



ECOLOGICAL IMPACT ASSESSMENT

LOWER HORSEBRIDGE
HAILSHAM
EAST SUSSEX
BH3 7HE

JANUARY 2023

HERTFORDSHIRE HOLDINGS LTD



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1.0 EXECUTIVE SUMMARY

- 1.1 LC Ecological Services Ltd were commissioned by Hertfordshire Holdings Ltd to conduct an Ecological Impact Assessment (EcIA) to assess the potential ecological effects in relation to a proposed application for a housing development with associated access.
- 1.2 The scoping information provided by the ecological appraisal summarises the ecological baseline methods and results; evaluates the Important Ecological Features (IEFs); and indicates the potential impacts and proposes mitigation for the construction and operational of the proposed development.
- 1.3 Thirteen Identified Ecological Features (IEFs), including designated sites of international importance, national importance, four habitats and four fauna of local importance No significant negative impacts to these IEF's were identified during the assessment following the application of mitigation measures.
- 1.4 Enhancements have been provided to increase the value of the habitats on site for wildlife.

2.0 INTRODUCTION

- 2.1 LC Ecological Services Ltd were commissioned by Hertfordshire Holdings Ltd to conduct an Ecological Impact Assessment (EcIA) to assess the potential ecological effects in relation to a proposed application for a housing development with associated access. A site location plan is provided in appendix I.
- 2.2 This EcIA assessment draws upon the results of a desk study, data search and phase two surveys for bats, reptiles, dormice, nesting, and wintering birds. This data is used to summarise the Important Ecological Features (IEFs) and indicates the potential impacts and proposed mitigation for the construction and operation of the proposed development.
- 2.3 The proposal are for a mixture of private and affordable housing units with a new site access and associated landscaping. A site layout is provided in appendix II.

Site context and location

- 2.4 The proposed development site lies to the north-east of Horsebridge village in a semi-rural area. The site comprises of grazed grassland. The A22 lies beyond the western boundary and the A271 beyond the northern boundary. A small number of residential dwellings and their associated gardens bound part of the northern boundary along with the Hellingly Rugby Club. Grazed improved grassland with a river bisecting the field, is located in the east of the site.
- 2.4 The wider area supports improved grassland fields with occasional arable fields and woodland blocks.

Purpose of the report

- 2.5 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.

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:** Special Protected Areas (SPAs) and Special Conservation Area (SCAs) 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:** Special Sites of Scientific Interest (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;

- **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 The Wealden District Council Core Strategy (2011) includes biodiversity in BP5 and includes:

- 2.8 One of Wealden's principal assets is the high quality of its environment. This is reflected in the high proportion of the District which is protected for its landscape and biodiversity importance. The High Weald Area of Outstanding Natural Beauty and the South Downs National Park together cover some 60% of the District, in formal recognition of its landscape quality. The internationally important areas of conservation at Ashdown Forest and the Pevensey Levels are also situated within the District. The location and scale of future development will be restricted by its potential impact on all these designated areas, although opportunities exist to enhance the quality of the District's biodiversity and geodiversity overall.
- 2.10 The richness and diversity of its biodiversity, landscape and heritage are significant factors in making the District such a desirable place in which to live. This coupled with a limited legacy of brownfield land places additional pressures on the abundant supply of greenfield land. Our Core Strategy needs to ensure that the growth required to meet needs makes the best use of resources without compromising future requirements, and makes an overall positive contribution to the environment where possible. Working in partnership to manage our natural resources is crucial, ensuring that the attractiveness of the resource is not diminished through uncontrolled visitor pressure or development.
- 2.11 The Core Strategy should contribute to mitigating climate change by seeking to reduce carbon emissions and other greenhouse gases through: the appropriate selection of areas for growth; providing sustainable transport alternatives to the private motor vehicle; sustainable construction

techniques; and use of renewable and low carbon energy sources. Adapting and mitigating climate change is also necessary through avoiding inappropriate development in areas of high flood risk and supporting appropriate flood risk infrastructure; providing for a resilient environment within our built-up areas; protecting our landscape; and planning for the future effects of climate change on biodiversity through the green infrastructure network.

Biodiversity Action Plans

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

- Brown long-eared bat (*Plecotus auratus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)

4.0 ASSESSMENT METHODOLOGY

Study Area

4.1 The site is located at central Ordnance Survey (OS) grid reference TQ 5754511183) 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 protected and notable species including bat; 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 at Lower Horsebridge.

Survey type	Year(s)	Comment
Environmental record searches	2023	Records obtained from Sussex Biodiversity Records Centre (SxBRC); 17.01.2023)
Desk study - Statutory sites designated for nature conservation	2023	Records obtained from DEFRA's web-based Multi-Agency Geographic Information for the Countryside (MAGIC)
Ecological appraisal and phase 1 habitat survey	2020 and 2023	LC Ecological Services December 2020 and January 2023
UKHabs Classification	2022 and 2023	Lizard Ecology carried out a condition assessment of the habitats on site in October 2022 and January 2023
Badger walkover survey	2020 and 2023	Completed during the ecological appraisal and updated walkover survey
Bats – assessment of site suitability for roosting bats in trees	2020 and 2023	Seasonal activity surveys combined static monitoring was undertaken in 2020.
Bat activity surveys	2020	Seasonal activity surveys combined static monitoring in 2020
Breeding birds	2020	An assessment of the sites suitability to support nesting birds

Survey type	Year(s)	Comment
Great crested newt	2020 and 2023	Completed during the ecological appraisal. No evidence was recorded, and the habitat is considered to be sub-optimal and isolated from known populations. This species has not been considered further.
Hazel dormouse	2020 and 2023	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. Updated walkover of the hedgerows to check for evidence of hazel dormouse done in January 2023
Reptiles	2020	Presence/absence survey was undertaken. No reptiles within the site but confirmed within the remainder of the improved grassland to the east.

Assessment Process

- 4.5 The EcIA is in accordance with the CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018).
- 4.6 The starting point was to determine which features should be subject to detailed assessment, that is, those Important Ecological Features (IEFs):
- Of sufficient value that impacts upon them may be significant (in terms of legislation or policy); and
 - Potentially vulnerable to significant impacts arising from the development.
- 4.7 This approach is consistent with the EIA Regulations, which only require investigation of likely significant effects.
- 4.8 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, 2022)

Level of Value	Example of Definitions
International	An internationally important site e.g. Special Protected Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such a designation).

Level of Value	Example of Definitions
	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 Biodiversity Action Plan (BAP), or 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 (Sussex)	A site designated as either a Site of Importance for Nature Conservation (SINC) or a Site of Nature Conservation Interest (SNCI), or habitats that meet the designation criteria for SINC in Sussex. 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

- 4.9 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.

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.

- 4.10 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

- 4.11 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

- 4.12 The absence of desk studies is not taken as that species being absent from the site as it is likely due to under recording within the area.
- 4.13 In April 2020 only two static monitoring devices were deployed, and only four nights sampling were possible due to the late appointment and static monitoring devices already being deployed at other sites.
- 4.14 In May 2020 three static monitoring devices were deployed however static 1 was stolen from the site and it was not possible to recover the data.
- 4.15 In June three static monitoring devices were deployed however the data on static 2 became corrupted and was unable to be recovered.
- 4.16 Despite the reduced survey effort in April, May and June, it is still considered that sufficient evidence has been obtained from the combination of static monitoring and activity transects across the whole season to allow a comprehensive understanding and assessment of the use of the site by bats.
- 4.17 Long-eared (*Plecotus sp.*) bat species have very quiet calls and are likely underestimated through static monitoring with not all calls recorded. The *Myotis* species and *Nyctalus* are difficult to separate to species level with static analysis alone and therefore these have been analysed to genus only.
- 4.18 Access was not permitted to all the ponds recorded within 500 metres of the site. Nine of the eighteen were accessed and two of the ponds where access was not granted a HSI assessment could still be undertaken. The majority of the ponds were located west of the A22, therefore connectivity was limited and any impacts on site are considered highly unlikely to impact the populations recorded or potentially present in ponds that were not assessed.

5.0 RESULTS

- 5.1 An ecological appraisal was conducted on site on the 2nd March 2020 by LC Ecological Services with a habitat condition assessment of the habitats undertaken in 2022 and an updated walkover of the site January 2023 by Lizard Ecology. The methodology and the key findings are summaries in this section to inform the nature conservation evaluation for each of the IER's identified.

Designated Sites

- 5.1 There is one SAC, one Ramsar and four SSSI sites within a 5-kilometre radius of the site. The nearest being Lower Dicker SSSI located 1.47 kilometres west of the site.
- 5.2 Non-statutory designated sites include one Local Nature Reserve (LNR) and two Local Wildlife Sites (LWS) sites within a 2 kilometre radius of the site. The nearest being Hellingly Cemetery LWS located 0.5 kilometres north of the site.
- 5.3 A full list of statutory and non-statutory designated sites are provided in appendix III.

Habitats

- 5.4 The standard phase 1 habitat survey methodology (JNCC, 2016) was adopted whereby habitats are mapped using colour codes (appendix IV). A detailed walkover survey of the site was undertaken on 2nd March 2020 by Matt Tennent and Sam Williams, directly searching for legally protected and invasive species of flora and fauna and categorising any habitats of ecological value that were encountered. A general description of the vegetation on site was also recorded, listing species encountered and scoring their abundance using the DAFOR scale. A comparison of the habitats and their condition were included between the 2020, 2022 and 2023 habitat surveys. The phase 1 habitat map is shown in appendix IV.
- 5.5 In October 2022 and January 2023, the site was mapped using the habitat classifications detailed in the UK Habitat Classification User Manual. The UKHABs map is shown in appendix IV. Habitat were mapped using QGIS. The following habitats were recorded on site and are described below, with target notes in appendix III and photos in appendix V.
- Improved grassland (Modified grassland)
 - Scrub (Heathland – bramble scrub)
 - Lowland mixed Deciduous woodland (Woodlands and Forest – lowland mixed deciduous woodland)
 - Hedgerow

Improved grassland (Modified grassland)

5.6 Improved pasture grassland is the dominant habitat on site with a sward height of approximately 30 centimetres. Species include dominant perennial rye-grass (*Lolium perenne*), abundant Yorkshire-fog (*Holcus lanatus*), cock's foot (*Dactylus glomerata*), frequent creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), occasional meadow buttercup (*Ranunculus acris*), broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), false-oat grass (*Arrhenatherum elatius*), rare common nettle (*Urtica dioica*), dandelion (*Taraxacum* agg.) and *Brassica* sp.

5.7 The UKHabs Classification for this habitat is modified grassland.

Scrub (Heathland -Bramble scrub)

5.8 Scrub habitat is present on site in the form of a low number of small bramble (*Rubus fruticosus* agg) patches.

5.9 The UKHabs definition of this habitat is heathland – bramble scrub which is a low distinctiveness habitat.

Lowland mixed Deciduous woodland (Woodlands and Forest – lowland mixed deciduous woodland)

5.10 A deciduous broadleaved woodland block approximately 60 metres in diameter was recorded in the centre of the site. At the time of the survey the woodland was waterlogged. Abundant species include blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*) and ash (*Fraxinus excelsior*) with frequent oak (*Quercus robur*) and crack willow (*Salix fragilis*) with occasional field maple (*Acer campestre*). The understory has abundant cow parsley (*Anthriscus sylvestris*), ivy (*Hedera helix*) and hemlock water-dropwort (*Oenanthe crocata*); frequent cock's foot, lord's-and-ladies (*Arum maculatum*), lesser celandine (*Ranunculus ficaria*) and common nettle; occasional Spanish bluebell (*Hyacinthoides hispanica*) and bramble with rarely occurring meadow buttercup (*Ranunculus acris*).

5.11 The UKHabs definition for this habitat is woodlands and forest – lowland deciduous woodland which is a habitat of high distinctiveness.

Hedgerow

5.12 The site is bounded by a hedgerow along the southern and western boundary. The southern boundary is an established hedgerow and measures around eight metres in width and six metres in height and 140 metres in length. Species include hazel (*Corylus avellana*), alder (*Alnus glutinosa*), hawthorn, ivy, ash, sycamore (*Acer pseudoplatanus*), goat willow (*Salix caprea*) and horse chestnut (*Aesculus*

hippocastanum). Ground flora comprises Yorkshire-fog, spear thistle (*Cirsium vulgare*), cleavers (*Galium aparine*), common nettle, lord's-and-ladies and dock species (*Rumex sp.*).

- 5.13 The western boundary hedgerow is a well-managed hedgerow of approximately one metres in width and two metres in height and 250 metres in length.
- 5.14 The northern boundary hedgerow measuring approximately four metres in height, three metres in width and 380 metres in length runs along the northern boundary of the central portion of site. This hedgerow has a diverse range of species, including field maple, hawthorn, dogwood (*Cornus sanguinea*), blackthorn, bramble, sycamore, oak, grey willow (*Salix cinerea*), holly (*Ilex aquifolium*), goat willow and garden privet (*Ligustrum ovalifolium*). Ground flora of this hedgerow included bracken (*Pteridium aquilinum*), snowdrops (*Galanthus nivalis*), lord's-and-ladies, cock's foot, Yorkshire-fog, perennial rye-grass and common nettle.

Assessment of habitats

- 5.15 The level of value of these habitats is summarised in table 4 below.

Table 4: Level of value of habitats recorded within the site

IEF	Evaluation rationale	Value of IEF
Improved grassland	This habitat is common and widespread within the local, county, and national levels. This habitat is grazed which reduces its potential to support a range of fauna and flora.	Local
Scrub	This habitat is common and widespread within the local, county, and national level. This habitat will support a range of fauna and flora.	Local
Lowland mixed Deciduous woodland	This habitat is common at a local, county and national levels, which can support a range of fauna and flora.	Regional
Hedgerows	This habitat is common at a local, county and national levels, which can support a range of fauna and flora.	National

Protected Species Assessment

- 5.16 SxBRC was contacted for records of protected and notable species from within a two kilometres radius of the site in 2020 with an updated data search carried out in 2023 to check for additional records between these years. Full records are provided in appendix III however, records include records for four reptile species, two amphibians including great crested newts (*Triturus cristatus*), fourteen

species of bats, six records of water vole (*Arvicola amphibius*), and seven records of hazel dormouse (*Muscardinus avellanarius*).

5.17 Based on the habitat's suitability on the site and records returned by SxBRC, protected species surveys were subsequently completed in 2020 in order to inform the EcIA and include:

- Badger surveys
- Bat activity and foraging surveys
- Breeding bird surveys
- Great crested newt suitability assessment and eDNA analysis
- Otter and water vole surveys
- Hazel dormouse presence/absence surveys
- Reptile presence/absence surveys

5.18 The updated walkover survey of the site in 2023, did not identify the requirement to update the above surveys as the habitats remained the same however, the site was re-assessed for badgers, reptiles, great crested newts, hazel dormouse, and otters and water voles.

Badger

5.19 A direct search was undertaken for signs of badger. Signs of badger may include setts, dung pits, latrines, paths or hairs on fences and vegetation. Any setts encountered were classified according to the number of entrances and the extent of their use.

5.20 No evidence of badgers was identified on site in 2020 or during the updated walkover survey in 2023.

Bats

Trees

5.21 Bats often roost in trees in old woodpecker holes, splits, cavities, rot holes, loose or flaking bark and ivy creepers. Trees within the site were inspected for their potential to support roosting bats on the 2nd March 2020 and 17th January 2023. The survey looked to identify suitable roosting features in trees and to classify trees in relation to the Bat Conservation Trust 3rd edition guidelines (2016). The criteria is based upon the criteria as shown in table 5 below.

Table 5: Criteria for assessing bat roosting potential of trees

High Roosting Potential	Trees with multiple, highly suitable features capable of supporting larger roosts including maternity and hibernation roosts.
Moderate Roosting Potential	Trees with definite bat potential, supporting fewer suitable features than high roosting potential trees or with potential for use by small numbers of bats.
Low Roosting Potential	Trees with potential to support an individual bat, or no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features which may have limited potential to support bats.

- 5.22 The phase 1 tree survey was conducted on the 2nd March 2020 by Sam Williams and updated by Lizard Ecology on the 17th January 2023. Six trees were recorded within the survey boundary which had features suitable for roosting bats. These trees and the bat roosting features are described in appendix VI.

Commuting and foraging habitat

- 5.23 The hedgerows and improved grassland habitats within the site along with habitats in the wider improved grassland field (river and riparian fringe, woodland, scrub, scattered trees and improved pasture grassland) are of high-quality foraging and commuting habitat for bats. Collectively, these habitats are likely to support a diverse assemblage of invertebrate prey and they are also well connected with further suitable habitat in the surrounding area primarily to the north and west including hedgerows, woodland and farmland with a larger block of ancient woodland approximately 750 metres to the south. Within the wider surrounding area there are native hedgerows, woodland, arable and pasture fields, water courses and waterbodies, residential housing with associated gardens, all of which could provide suitable foraging and commuting habitat for bats.
- 5.24 The data returned from SxBRC recorded fifteen species of bats including Bechstein's bat (*Myotis bechsteinii*), an Annex II species, which primarily roosts in woodland and is considered one of the rarer species in the UK.
- 5.25 A review of Magic Maps identified the following European Protected Species (EPS) licenses within a 2-kilometre radius of the site:
- EPSM2012-4035 (1.37 kilometres south-west) allowed the destruction of a resting place for common pipistrelle and brown long-eared bats.
 - 2020-505990EPS-MIT (1.76 kilometre south-east) allowed the destruction of a resting place for common pipistrelle bats.

