the rarest species recorded and is considered to be an uncommon species. As the rarest species recorded, this species was used to determine the value for foraging and commuting species.

5.25 According to Wray, White, Long and Mitchell-Jones (2010) *Valuing Bats in Ecological Impact Assessment* the site is considered to be of **local** value for foraging and commuting bats.

Bats: Preliminary Roost Assessment of trees on site

5.26 An assessment of Potential Roosting Features (PRF) within trees was made during the ecological appraisal by Andrew Heideman (ACIEEM) in accordance with the the Good Practice Guidelines *(Collins, 2016)*. No suitable roosting features were identified within the development area and no proposals for the removal of mature trees have been made as part of the development proposals. No impacts to PRF are anticipated as part of the design proposals.

Birds – Nesting birds

5.27 The site was assessed for its potential to support nesting birds by suitably experienced ecologist Andrew Heideman

5.28 SxBRC returned records of a wide variety of bird species, some of which are associated with arable land. No nests for these species were detected during the site walk over or during the other surveys conducted on site. There is some habitat for nesting birds within the hedgerows and foraging potential exists within the scrub and arable habitats. The site is considered to be of **local** importance to nesting birds.

Great crested newts

ARUN DISTRICT COUNCIL Y/3/22/OUT

5.29 An assessment of the sites suitability to support great crested newts was undertaken by CL08 licence holder Andrew Heideman (Natural England licence number: 2018-36489-CLS-CLS) during the ecological appraisal of the site. The assessment was undertaken in accordance with the criteria provided by Oldham et al. (2000, 2008). Suitable terrestrial habitat for great crested newt was recorded however, there were no water bodies identified on site, or within the 500 metre dispersion radius which would allow the colonisation of the site from suitable offsite aquatic habitat.

5.30 Three records of great crested newt were returned from SxBRC. However, the closest identified records on MAGIC were over 2.4 kilometres to the south east on the opposite side of the A259. The main road would be a limiting factor to movement and prevent the formation of a linked metapopulation on the side of the road closer to the site. In the absence of suitable aquatic habitat to support breeding great crested newts on site and the isolated nature of the site in an arable landscape it is considered there is no risk of colonisation of the site by this species. Any identifiable records are considered to originate from populations located well outside the dispersion range of this species. Great crested newts have therefore been screened out of this assessment.

Hazel dormouse

5.31 The site was assessed for its potential to support hazel dormouse by licensed ecologist Andrew Heideman (Natural England licence number: 2016-26785-CLS-CLS) during the ecological appraisal of the site.

5.32 SxBRC returned no records of hazel dormouse within two kilometres of the site. The nearest mitigation licence for this species was identified as being located 4.7 kilometres from the site on MAGIC with no intervening connecting habitat. No evidence of hazel dormouse was recorded during the site visit and the habitat recorded on site was sub-optimal due to its isolated nature within the wider landscape. Due to the isolated nature of the site from suitable habitat it is considered that hazel dormouse are absent from the site and are therefore screened out of this assessment.

Reptiles

5.33 SxBRC returned 17 records of slow worm, eight records of grass snake, one record of adder and 12 records of common lizards.

5.34 Habitats within the site were assessed for their suitability to support reptile species in accordance with Reptile surveys: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation (Froglife, 1999). The arable field margins holding scrub and tall ruderal habitat are considered suitable to support reptiles.

ARUN DISTRICT COUNCIL Y/3/22/OUT

5.35 Targeted surveys were undertaken, where refugia was set out on the 25th August by suitably experienced surveyor Stuart Woodley. Seven survey visits during suitable weather conditions and at different times of the day were conducted between September and October 2021 by experienced ecologist Mark Wardle.

5.36 During the surveys a low population of slow worm, grass snake and common lizard were recorded on site. A juvenile grass snake was recorded on site which would indicate a breeding population within the local area. The presence of a ditch along the northern boundary of the development area will provide an ideal foraging location for this species. The results have been provided in appendix VI. The site is considered to be of **local** importance for reptiles.

Assessment of species

5.37 The level of value of these species is summarised in table 7 below.

Table 7: Level of value of protected species supported on the site

IEF	Evaluation rationale	Value of EIF
Bats	Commuting and foraging habitat	Local
Birds – breeding	Common and widespread species of birds will use the site for nesting and foraging within.	Local
Reptiles	Foraging and basking.	Local

ARUN DISTRICT COUNCIL Y/3/22/OUT

6.0 IMPACT ASSESSMENT

6.1 The impacts have been assessed against the development proposals including the inherent mitigation measures described below.

6.2 Impacts during the construction and operational phases of the proposed development are discussed for the IEFs that are of at least local value or subject to legal consideration. The IEFs included from this point on are therefore limited to:

- Climping beach SSSI (national value)
- Flepham SSSI (national value)
- The Brooks LNR (regional value)
- West Beech LNR (regional value)
- Tall ruderal vegetation (local value)
- Hedgerows (local value)
- Native scrub (local value)
- Wet ditch (local value)
- Bats: commuting and foraging habitat (local value)
- Birds: breeding and wintering (local value)
- Reptiles: basking and foraging habitat (local value)

<u>Construction Phase Impacts</u>

Statutory Sites

6.3 The proposed development is located over four kilometres from all the statutory sites with no direct or indirect routes of impact linking the site to the statutory sites within the area of assessment. The IEF's are of **national and regional value**, the magnitude of effect is considered to be **negligible,** and the impact is therefore **not significant**.

Habitats

Tall ruderal vegetation

Habitat Loss

6.4 The proposed development will result in the loss of 0.27 hectares of tall ruderal habitat present on site. As the IEF is of **local** importance, the magnitude of effect is considered to be **low**, and therefore **not significant**.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Hedgerows

Habitat Loss

6.5 The design proposals will result in no loss of the existing hedgerow habitat on site. As the IEF is of **local** importance, the magnitude of effect is considered to be **negligible**, and therefore **not significant**.

Native scrub

Habitat Loss

6.6 An area of native scrub habitat measuring approximately 0.12 hectares will be lost during the development. As the IEF is of **local** importance, the magnitude of effect is considered to be **low**, and therefore **not significant**.

Wet ditch

6.7 The wet ditch on site will be retained during construction and will be outside the works boundary. As the IEF is of **local** importance, the magnitude of effect is considered to be **negligible**, and therefore **not significant**.

Protected and Notable Species

Bats

Loss of foraging and commuting habitat

6.8 There will be no net loss of foraging and commuting habitat as a result of the proposals. The site is considered to hold low suitability for foraging and commuting bats with suitable habitat limited to the boundary features that are being retained. As the IEF is of **local value**, the magnitude of effect is **negligible**, which is of **not significant**.

