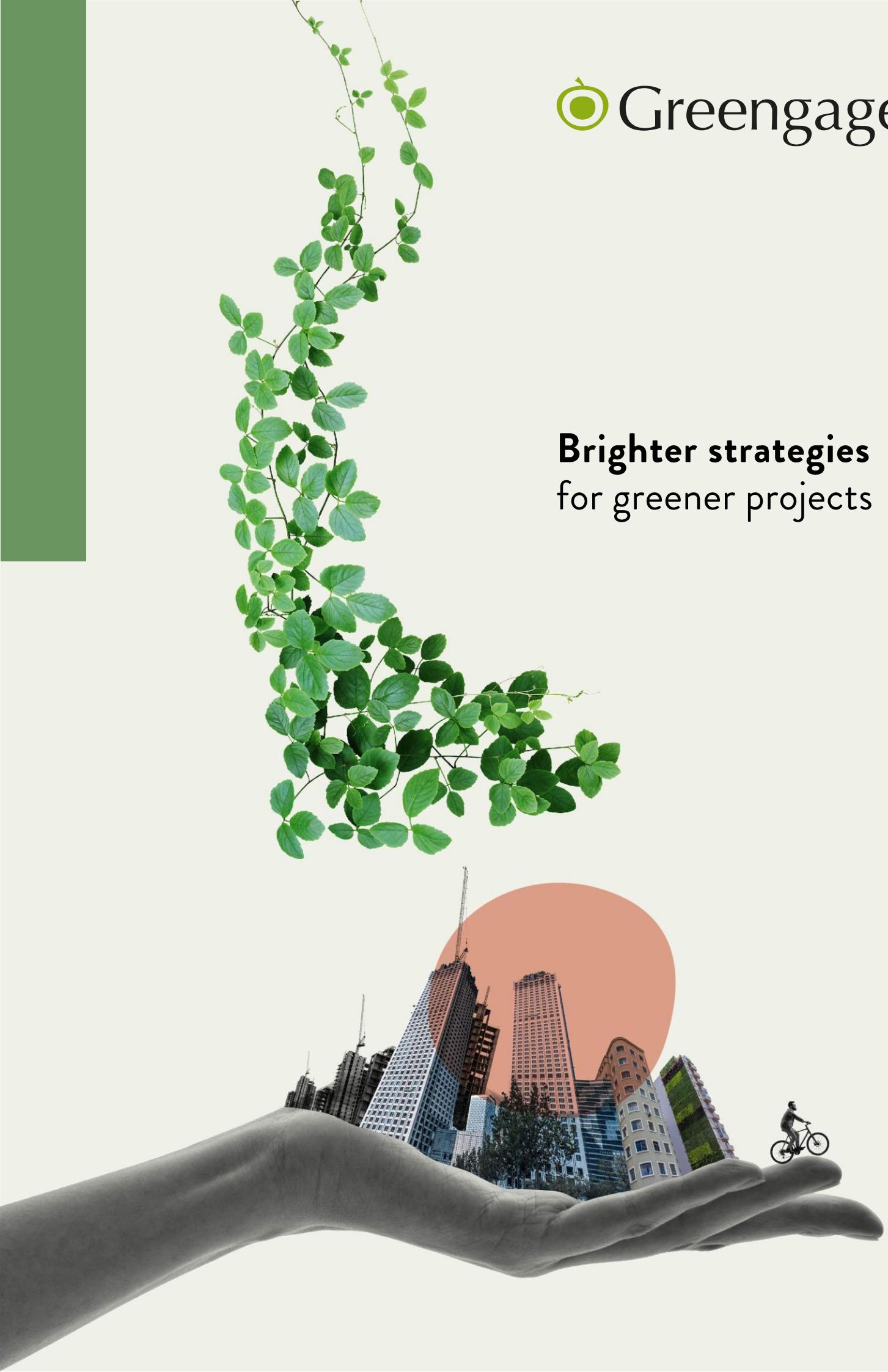




**Brighter strategies**  
for greener projects



Client: Lovell  
Project: Novartis Phase 1&2  
Report: Bat Activity Survey

## QUALITY ASSURANCE

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## CONTENTS

<b>1.0 EXECUTIVE SUMMARY</b>	<b>1</b>
<b>2.0 INTRODUCTION</b>	<b>3</b>
2.1 AIMS OF SURVEY	3
2.2 SITE DESCRIPTION	3
2.3 ECOLOGICAL BACKGROUND	4
<b>3.0 METHODOLOGY</b>	<b>6</b>
3.1 ACTIVITY SURVEYS	6
3.2 SURVEYORS	7
3.3 LIMITATIONS AND COMMENTARY ON METHODOLOGY	9
<b>4.0 RESULTS AND INTERPRETATION</b>	<b>11</b>
4.1 NIGHT-TIME BAT WALKOVER	11
4.2 AUTOMATED/ STATIC MONITORING	12
<b>5.0 RECOMMENDATIONS AND CONCLUSIONS</b>	<b>18</b>
5.1 SUMMARY OF ACTIVITY SURVEYS	18
5.2 AVOIDANCE OF LOSS OF FORAGING/COMMUTING HABITAT	18
5.3 COMPENSATION FOR LOSS OF FORAGING/COMMUTING HABITAT	18
5.4 MITIGATION FOR IMPLEMENTATION OF ARTIFICIAL LIGHTING	20
5.5 ENHANCEMENT	21
<b>6.0 SUMMARY AND CONCLUSION</b>	<b>22</b>
<b>APPENDIX A LEGISLATION AND POLICY</b>	
<b>APPENDIX B BAT SURVEY MAPPING</b>	
<b>APPENDIX C AUXILIARY SURVEY DATA</b>	
<b>REFERENCES</b>	

## Tables

Table 3.1 Static detector locations	7
Table 4.1 Total number of registrations per species	12
Table 4.2 Species scores	13
*These numbers are based on the rarity of species within southern England.	
Table 5.1 Suitable species for attracting bat invertebrate prey	19
Table C.1 Auxiliary survey data	

## Figures

Figure 4.1 Species/species group division with the numbers representing the total number of registrations for each species	13
Figure 4.2 Species composition at each static detector location on site (seasonal average)	15
Figure 4.3 Number of registrations at each static detector location across the monitoring months (seasonal average)	16
Figure 4.4 Number of registrations per month April -October 2025 (seasonal average)	17

## 1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd (Greengage) was commissioned to undertake a bat activity survey by Lovell of a site known as Novartis Phase 1&2, in Horsham, West Sussex, hereafter referred to as 'the site', to assess the levels of bat activity at the site, to determine features or habitats on site that could potentially support bats.

The surveys work was commissioned in order to inform the planning application for the site (Planning Ref: DC/25/0629) which seeks "*Residential development comprising approximately 206 dwellings, including Part-demolition of Building 3, to include the demolition and reinstatement of the building's 'wings', with the central tower retained and demolition of 'Building 36'. Vehicular access taken from Wimblehurst Road. Car and cycle parking, landscaping and open space and associated works. The replacement of the existing cedar trees at the site.*"