Activity transects

- 5.26 During the activity transect surveys three species and two genus was recorded; common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle and noctule (*Nyctalus noctula*). Common pipistrelle bats were recorded more frequently with soprano pipistrelle bats and low numbers from noctules.

Common pipistrelle

- 5.27 Common pipistrelle bats were recorded on all surveys with this species being first recorded on site within 23 minutes of sunset and no later than 47 minutes after sunset. Foraging and commuting behaviour was recorded along all boundaries of the site. Key areas of foraging were recorded along the river in the east, along the northern and southern boundaries.
- 5.28 The timing of calls does not indicate that there is a maternity roost for this species nearby.

Soprano pipistrelle

- 5.29 This species was recorded during four of the seven surveys with very low activity recorded along the northern and southern boundaries of the site. Bats were first seen on site 31 minutes after sunset with a majority seen nearly an hour after sunset.

Noctule

- 5.30 Noctules were recorded as early as 12 minutes after sunset and within three minutes of sunrise. On the 7th July 2020, two bats were seen emerging from the woodland south of the woods and commuted south.
- 5.31 The presence of noctules early in the evening suggests day roosting bats within the vicinity of the site.

Brown long-eared and Myotis bats

- 5.32 A single long eared (*Plecotus sp.*) pass was recorded in July 2020. A single *Myotis sp.* pass was recorded along the river in August 2020.

Summary

- 5.33 In general, activity on the transect surveys was low with foraging and commuting being recorded along the northern and southern boundaries with increased activity for all species recorded within the remainder of the field in the east and north-east of the site. The consistent records of common pipistrelle and soprano pipistrelle

bats would indicate that there is site wide use, and the recordings would indicate that roosting is occurring nearby.

5.34 The transect results are provided in appendix VII.

Static monitoring

5.35 During the static monitoring a total of four species of bat were recorded at static 1 and static 2 locations, including noctule, common pipistrelle, soprano pipistrelle and a *Myotis* species.

5.36 Static monitoring results for the monitoring period between April and October 2020 are presented in table 6. A map detailing the locations of static monitor devices for the survey is provided as appendix VII.

5.37 Table 6 illustrates that common pipistrelle and soprano pipistrelle consistently recorded high levels of activity across the site. Of the total 178 nights bats were recorded on the static detectors, 45 of the nights recorded high levels of common pipistrelle activity followed by soprano pipistrelle which recorded 30 nights of high activity.

5.38 *Myotis* species were also recorded in very low numbers with them being recorded on a total of 19 nights at static location 1 and 36 nights at static location 2.

5.39 Very low activity was recorded by noctule bats with this species being recorded a total of nine monitoring nights at static location 1 and 14 nights at static location 2.

5.40 Static monitoring indicates that both common pipistrelle and soprano pipistrelle activity levels were similar for both static 1 and static 2 locations and both *Myotis* and noctule activity levels were lower at static 1 location than the woodland at static 2 just outside of the site boundary.

Table 6. Summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Detector ID	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
Static 1	<i>Myotis</i>	0	1	3	9	6
Static 1	<i>Nyctalus</i>	0	4	0	2	3
Static 1	<i>Pipistrellus pipistrellus</i>	31	19	4	1	2

Static 1	<i>Pipistrellus pygmaeus</i>	19	13	8	5	6
TOTAL		50	37	15	17	16
Static 2	<i>Myotis</i>	3	16	4	10	3
Static 2	<i>Nyctalus</i>	0	4	2	5	3
Static 2	<i>Pipistrellus pipistrellus</i>	26	10	6	3	2
Static 2	<i>Pipistrellus pygmaeus</i>	11	17	4	6	9
TOTAL		40	47	16	34	17

- 5.41 Figure 1 below demonstrates that the activity was evenly distributed across the months with peaks in activity for common and soprano pipistrelle and *Nyctalus* recorded in August. Activity for *Myotis* bats was higher in the autumn in September and October.
- 5.42 As indicated by figure 2, it is likely that static one and two were deployed near roosts and along a flight path from roosts nearby for common pipistrelle, soprano pipistrelle and *Nyctalus* bats as the timing of the first calls recorded are within the key emergence times for these species.

Figure 1. The activity level (percentile) of bats recorded across each night of the bat survey for the entire site, split between months.

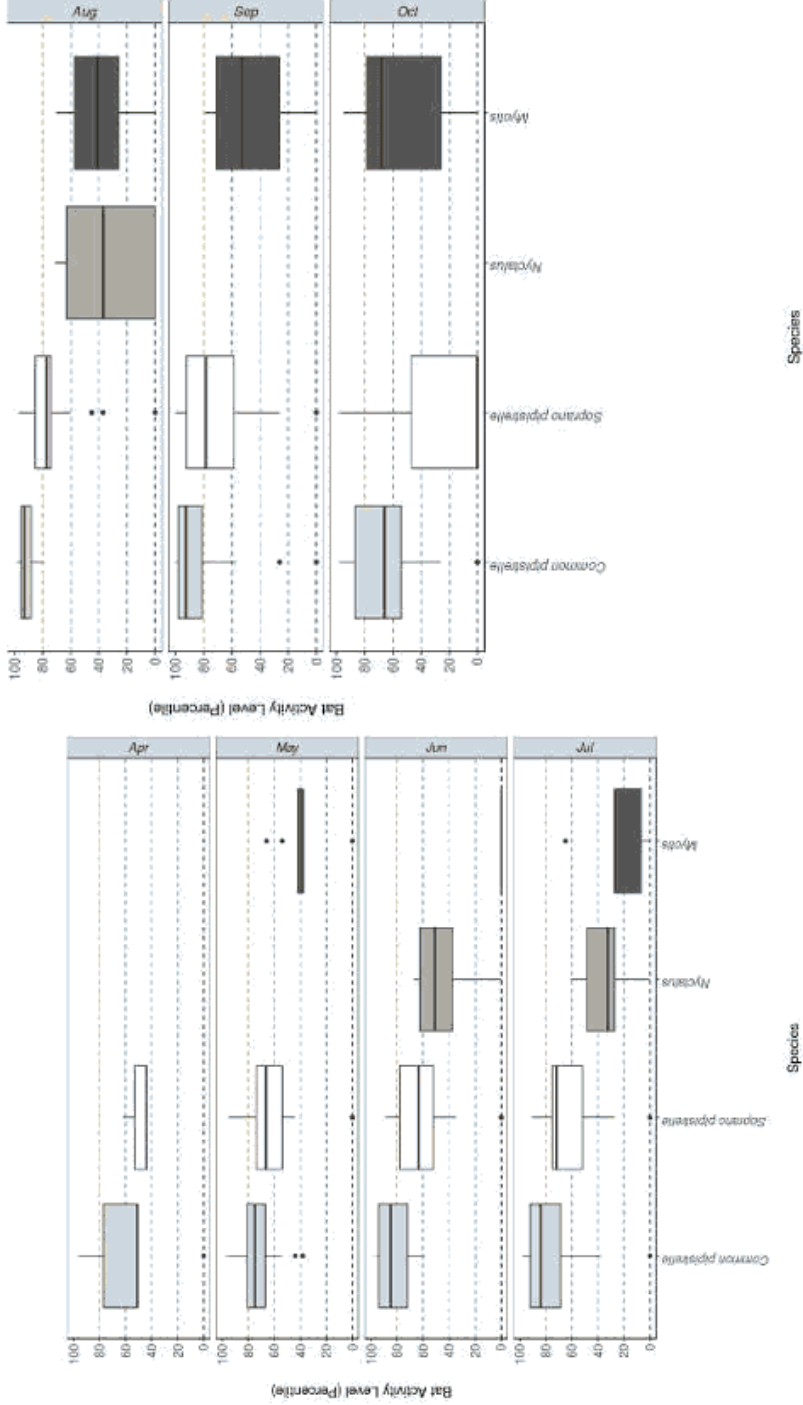
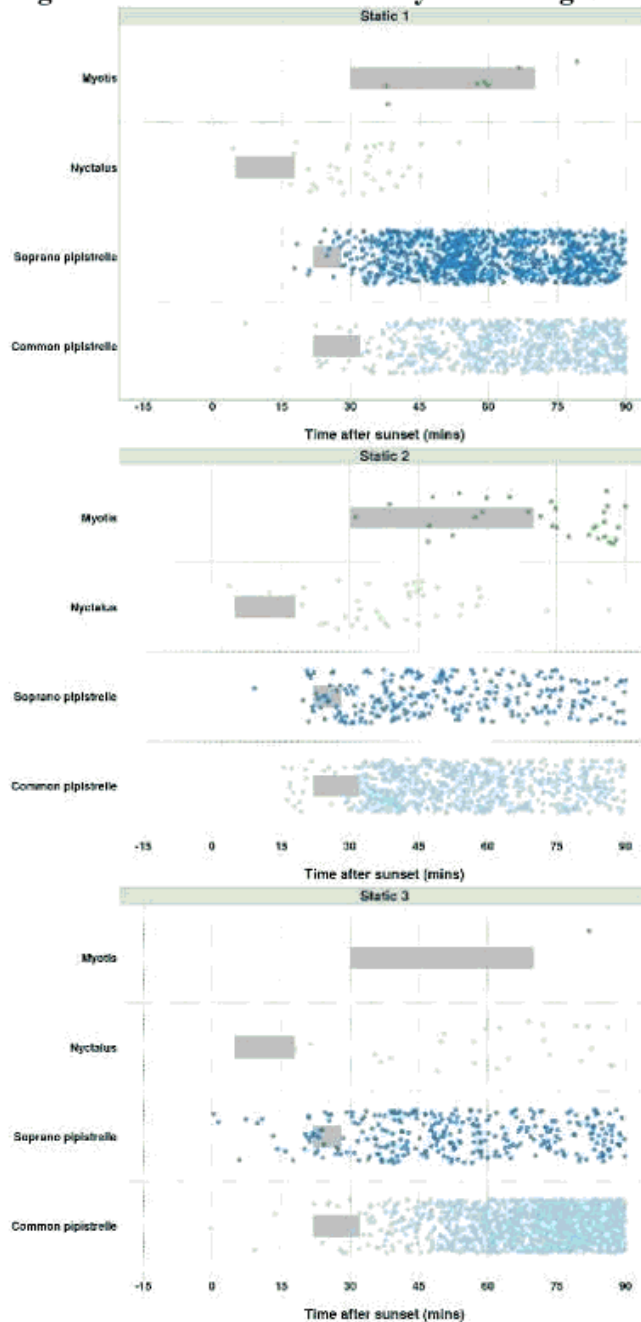


Figure 2: Bat Passes Potentially Indicating Close Proximity to a Roost (Russ 2012)



Value of the habitat for foraging and commuting bats

- 5.43 The majority of the site is improved pasture grassland. The tall hedgerows around the site also provide an important habitat and foraging belt for a variety of bat species. The boundaries hedgerow habitats are not fragmented and are connected into the wider network of hedgerows. The river and riparian fringe habitat also provide strong foraging and commuting corridors for bats.

5.44 The value of the habitat for foraging and commuting bats was assessed. The scores in tables 7 and 8 are calculated assuming populations of *Myotis* species being regularly recorded.

Table 7: Scores for 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	5	3	5
Total score			16

Table 8: Scores for 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)
2	5	3	5
Total score			15

- 5.45 Using the scoring system above, the foraging areas and commuting routes across the site are considered to be of **local importance** for bats. This assessment was undertaken using the small number of *Myotis sp.* observed in 2020.
- 5.46 It is considered that the primary routes across site are the hedgerows and water courses which provide important foraging and commuting habitat for bats in the area. The highest activity levels recorded by *Myotis* bats were recorded in the woodland block therefore also indicating the importance of this habitat for foraging bats.

Birds

- 5.47 The standard Common Bird Census methodology as developed by Marchant (1983) for the British Trust for Ornithology (BTO) was adopted. A set route was followed on two occasions during May and June 2020. Visits to the site were made by experienced ornithologists Catherine O'Reilley and George Sayer on the 29th May, and 22nd June and 1st July 2020. Any birds encountered were identified either visually or from their vocalisations. Birds were noted with standard BTO codes and behaviour was mapped. Following the surveys territory mapping was conducted following the methodology set out in Bibby *et al.* (1992). Territories were determined using the criteria set out in table 9 below.

Table 9: Criteria for determining bird territories

Breeding status	Registration description
Confirmed breeding territory	Two registrations of a particular species displaying breeding behaviour within a territory range over the total survey period
	A single record of a nest containing eggs or young
	Two registrations of a difficult species (e.g. nocturnal species such as owls or woodcocks) within a territory range over the total survey period
Probable breeding territory	Present in suitable habitat in the same location (within normal territory range) on two occasions
	Displaying breeding behaviour ¹ on one occasion only
Possible breeding territory	Present in suitable habitat on one occasion only
Non-breeding	Present in habitat not suitable for breeding
	Immature birds (e.g. herring gull first breeds at 4 years of age)

- 5.48 The hedgerows and woodland on site provides suitable nesting habitat for birds and the improved grassland provides suitable foraging habitat.

Breeding Bird Survey Results

- 5.49 The results of the breeding bird surveys are provided below in table 11 with territories shown in appendix IX. Fifteen species were recorded on site, one of which is listed as red list species/UKBAP priority species, and two listed amber listed species.
- 5.50 Weather conditions for the breeding bird surveys have been provided in table 10 below:

¹ Breeding behaviour includes displaying, singing, territorial activity, agitated or defensive behaviour, pair of adults together

Table 10: Weather conditions during the breeding bird surveys

Date	Visit number	Weather conditions
29/05/2020	1	13°C, cloud cover 1/8, wind 0/12, still, dry.
22/06/2020	2	15°C, cloud cover 3/8, wind 1/12, good visibility.
01/07/2020	3	17°C, cloud cover 3/8, wind 2/12, good visibility.

5.51 The breeding bird assemblage on the site was assessed using the criteria set out by Fuller (1980). The adapted scale outlined in the IEEM guidelines (2006) was used which reflects the decline in arable species since Fullers guidelines were originally published.

- Up to 24 breeding species = Local Importance
- 25 – 49 breeding species = District Importance
- 50 – 69 breeding species = County Importance
- 70 – 84 breeding species = Regional Importance
- 85+ breeding species = National Importance

5.52 Four species were confirmed as breeding on site with an additional four as probable breeding. The areas with the highest density of breeding birds were predominantly around the residential buildings adjacent to the north-eastern boundary of the site. The woodland block and southern boundary hedgerow were also frequently used.

Table 11: Breeding bird species recorded on site.

Species	Latin name	BTO species code	Notable status	Max count	Number of visits recorded	Breeding status
Long-tailed Tit	<i>Aegithalos caudatus</i>	LT	Amber List BoCC	1	2	Probable
Buzzard	<i>Buteo buteo</i>	BZ		0	1	non-breeder
Feral Pigeon	<i>Columba livia</i>	FP		1	1	Possible
Crow	<i>Corvus corone corone</i>	C.		4	3	Possible
Blue Tit	<i>Cyanistes caeruleus</i>	BT		3	2	Confirmed
Robin	<i>Erithacus rubecula</i>	R		2	1	Probable
Chaffinch	<i>Fringilla coelebs</i>	CH		2	1	Probable
Swallow	<i>Hirundo rustica</i>	SL		0	1	Non-breeder
House Sparrow	<i>Passer domesticus</i>	HS	Red List BoCC, UK BAP	0	1	Non-breeder (although site likely forms part of territory)
Jackdaw	<i>Corvus monedula</i>	JD		0	1	Non-breeder (although site likely to form part of territory)
Chiffchaff	<i>Phylloscopus collybita</i>	CC		2	1	Probable
Green Woodpecker	<i>Picus viridis</i>	G	Amber List BoCC	1	3	Confirmed
Collard Dove	<i>Streptopelia decaocto</i>	CD		0	1	non-breeder
Wren	<i>Troglodytes troglodytes</i>	WT		3	2	Confirmed
Blackbird	<i>Turdus merula</i>	B		4	1	Confirmed

Great crested newt

- 5.53 Suitable breeding ponds are essential to support populations of great crested newt although they actually only spend a relatively short period of the year in the ponds during the spring for breeding. The remainder of the year is spent in suitable 'foraging' terrestrial habitat such as tall grassland and woodland. During the winter the great crested newt hibernates, often amongst the roots of trees and scrub or in other places such as rubble piles, amongst the foundations of buildings or under fallen trees and logs.

- 5.54 Great crested newts are known to forage up to at least 500 metres from their breeding sites and suitable habitats that fall within 500 metres must be considered even in situations where the breeding site itself will not be affected. Suitable breeding habitat, and the presence of suitable terrestrial habitat within the development site were assessed during this survey.
- 5.55 The data search returned eleven records with the most recently dated from 2018, within 2 kilometres of site. A MAGIC search recorded mitigation licences within 200 metres of the site to the south which indicated presence in the area. Approximately 18 water bodies were identified with 500 metres of the site using aerial mapping.
- 5.56 A single pond was recorded on site which could provide suitable aquatic habitat for great crested newts. In addition to these areas of the site which are un-grazed would provide suitable terrestrial habitat for great crested newts, with the hedgerows forming good hibernating habitat. The A271 and A22 dual carriageway separates the site from habitats to the north and west and the Cuckmere River separates the site from the new development to the south.

Habitat Suitability Index (HSI)

- 5.57 A Habitat Suitability Index (HSI) assessment was undertaken to determine the suitability of the ponds within 500 metres of the site to support great crested newts. The assessment uses criteria and values as provided by Oldham et al. (2000, 2008). HSI cannot be used to predict the presence of great crested newts.