Birds – breeding

Loss of nesting habitat

6.9 There will be a minor loss of suitable bird nesting habitat from the site as the scrub habitats will be removed to facilitate the development. As the IEF is of **local value** and the magnitude of effect is considered to be **medium** the impact is therefore **not significant**.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Disturbance

6.10 All birds are protected by law from disturbance when on the nest. Nesting birds in nearby vegetation are likely to experience a small amount of disturbance if construction works take place during the nesting season. As the IEF is of **local** importance and the magnitude of effect is considered to be **medium** the impact is therefore **not significant**.

Reptiles

Loss of basking and foraging habitat

6.11 There will a loss of suitable foraging and basking habitat during the construction period which will displace a low population of common lizard, grass snake and slow worm into the surrounding habitats. This will result in a slight loss of habitat but will not impact natural range as commuting routes though the landscape will be maintained for the duration of the works. As the IEF is of **local value**, the magnitude of effect is **low**, the impact is therefore **not significant**.

Operational Phase Impacts

Statutory Sites

6.12 Once constructed the development will not result in any direct impacts upon the statutory sites within the assessment area. This is as the site is situated at a sufficient distance from all of the designated sites and holds no route of impact to the sites. There may be a slight accumulative increase in recreational use of the site due to the increased population within the area but this would only represent a small increase in irregular trips as the sites are situated at such a distance that they would be unlikely to be subject to daily use. As the IEF's are of **national and regional** value, the magnitude of effect will be **low** and therefore **not significant**.

Habitats

Hedgerows

Habitat Loss

6.13 The change in land use will result in less intensive management of the hedgerows therefore leading to an increase in the quality of this habitat. As the IEF is of **local** importance, the magnitude of beneficial effect is considered to be **medium**, and therefore **not significant**.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Protected and Notable Species

Bats (Foraging and Commuting)

Disturbance

6.14 A minor increase in lighting as an operational impact is possible and is anticipated to affect foraging bats in a limited capacity. As the IEF is of **local value**, the magnitude of effect is **low** and therefore **not significant**.

Birds – breeding

6.15 Potential impacts on breeding birds post construction are likely to be caused by inappropriate management of suitable habitats. Cutting the hedgerows, grassland, and scrub at the wrong times of year would likely result in the killing or injuring of birds, destructions of nests and potentially a loss of foraging habitat. As the IEF is of **local value**, the magnitude of effect is **low** and therefore **not significant**.

Reptiles (Basking and foraging habitat)

6.16 There is potential that if habitat management is undertaken at an inappropriate time of year foraging and basking reptiles could be disturbed, harmed, damaged or destroyed. As the IEF is of **local value**, the magnitude of effect is **low** and therefore **not significant**.

Ecological enhancements

6.17 Approximately 0.88 hectares of neutral grassland with wildflowers will be created. This will create a more diverse habitat than the current arable land and will provide additional habitat for a range of species. High quality grassland is suitable to support a diverse invertebrate assemblage which provides foraging resource for bird and bat species. In addition to this, mixed height grassland is an ideal habitat for native reptiles and its creation on site will provide increased habitat connectivity. This habitat is also suitable for foraging and commuting by terrestrial mammals, including priority species such as western European hedgehog (*Erinaceus europaeus*).

6.18 An area measuring approximately 0.98 hectares of mixed scrub mosaic comprising mixed scrub and rough grassland will be created. This will be of higher quality than the existing scrub and will be created as small blocks within a wider area of grassland to provide increased potential for reptile foraging, commuting and hibernation. This habitat is ideal for native terrestrial species as the combination of grassland and scrub provides shelter within areas of foraging. The taller scrub will also provide birds with an increased area of suitable nesting habitat.

ARUN DISTRICT COUNCIL Y/3/22/OUT

6.19 The development includes the creation of 0.61 kilometres of species rich native hedgerow, and retention of the existing hedgerows. Of the new hedgerow 0.16 kilometres of it will be native with mature trees. A large section of the new hedgerow will be created along the existing ditch which is an offsite boundary feature to the northern aspect of the development area. This habitat will include a number of native fruiting tress such as hazel, hawthorn and Guelder rose (*Viburnum opulus*) which will provide foraging resources for birds at different times of the year.

6.20 An area of deciduous native woodland measuring approximately 0.65 hectares will be created in the east of the site and be connected to the hedgerow network. This habitat will be formed from a wide diversity of native species and provide additional nesting provision for bird species as well as a high value foraging habitat with a high diversity of invertebrate assemblages.

6.21 A pond measuring approximately 0.14 hectares will be created. This pond will not meet the requirements for a priority habitat under the NERC act 2006 but will hold reed beds measuring approximately 0.03 hectares in size. Water bodies such as ponds are known to support foraging by bat and bird species. They are also vital to support terrestrial mammals, such as badgers, as well as amphibians. Notable utilisation for breeding and foraging is possible from priority species such as toads (*Bufo bufo*) and grass snake.

6.22 Modified grassland approximately 2.46 hectares in size will be created as a result of the development. These grasslands will be maintained for amenity use but will hold a higher biodiversity value than the existing arable land due to an increase in floristic diversity which will not be affected by agricultural practices.

6.23 Where any close boarded fencing is to be installed, gaps measuring 13cm by 13 cm will be provided to allow for hedgehog movement across the site. There will also be an increase in hibernation suitability for this species as the proposed planting scheme includes tree species with suitable leaves for nest construction such as field maple.

6.24 Integrated bat and bird boxes will be installed in 50% of the dwellings constructed on site.

6.25 These ecological enhancements are of **local** value, and the level of impact is **high** and therefore a **minor positive** impact.

ARUN DISTRICT COUNCIL Y/3/22/OUT

7.0 MITIGATION

7.1 While the majority of the impacts identified in section 6 are not significant legislation must be adhered to and therefore the following mitigation outlined in this section is required.

Construction phase

Protected and Notable Species

Badgers

7.2 To prevent impacts to commuting and foraging badgers any excavation will be covered overnight and 'mammal ladders' will be used where appropriate to ensure badgers do not become trapped in excavations. At no point will unsealed containers be left overnight that mammals may become trapped in or drink from.

7.3 Though the badger sett on site was recorded as not being active this species may colonise the site in other areas before the start of construction. Prior to works commencing a update badger surveys will be conducted to determine whether badgers are using the site or not. If an active sett is recorded on site it must be closed to facilitate the development if any works are to be undertaken within 20 metres of it. This is as the sett would otherwise be impacted by the development works. As a single entrance sett it is considered to be an outlier sett of low importance and no mitigation sett will be required to replace the sett as its loss is unlikely to affect territory range.

7.4 The outlier badger sett was considered to be inactive in 2021 and to be a non-breeding sett. The activity of this sett will need to be confirmed prior to the commencement of the development and an update survey should be undertaken to determine activity levels.