A Preliminary Ecological Appraisal (PEA)<sup>1</sup> undertaken by Greengage in November 2024 involved a detailed systematic assessment of the site's suitability to support bats. The site contained sparsely vegetated urban land, developed land; sealed surface, building, other standing water, bramble scrub, dense scrub, other neutral grassland, modified grassland, other woodland - mixed - mainly conifer, other native hedgerow and willow scrub. The existing building is located adjacent to the site's eastern boundary, hereafter referred to as 'the former Novartis building'. The vegetated habitats and minimal artificial lighting on site, was considered to provide moderate suitability to support foraging and commuting bats.

As such, in accordance with the Bat Conservation Trust (BCT) guidelines<sup>2</sup>, bat activity surveys were conducted, comprising three Night-time Bat Walkovers (NBWs) in spring, summer and autumn 2025 respectively, and supplemented by automated static bat detector surveys with detectors installed for a minimum of five nights per month between April and October 2025. Two detectors were set out on site in the northeast and northwest (S1NHP12 and S2NHP12).

The NBWs and analysis of the automated static detector data confirmed the majority of bat activity on site was recorded by the northern most static detector (S2NHP12), associated with the vegetated northern boundary of the site along Parsonage Road. However, the static located close to the railway line in the south (S1NHP12) recorded the most species diversity. Therefore, it is considered the tree line along the northern boundary is of value as a foraging resource for more common bat species, but the railway line in the south may provide a commuting route for the local bat population.

Activity was recorded from at least eight species/species groups including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Cephaeus serotinus*, noctule bat *Nyctalus noctula*, Nathusius's pipistrelle *Pipistrellus nathusii*, brown long-eared bat *Plecotus auritus*, *Myotis* species *Myotis sp.*, and barbastelle *Barbastella barbastellus*. In accordance with the Bat Mitigation Guidance<sup>3</sup>, this is an assemblage of county importance.