HSI Results

- 5.58 HSI assessment was conducted on the fourteen waterbodies within 500 metres where access was available. A map of the pond locations is provided in appendix X. The results of the HSI are provided in table 12 below.

Table 12: Descriptions and HSI results for ponds

Pond Number	Pond Description	HSI score
Within the site		
1	Large pond situated within an isolated group of mature trees within an open field. Small numbers of stickleback recorded. The large pond is medium size, with clear water and 20% macrophyte cover, the pond is shallow with some evidence of cattle poaching. Shade c. 70%.	0.65 - Average
Outside of the site boundary		

Pond Number	Pond Description	HSI score
Within the site		
2	Grazed improved grassland field small pools which are linked by a small ditch. Heavy cattle poaching. 5% macrophyte coverage. No fish or fowl. 60% shade.	0.74 – Good
3	Medium sized pond situated within willow scrub habitat, 100% shade with poor water quality and heavy leaf litter. No fish, fowl or macrophytes. Land surrounding the pond comprises tussocky grassland.	0.59 – Below Average
4	Pond heavily shaded by hawthorn and willow scrub. Poor water quality with lots of leaf litter present. No macrophytes. No fish recorded though possible. No fowl. Garden and scrub/trees surround.	0.58 – Below Average
5	Located within hotel grounds. Large pond with dense stands of typha present. Amenity grassland surrounds. No fowl but small number of fish present. No shade with good water quality.	0.78 - Good
6	Located within hotel ground. 20% shoreline shade, moderate water quality. Amenity grassland and hardstanding surrounds. Small number moorhen present, large fish also noted. 10% macrophyte coverage.	0.63 - Average
7	Located within hotel ground. Concrete pond with central fountain. Vertical banks. No macrophytes. Dense fish stocks and small number of ducks present. No shade, poor water quality, hardstanding and lawn surrounds.	0.42 – Poor
8	Distant inspection through hedge only. Pond appears to be shaded by surrounding trees, limited macrophyte coverage, fish possible, small number fowl. Trees, tall ruderal, grassland and hard standing surround.	0.78 - Good
9	Large pond with central island, domestic geese live on the pond and other wildfowl were present. The pond has a steep stone wall on one side as it used to be used as a clay extraction pit. Little macrophyte coverage, garden surrounds.	0.48 - Poor
10	Owner of Starnash Farm would not allow access to land.	N/A
11	Large pond situated within an area of mature trees, the pond appears to hold fish (bubbles seen) however, not to the owners knowledge. Macrophyte cover within the pond is low and the pond is heavily shaded by surrounding trees. A large spit divided the pond in the middle. Access for eDNA possible however further access was denied.	0.65 – Average
13	Rectangular pond with macrophyte coverage to the north, south and west, bare ground and rubble piles to	0.83 - Excellent

Pond Number	Pond Description	HSI score
Within the site		
	the east. Small numbers of moorhen present. 30% shading from treeline to the west, all other aspects open. Hardstanding to the east, amenity grassland to the west, rough grassland to other aspects. Good water quality. No fish noted.	

Environmental DNA Survey

- 5.59 A technique for surveying great crested newts known as environmental DNA testing (eDNA) was undertaken on the by Ben Fisher and Catherine O'Reilley (Natural England Class Licence number: 2016-26173-CLS-CLS). This involved taking water samples from ponds for DNA analysis which can confirm presence or absence of great crested newt. Water samples were sent to SureScreen Scientific for analysis.
- 5.60 The eDNA surveys were undertaken on ponds 1, 2, 3, 4, 5, 6, 7, 11 and 13. Access was not granted to survey ponds 8, 9, 10 or 12. The majority of the results returned a negative result with a positive result being recorded in pond 13. Pond 13 is located approximately 390 metres west of the site and movement between this site and the proposed development site is limited due to the A27 acting as a significant barrier to movement. Movement under the A27 is possible where the Cuckmere River passes under the road however it is considered highly unlikely due to the additional distance required to reach the underpass and considering great crested newts have not colonised the intervening ponds.

Hazel dormouse

- 5.61 The habitat on the site was assessed for the potential to support the hazel dormouse, which are found in habitats such as woodlands, scrub and hedgerows with good connectivity and suitable food plants. Satellite images were used to assess the connectivity of any suitable habitat present on the site to other areas of woodland and hedgerow networks.
- 5.62 A total of 50 tubes were installed along hedgerow 2, 3, 4 and 5 on the 4th June 2020 and the nest tubes were inspected on a monthly basis between June – November 2020, in order to attain a minimum survey effort of 20 points. Surveys were undertaken by Catherine O'Reilly, Will Mills and Ben Fisher working as accredited agents under licence number 2016-26392-CLS-CLS. The location of the dormouse tubes is presented in appendix XII The point system is achieved by undertaking a nest tube survey each month between April to November. The number of months required is dependent on the months surveyed as each month is assigned a different index of probability score because the likelihood of finding dormouse varies throughout the survey season, with September being the optimum month.

- 5.63 Seven records of the hazel dormouse were returned by SxBRC within two kilometres of the site dated between 1998 and 2016. A search on MAGIC database returned mitigation licences approximately 1.3 kilometres to the east of the site. Suitable dormice habitat is present on site in the form of the established hedgerows and there is some less suitable habitat recorded within the woodland block, although this is isolated due to the lack of connecting habitat.

Dormouse Survey Results

- 5.64 Targeted hazel dormouse surveys were undertaken on the hedgerows of the site in 2020. The results have been provided in table 13 below however, to summarise no evidence of hazel dormouse was recorded.
- 5.65 During the updated walkover of the site on the 17th January 2023, no evidence of dormice were recorded.
- 5.66 No evidence of hazel dormouse were recorded on site. The nearest known record is recorded west of the A22 with other records located a significant distance east and south-east of the site. Between the site and these records, the area is predominantly residential with limited connectivity therefore, it is considered highly unlikely that dormice will be able to colonise the site from these known locations. Due to the absence of evidence on site and the lack of connectivity from the known records in the area it is considered highly unlikely hazel dormouse are present on site. No further action is required.

Table 13: Hazel dormouse survey results

Date	Surveyors	Weather	Temperature	Results	Other
19/06/2020	Catherine O'Reilly	Wind 3/12, cloud 5/8, overcast but dry	13-16°C	No dormouse nests identified.	Evidence of nesting birds recorded in tube 5 (feathers and droppings)
17/07/2020	Will Mills	Wind 1/12, cloud 1/8, Sunny and dry	18-22°C	No dormouse nests identified.	Wood mouse feeding remains were recorded in tubes 18 and 41. A partial wood mouse nest constructed from leaves was recorded in tube 48.
17/08/2020	Will Mills	Wind 1/12, cloud 3/8, partly cloudy	20-21°C	No dormouse nests identified.	Wood mouse feeding remains in tubes 4,15,23 and 29. Wood mouse nest tubes 18, 30 and 34.

Date	Surveyors	Weather	Temperature	Results	Other
03/09/2020	Ben Fisher	cloud 6/8 wind 2/12 Mostly cloudy	20°C	No dormouse nests identified.	Wood mouse feeding remains in tubes 4, 5, 15, 34 and 41. Wood mouse nests in tubes 18 and 48.
12/10/2020	Ben Fisher	Mild, mostly overcast 3/8 Wind 2/12	14°C	No dormouse nests identified.	Wood mouse feeding remains recorded in tubes 2, 3, 4, 5, 10, 11, 14, 15, 24, 27, 29 and 36. Wood mouse nests in tubes 18, 30, 35 and 37. Wood mouse were recorded in nests in tubes 40, 41 and 47.
05/11/2020	Ben Fisher	Wind 1/12 Cloud 2/8	12°C	No dormouse nests identified.	

Otter and water vole

5.67 The habitat on site was assessed for its potential to support otter. Otter forage for fish, amphibian, mammal and crayfish (*Austropotamobius* sp.) prey on rivers, ditches, dykes, lakes and ponds. Suitable key landscape features such as under bridges, weirs, sand and mud bars, and confluences are inspected for field signs such as spraints and footprints. Potential resting sites are noted such as overhanging trees and dense scrub, reedbeds, islands and woodland both on watercourses and where access allows within 500 metres of rivers.

5.68 Otter are secretive and generally confined to watercourses, wetlands and coastal areas. They can have territories extending up to 20 kilometres and will use a variety of habitats such as cavities in tree root systems, dense bramble patches and reedbeds for the establishment of holts (breeding sites) and resting areas. They forage on fish, crayfish, birds and amphibians. Otter are rarely seen and therefore, the survey technique is based on searching for characteristic evidence or signs on, or close to, the banks of the watercourse which includes:

- **Footprints:** Otter have distinctive footprints with five webbed toes, however in practice the fifth toe and webbing are only visible in very soft sediment.
- **Spraints:** Otter spraints vary in colour and texture but have a characteristic smell and are often found in conspicuous places to advertise an individual's presence or to act as territorial markers.
- **Runs, trails or slides:** Otter create well-worn runs and slides due to their habitual use of routes and their close proximity to ground level.

- **Holts and resting sites:** In general, resting sites are temporary 'lie-ups' that are used by otters on foraging sprees. Otter will use many types of resting site for example under overhanging roots, in drainpipes or within stands of dense vegetation. Holts tend to be more permanent subterranean dens which are generally associated with breeding activity and are usually set well back from the flooding level of the associated river system.
- 5.69 Water vole occur mainly along well vegetated banks of slow flowing rivers, ditches, dykes and lakes with little shading. Water vole excavate extensive burrow systems into the banks of waterways. They forage on grasses, reeds, rushes and bark, and steep earth banks are preferred for burrowing. Suitable waterbodies within 5 metres of the site are visually assessed for suitability to support water voles. Any field signs such as burrows, latrines and feeding stations are noted.
- 5.70 Water vole are largely found along well vegetated banks of slow flowing rivers, ditches, dykes and lakes with little shading. Water vole excavate extensive burrow systems into the banks of waterways. They forage on grasses, reeds, rushes and bark, and steep earth banks are preferred for burrowing. As with otter, water vole are also rarely seen and the survey technique is based on searching for characteristic evidence or signs on, or close to, the banks of a watercourse which includes:
- **Faeces:** These are between eight and twelve millimetres long and four to five millimetres wide and are cylindrical with blunt ends.
 - **Latrines:** The majority of droppings are deposited at latrine sites, used to mark range boundaries or favoured spots close to burrows. Latrines often comprise a flattened mass of old droppings topped with fresh ones.
 - **Feeding stations:** Water vole often bring cut pieces of vegetation to favoured feeding sites close to the water's edge where they leave neat piles of feeding remains.
 - **Burrows:** Water vole burrows are typically wider than high with a diameter of between four and eight centimetres. Around these holes, well-grazed lawns can often be found where the water voles have chewed the vegetation short.
 - **Footprints:** Water vole have distinctive footprints with a small hind foot (twenty-five to forty two millimetres) and a star-shaped front foot, however, in practice, their footprints are easily confused with rat footprints. Consequently, footprints cannot be relied on as conclusive evidence of water voles.
 - **Runs:** Water vole create paths under cover of the bankside vegetation between their burrows.
- 5.71 The desk study returned six records of water vole within a two-kilometre radius of the site. Due to the confidential nature of otter records in East Sussex they were not returned on the data search. The water level of the river on site was extremely high during the initial survey however, high banks and good foliage cover was identified, of which the high banks are predominately favoured habitat for water vole burrows. This river system has been identified as holding potential to support both commuting otters and a water vole population.

- 5.72 Surveys for otter were undertaken by ecologists Catherine O'Reilley and Ben Fisher on the 19th June 2020 and George Sayer and Louise Barker on the 17th August 2020 and updated on the 19th January 2023.
- 5.73 Survey results have been provided in appendix XIII, although to summarise no evidence of either species was recorded.
- 5.74 Some potential feeding remains were identified along the central ditch however, this was attributed to fallen vegetation from cattle grazing due to the height of the surrounding cut vegetation and short length of the cut section (surrounding vegetation grazed at >40 centimetres height). In addition to this, two areas of droppings were recorded however these were thought to be field vole due to small size (6 to 7 millimetres long). Burrows were recorded within the banks of the Cuckmere River however, these were considered to be used by rats.
- 5.75 No evidence of otter or water vole were recorded on site. Therefore, no further action is required.

Reptiles

- 5.76 Common reptile species such as slow-worm and grass snake are widespread in habitats that provide both cover, in the form of scrub or tall vegetation, and basking areas such as hard standing or short grassland communities. Piles of debris or rubble also provide excellent refuge and hibernation sites for reptiles. They do also have an affinity for hiding under debris exposed or partially exposed to the sun.
- 5.77 The site was assessed for its potential to support reptile species and targeted reptile surveys were undertaken between September and October 2020. This involved distributing artificial refugia within the site on the 4th September 2020, in this case 0.25 metre² pieces of roofing felt were used. These were left to settle for two weeks, after which seven survey visits were undertaken. The 'reptile mats' were checked between 0900 and 1100 hours or between 1600 and 1900 hours and/or during suitable weather conditions, when it was cloudy and/or with sunny breaks with temperatures between ten and eighteen degrees centigrade, when the refuges provide greater heat than the open ground.
- 5.78 The improved grassland borders, riparian fringes, hedgerows and scrub habitat on site provide suitable areas of habitat for common reptile species such as slow worm, grass snake and common lizard. The data search from SxBRC returned records of all these species including adder.
- 5.79 The targeted reptile surveys undertaken recorded no reptiles within the site however, a peak count of one slow worm and one common lizard were recorded in the remainder of the site to the east. The results of the survey are provided in table 16 below.

Table 16: Reptile Survey Results

Surveyors: Ben Fisher										
Survey	Date of Visit	Time	Weather	Temperature	Wind	Reptiles				Area recorded
						SW ²	GS ³	CL ⁴	A ⁵	
1	18/09/2020	08:30	Clear & Sunny	17°C	2	0	0	0	0	
2	21/09/2020	08:45	Clear & Sunny	16°C	1	0	0	0	0	
3	23/09/2020	10:30	Light Cloud	17°C	3	0	0	0	0	
4	30/09/2020	11:00	Cloudy with sunny spells	17°C	3	0	0	0	0	Outside of site boundary within the marshy grassland Juvenile female slow worm recorded under mat 13 and adult male common lizard recorded under mat 23.
5	02/10/2020	16:00	Light Cloud / sun	15°C	2	0	0	0	0	
6	05/10/2020	16:00	Clear & Sunny	14°C	2	0	0	0	0	
7	07/10/2020	16:00	Clear & Sunny	16°C	1	0	0	0	0	
Peak count						1	0	1	0	

5.80 The site does not support reptiles however, the neighbouring grazed improved grassland to the east supports a low population of slow worms and common lizards. The grassland within the site has continued to be grazed. The boundary hedgerows could support reptiles from the remainder of the field to the east therefore, precautionary measures have been recommended in section 8.

² SW: Slow Worm

³ GS: Grass Snake

⁴ CL: Common Lizard

⁵ A: Adder

Freshwater invertebrates

- 5.81 The data search returned low numbers of records for freshwater invertebrates within 2 kilometres of the site. There were however no records of Ramshorn snails (*Anisus vorticulus*) for which Pevensey Levels SAC, Ramsar and SSSI is designated for. Since the river on site does not connect to Pevensey Levels, it is considered that the proposed development will not have a negative impact upon this species or designated site.
- 5.82 In addition, to this the proposed development is located outside of the proposed flood zones of the river and the ponds recorded on site will also be retained. It is therefore considered that there will be no impacts upon the freshwater invertebrates.

Assessment of Species

- 5.83 The level of value of these species is summaries in table 17 below.

Receptor	Evaluation rationale	Value of receptor
Foraging and commuting Bats	The site was assessed as offering high potential for foraging and commuting bats. Surveys confirmed common pipistrelle, soprano pipistrelle, noctules and very low activity from brown long-eared and <i>myotis</i> bats.	Local
Badgers	Records of badger within the wider area, with suitable commuting and foraging habitat present within the red line boundary.	Local
Nesting birds	Common and widespread species of birds are using the site for nesting and foraging.	Local
Reptiles	The site offers suitable habitat for reptiles in the form of hedgerows only. Slow worm and common lizard are known to be present in the remainder of the field however, not within the red line boundary	Local

7.0 ASSESMENT OF POTENTIAL IMPACT

- 7.1 The impacts have been assessed against the proposals including the inherent mitigation measures described below.
- 7.2 Impacts 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:
- Pevensey Levels SAC, Ramsar, SSSI (International and national value)
 - Lower Dicker SSSI (National value)
 - Burgh Hill Farm Meadow SSSI (National value)
 - Arlington Reservoir SSSI and LNR (National and regional value)
 - Hellingly Cemetery LNR (Regional value)
 - Bramble Grove LWS (Regional value)
 - Hedgerows (County value)
 - Broadleaved woodland (Regional value)
 - River and riparian fringe (Local value)
 - Badger (Local value)
 - Foraging and commuting bats (Local value)
 - Nesting birds (Local value)
 - Reptiles (Local value)

Construction Phase Impacts

Statutory designated sites

Pevensey Levels SAC, Ramsar and SSSI

- 7.3 No part of the proposed development site falls within the boundaries of the Pevensey Levels SAC/Ramsar European Protected Sites, and at their closest point they are located 2.4 kilometres from the boundary of the survey area. No direct impacts to or indirect impacts to Pevensey Levels SAC, Ramsar and SSSI are considered. Dust and noise are unlikely to travel the intervening distance with sufficient intensity to cause adverse impacts to the flora and fauna of this statutory site. The IEFs are of **international and national value**, the magnitude of impacts from the proposed development are considered to be **negligible and therefore, the impact is not significant**.