7.5 The sett or any new setts that are found to be active will required implementation of an exclusion methodology to close the sett under licence from Natural England includes the following:

- Exclusion will be conducted under licence using one-way gates between October and November.
- Once the gates have been installed, they will be visited once every 3 days, by a suitably qualified ecologist, for a period of 21 days to ensure badgers have not dug their way back in.
- The gates will be left in situ for the duration of the exclusion exercise, and once the badgers are deemed to have left the sett they will then be dug up under the supervision of a suitably qualified ecologist.

ARUN DISTRICT COUNCIL Y/3/22/OUT

- During the construction works measures will be taken to prevent badgers from being harmed. This will include the measures to prevent impacts to commuting and foraging badgers.

7.6 The closure of disused setts is not licensable. In the event that the setts are considered to be inactive they will be closed using the methodology outlined above as a measure of good practice.

Bats-Foraging and commuting habitat

7.7 During the construction phase, to ensure bats are not impacted, there will be restrictions on working hours and the use of external lighting systems.

Birds – Nesting birds

7.8 In order to minimise the impact of the works on breeding birds the suitable nesting habitat to be removed during the development will be cut outside the nesting bird season. This is considered to extend from the 1st March to the 31st August. Where this is not possible a suitably qualified ecologist should check potential nesting habitat immediately prior to works commencing. Where nesting birds are encountered, a 5-metre buffer zone will be provided around the nest and works must be postponed in this area until the nestlings have fledged.

Reptiles (Basking and foraging habitat)

7.9 Although the adverse impact on reptiles during construction is not predicted to be significant, mitigation will be implemented to negate the potential for any individuals being harmed or injured. This will involve controlled habitat manipulation to encourage reptiles to naturally move away from the construction site. A methodology of the strim and push exercise is detailed below:

- The tall ruderal habitat that requires clearance will be maintained at a short sward height prior to works commencing on site. This will encourage reptiles in these areas to move away from the works area naturally. This will involve strimming under the careful supervision of a suitably experienced reptile handler during temperatures above 10°C when reptiles are more mobile. The strimming will be carried out in a two strim cycle with the first cut to 15 centimetres and the second to ground level. This cut will take place in one direction from north to south, towards the suitable habitat (the hedgerow and field strip), being retained on the south of the site in order to give any reptiles a chance to leave the area and disperse to the wider landscape.
- Slow worms will sometimes freeze instead of moving off and these animals should be carefully moved to the suitable habitat being retained adjacent to the works area.

ARUN DISTRICT COUNCIL Y/3/22/OUT

- All arisings from the strimming and clearance will be immediately removed from the works area to prevent any reptiles sheltering within it.
- The habitat within the works area / construction zone will then be maintained at a short sward height or bare ground to discourage reptiles from entering the works area.
- Materials and any arisings, will be kept off the ground through the use of skips or pallets if stored on the grassland. This will negate any risk of reptiles sheltering within stock piled materials or arisings from site clearance.
- A destructive search will be conducted of the log piles and scrub root balls and other habitat favoured by reptiles.
- A reptile fence or barrier will not be needed to prevent colonisation of reptiles as the works site will be maintained unsuitable for reptiles.

Operational phase

Protected and Notable Species

Bats-Foraging and commuting habitat

7.10 Though impacts from the disruption of bats species are not considered significant lighting mitigation will be required to prevent disruption of natural range as part of best practice. The impact of additional lighting as a result of the proposed development will be minimised through;

- Directing lighting to only where it is needed away from the hedgerows along the site boundaries and away from the natural green space area to be created on site;
- Through the design of the luminaire by using accessories such as cowls or hoods;
- Light sources should emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <4,200 kelvin.
- Using LED luminaires where possible with light levels kept as low as practically possible (between 1 and 3 lux); and
- Security lighting will be on a timer and only triggered at waist height.

Birds – breeding and wintering

7.11 Habitat management on site will be timed to avoid harming or destroying active birds' nests. The grassland created on site will be cut or grazed in the spring and autumn to avoid disturbing any ground nesting birds such as skylark.

7.12 Where possible the hedgerows created on site will be cut outside the nesting bird season this is considered to extend from the 1st March to the 31st August. A pre

ARUN DISTRICT COUNCIL Y/3/22/OUT

works check should be undertaken checking for any active nests prior to cutting the hedge. Where active nests are recorded management should be postponed until the chicks have fledged.

ARUN DISTRICT COUNCIL Y/3/22/OUT

8.0 RESIDUAL EFFECTS

8.1 No significant negative impacts from the proposed works were identified during the assessment. The proposed mitigation and enhancement measures outlined above will result in a **minor positive impact** overall.

9.0 IN-COMBINATION EFFECTS

9.1 An outline planning application has been granted, subject to conditions for Land at Bilsham Road (Y/91/17/OUT) for up to 250 residential dwellings (Class C3), vehicular access, public open space, ancillary works and associated infrastructure. Protected species surveys were undertaken including seasonal bat surveys, reptile surveys, badger surveys and breeding bird surveys. The proposed development at Land West of Bilsham Road is functionally linked to the Y/91/17/OUT application site. The design of the development will allow species to continue to move between the two sites with no barriers to movement. Connectivity through linear features will be increased through the creation of hedgerows. Therefore, it is considered the in-combination effect will be **not significant**.

9.2 Other applications near Drove Lane include change of use of buildings (various applications), extensions to existing dwellings and modifications to listed buildings at Hobbs Court (Y/89/20/L, Y/88/20/HH, Y/90/20/HH, Y/130/20/HH, Y/84/21/HH). All of these applications were granted therefore it can be assumed that there was no significant impact. It is considered the in-combination effect is also **not significant**.

10.0 CONCLUSION

10.1 Extended phase 1 habitat and protected species surveys have been undertaken across the proposed development site. Assessments of desk studies including the proximity to designated sites and protected notable species were made. The impact assessment concluded that without mitigation there would be a significant impact on the statutory sites within the assessment area.

10.2 Mitigation measures have been provided including seasonal timing restrictions or supervising works in relation to nesting birds and reptile habitat degradation. Implementing these mitigation measures will ensure that there are not any residual effects.

10.3 The proposed enhancement measures outlined in section 6 will result in a **minor positive impact** overall.

ARUN DISTRICT COUNCIL Y/3/22/OUT

10.4 These surveys are valid for 18 months and should the works be delayed past this time then an updated survey will be required.

ARUN DISTRICT COUNCIL Y/3/22/OUT

11.0 REFERENCES

Arun District Council (2018) *Arun Local Plan 2011-2031*

Bright, P., Morris, P. and Mitchell-Jones, T. (2006) *The dormouse conservation handbook 2nd Ed*. English Nature, Peterborough.

Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). *The UK Habitat Classification User Manual Version 1.1* at http://www.ukhab.org/

CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, Second Edition. Technical Guidance Series*. Chartered Institute of Ecology and Environmental Management, Winchester

CIEEM (2019) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester

Collins, J., Charleston, P., Davidson-Watts, I., Markham, S. and Kerslake, L. (2016). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. (*3rd Edition*), Bat Conservation Trust, London.

Crosher, I. [A], Gold, S. [B], Heaver, M. [D], Heydon, M. [A], Moore, L. [D], Panks, S. [A], Scott, S [C], Stone, D. [A] & White, N. [A]. (2019[a]). *The Biodiversity Metric 3.0: Auditing and accounting for biodiversity value: technical supplement (2021)*. Natural England (A – Natural England, B – Imperial College, University of London, C – Environment Agency, D – Department for Environment, Food and Rural Affairs).

Department for Communities and Local Government (2005). Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

English Nature (2002) *Badgers and Development*, English Nature, Peterborough.

Froglife (1999). *Reptile surveys. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. (Advice Sheet 10).

Harris S, Cresswell P and Jefferies D (1989). Surveying Badgers. Mammal Society.

Joint Nature Conservation Committee (2016). *Handbook for Phase I Habitat Survey.* JNCC.

Ministry of Housing, Communities and Local Government (2019). *National Planning Policy Framework*.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Multi-Agency Geographical Information for the Countryside (MAGIC) Website at https://magic.defra.gov.uk/,

Stace (2010). *New Flora of the British Isles (third edition).* Cambridge University Press, Cambridge.

Sussex Biodiversity Record Centre (2021) *Ecological data search for Land West of Bilsham Road, Yapton*

Wray. S., White. D., Long. E. And Mitchell-Jones.T.(2010) In Practice December 2010, Valuing Bats in Ecological Impact Assessment.

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX I: SITE BOUNDARY

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX II: PHASE 1 HABITAT SURVEY

An extended Phase 1 habitat survey of the site was undertaken by ecologist Andrew Heideman on 29th July 2021. Descriptions of the habitats recorded on site are provided below:

Arable

This habitat comprises a monoculture of winter-sown cereal (likely to be wheat or barley. This was harvested later in the year to convert this area of habitat to bare ground.

Tall ruderal

The western field boundaries comprised tall ruderal habitat. The boundary varied in width from 2 to 4 metres and held a number of tall herb species which included; black knapweed (*Centaurea nigra*), fat hen (*Chenopodium album*), hedge bedstraw (*Galium mollugo*), greater willow herb (*Epilobium hirsutum*), board leaved dock (*Rumex obtusifolius*), ragwort (*Jacobaea vulgaris*), yarrow (*Achillea millefolium*), cleavers (*Galium aparine*) and common nettle (*Urtica dioica*). Grass species included, creeping bent (*Agrostis stolonifera*), black bent (*Agrostis gigantea*), sterile brome (*Bromus sterilis*), cock's foot (*Dactylus glomerata*) Yorkshire fog (*Holcus lanatus*) and false oat-grass (*Arrhenatherum elatius*). There was a high proportion of common herb species commonly considered to be arable weeds throughout the margins which represented unmanaged habitats between the arable land and the hedges. A full list of species recorded is presented in table 1 below.

Table 1: Species recorded in tall ruderal habitat

Common name	Latin name	Abundance	Status
Yarrow	*Achillea millefolium*	O-R	Common & widespread
Creeping bent	*Agrostis stolonifera*	LA-O	Common in grasslands of all kinds except on most acidic soils
Black bent	*Agrostis gigantea*	LA-R	Common in fields, roadsides, ditches, and other disturbed habitats
Lesser burdock	*Arctium minus*	O-R	Common & widespread
False oat-grass	*Arrhenatherum elatius*	D/A	Common in meadows & on road verges
Sterile brome	*Bromus sterilis*	F-O	Common in meadows & on road verges

ARUN DISTRICT COUNCIL Y/3/22/OUT

Black knapweed	*Centaurea nigra*	O-R	Common on grasslands, roadsides & wasteland
Fat-hen	*Chenopodium album*	F-O	Common in arable & wasteland habitats
Creeping thistle	*Cirsium arvense*	F-O	Common & widespread
Spear thistle	*Cirsium vulgare*	O-R	Common & widespread
Cock's foot	*Dactylus glomerata*	LF-R	Common & widespread
Greater willow herb	*Epilobium hirsutum*	R	Common in fens, marshes, river banks and occasionally drier areas
Cleavers	*Galium aparine*	LF-O	Common & widespread
Hedge bedstraw	*Galium mollugo*	O	Common & widespread on richer soils
Hogweed	*Heracleum sphondylium*	F	Common & widespread
Common ragwort	*Jacobaea vulgaris*	O-R	Common & widespread
Common poppy	*Papaver rhoeas*	O/R	Common on arable, wasteland & roadsides
Timothy	*Phleum pratense*	R	Common on waysides & grasslands, often sown for fodder
Bristly oxtongue	*Picris echioides*	O-R	Common on clay or chalk soils
Rough meadow-grass	*Poa trivialis*	O-R	Abundant in meadows, woods, marshes & waste ground
Bracken	*Pteridium aquilinum*	LO-R	Common & widespread
Broad-leaved dock	*Rumex obtusifolius*	O	Common & widespread
Charlock	*Sinapis arvensis*	LF-R	Common in arable & wasteland habitats
Perennial sow-thistle	*Sonchus arvensis*	O-R	Common & widespread
Prickly sow-thistle	*Sonchus asper*	O-R	Common & widespread

ARUN DISTRICT COUNCIL Y/3/22/OUT

Smooth sow-thistle	*Sonchus oleraceus*	R	Common & widespread
Scentless mayweed	*Tripleurospermum inodorum*	O	Common in arable & wasteland habitats
Common nettle	*Urtica dioica*	LA/O	Common & widespread

Wet ditch

A wet ditch is located adjacent to the northern boundary of the development area. It is a wet ditch with steep banks that are approximately three metres deep. The water level at the time of survey was approximately 13 centimetres deep. It was colonised with ivy, common nettle, cleavers, pendulous sedge (*Carex pendula*), hemlock-water-dropwort (*Oenanthe crocata*), timothy (*Phleum pratense*), charlock (*Sinapis arvensis*), false brome (*Brachypodium sylvaticum*), soft shield-fern (*Polystichum setiferum*) and red campion (*Silene dioica*).