Proposals would result in the removal of existing vegetation, including the majority of the trees on site. While foraging and commuting bats are not legally protected, in accordance with planning policy and

good practice, measures to mitigate and compensate for foraging bats and enhance the site for both roosting and foraging/commuting bats are recommended. These measures include:

- Retention of foraging/commuting habitat and compensatory planting where habitat is lost;
- Bat-sensitive lighting regime following guidance from The Institute of Lighting Professionals (ILP) and BCT<sup>4</sup>.
- Provision of bat boxes into the fabric of the new buildings, suitable for summer roosting; and
- Wildlife friendly habitat creation to enhance the site as a foraging and commuting resource, including provision of rain gardens/ Sustainable Drainage System (SuDS), native hedgerow, wildflower meadow, extensive tree planting and introduced shrub utilising species listed by the Royal Horticultural Society (RHS) plants for pollinators<sup>5</sup> list.

Should the above mitigation, compensation and enhancement measures be successfully implemented, the development is predicted to have a negligible impact upon foraging and commuting bats.

Furthermore, the enhancements measures to be implemented will likely result in the development providing a long-term positive impacts for bats.

The data collected during the bat activity surveys is considered valid for 24 months in accordance Chartered Institute of Ecology and Environmental Management (CIEEM) guidance<sup>6</sup> and an updated survey may be required if the works have not started within this timeframe or should site conditions change significantly during this time.

## 2.0 INTRODUCTION

Greengage was commissioned to undertake a bat activity survey by Lovell of a site known as Novartis Phase 1&2, in Horsham, West Sussex, hereafter referred to as 'the site', to assess the levels of bat activity at the site, to determine features or habitats on site that could potentially support bats.

The surveys work was commissioned in order to inform the planning application for the site (Planning Ref: DC/25/0629) which seeks *"Residential development comprising approximately 206 dwellings, including Part-demolition of Building 3, to include the demolition and reinstatement of the building's 'wings', with the central tower retained and demolition of 'Building 36'. Vehicular access taken from Wimblehurst Road. Car and cycle parking, landscaping and open space and associated works. The replacement of the existing cedar trees at the site."*

### 2.1 AIMS OF SURVEY

The purpose of the survey was to further determine if there are any features or habitats on site that could potentially support bats. The survey aimed to:

- Determine the presence/absence of bat species foraging and commuting on site; and
- Determine the intensity of bat activity both spatially and temporally to help estimate bat diversity and relative abundance and measure relative importance of the site for local populations.

By using a collation of existing data for the area to support the survey, it is possible to determine the presence/likely-absence of bats across the site and in the wider area. This information can then be used to inform the extent of any mitigation, compensation or enhancement that may be appropriate.

### 2.2 SITE DESCRIPTION

The site extends to approximately 2.63 hectares (ha) and is centred on National Grid Reference TQ 17809 31816, OS Co-ordinates 517809, 131816.

The site is comprised primarily of developed land; sealed surface, with one large existing building located adjacent to the site's eastern boundary which contains a courtyard hereafter referred to as "the former Novartis building". The courtyard included a pond, surrounded by bramble scrub, dense scrub, modified grassland and individual trees. Two large patches of sparsely vegetated urban land were located towards the centre of the site, both of which were which bordered by large patches of bramble scrub. Multiple areas of other neutral grassland were located throughout the site, positioned around the centre of the site, and in the northeast and southwest corners of the site. Two patches of willow scrub were located adjacent to the western site boundary, with an area of modified grassland located towards the northwest corner. At the entrance to the site along the western boundary, a small patch of other woodland - mixed - mainly conifer was present to the south, with bramble scrub to the north bordered by another native hedgerow. Individual trees were located through the site, with the highest density located along the northern boundary of the site.

The site is located in the centre of Horsham and therefore situated in an urban setting, primarily surrounded by residential buildings and gardens. Parsonage road and Wimblehurst road run along the northern and western boundaries of the site respectively, with a railway line running adjacent to the southern boundary, with an additional railway line located in close proximity to the east of the site.

Fragmented priority woodland is found throughout Horsham with the closest found in Horsham Park approximately 480 metres (m) south of the site boundary. Warnham Local Nature Reserve (LNR) is located approximately 665 m northwest of the site boundary, with a golf course located directly south of the LNR. Large areas of ancient woodland can be found within the wider area, with the closest located in approximately 850 m north of the site boundary. Multiple parcels of different priority habitats are located between 1 km to 2 km from the site boundary. These include woodland pasture and parks, good quality semi-improved grassland (non-priority), ancient replacement woodland, and lowland meadows which are all classified as priority habitats.

## 2.3 ECOLOGICAL BACKGROUND

### 2018 -2022

An initial Ecological Appraisal by Hampshire County Council originally produced in 2015 and updated in 2018/2019<sup>7</sup> surveyed across the entire Novartis site, incorporating what is now known as Novartis Phase 1&2 and Novartis Phase 3, hereafter collectively referred to as the 'wider site'. This Ecological Appraisal recommended further bat emergence surveys. Hampshire County Council undertook two dusk emergence and one dawn re-entry survey<sup>7</sup> in August and September 2018 on two buildings formally known as the gatehouses (associated with Novartis Phase 1&2), which have since been demolished. During these surveys, no roosting was identified, and low-moderate levels of bat activity were recorded which mainly pertained to common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, with sightings and calls also recorded for brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula* and myotis species *Myotis* spp. A singular dusk emergence survey was undertaken in June 2019 on the former Novartis building<sup>7</sup>, also by Hampshire County Council, immediately adjacent to the western boundary of the site in 2019. No emergences from the former Novartis building were recorded, determining likely absence of roosting bats.