Lower Dicker SSSI

- 7.4 The proposed developed site will be located over 1.47 kilometres from Lower Dicker SSSI therefore no direct or impacts on the site are anticipated. The designated site is located sufficiently far away and Lower Dicker is a small, designated site that indirect impacts from any dust or noise disturbance are not

considered. This IEF is of **national value**, the magnitude of effect is **negligible and therefore not significant**.

Burgh Hill Farm Meadow SSSI

- 7.5 The proposed developed site will be located over 3.8 kilometres from Burgh Hill Farm Meadow SSSI therefore, no direct or impacts on the site are anticipated. The designated site is located sufficiently far away that indirect impacts from any dust or noise disturbance are not considered. This IEF is of **national value**, the magnitude of effect is **negligible and therefore not significant**.

Arlington Reservoir SSSI and LNR

- 7.6 The proposed developed site will be located over 4.9 kilometres from Arlington Reservoir SSSI and LNR therefore, no direct or indirect impacts on the site are anticipated. This IEF is of **national value**, the magnitude of effect is **negligible and therefore not significant**.

Non-statutory sites

Hellingly Cemetery LWS and Bramble Grove LWS

- 7.7 Hellingly Cemetery LWS is located 0.5 kilometres north of the proposed located for the development site and Bramble Grove LWS is over 1.7 kilometres . Due to the nature of the proposals and the distance, adverse impacts on habitats within these sites are not anticipated. This IEF is of **regional value**, the magnitude of effect is **negligible and therefore not significant**.

Habitats

Hedgerows

- 7.8 The proposals will result in a loss of a section of the western boundary hedgerow to facilitate a new site entrance. The western boundary hedgerow is not considered important under the Hedgerow Regulations 1997 however, the southern boundary is. The southern boundary will be retained as part of the development proposals. Although the western boundary hedgerow is not classified as important, it does provide a suitable corridor for wildlife to use, and hedgerows are listed as a Biodiversity Action Plan (BAP) habitat in Sussex. Hedgerows are considered to be important within the site and are of **Local value**.
- 7.9 When considered without mitigation, the loss of a section of hedgerow on site will result in a **certain minor adverse impact at the local level**.

Broad-leaved woodland

- 7.9 The broad-leaved woodland will be retained as part of the development proposals. This IEF is of local importance. Although this habitat will be retained, there is potential for indirect impacts during construction works such as accidental damage from plant machinery, dust and pollutants. When considered without mitigation, the indirect impact on the broad-leaved woodland is a **certain minor adverse impact at the local level**.

River and riparian fringe

- 7.10 The river lies on the eastern boundary of the site. Although the proposals will not result in the loss of this habitat there is potential for indirect effects from construction activities such as pollutants. Without mitigation, the indirect impact on the broad-leaved woodland is a **certain minor adverse impact at the local level**.

Protected and notable species

Badgers

- 7.11 The site supports common birds with a low number of species of conservation concern. When mitigation proposed is not taken into account the removal of a section of hedgerow and foraging grounds for birds is considered to have a **reversible moderately adverse impact at a local level**.

Bats

- 7.12 The hedgerows, woodland and river systems on site provide suitable foraging and commuting habitat for bats. During the activity transect surveys three species and two genus of bats were recorded. This included common pipistrelle, soprano pipistrelle, noctule long-eared species and *Myotis sp.* In general, activity on the transect surveys was low with foraging and commuting being recorded across the majority of the site. The consistent records of common pipistrelle and soprano pipistrelle bats would indicate that there is site wide use, and the recordings would indicate that roosting is occurring nearby.
- 7.13 When mitigation is not considered, the loss of foraging habitat for bats is considered to have a **certain moderately adverse impact for bats at a local level**.

Reptiles

- 7.14 The loss of a section of hedgerow will result in the loss of suitable habitat for reptiles. Although surveys have confirmed this species to be absent from the site, they are present within the remainder of the field to the east. When mitigation is

not taken into account, the loss of the hedgerow is considered to have a **probable minor adverse impact on reptiles at a local level.**

Operational Phase

Statutory designated sites

Pevensey Levels SAC, Ramsar and SSSI and other SSSI sites

- 7.15 No part of the proposed development falls within the boundaries of the statutory designated sites listed in appendix II. No direct impacts from the proposals are anticipated from effects such as noise, lighting or introductions from non-native plant species. The IEF is of international and national value and the effects are **negligible and therefore the impacts are not significant.**

Non-statutory designated sites

- 7.16 The proposed development does not lie within or along the boundaries of any non-statutory designated sites therefore, no adverse impacts during the operational phase are considered. The IEF is of regional value and the effects are **negligible and therefore the impacts are not significant.**

Protected and notable species

Badgers

- 7.17 During the operational phase, no adverse impacts are considered for badgers. The IEF is of local value and the effects are **negligible and therefore the impacts are not significant.**

Bats

- 7.18 Once constructed, lighting has the potential to disturb foraging and commuting bats. Without mitigation, an increase in lighting is considered to have a **probable moderate adverse impact on foraging and commuting bats at a local level.**

Nesting birds

- 7.19 The proposals will retain the woodland and the majority of hedgerows on site. The enhancements to these habitats will provide a benefit for birds nesting and foraging within the site. Gardens of the new properties will provide foraging areas for birds. The IEF is of local value and the effects are **negligible and therefore the impacts are not significant.**

Reptiles

- 7.20 The hedgerows on site will be retained and will continue to provide habitat for reptiles within the local area. The IEF is of local value and the effects are **negligible and therefore the impacts are not significant.**

Ecological enhancements

- 7.20 The NPPF requires enhancements within the site. The following enhancements have been recommended:

- Provision of log and brushwood piles alongside any retained hedgerows and within any new habitat creation areas will provide refugia and hibernacula for reptiles and other fauna such as hedgehog (*Erinaceus europaeus*) and deadwood invertebrates.
- Flowering grassland seed mixes from a supplier of seeds of local provenance can be used to seed new lawns and areas of amenity grassland within the layout of the development (such as Emorsgate EL1). Such grassland provides better nectar sources for invertebrates and hence is of greater value for foraging birds, reptiles and amphibians.
- Hedgerows should be enhanced where retained and additional hedgerow should be planted where possible. Substantial hedgerow margins should be planted with habitats that include the provision of winter seed for foraging arable bird species.
- Patches of dense scrub should be planted to provide additional habitat for red listed bird species recorded on site, including yellowhammer.
- Buffer planting along the central site ditch should be included to provide habitat for wintering snipe and other waders.
- The inclusion of wildlife ponds within the design of any proposals would enhance the area for local amphibians and invertebrate populations. The pond should be kept free of fish and planted with native British plant species such as water-plantain (*Alisma plantago-aquatica*), reed sweet-grass (*Glyceria maxima*) and yellow flag (*Iris pseudacorus*).
- The provision of bat and bird boxes within the retained woodland areas and on suitable mature hedgerow standards to provide additional nesting and roosting opportunities for local bat and bird populations.
- Swift bricks will be installed under the eaves or at the top of a vertical wall away from windows on any new buildings to provide nesting opportunities for this species.
- Integrated bat box into at each of the proposed dwellings or at least within every two dwellings.

- Where any close boarded fencing is to be used within the development, hedgehog friendly gravel boards with holes of 13cm by 13cm should be provided to enable hedgehog movements around the site.

8.0 MITIGATION

Construction Phase

Statutory and non-statutory Designated Sites

- 8.1 There are no impacts on statutory designated sites and therefore no mitigation is required. However, the Wealdon District Core Strategy Local Plan (2013) requires that development within Hailsham, considers the impact of waste water discharge on the Pevensey Levels SAC / Ramsar. The Local plan states that any new development within the north Hailsham area will be limited to 1,750 new dwellings in order to comply with the local treatment centre for the waste water discharge capacity. Therefore any proposed residential dwellings must not exceed this limit unless alternative waste water treatment services are provided. Any development should include a Sustainable Drainage System which will also protect the river on site and will not contribute to the flood levels on site.

Non-statutory designated sites

- 8.2 There are no impacts on non-statutory designated sites and no mitigation is required.

Habitats

Hedgerows

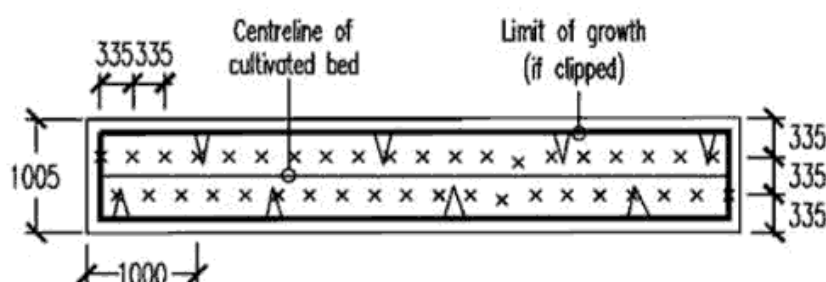
- 8.3 It is recommended that the loss of a section of the western boundary hedgerow is kept to a minimum. All retained hedgerows should be protected during construction in accordance with the British Standards Institute (2012) by installing Heras fencing along the root protection zones before works.
- 8.4 The mitigation outlined below will be required for any hedgerow clearance on site.
- Any hedgerow loss will be mitigated using native hedgerow planting that is equivalent to the length of habitat lost. This will provide a suitable level of compensation for habitat loss as well as an additional habitat feature suitable for a range of fauna including birds, bats, invertebrates, reptiles and amphibians. New hedgerow planting would also enhance the aesthetic appeal of the site and provide natural screening of the development.

- Recommended species and planting proportions for new hedgerow planting are detailed in table 18 below, an example planting pattern for new hedgerows is illustrated in diagram 1.
- It is recommended that existing retained hedgerows should be enhanced by planting up any gaps or thin sections with native shrub whips.
- Ongoing management of hedgerows on the development site is also recommended, this should comprise light flailing on a biannual basis with hedgerows sculpted into a rounded A-shape during flailing. Flailing of the hedgerows should not be too deep and severe.

Table 18: Species to be included in hedgerow planting

Species	Proportion within hedgerow
Spindle (<i>Euonymus europaeus</i>)	10%
Hawthorn (<i>Crataegus monogyna</i>)	15%
Blackthorn (<i>Prunus spinosa</i>)	15%
Field maple (<i>Acer campestre</i>)	15%
Dog rose (<i>Rosa canina</i>)	5%
Hazel (<i>Corylus avellana</i>)	20%
Elder (<i>Sambucus nigra</i>)	10%
Crab apple (<i>Malus sylvestris</i>)	5%
Guelder-rose (<i>Viburnum opulus</i>)	5%
Pedunculate oak (<i>Quercus robur</i>), small-leaved lime (<i>Tilia cordata</i>) and/or beech (<i>Fagus sylvatica</i>) will be used for standard tree planting within the hedgerow.	

Diagram 1: Planting Pattern



8.5 With this mitigation in place, the loss of a section of hedgerow will in the short term have a **probable minor adverse impact within the site but in the long**

term following the successful establishment of the mitigation works, will result in a minor beneficial impact within the local area.

Broad-leaved woodland

- 8.6 The woodland is to be retained as part of the proposals. The woodland should be protected during construction in accordance with the British Standards Institute (2012) by installing Heras fencing along the root protection zones before works.
- 8.7 With the above mitigation in place, the impacts on the woodland are downgraded to **negligible**.

River and riparian fringe

- 8.8 The River Cuckmere is along the southern boundary of the site and a number of ditches also pass through the site to the river. The river to the east lies outside of the boundary of the site. Any potential development of the site could result in direct and indirect impacts upon the river and surrounding riparian habitat therefore mitigation is required to negate any negative impacts upon these habitats.
- 8.9 Development of the site could potentially result in degradation of the river habitat via pollution, dust and changes to the local hydrological regime. The presence of a residential development may also have a disturbance impact on fauna which use the river corridor habitat, such as breeding birds.
- 8.10 A Construction Environmental Management Plan (CEMP) will need to be produced and implemented prior to the construction phase of any development on site in order to mitigate against potential indirect impacts to the river. The CEMP will detail specific construction methods and precautionary measures to avoid impacts to designated sites, this will include:
- Details of how building materials, fuels and chemicals will be stored and controlled on site to avoid the risk of pollution and siltation, for example all building materials will be stored appropriately in specific designated areas to avoid potential pollution incidents and creation of dust.
 - All plant will be fitted with drip trays in order to avoid potential pollution incidents and re-fuelling of plant/vehicles will either take place off site or within a specific designated area on site which is situated at a safe distance from any watercourses.
 - Details on the proposed construction methodology including factors such as construction access, methods of construction, timing of work, use of lighting and working hours.
 - Dust control and suppression methodology.

- 8.11 The development has been located away from the river and a buffer zone of natural vegetation maintained within the intervening distance, such as wildflower grassland with hedgerows and scrub planting. This buffer zone could potentially form part of open greenspace provision on the site should a residential development scheme be proposed for the site.
- 8.12 The proposals include two near ponds along the boundary of the new development in order to avoid/limit any impacts to the local hydrological regime which could in turn affect the identified river. This will involve strategic design of the new drainage system and installation of Sustainable Urban Drainage Systems features such as filter strips/swales, permeable surfaces, filter drains, infiltration devices, and basins/ponds. These features will provide attenuation and sustainable drainage of surface water run-off, as well as water treatment through the processes of sedimentation, filtration, absorption and biodegradation.
- 8.13 The above mitigation measures will reduce the impacts on the rivers on site to a long-term **certain minor benefit impact within the site.**

Protected and notable species

Badgers

- 8.14 Although there were not any badger setts recorded within the red line boundary there is potential for badgers to move into the site between the writing of this report and the commencement of works. The following safeguarding measures for badger during construction will be included in the CEMP and implemented as a measure of best practice:
- Install Heras fencing in areas where it is important to exclude badgers for safety reasons e.g. fuel storage areas.
 - Any topsoil, aggregates or other material piles will be stored within a designated area well away from the development and associated zones of activity. These will be regularly inspected to ensure they are not being used by badger.
 - Minimise night-working to avoid disturbance to badger.
 - If excavations are left open at night, wooden boards or planks will be provided as a means of escape for any animals that fall in.
 - Any pipework will be capped over-night to avoid animals becoming trapped.

Bats

- 8.15 There is potential for increase lighting during construction works. Mitigation will include measures to limit lighting impacts during the construction phase as a measure of best practice. During the construction phase, to ensure foraging or commuting bats are not impacted, there will be restrictions on working hours and the use of external lighting systems. Working hours will be limited to daylight

hours after 08:00 and conclude at least an hour before sunset during the summer months when bats are most active. This will be detailed within the CEMP for the development. Landscaping proposals

- 8.16 These measures will reduce the level of impact to **negligible and not significant**.

Nesting birds

- 8.17 The site supports more widespread species with a low number of species of conservation concern. It is recommended that the following precautions are followed to negate the risk of harming nesting birds during both the infrastructure and housing development:

- The clearance of any scrub, woodland, scattered trees, hedgerows and improved pasture grassland should where possible be undertaken outside of the bird nesting season, which is considered to extend from the 1st March to the 31st August, or if this is not possible, clearance must be done under the supervision of an ecologist to ensure that nesting birds are not harmed. Where nesting birds are encountered, clearance and/or demolition must be postponed until the nestlings have fledged.

Reptiles

- 8.18 Although reptiles were not recorded within the red line boundary, the remainder of the improved grassland field to the east supports a low population of slow worms and common lizards. The updated survey has confirmed that the site is continued to be grazed and therefore unsuitable for reptiles however, the boundary hedgerows continue to provide shelter and a commuting corridor for reptiles. Therefore, a precautionary methodology will be applied to ensure no reptiles are harmed during the removal of a section of the western hedgerow. The methodology will include:

- To encourage reptiles on the site to move away from the works area naturally the habitat within the works area will be made unsuitable by the continued grazing of the site up until construction works commence.
- Materials and any arisings, will be kept off the ground through the use of skips or pallets. This will negate any risk of reptiles sheltering within stock piled materials or arisings from site clearance.
- The removal of the hedgerow will be carried out during the reptile active season March-September, inclusive and when temperatures are above 10°C. Any reptiles found will be moved by the ecologist and put into suitable habitat adjacent to the site.

- 8.19 The creation of wildflower grassland, scrub and woodland planting will provide a mosaic of habitats favoured by slow worms. The construction of hibernacula within these areas can further enhance the habitat for reptiles.

- 8.20 With the above mitigation and enhancement measures in place the **short term impacts are minor with the long-term benefits following establishment of the proposed planting are a minor benefit for reptiles within the local area.**

Operational Phase

Designated Sites

- 8.21 Indirect impacts from any residential development may arise from increased visitor pressure on both European Protected sites and local wildlife sites therefore open greenspace provisions should be provided within the scope of any residential development to ease visitor pressure on these sites. The proposed development provides 4.5ha of greenspace for public access which will reduce any impacts on nearby statutory and non-statutory designated sites.