Scrub

A dense area of scrub formed from grey willow (*Salix cinerea subsp. oleifolia*) and goat willow (*Salix caprea*) was located along the south eastern boundary of the site in front of a fence line. This area also contained field maple (*Acer campestre*), bramble (*Rubus fruticosus*), blackthorn (*Prunus spinosa*), buddleia (*Buddleja davidii*), dog rose (*Rosa canina)* and elder (*Sambucus nigra*), ash (*Fraxinus excelsior*) and bracken (*Pteridium aquilinum*).

Hedgerow

A single hedgerow was recorded within the development area. This hedgerow is located along the boundary adjacent to Bilsham road. It was a native defunct hedgerow with a number of substantial gaps. H1 is approximately three metres tall and 2.5-3 metres wide. The hedge is dominated by blackthorn (*Prunus spinosa*) with field maple and goat willow. The hedgerow contained two mature oak (*Quercus robur*) standards.

ARUN DISTRICT COUNCIL Y/3/22/OUT

Table 2: Species recorded in the hedgerow

Ref	Woody species	Ground flora	General description	UK BAP?	Hedge Regs
Hedgerow 1	Hawthorn (*Crataegus monogyna*) Elder (*Sambucus nigra*) Blackthorn (*Prunus spinosa*) Field maple (*Acer campestre*) Goat willow (*Salix caprea*) Buddleia (*Buddleja davidii*) Dog rose (*Rosa canina*) English oak (*Quercus robur*)	Hogweed (*Heracleum sphondylium*) Common nettle (*Urtica dioica*) Ivy (*Hedera helix*) Bramble (*Rubus fruticosus*) False oat-grass (*Arrhenatherum elatius*) Cleavers (*Galium aparine*) Bracken (*Pteridium aquilinum*)	It was a native defunct hedgerow with a number of substantial gaps. H1 is approximately three metres tall and 2.5-3 metres wide	Yes	No

ARUN DISTRICT COUNCIL Y/3/22/OUT

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX III: SITE PHOTOGRAPHS

Photo 1: Arable habitats

Photo 2: Tall ruderal habitat

Photo 3: Badger sett

Photo 4: Hedgerow 1

Photo 5: The ditch along the northern boundary of the development area.

Photo 6: The arable field following harvest.

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX IV: BAT SURVEY RESULTS

Transect route

ARUN DISTRICT COUNCIL Y/3/22/OUT

Dusk transect 25/08/2021

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Land West of Bilsham Road, Yapton	**SURVEYORS:** Stuart Woodley and Alfie Wardle		**DATE:**	25/08/2021
TEMP AT START:	18°C	**SUNSET:**	20:04	**START TIME:**	20:04
TEMP AT END:	16°C	**CLOUD COVER (oktas):**	0/8	**END TIME:**	22:04
WIND (bft):	1-2/12	**RAINFALL:**	Nil	**WEATHER:**	Clear, cool
Equipment:	EMT	**Additional information:**	N/A		
TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.	
20:18	A				
20:28	B				
20:37-43	C	Soprano pipistrelle	2	Foraging along hedgerow	
20:51	C-D	Common pipistrelle	1	Heard not seen. Foraging.	
20:52	C-D	Noctule	1	Heard not seen. Foraging.	
20:55	D				
21:05	E	Serotine	1	Heard not seen. Foraging.	
21:06	E	Serotine	1	Heard not seen. Foraging.	
21:13	E				
21:19	F				
21:30	G				
21:39	H				
21:55	H-A	Soprano pipistrelle	1	Heard not seen. Foraging.	
21:58	A				

ARUN DISTRICT COUNCIL Y/3/22/OUT

Dusk transect 27/09/2021

BAT DETECTOR ACTIVITY SURVEY					
SURVEY LOCATION:	Land West of Drove Lane	**SURVEYORS:** William Davis and Craig Stevens		**DATE:**	27/09/2021
TEMP AT START:	13°C	**SUNSET:**	18:50	**START TIME:**	18:50
TEMP AT END:	13°C	**CLOUD COVER (oktas):**	5/8	**END TIME:**	20:50
WIND (bft):	1-2/12	**RAINFALL:**	Brief shower	**WEATHER:**	Scattered cloud and brief shower
Equipment:	EMT	**Additional information:**	N/A		

TIME	STOPPING POINT/TARGET NOTE	SPECIES	NUMBER OF BATS	ACTIVITY (behaviour/ commuting/ direction/ foraging/ feeding/ feeding buzzes/ roost/ etc.
19:13	B			
19:25	C			
19:30	C	Soprano pipistrelle	1	Heard not seen. Foraging.
19:33	D			
19:37	D-E	Common pipistrelle	1	Heard not seen. Commuting
19:39	E			
19:40	E	Noctule	1	Heard not seen. Commuting
19:41	E	Common pipistrelle	1	Heard not seen. Commuting
19:46	E	Common pipistrelle	1	Heard not seen. Commuting
19:47	Light rainfall started			
19:53	F			
19:56	F	Common pipistrelle	1	Heard not seen. Foraging
20:06	G			
20:07	G	Common pipistrelle	1	Very faint call.
20:07	G	Soprano pipistrelle	1	Heard not seen. Commuting.
20:11	G-H	Common pipistrelle	1	Heard not seen. Commuting
20:19	H			
20:21	A			