Bats

- 8.22 Lighting during the operational phase could result in the disturbance of commuting and foraging bats. The proposed development should maintain connectivity along the boundary hedgerows of the site and along the river corridor by minimising any lighting on these areas. A lighting strategy will be implemented in accordance with *Bats and Artificial Lighting in the UK* (BCT, 2018). The following measures will be used to minimise impacts on nocturnal species such as bats:
- Selection and design of the lighting systems and by using accessories such as cowls or hoods to minimise light spill and direct light only to where it is needed.
 - Using light sources that emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <2,700 kelvin.
 - LED luminaires should be used where possible.
- 8.23 The lighting design will be guided by the principles outlined above however, will also be required to comply with East Sussex County Council guidance on streetlighting.

Nesting birds

- 8.24 On-going management of habitats on site such as the maintenance of hedgerows and woodland habitat could result in the disturbance of nesting birds, if trimmed at the wrong time of the year. A Landscape and Ecological Management Plan (LEMP) will be prepared for the site for on-going management and timing issues will be addressed in the LEMP, and management will be implemented accordingly.

9.0 RESIDUAL EFFECTS

- 9.1 No significant negative impacts from the proposed works were identified during the assessment, assuming all mitigation measures are implemented.

10.0 IN-COMBINATION EFFECTS

- 10.1 There are no other developments in the vicinity of the site which are likely to give rise to cumulative impacts.

11.0 CONCLUSION

- 11.1 Land at Lower Horsebridge is considered to be of moderate ecological value. This report has identified that the proposed works which will result in the loss of a section of hedgerow (BAP habitat) and improved grassland could impact negatively upon breeding birds, bats, badgers and reptiles. Mitigation measures have been provided including protection of hedgerows and woodland to be retained. In addition, the supervision of the removal of the hedgerow will reduce impacts on nesting birds and reptiles. Furthermore, the site will provide 4.5ha of open green space for residents to use.
- 11.2 The updated survey in 2023 confirmed that the habitats on site remained the same as recorded in 2020 with no significant changes. It is considered that the survey data from the 2020 survey season in relation to bats and dormice, remain valid.

12.0 REFERENCES

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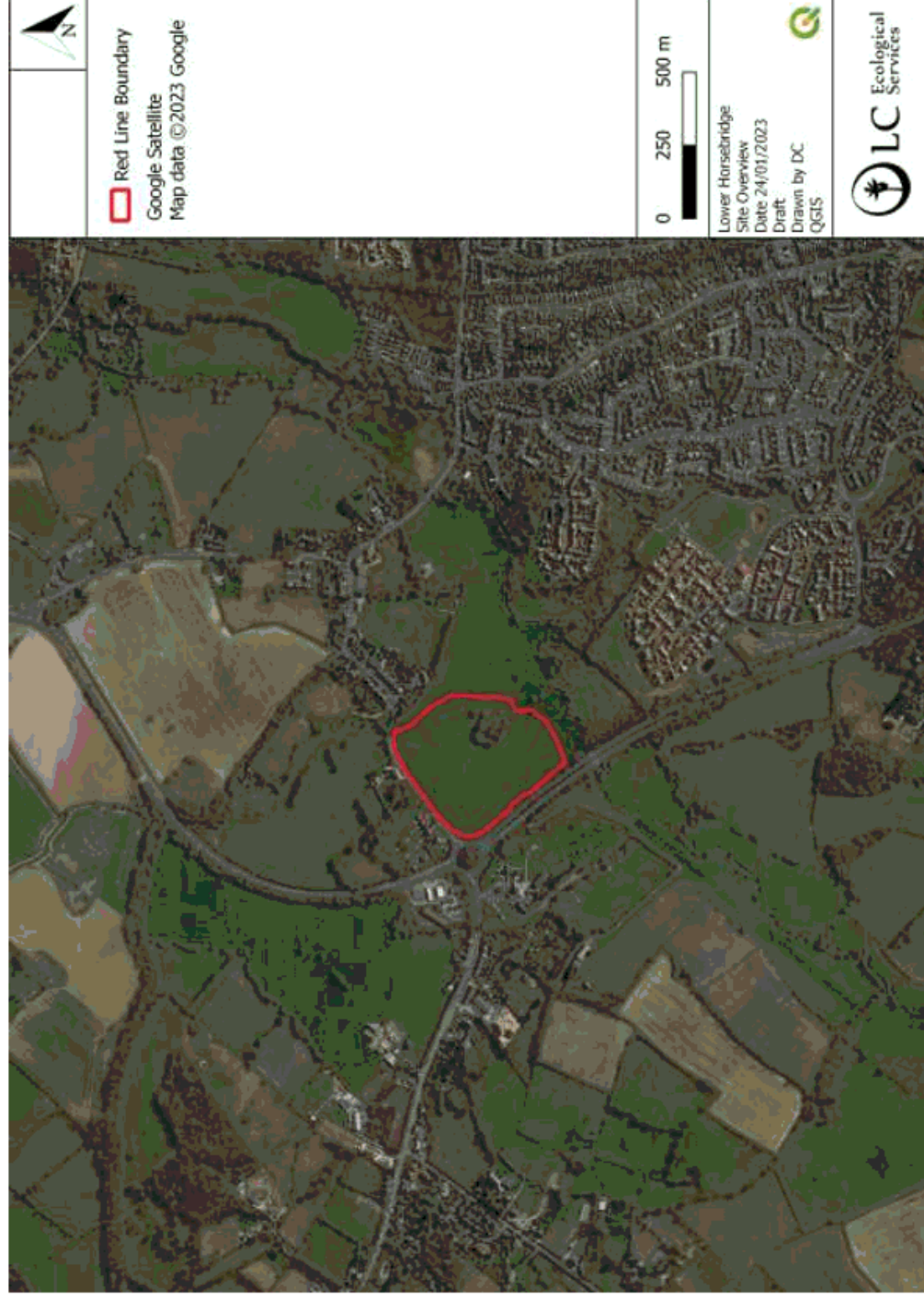
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APPENDIX I: Site location



APPENDIX II: Site proposals



APPENDIX III: Designated sites and protected and notable species results

Table 1: Statutory designated sites within 2 kilometre and non-statutory designated sites located within a 2 kilometre radius of land at Lower Horsebridge.

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
Pevensey Levels	SAC ⁶	2.4 km east	3585.38	Large area of low-lying grazing meadows with a mosaic of inland water bodies. The Annex II species Ramshorn snail (<i>Anisus vorticulus</i>) is a primary cause of designation as it is supported throughout the SAC 'in both a wide spatial distribution and in good population density classes.'
	Ramsar ⁷	2.4 km east	3585.38	Pevensey Levels is a large area of low-lying grazing meadows intersected by a complex system of ditches which show a wide variety of form and species composition and support important communities of wetland flora and fauna. The site supports one nationally rare and several nationally scarce aquatic plants and many nationally rare invertebrates. Ornithologically, the site is of national importance as the number of wintering lapwings (<i>Vanellus vanellus</i>) has regularly exceeded 1% of the total British population in recent years.
Lower Dicker	SSSI	1.47 km west	0.12	Small disused and overgrown quarry, important geologically

⁶ SAC: Special Area of Conservation

⁷ Ramsar: Ramsar Convention (Protected wetland areas)

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
				within the High Weald Natural Area.
Burgh Hill Farm Meadow (SSSI)	SSSI	3.8 km north west	0.9	Good quality undisturbed meadow habitat due to a regime of grazing sympathetic to wildlife. Sixty-seven species of flowering plant have been recorded on this relatively small site.
Arlington Reservoir	SSSI	4.9km south west	100.4	Wetland, deciduous woodland and grassland habitats. Good for autumn and spring migrating birds with over 173 species recorded. Barn owl (<i>Tyto alba</i>), osprey (<i>Pandion haliaetus</i>), kingfisher (<i>Alcedo atthis</i>), various bat species, hazel dormouse (<i>Muscardinus avellanarius</i>), water vole (<i>Arvicola amphibius</i>), smooth newt (<i>Lissotriton vulgaris</i>) and palmate newts (<i>Lissotriton helveticus</i>) and 37 recorded butterfly species. The site can hold up to 10,000 over-wintering widgeon (<i>Anas penelope</i>).
	LNR ⁸	4.9km south west	100.5	
Hellingly Cemetery	LWS ⁹	0.5 km north	2.3	Localised areas in the centre of the cemetery are particularly species-rich assemblage with agrimony (<i>Agrimonia eupatoria</i>), common dog-violet (<i>Viola riviniana</i>) and glaucous sedge (<i>Carex flacca</i>) and, very locally, yellow oat-grass (<i>Trisetum flavescens</i>), fairy flax (<i>Linum catharticum</i>), dwarf thistle (<i>Cirsium acaule</i>) and spring-sedge (<i>Carex caryophyllaea</i>).
Bramble Grove	LWS	1.7 km south west	11.2	Small ancient woodland. The species-rich ground flora consists mainly of carpets of bluebell (<i>Hyacinthoides non-</i>

⁸ LNR: Local Nature Reserve

⁹ LWS: Local Wildlife Site

Site name	Conservation status	Distance and direction from site	Size (Ha)	Habitat description
				<i>scripta</i>), wood anemone (<i>Anemone nemorosa</i>) and locally dog's mercury (<i>Mercurialis perennis</i>), with pignut (<i>Conopodium majus</i>), wood millet (<i>Milium effusum</i>), enchanter's-nightshade (<i>Circaea lutetiana</i>), wood mellick (<i>Melica uniflora</i>) and yellow archangel (<i>Lamium galeobdolon</i>) commonly occurring.

Table 2: Protected and notable species within two kilometres of land at Lower Horsebridge

Common Name	Scientific name	Status	Records
<i>Amphibians and Reptiles</i>			
Slow-worm	<i>Anguis fragilis</i>	Schedule 5 WCA ¹⁰ , UKBAP ¹¹	44 records dated between 1991 and 2015.
Common toad	<i>Bufo bufo</i>	Schedule 5 WCA, UK BAP	3 records dated pre 2002.
Grass snake	<i>Natrix helvetica</i>	Schedule 5 WCA	25 records dated between 1988 and 2018.
Great crested newt	<i>Triturus cristatus</i>	Habs Regs ¹² Annex II ¹³ , Schedule 5 WCA, UK BAP	11 records dated between 2006 and 2018.
Adder	<i>Vipera berus</i>	Schedule 5 WCA, UKBAP	1 record dated 2011.
Common lizard	<i>Zootoca vivipara</i>	Schedule 5 WCA, UKBAP	16 records dated between 1988 and 2011.
<i>Birds</i>			
Lesser redpoll	<i>Acanthis cabaret</i>	Red List BoCC ¹⁴ , UK BAP	5 records dated between 2005 and 2018.
Skylark	<i>Alauda arvensis</i>	Red List BoCC, UK BAP	19 records dated between 1991 and 2016.
Kingfisher	<i>Alcedo atthis</i>	Schedule 1 WCA, Annex 1 ¹⁵ , Amber List BoCC	22 records dated between 1982 and 2016.

¹⁰ WCA: The Wildlife and Countryside Act 1981 (as amended)

¹¹ UKBAP: UK Biodiversity Action Plan

¹² Habs Regs: Conservation of Habitats and Species (Amendment) Regulations 2017

¹³ Annex II of the Habitats Directive

¹⁴ BoCC: Birds of Conservation Concern

¹⁵ Annex 1: As listed within the Birds Directive

Common Name	Scientific name	Status	Records
Short-eared owl	<i>Asio flammeus</i>	Annex 1, Amber List BoCC	1 record dated 2016.
Nightjar	<i>Caprimulgus europaeus</i>	Annex 1	2 records dated between 1998 and 2011.
White stork	<i>Ciconia ciconia</i>	Annex 1	1 record dated 2005.
Hen harrier	<i>Circus cyaneus</i>	Schedule 1, Annex 1, Red List BoCC	1 record dated 2016.
Cuckoo	<i>Cuculus canorus</i>	Red List BoCC, UK BAP	19 records dated between 1991 and 2014.
Lesser spotted woodpecker	<i>Dendrocopos minor</i>	Red List BoCC, UK BAP	11 records dated between 1981 and 2006.
Little egret	<i>Egretta garzetta</i>	Annex 1	9 records dated between 2003 and 2012.
Yellowhammer	<i>Emberiza citrinella</i>	Red List BoCC	20 records dated between 2003 and 2011.
Reed bunting	<i>Emberiza schoeniclus</i>	Amber List BoCC, UK BAP	25 records dated between 1996 and 2018.
Merlin	<i>Falco columbarius</i>	Schedule 1, Annex 1, Red List BoCC	2 records dated 1991 and 1993.
Peregrine	<i>Falco peregrinus</i>	Schedule 1 WCA, Annex 1, Red List BoCC	5 records dated between 1998 and 2018.
Hobby	<i>Falco Subbuteo</i>	Schedule 1	22 records dated between 1980 and 2018.
Brambling	<i>Fringilla montifringilla</i>	Schedule 1 WCA	1 record dated 2008.
Wryneck	<i>Jynx torquilla</i>	Schedule 1, UK BAP	1 record dated 2004.
Herring gull	<i>Larus argentatus</i>	Red List BoCC, UK BAP	74 records dated between 2005 and 2018.
Linnet	<i>Linaria cannabina</i>	Red List BoCC, UK BAP	20 records dated between 2009 and 2014.
Common crossbill	<i>Loxia curvirostra</i>	Schedule 1 WCA	1 record dated 2011.
Red kite	<i>Milvus milvus</i>	Schedule 1 WCA, Annex 1	14 records dated between 2009 and 2018.
Spotted flycatcher	<i>Muscicapa striata</i>	Red List BoCC, UK BAP	8 records dated between 2003 and 2011.
Whimbrel	<i>Numenius phaeopus</i>	Schedule 1 WCA, Red List BoCC	1 record dated 2010.
Osprey	<i>Pandion haliaetus</i>	Schedule 1 WCA, Annex 1, Amber List BoCC	4 records dated between 1996 and 2011.
House sparrow	<i>Passer domesticus</i>	Red List BoCC, UK BAP	136 records dated between 2002 and 2018.
Tree sparrow	<i>Passer montanus</i>	Red List BoCC, UK BAP	5 records dated between 1993 and 2005.
Grey partridge	<i>Perdix perdix</i>	Red List BoCC, UK BAP	2 records dated 1993 and 2010.

Common Name	Scientific name	Status	Records
Marsh tit	<i>Poecile palustris</i>	Red List BoCC, UK BAP	3 records dated between 2003 and 2010.
Dunnock	<i>Prunella modularis</i>	Amber List BoCC, UK BAP	89 records dated between 1999 and 2017.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber List BoCC, UK BAP	38 records dated between 2001 and 2017.
Firecrest	<i>Regulus ignicapillus</i>	Schedule 1 WCA,	1 record dated 2016.
Turtle dove	<i>Streptopelia turtur</i>	Red List BoCC, UK BAP	7 records dated between 1980 and 2016.
Starling	<i>Sturnus vulgaris</i>	Red List BoCC, UK BAP	115 records dated between 2004 and 2018.
Green sandpiper	<i>Tringa ochropus</i>	Schedule 1 WCA, Amber List BoCC	2 records dated 2003 and 2009.
Redwing	<i>Turdus iliacus</i>	Schedule 1 WCA, Red List BoCC	39 records dated between 1989 and 2018.
Song thrush	<i>Turdus philomelos</i>	Red List BoCC, UK BAP	113 records dated between 2004 and 2018.
Fieldfare	<i>Turdus pilaris</i>	Schedule 1 WCA, Red List BoCC	38 records dated between 1989 and 2013.
Mistle thrush	<i>Turdus viscivorus</i>	Red List BoCC	23 records dated between 2007 and 2017.
Barn owl	<i>Tyto alba</i>	Schedule 1 WCA	21 records dated between 1996 and 2018.
Hoopoe	<i>Upupa epops</i>	Schedule 1	1 record dated 2018.
Lapwing	<i>Vanellus vanellus</i>	Red List BoCC, UK BAP	11 records dated between 1991 and 2011.
Mammals – bats			
Bat sp.	<i>Chiroptera</i>	Schedule 2 Habs Regs, Schedule 5 WCA	5 records dated between 1990 and 2007.
Serotine	<i>Eptesicus serotinus</i>	Schedule 2 Habs Regs, Schedule 5 WCA	3 records dated between 2002 and 2011.
Myotis species	<i>Myotis sp.</i>	Schedule 2 Habs Regs, Schedule 5 WCA	1 record dated 2006.
Bechstein's bat	<i>Myotis bechsteinii</i>	Schedule 2 Habs Regs, Schedule 5 WCA, Annex II, UK BAP	1 record dated 2006.
Daubenton's bat	<i>Myotis daubentonii</i>	Schedule 2 Habs Regs, Schedule 5 WCA	2 records dated 1983 and 2014.
Whiskered bat	<i>Myotis mystacinus</i>	Schedule 2 Habs Regs, Schedule 5 WCA	1 record dated 2012.
Whiskered/Brandt's bat	<i>Myotis mystacinus/brandtii</i>	Schedule 2 Habs Regs, Schedule 5 WCA	1 record dated 2013.
Natterer's bat	<i>Myotis nattereri</i>	Schedule 2 Habs Regs, Schedule 5 WCA	4 records dated between 2011 and 2014.
Lesser noctule	<i>Nyctalus leisleri</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	1 record dated 2013.

Common Name	Scientific name	Status	Records
Noctule	<i>Nyctalus noctula</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	2 records dated 2011.
Pipistrelle species	<i>Pipistrellus sp.</i>	Schedule 2 Habs Regs, Schedule 5 WCA	3 records dated between 2000 and 2007.
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	Schedule 2 Habs Regs, Schedule 5 WCA	1 record dated 2011.
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Schedule 2 Habs Regs, Schedule 5 WCA	20 records dated between 1986 and 2018.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	2 records dated between 2011 and 2015.
Brown long-eared	<i>Plecotus auritus</i>	Schedule 2 Habs Regs, Schedule 5 WCA, UK BAP	6 records dated between 1985 and 2009.
Mammals – Terrestrial (non-bats)			
European water vole	<i>Arvicola amphibius</i>	Schedule 5 WCA, UKBAP	6 records dated between 1990 and 2017.
West European hedgehog	<i>Erinaceus europaeus</i>	UK BAP	20 records dated between 2005 and 2018.
Hazel dormouse	<i>Muscardinus avellanarius</i>	Schedule 2 Habs Regs, UK BAP, Schedule 5 WCA	7 records dated between 1998 and 2016.
Plants			
Bluebell	<i>Hyacinthoides non-scripta</i>	Schedule 8 WCA	24 records between 2004 and 2016.
Invertebrates			
Long legged tabby	<i>Synaphe punctalis</i>	Notable B, Sussex rare	1 record in 2021
Hornet hoverfly	<i>Volucella zonaria</i>	Sussex rare	1 record in 2021
N/A	<i>Agabus bipustulatus</i>	Sussex Rare ¹⁶	1 record dated 2014
N/A	<i>Berosus affinis</i>	Sussex Rare	1 record dated 2014
N/A	<i>Hydaticus seminiger</i>	Nationally Scarce ¹⁷	1 record dated 2014
Scarce libellula	<i>Libellula fulva</i>	Red list ¹⁸ post2001, Sussex rare	2 records dated 2012
N/A	<i>Limnoxenus niger</i>	Red List post 2001, Sussex Rare	1 record dated 2014
N/A	<i>Ochthebius bicolon</i>	Sussex rare	1 record dated 2014
N/A	<i>Orchesia micans</i>	Nationally Scarce, Sussex Rare	1 record dated 2014
N/A	<i>Paracorymbia fulva</i>	Red List pre94	1 record dated 2015
N/A	<i>Peltodytes caesus</i>	Nationally Scarce	1 record dated 2014
Brilliant emerald	<i>Somatochlora metallica</i>	Red list post2001, Sussex rare	2 records dated 2012

¹⁶ Sussex rare: Sussex Rare Species inventory

¹⁷ Nationally Scarce – formerly Nationally Notable

¹⁸ Red list: IUCN Red List

Common Name	Scientific name	Status	Records
Marsh pond snail	<i>Stagnicola palustris/fuscus/corvus</i>	Red list post2001	1 record dated 2014
<i>Invasive plants</i>			
Montbretia	<i>Crocasmia crocosmifolia</i> x	Schedule 9 WCA	10 records dated between 2006 and 2010.
Japanese knotweed	<i>Fallopia japonica</i>	Schedule 9 WCA	7 records dated between 2006 and 2009.
Indian balsam (Himalayan balsam)	<i>Impatiens glandulifera</i>	Schedule 9 WCA	25 records dated between 2001 and 2016.
Yellow variegated archangel	<i>Lamium galeodibolon argentatum</i>	Schedule 9 WCA	8 records dated between 2006 and 2016.

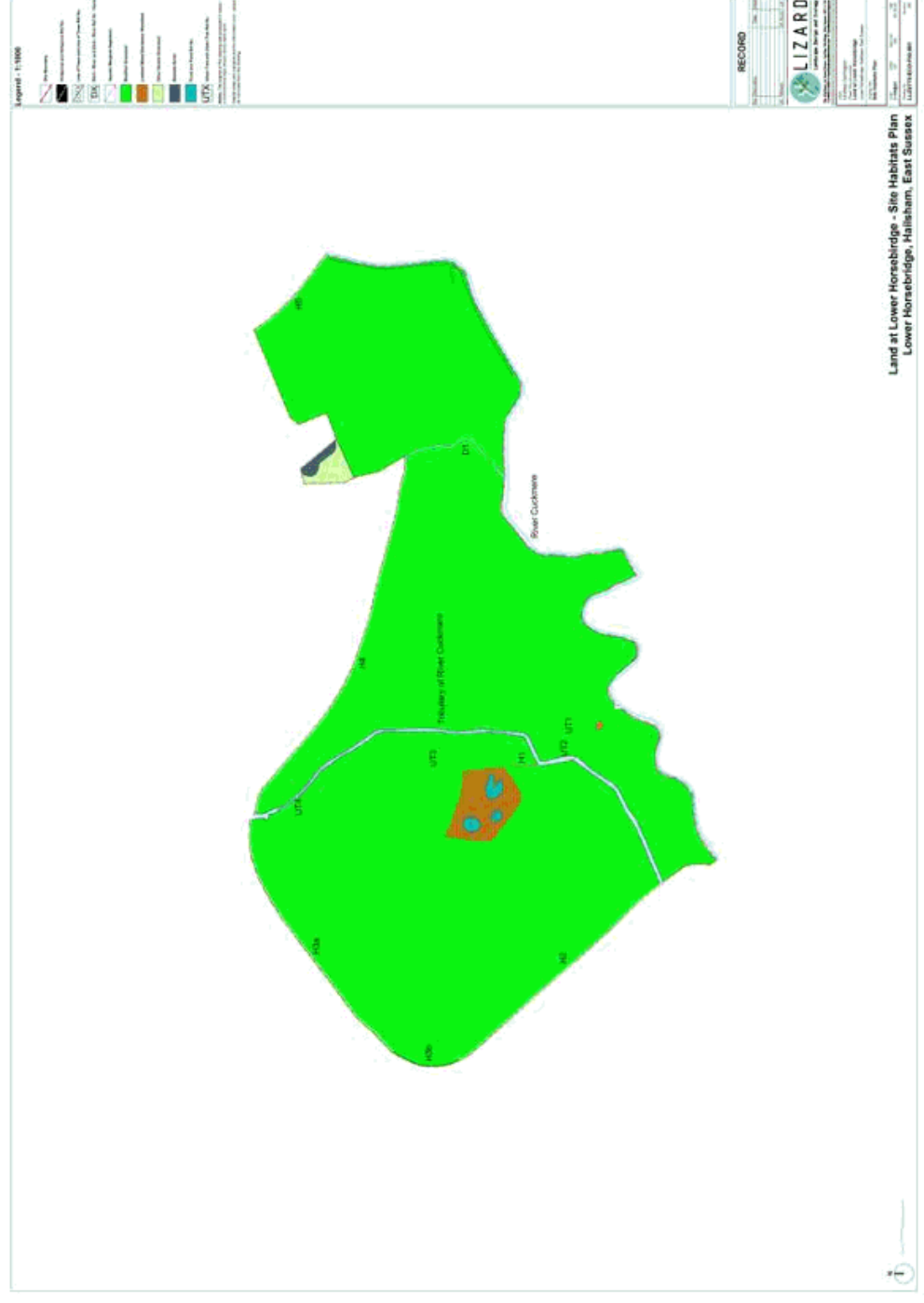
APPENDIX IV: Phase 1 habitat map 2020



Target notes to accompany Phase 1 habitat map

Target Note	Description
1	The majority of the survey area comprises improved pasture grassland which during the survey visit comprised a sward height of approximately 30 centimetres. Species present include dominant perennial rye-grass (<i>Lolium perenne</i>), abundant Yorkshire-fog (<i>Holcus lanatus</i>), cock's-foot (<i>Dactylus glomerata</i>), frequent creeping buttercup (<i>Ranunculus repens</i>), white clover (<i>Trifolium repens</i>), occasional meadow buttercup (<i>Ranunculus acris</i>), broad-leaved dock (<i>Rumex obtusifolius</i>), curled dock (<i>Rumex crispus</i>), false-oat grass (<i>Arrhenatherum elatius</i>), rare common nettle (<i>Urtica dioica</i>), dandelion (<i>Taraxacum</i> agg.) and <i>Brassica</i> sp.
2	Scrub habitat is present on site in the form of a few small bramble (<i>Rubus fruticosus</i> agg) patches.

UKHABs Map January 2023



APPENDIX V: Site photographs



Photo 1: Improved pasture grassland dominating site (Photo 2020)



Photo 2: Waterbody within woodland block (Photo 2020)



Photo 3: River habitat (Photo 2020)



Photo 4: Eastern boundary of site (Photo 2020)

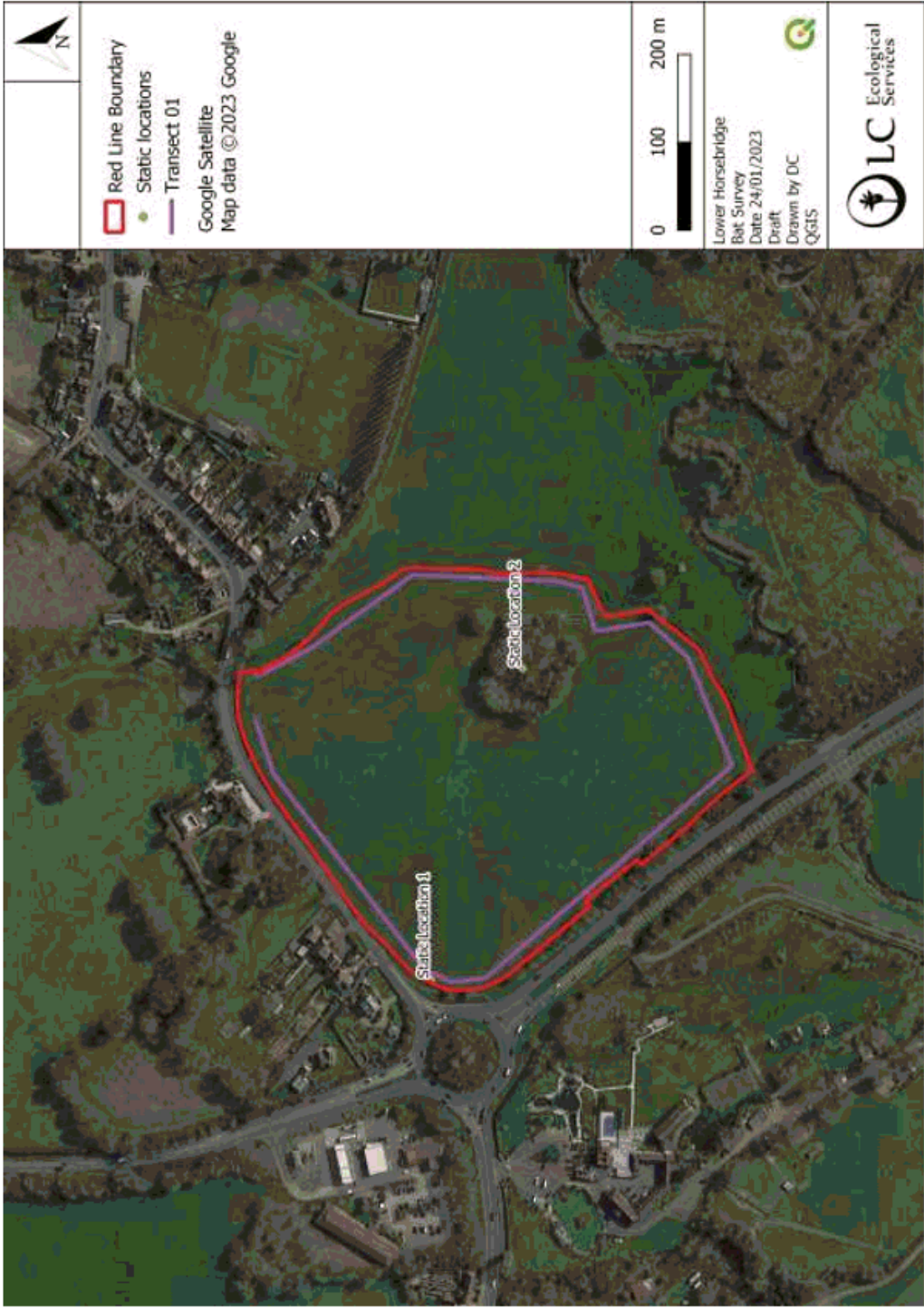


Photo 5: Recording the recent flooding (Photo 2020)

APPENDIX VI: Phase 1 tree results

Bat Tree Survey						
SURVEY LOCATION :	Lower Horsebridge	SURVEYORS:	Sam Williams, Matt Tennent	DATE:	02/03/2020	
TEMP AT START:	8°C	START TIME:	14:00	END TIME:	17:30	
WIND (bft):	3/12	Cloud cover:	4/8	Weather:	Cool, breezy	
Tree number	Climb/Soft fell/Scope/Ladder	Species	Grid ref	PRF		
				Feature (split etc)	Direction (N, E, S, W)	Height
1		Ash	TQ 57408 11367	None	-	-
2		Ash	TQ 57404 11369	None	-	-
3		Willow	TQ 57401 11370	None	-	-
4		Oak	TQ 57445 11201	None	-	-
5		Ash	TQ 57382 11169	Woodpecker hole	West	8m
6		Hawthorn	TQ 57406 11136	Lifted bark, ivy covered	Northeast	1-6m
7		Oak	TQ 57421 11129	Rot hole	West	4m
8		Ash	TQ 57423 11127	Woodpecker hole	South	5m
9		Oak	TQ 57450 11071	None	-	-
10			TQ 57474 11073	Rot hole x 3	2 facing east	2m + 6m
					1 facing west	3m
11		Ash	TQ 57423 11326	None	-	-
12		Ash	TQ 57477 11156	None	-	-
13		Ash	TQ 57436 11169	2 x rot and woodpecker holes	South	6 + 6.5m

APPENDIX VII: Static detector locations and transect route



APPENDIX VIII: Bat activity survey results

Date	27/04/2020	
Survey Type	Dusk	
Sunrise / Sunset	20:15	
Start Time	20:10	
End Time	22:33	
Temperature	13°C	
Wind	1	
Weather	Light Cloud	
Surveyor	Joshua Harwood	
Point	Transect 01	
Time	Species	Notes
20:29	Noctule	High over site, flying east
20:46	Soprano pipistrelle	Commuting along western hedgerow
20:54	Common pipistrelle	Foraging/circling along the southern hedge line
20:56	Soprano pipistrelle	Foraging over ditch
20:57	Soprano pipistrelle	Foraging over ditch
20:58	Soprano pipistrelle	Foraging in eastern corner of southern hedge line
20:59	Soprano pipistrelle	Continuous foraging in SE corner of transect
21:06	Common pipistrelle	Foraging around southern edge of central woodland
21:11	Soprano pipistrelle	Commuting, not seen
21:12	Common pipistrelle	Commuting, not seen
21:16	Common pipistrelle	Heard but not seen, west of central woodland
21:17	Common pipistrelle	Foraging along ditch and Northern boundary
21:17	Common pipistrelle	Heard but not seen
21:19	Common pipistrelle	Heard but not seen
21:20	Common pipistrelle	Heard but not seen
21:35	Common pipistrelle	Foraging along hedge near road sign to south western section of transect
21:36	Common pipistrelle	Heard but not seen
21:40	Common pipistrelle	Heard but not seen

20:43-45	Common pipistrelle	Foraging and social calling to north western corner of transect
21:51	Common pipistrelle	Heard but not seen, halfway along western boundary hedge
22:10	Common pipistrelle	Foraging to north of central woodland
22:15	Common pipistrelle	Commuting along hedge & trees to north eastern corner of site
22:19	Common pipistrelle	Heard but not seen
22:26	Common pipistrelle	Heard but not seen, halfway along western boundary hedge
22:27	Common pipistrelle	Heard but not seen
22:28	Common pipistrelle	Heard but not seen
22:29	Common pipistrelle	Heard but not seen

Date	28/05/2020	
Survey Type	Dusk	
Sunrise / Sunset	21:00	
Start Time	21:00	
End Time	23:00	
Temperature	13 °C	
Wind	1	
Weather	Clear & Sunny	
Surveyor	Joshua Harwood	
Point	Transect 01 (Clockwise)	
Time	Species	Notes
21:46	Common pipistrelle	HEARD NOT SEEN, next to roundabout/road sign
22:03	Common pipistrelle	SW of woodland: bat foraging inside the woodland and circling along the outside of the woodland

Date	08/06/2020
Survey Type	Dusk
Sunrise / Sunset	21:10
Start Time	21:10
End Time	23:15
Temperature	12 °C
Wind	1
Weather	Clear & Sunny

Surveyor	Josh Harwood	
Point	Transect 01 (Clockwise)	
Time	Species	Notes
21:33	Noctule	Flying over site in the NW corner
21:35	Common pipistrelle	Foraging along hedge to NW corner
22:06	Common pipistrelle	Foraging along the southern edge of central woodland
22:08	Common pipistrelle	Foraging along the southern edge of central woodland
22:30	Noctule	Flying over site along the N boundary
Date	07/07/2020	
Survey Type	Dusk	
Sunrise / Sunset	21:11	
Start Time	21:05	
End Time	23:20	
Temperature	15 °C	
Wind	Start: 1 End: 3	
Weather	Overcast	
Notes	The cows in the field blocked the larger portion of the eastern field for most of the evening, only a single full lap was able to be undertaken towards the end of the survey. Before this all the survey was restricted to the smaller most easterly field with some of the poplar tree line towards the north. As soon as it was safe to do so more of the transect was included.	
Surveyor	Josh Harwood	
Point	Transect 01 (counter-Clockwise)	
Time	Species	Notes
21:46	Noctule	S of woods: 2 bats emerged from woodland flying to the south over the road.
21:53-21:57	Noctule	S of woods: Heard not seen continuous calling
21:58	Common pipistrelle	Foraging along western boundary
21:58-22:01	Noctule	Flying over site
22:01	Common pipistrelle	Heard only mid-way along west boundary
22:09	Pipistrelle sp.	Roundabout: flew from N to south over the road
22:14	Soprano pipistrelle	Commuting along hedge to NW corner of site
22:19	Common pipistrelle	NE gate: Heard not seen
22:21	Soprano pipistrelle	NE gate: Heard not seen