ARUN DISTRICT COUNCIL Y/3/22/OUT

20:23	A	Common pipistrelle	1	Heard not seen. Foraging

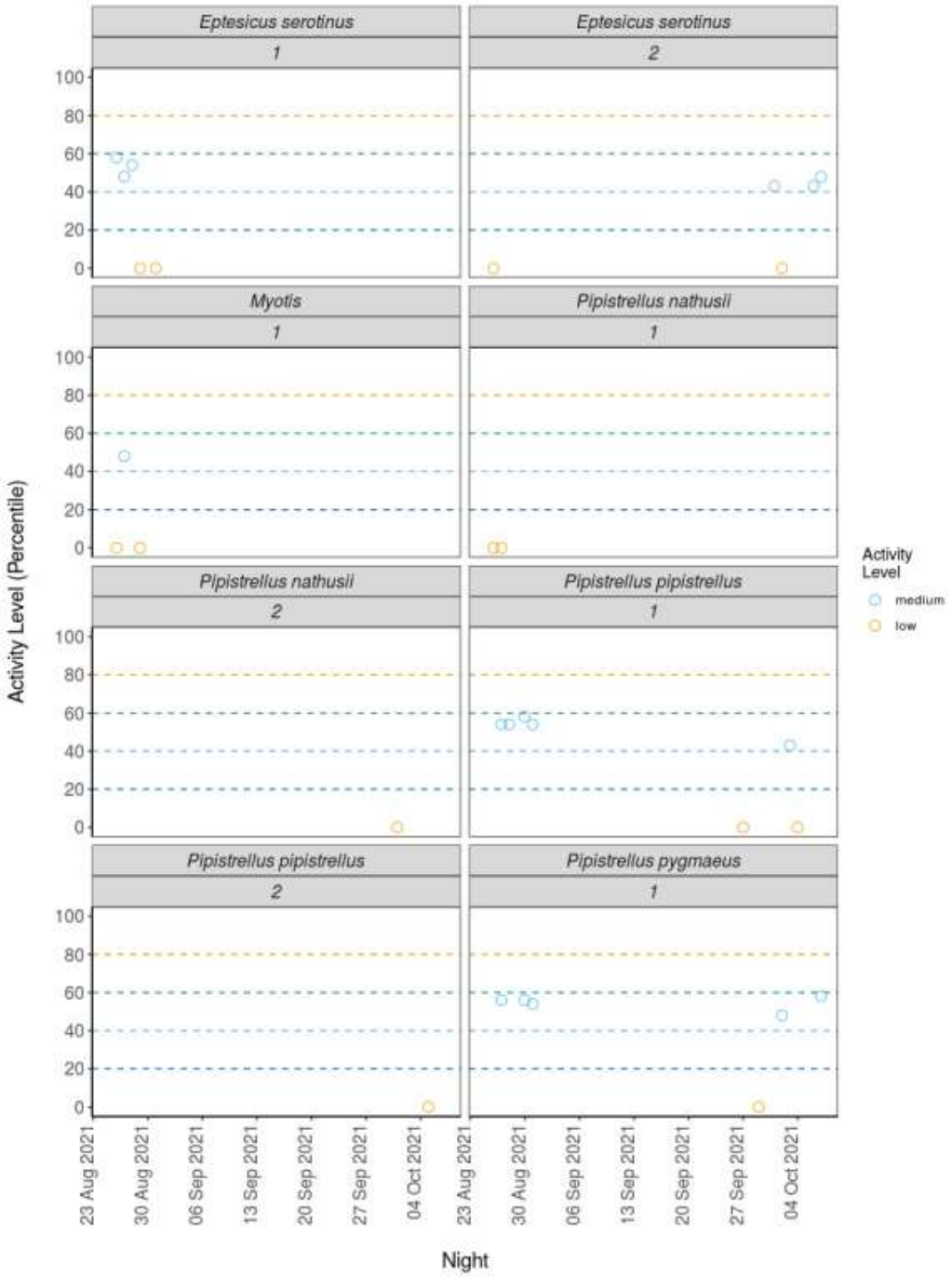
Static monitoring

Table 3: Medium passes per detector

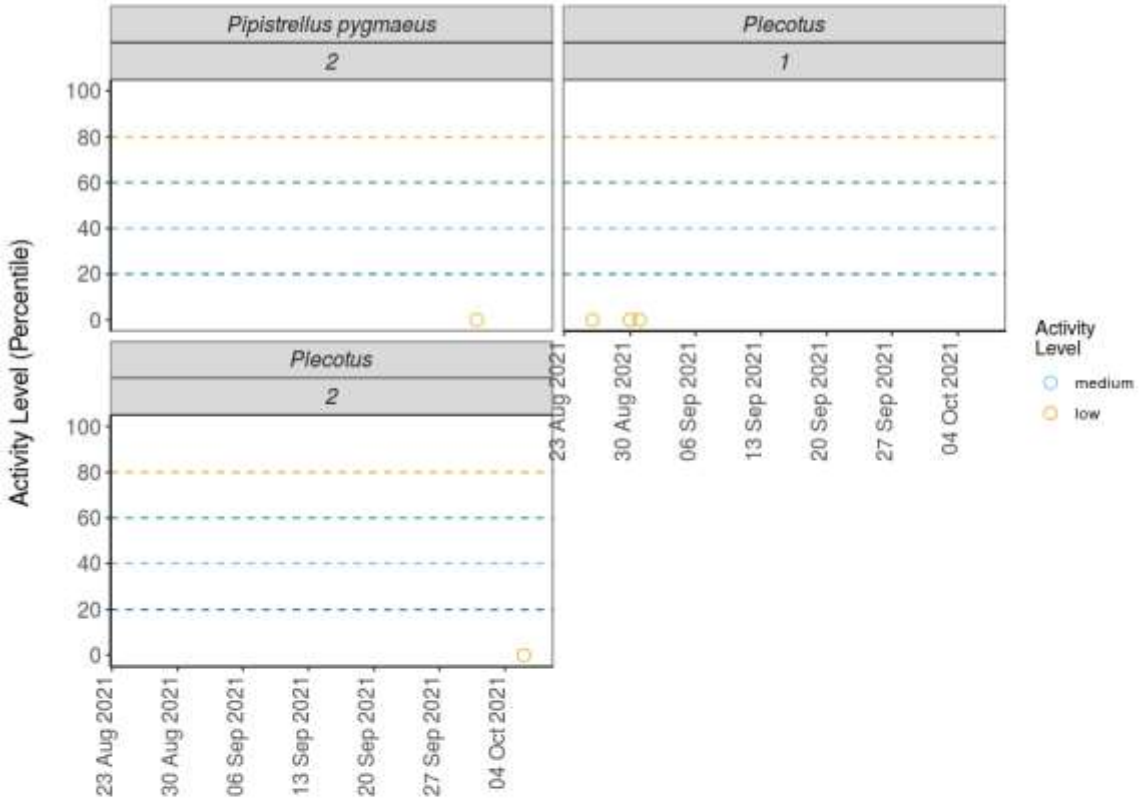
Species	Detector ID	Aug	Sep	Oct
Common pipistrelle	1	0.9	0.1	0.2
Soprano pipistrelle		0.8	0.1	0.2
Nathusius' pipistrelle		0.1	NA	NA
Serotine		0.3	NA	NA
Long-eared bats		0.2	NA	NA
Myotis		0.2	NA	NA
Common pipistrelle	2	NA	0.2	0.9
Soprano pipistrelle		NA	NA	0.1
Nathusius' pipistrelle		NA	NA	0.2
Serotine		0.1	NA	0.3
Long-eared bats		NA	NA	0.1
Myotis		NA	0.2	

ARUN DISTRICT COUNCIL Y/3/22/OUT

Graph 1: Bat activity recorded in 2021 by static as a percentile.