22:32	Noctule	Flying over site, near central woodland
22:35	Common pipistrelle	Heard only mid-way along west boundary
22:37	Soprano pipistrelle	Heard only mid-way along west boundary
22:37	leis/ Noctule	Heard only mid-way along west boundary
22:38	Soprano pipistrelle	Heard only mid-way along west boundary
22:40	Common pipistrelle	Heard only mid-way along west boundary
22:43	Soprano pipistrelle	Commuting along hedge to NW corner of site
22:44	Soprano pipistrelle	Foraging along NW hedge
22:45	Noctule	Foraging along NW hedge
22:45	Soprano pipistrelle	Flying south along NW hedge
22:47	Soprano pipistrelle	Foraging along NW hedge
22:52	Common pipistrelle	Foraging along NW hedge
23:06	Long-eared sp.	Flying to N edge of central woodland
Date	06/08/2020	
Survey Type	Dawn	
Sunrise / Sunset	05:26	
Start Time	03:30	
End Time	05:30	
Temperature	17 °C	
Wind	1	
Weather	Overcast	
Surveyor	Louise Barker	
Point	Transect 01 (Counterclockwise transect)	
Time	Species	Notes
03:30		NE boundary of western field
04:15	Common pipistrelle	NW boundary by gate
	Soprano pipistrelle	Heard not seen
04:25		E of roundabout
	Common pipistrelle	Flew W overhead
	Soprano pipistrelle	Heard not seen
	Soprano pipistrelle	Heard not seen
	Soprano pipistrelle	Heard not seen
04:35		By gate on SW boundary
	Soprano pipistrelle	III PASSES

	Common pipistrelle	II PASSES
04:48		SSE of western field by ditch
	Common pipistrelle	III PASSES
	Noctule	II PASSES
	Myotis	II PASSES
	Soprano pipistrelle	II PASSES
04:58		OAK TREE S OF WOODED AREA
	Soprano pipistrelle	II PASSES
	Noctule	II PASSES
	Common pipistrelle	commuting along ditch N to S
05:08		Oak tree E of WOODED AREA
	Common pipistrelle	III PASSES
	Noctule	I PASS
05:13		NE CORNER OF WOODED AREA
	Noctule	I PASS
	Common pipistrelle	I PASS
05:23		CENTRAL N BOUNDARY HEDGEROW
	Common pipistrelle	I PASS
	Noctule	I PASS

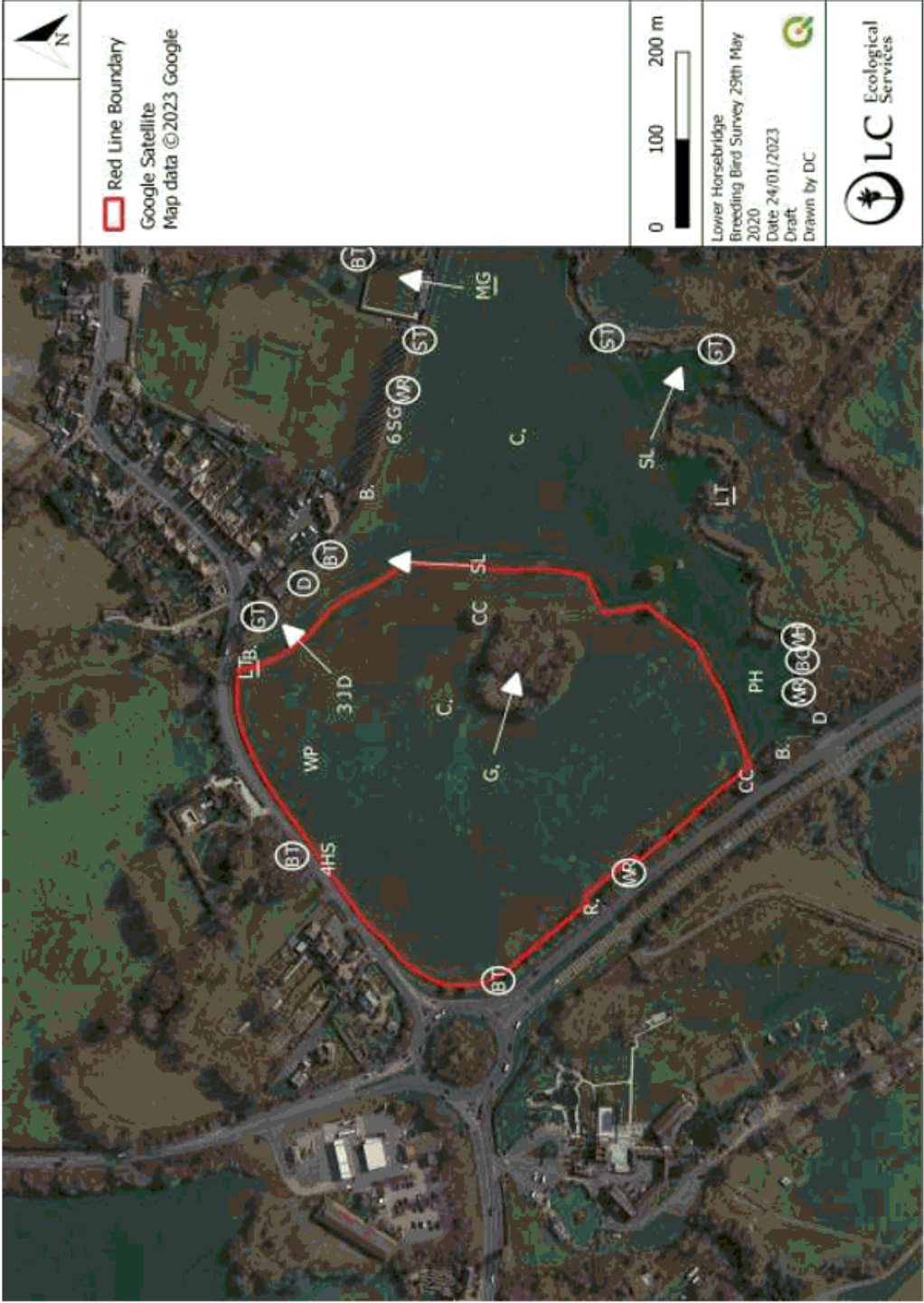
Date	16/09/20	
Survey Type	Dusk	
Sunrise / Sunset	19:10	
Start Time	19:00	
End Time	21:10	
Temperature	20 °C	
Wind	3	
Weather	Light Cloud	
Surveyor	Caleb Fry	
Point	Transect 01 - clockwise	
Time	Species	Notes
19:37	Common pipistrelle	Heard not seen (N corner of site by cars and willow)
19:38	Common pipistrelle	foraging around ditch and willow (same place)
20:00	Common pipistrelle	as above
20:27	Noctule	Heard not seen - SW corner of transect by A22
20:41	Common pipistrelle	Heard not seen by A271 (N)

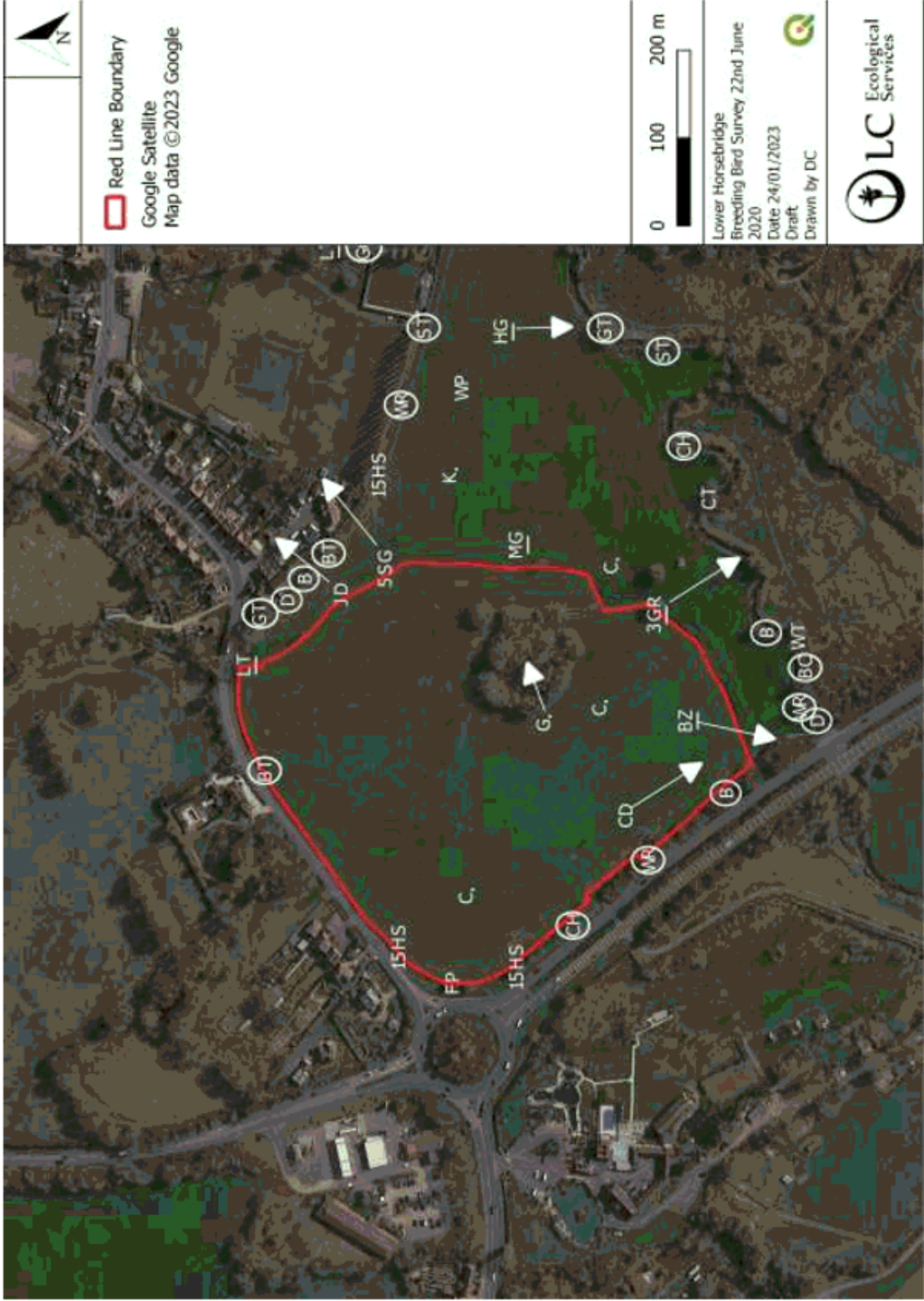
20:43	Common pipistrelle	Heard not seen by gate into field from A271 (N)
20:44	Common pipistrelle	foraging around ditch and willow (same place)

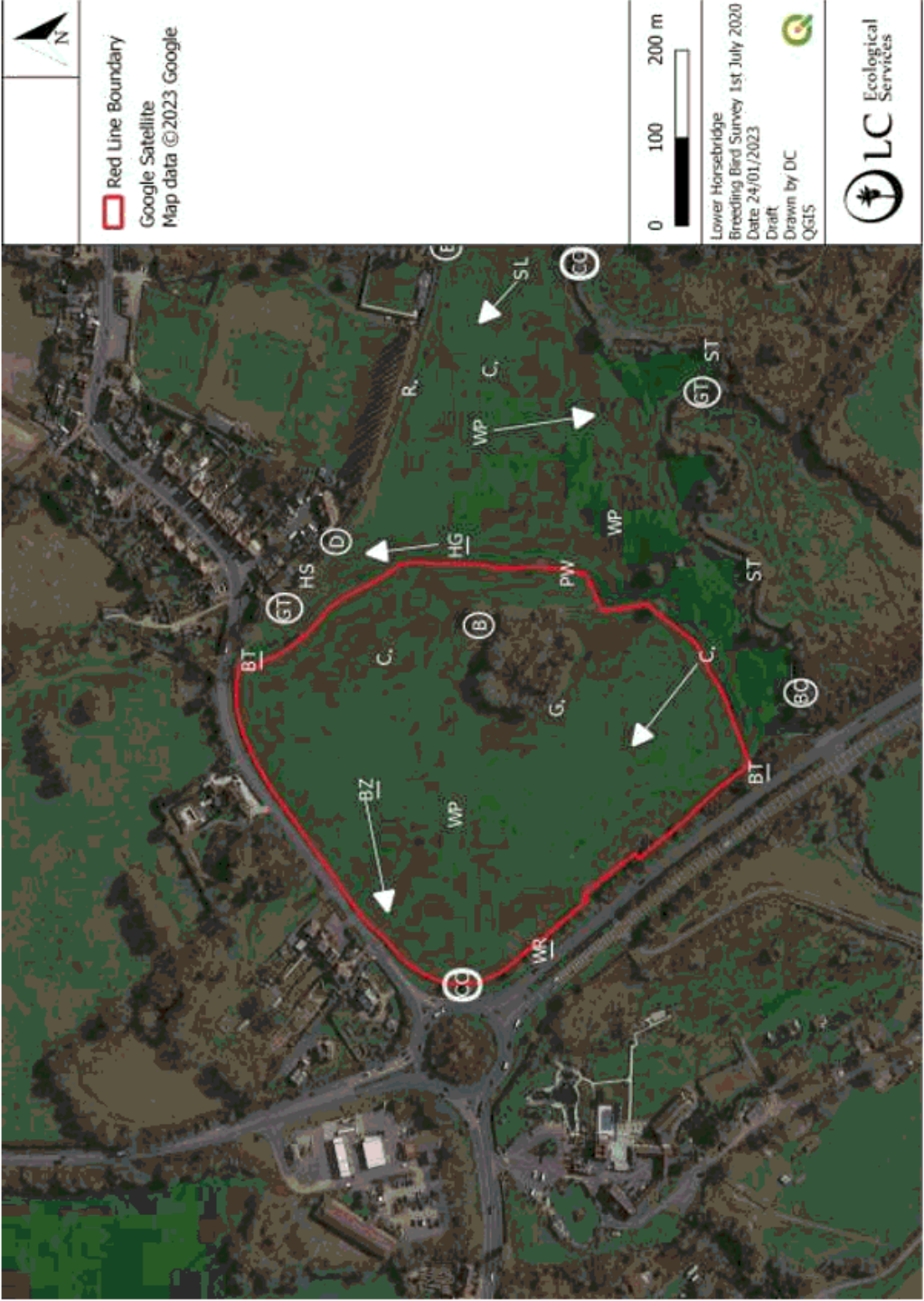
Date	08/10/2020
Survey Type	Dusk
Sunrise / Sunset	18:21
Start Time	18:20
End Time	20:21
Temperature	15 °C
Wind	0
Weather	Overcast

Surveyor	Catherine O'Reilly	
Point	Transect 1	
Time	Species	Notes
18:54	Noctule	flying south over ditch
18:56	Common pipistrelle	foraging half way along ditch
19:05	Common pipistrelle	foraging along hedge to NW corner, flying east
19:07	Common pipistrelle	foraging to NW corner
19:11	Soprano pipistrelle	commuting along ash trees to western boundary, lots social calls
19:17	Common pipistrelle	by antenna flying north
19:25	Common pipistrelle	foraging se corner of woodland
19:30	Common pipistrelle	foraging along ditch near power lines
19:37	Common pipistrelle	commuting N boundary, flying east
19:38	noctule	over N section of site
19:40	Soprano pipistrelle	along N boundary
19:42	Soprano pipistrelle	same, foraging up and down by road signs
19:44	Noctule	NW corner
19:48	Common pipistrelle	foraging NW corner
19:58	Soprano pipistrelle	N of antenna, not seen
	Common pipistrelle	over ditch to S part of transect

APPENDIX IX: Breeding bird survey results



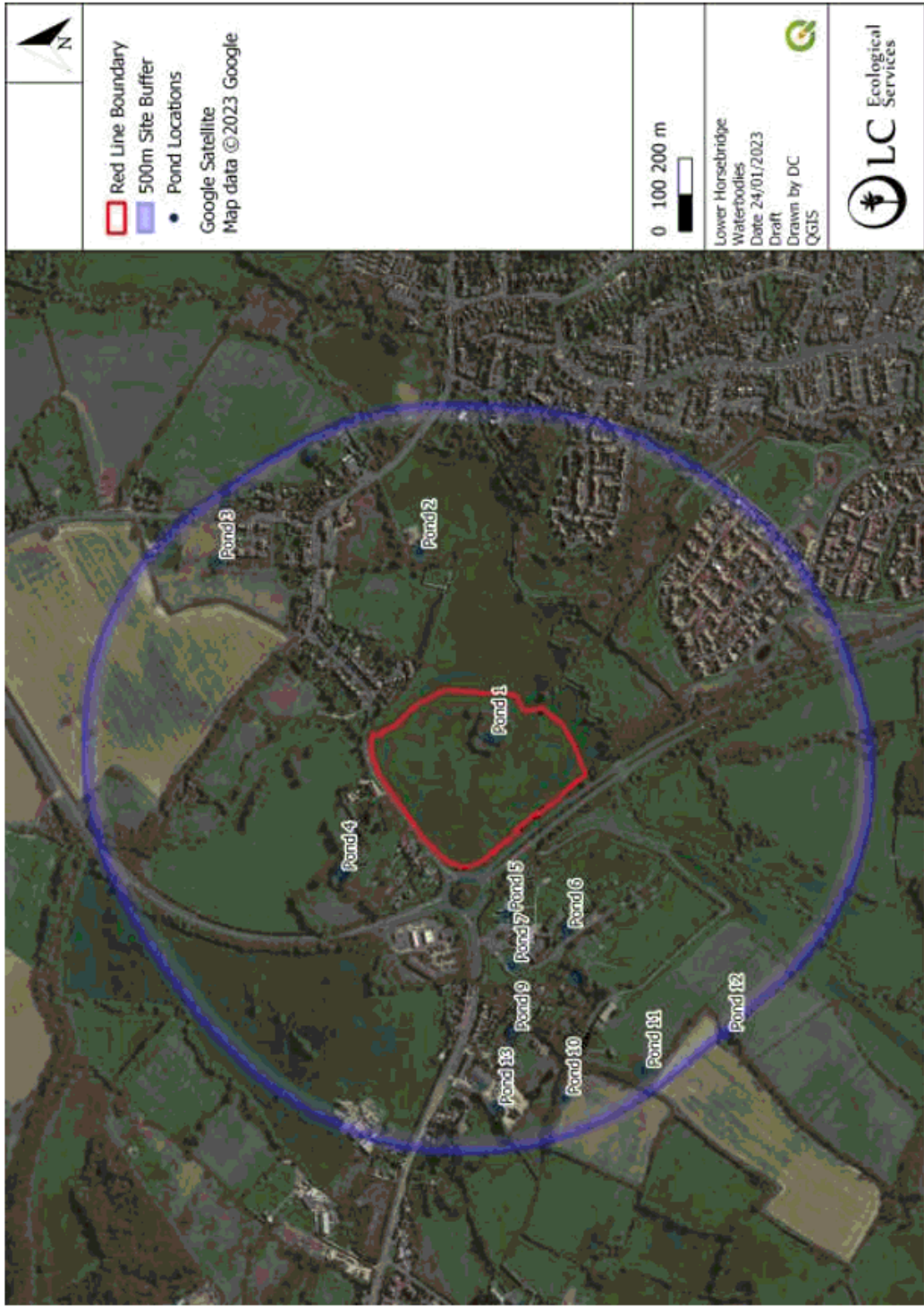




BTO SPECIES CODES

AC	Arctic Skua	GA	Gadwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M	Mistle Thrush	SE	Short-eared Owl
B	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Blue-throat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crane
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C	Carion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q	Quail	T	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K	Kestrel	NK	Red-necked Phalarope	W	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dottrel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D	Dunnock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E	Eider	LI	Linnet	R	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F	Fulmar	AF	Little Tern	RU	Ruff	Y	Yellowhammer

APPENDIX X: Pond locations



APPENDIX XI: eDNA results



Folio No: E7080
Report No: 1
Purchase Order: LLD1993
Client: LIZARD LANDSCAPE DESIGN
Contact: Ben Fisher

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: 30/04/2020
Date Reported: 10/05/2020
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1011	Pond 5, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1012	Pond 11, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1013	Pond 7, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1015	Pond 6, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1016	Pond 1a, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1017	P13, Lower		Pass	Pass	Pass	Positive	12



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Horsebridge							
1018	Pond 3, Land at Lower Horsebridge		Pass	Pass	Pass	Negative	0
1852	P1b, Lower Horsebridge		Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

Approved by: Sarah Evans

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,



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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.



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Folio No: E7287
Report No: 1
Purchase Order: LLD 1993
Client: LIZARD LANDSCAPE DESIGN
Contact: Ben Fisher

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: 12/05/2020
Date Reported: 19/05/2020
Matters Affecting Results: None

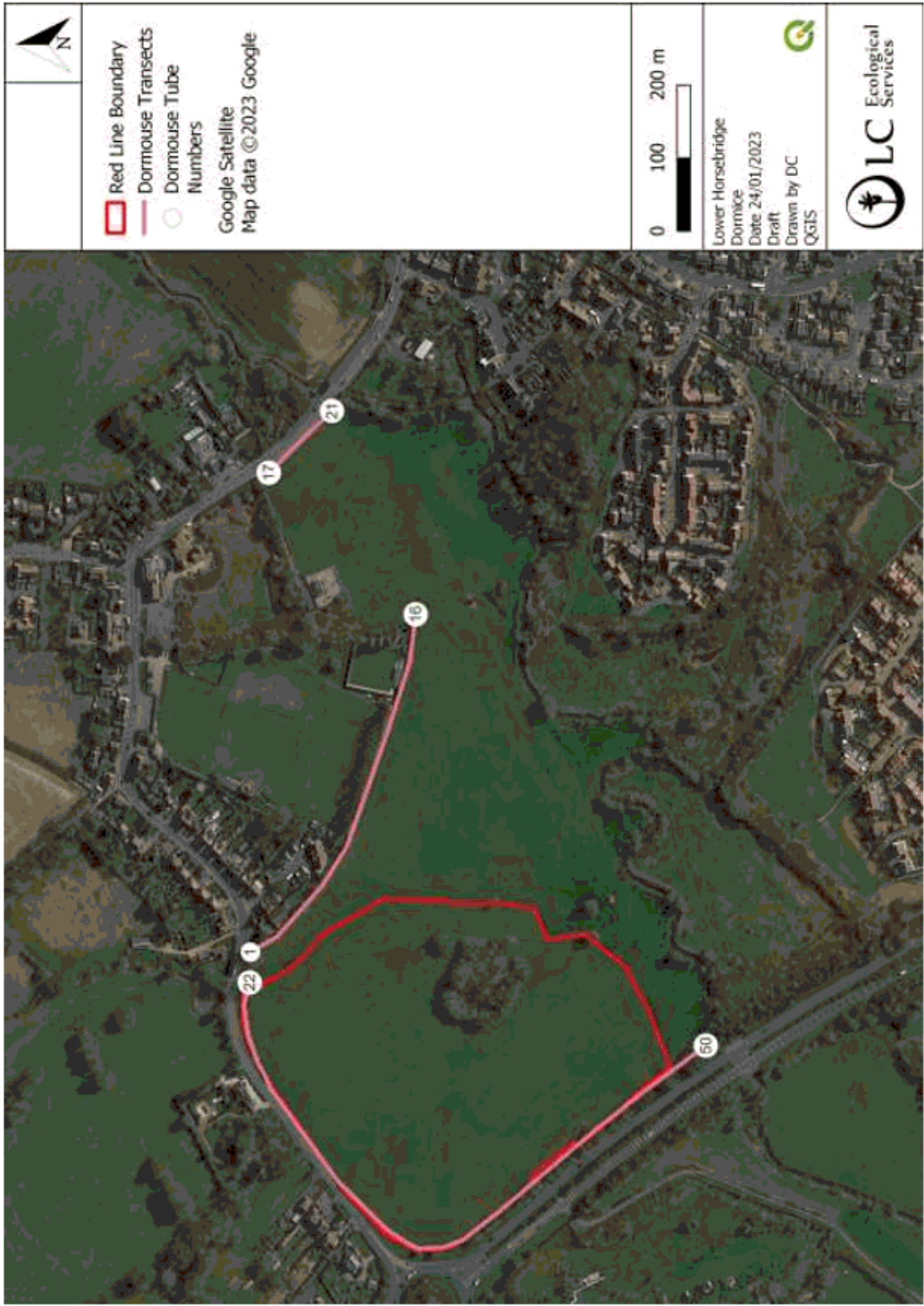
Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1854	P4, Lower Horsebridge		Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth

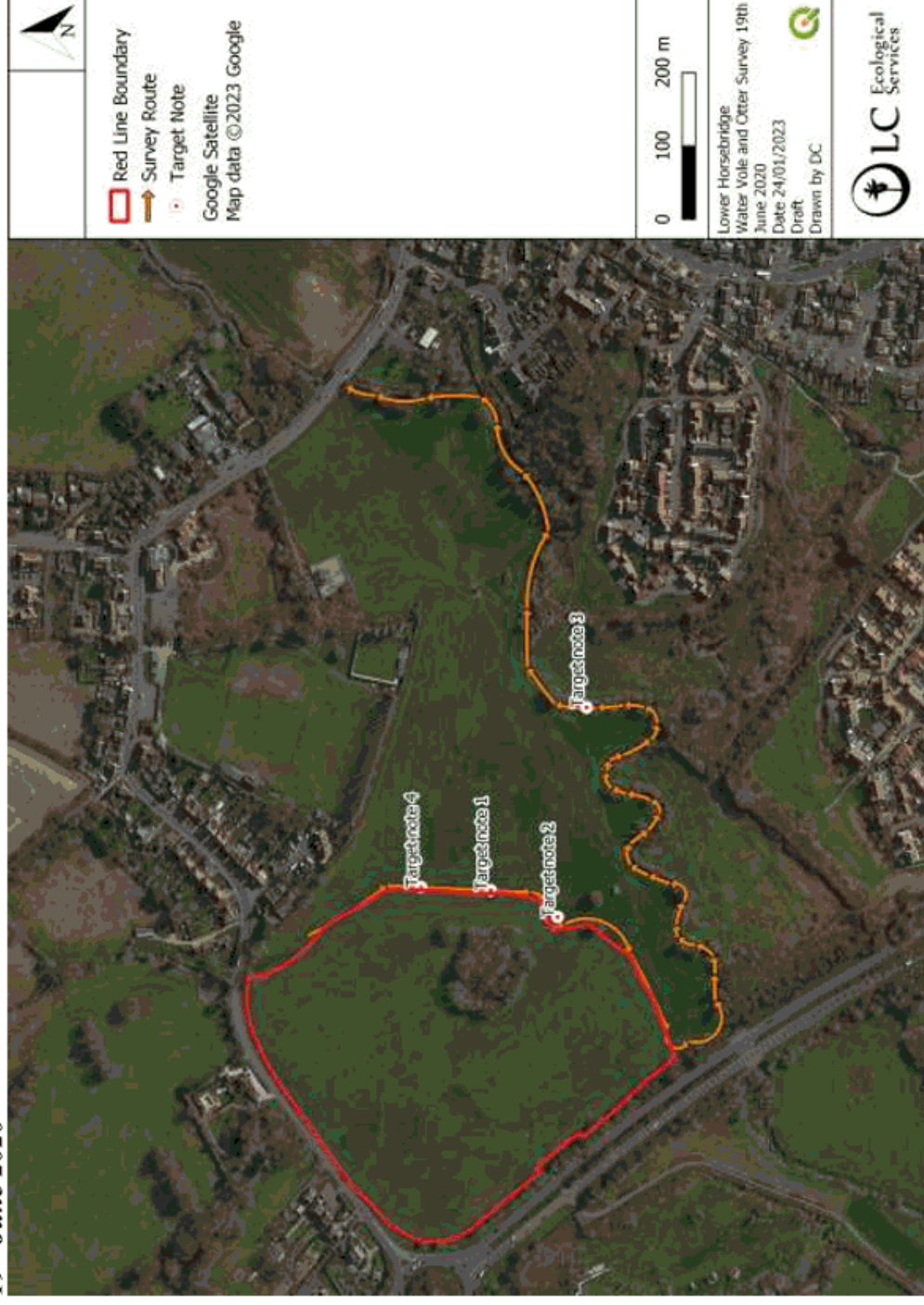
Approved by: Sarah Evans

APPENDIX XII: Dormouse survey results

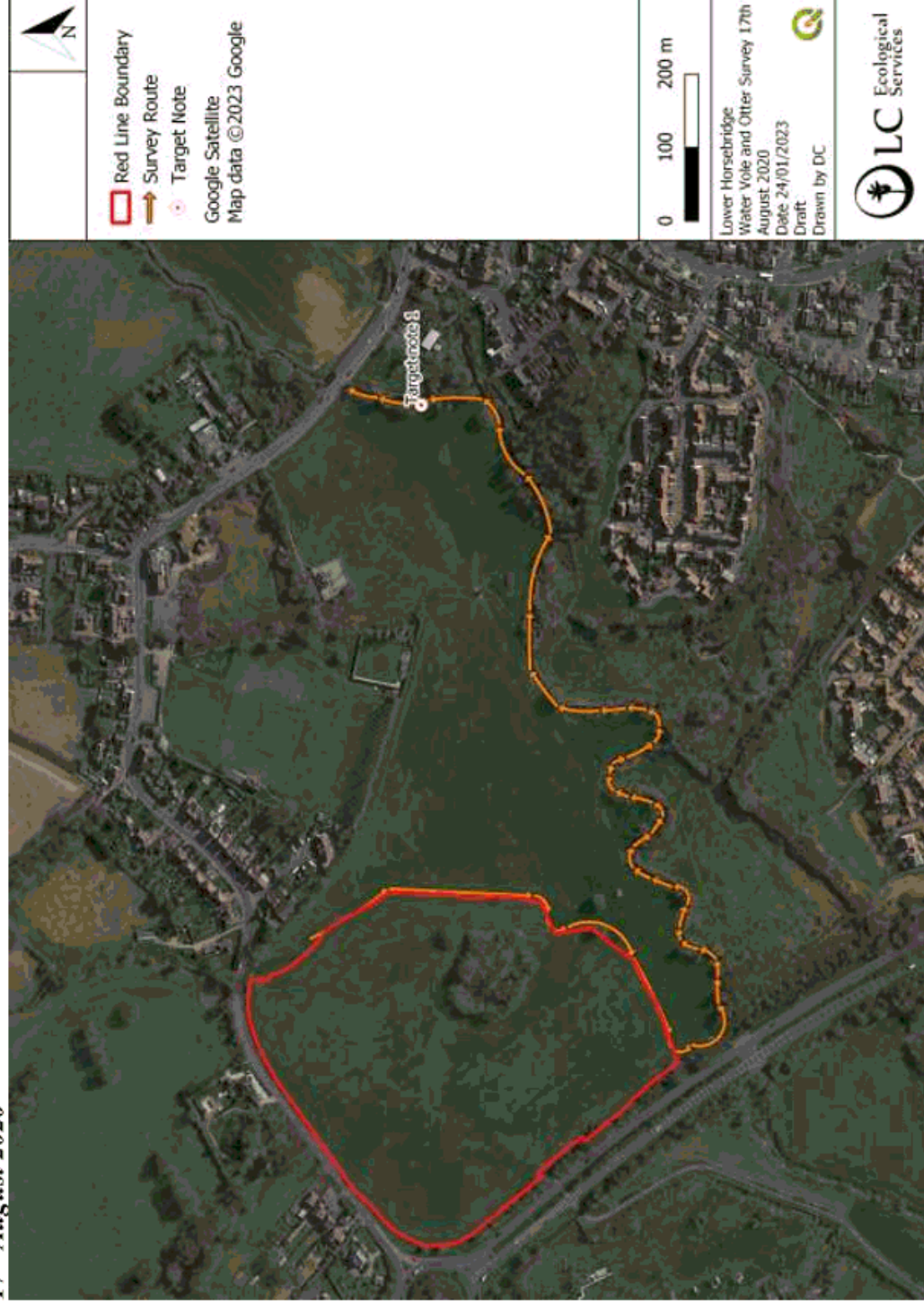


APPENDIX XIII: Otter and water vole survey results

19th June 2020



17th August 2020



Water Vole Survey Results

Visit 01 – 19th June 2020

Central ditch:

- Good levels of bankside & in channel vegetation, particularly to the southern end where species were most varied including favoured food plants such as meadow sweet & yellow flag iris. Sedges & rushes present along entire length.
- Evidence of cattle browsing and poaching of banks in some areas.
- Water depth varied between 10 centimetres– 60 centimetres, more water towards southern end.
- Couple of potential feeding remains cut at 45° angle noted (TN04), however this was attributed to fallen vegetation from cattle grazing due to the height of the surrounding cut vegetation and short length of cut section (surrounding vegetation grazed at >40 centimetres height).
- Two areas with 2-3 oval droppings recorded (TN01 & TN02), thought to be field vole due to small size (6-7 millimetres long).

Eastern Ditch:

- Dry
- Little bankside vegetation
- No potential field signs of water vole or otter

Cuckmere River:

- Some areas with good bankside vegetation but areas to the east beneath trees were very sparse with vegetation, dominated by nettle.
- A small number of Rat burrows were recorded on the opposite bank – TN03 (burrows linked with clear ‘rat runs’)
- Some bankside poaching was recorded
- Evidence of dogs & children using the river where access was available
- Good levels of water present – 30 centimetres to over 1 metre
- Large areas of dense Himalayan balsam were recorded
- No water vole or otter field signs were recorded.

Visit 02 – 17th August 2020

Central Ditch:

- Some areas were dry, whereas other areas recorded up to 20 centimetres of water.
- Extensive grazing of bankside vegetation was recorded.
- Some bankside poaching was recorded.
- No water vole / otter evidence.

Eastern Ditch:

- Entirely dry
- Extensive evidence of cattle crossing
- Very sparse bankside vegetation

Cuckmere River:

- Large stands of Himalayan Balsam were recorded.
- Small number of suspected rat burrows were recorded.
- Evidence of sheep & dog access.
- Bankside vegetation dominated by nettle and balsam, but some small areas with purple loosestrife, willowherb and rushes present. Sparse vegetation beneath tree cover to the east.
- ‘plop’ sound recorded to E section of river (TN01), however due to lack of other evidence its highly unlikely this was watervole.

APPENDIX XIV: Reptile survey results