ARUN DISTRICT COUNCIL Y/3/22/OUT



Night

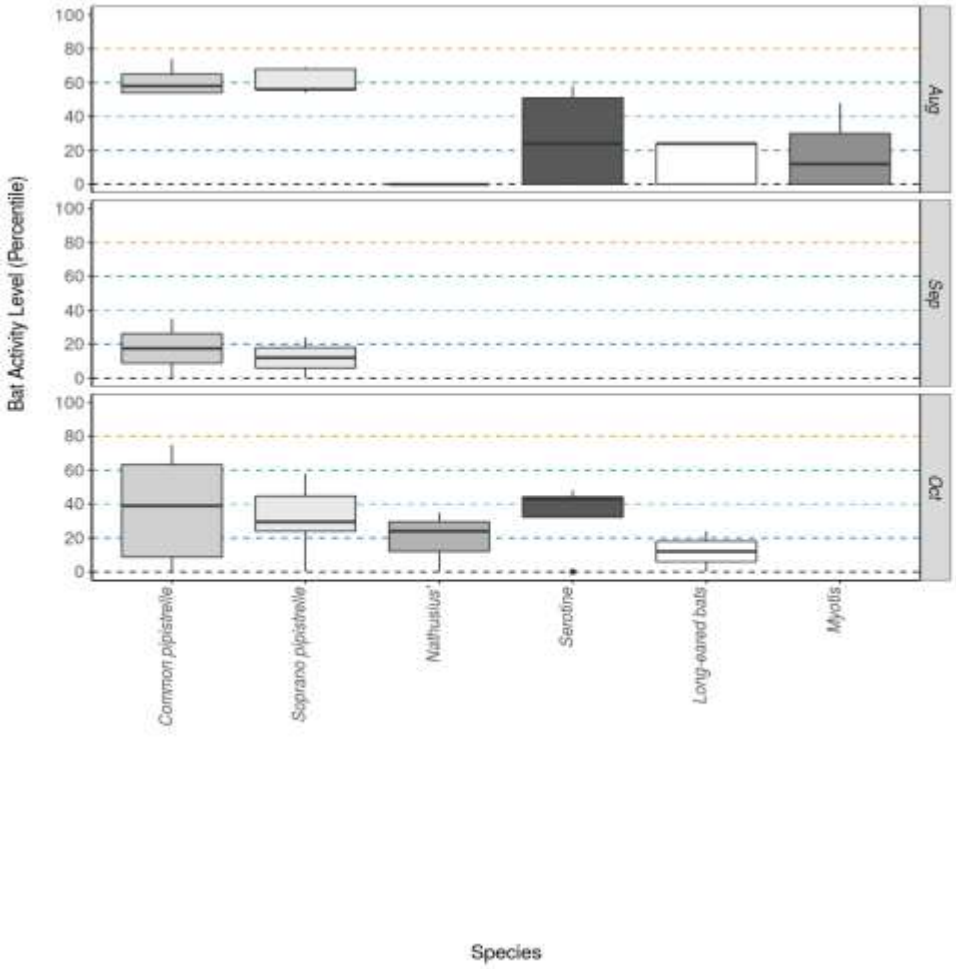
ARUN DISTRICT COUNCIL Y/3/22/OUT

Table 4 The nights of bat activity recorded for each species throughout the survey period.

Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
Eptesicus serotinus	0	0	6	1	4
Myotis	0	0	1	1	2
Pipistrellus nathusii	0	0	0	2	3
Pipistrellus pipistrellus	0	5	5	2	3
Pipistrellus pygmaeus	0	2	5	4	2
Plecotus	0	0	0	5	4

ARUN DISTRICT COUNCIL Y/3/22/OUT

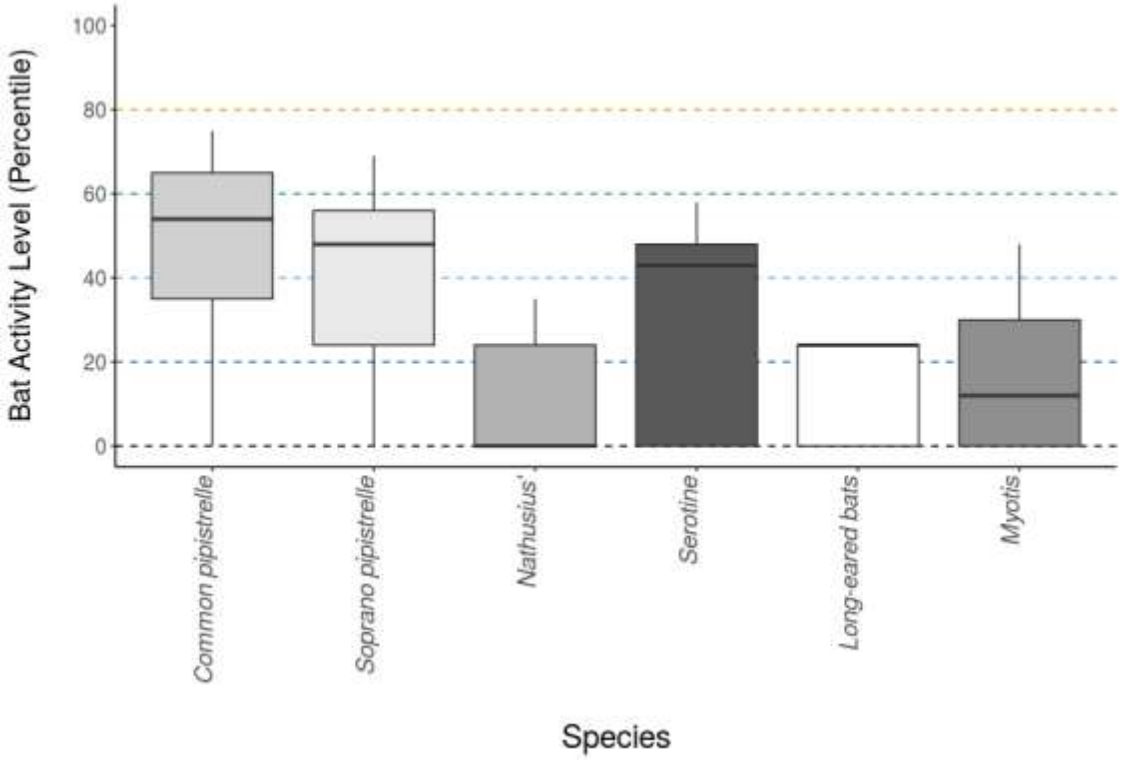
Graph 2: Breakdown of bat activity level by month across the entire 2021 survey period.



Graph 3: The level of bat activity by percentile range across the entire 2021 survey period.

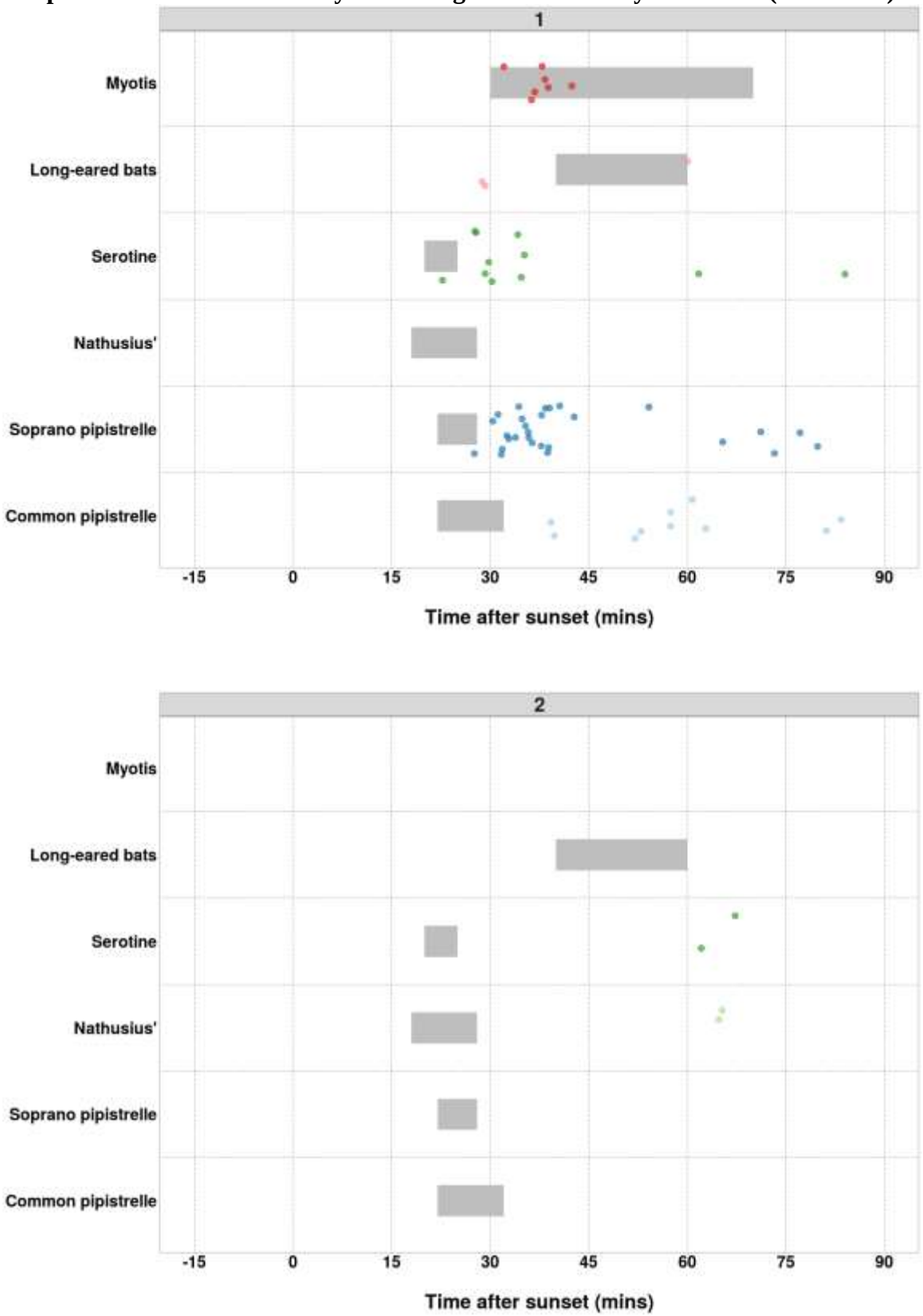
ARUN DISTRICT COUNCIL Y/3/22/OUT

As illustrated in graph 3, the centre line indicates the median activity level whereas the box represents the interquartile range (the spread of the middle 50% of nights of activity)



ARUN DISTRICT COUNCIL Y/3/22/OUT

Graph 4: Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012)



ARUN DISTRICT COUNCIL Y/3/22/OUT

Table 5: Scores for Land West of Bilsham Road foraging areas (bold indicates the relevant criteria)

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
Uncommon(3)	**-**	**Small number (3)**	Suburban areas or intensive arable land (2)
Rarer (5)	**Small number of bats (10)**	Moderate number/Not known (4**)**	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	**Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)**
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)
3	**10**	**3**	**4**
Total score			**20**

ARUN DISTRICT COUNCIL Y/3/22/OUT

Table 6: Scores for West of Bilsham Road commuting routes (bold indicates the relevant criteria)

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	**Individual bats (5)**	None (1)	Absence of (other) linear features (1)
Uncommon(3)	-	**Small number (3)**	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	**Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and moderate field sizes (3)**
-	-	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and river/streams (5)
3	**5**	**3**	**3**
Total score			**14**

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX V: REPTILE SURVEY RESULTS

Lamb Field, Yapton. Reptile survey September 2021 ①
Mark Weeble

Reptile results:

Visit	Date	Time	Weather	Temp (°C)	Common lizard	Slow worm	Sand lizard	Adder	Grass snake	Other	Area recorded
1	8/9	1255	Sunny	24		1					NW on bank
		1320				1					F/p NW
2	11/9	1149	Cloudy	20		3					Roadside S entrance
		51				1					SE corner
		56				1					NW on bank
		59				1					"
		"				3					" corner
		1202			1						"
3	13/9	1502	Broken sun	22		1					Roadside N corner
		03				1					" "
		07				1					" entrance
		08				1					" 1/2 way
		12							15		" S corner
		28				4					N centre bank
4	15/9	1318	Sunny	21		25					Roadside 1/2 way
		20				1					" "
		1325				3					N mid bank
		27				1					N W corner bank
5	19/9	1628	Cloudy	18		1					Roadside entrance
		Some mats along roadside + S boundary destroyed by mowing									
		All mats N bank + W footpath destroyed.									

Mats replaced 20/9

ARUN DISTRICT COUNCIL Y/3/22/OUT

Lamb Field, Yapton. Reptile survey 2021, September/October (2)
Mark Wardle

Reptile results:

Visit	Date	Time	Weather	Temp (°C)	Common lizard	Slow worm	Sand lizard	Adder	Grass snake	Other	Area recorded
6	30/9	1218	Cloudy	18		1					N corner roadside
		40				1					NW corner margin
7	1/10	1555	Broken sun	18						Kestrel x1	Headland
		1630				2					NW corner
8	3/10	1511	Broken sun	17	1	5					Roadside x5 entrance
9	6/10	1431	Sunny	18		1					N W corner headland
		40								Woodcock	Flushed N margin "
10	7/10	1430	Broken sun	18	Final survey (nil) + mats collected						

ARUN DISTRICT COUNCIL Y/3/22/OUT

ARUN DISTRICT COUNCIL Y/3/22/OUT

APPENDIX VI: ECOLOGICAL ENHANCEMENTS

ARUN DISTRICT COUNCIL Y/3/22/OUT

ARUN DISTRICT COUNCIL Y/3/22/OUT