In 2022, a Preliminary Ecological Appraisal (PEA) was produced by Ecology & Habitat Management Ltd<sup>8</sup> which assessed the site. The PEA included a phase 1 habitat survey which identified the following habitats: building, hardstanding, bare ground, semi-improved grassland, scrub, introduced shrub, and scattered trees. An updated bat emergence survey was undertaken in August 2022 by Ecology & Habitat Management Ltd<sup>8</sup> on the former Novartis building, with no emergences recorded. Low bat activity pertaining to common pipistrelle only was recorded towards the centre of the site.

### 2024

In November 2024, Greengage completed an updated PEA<sup>1</sup> of the site (Novartis Phase 1&2 only) which re-confirmed the site's suitability to support foraging and commuting bats.

The unmanaged mosaic of ground level vegetation, trees (including woodland) and scrub and the minimal artificial lighting, means the site is suitable for foraging bats. The suitable habitats on site are connected to the wider landscape via the railway line immediately to the south. The railway corridor provides suitable foraging and commuting habitats such as trees and scrub. The vegetated corridor of the railway links the site to woodland within the Warnham LNR. Therefore, the site was considered to have moderate suitability for foraging and commuting bats.

As part of the PEA<sup>1</sup>, data provided by Sussex Biodiversity Records Centre (SxBRC) were reviewed for an area within 2km of the site. This search returned 167 bat records from the period 2014 and 2024. Records identified nine species within 2km of the site, including common pipistrelle, soprano pipistrelle, serotine *Cephaeus serotinus*, Natterer's bat *Myotis nattereri*, Leisler's bat *Nyctalus leisleri*, noctule bat *Nyctalus noctula*, Nathusius's pipistrelle *Pipistrellus nathusii*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, unidentified pipistrelle bat species *Pipistrellus spp.*, unidentified bat species *Chiroptera spp.* and whiskered bat *Myotis mystacinus*.

In accordance with the Bat Conservation Trust (BCT) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines<sup>2</sup> and the Bat Workers Manual (2004)<sup>9</sup>, based on the presence of suitable foraging and commuting habitats, good connectivity to the wider landscape, and existing bat records in the local area, bat activity surveys were recommended to establish how the site is used by bats. In accordance with the guidance these surveys should comprise three Night-time Bat Walkovers (NBW) across spring, summer and autumn, supplemented by automated static bat detector surveys, with detectors deployed for a minimum of five nights per month between April and October.

## 3.0 METHODOLOGY

### 3.1 ACTIVITY SURVEYS

Activity surveys were undertaken comprising two types of surveys:

#### Night-time Bat Walkovers

Night-time Bat Walkovers (NBW) were undertaken on:

- 28th April 2025;
- 19th June 2025; and
- 22nd September 2025.

This covers one survey for each season bats are active (i.e. spring, summer and autumn). Each of these surveys commenced 15 minutes before sunset. The surveyors were then stationary at the start point for a minimum of 30 minutes after sunset. The start point was near suitable roost sources (i.e. the Former Novartis Building), in order for surveyors to observe any potential emergence or early bat activity from the building. After this stationary period, the surveyors began to walk around the site following a pre-determined NBW transect route. The transect route was designed using the information gathered in the PEA<sup>1</sup>, based on where bat activity was considered likely and unlikely to be. As per best practice, the NBW transect route takes an iterative approach with surveyors deviating from the pre-determined route to follow any interesting bat behaviour observed and stopping to listen/count when higher levels of activity are detected in a certain area. A map showing the route followed can be found in Appendix B.

During the survey, surveyors recorded:

- Location and time that bats are recorded;
- Species of bats;
- Their behaviour e.g. commuting/foraging/direction of travel etc; and
- Details on any stops made or detours taken.

Each NBW was conducted for a duration of two hours after sunset.

Each NBW was undertaken in clear, still and warm conditions with sunset temperatures 10°C or above, in accordance with BCT guidelines<sup>2</sup>. Auxiliary survey data with conditions for each survey is provided in Appendix C.

The surveyors were carrying bat detectors (iPads with Batloggers) during each NBW. Following each NBW the bat calls were analysed in-office using specialist computer software (Kaleidoscope) to confirm species present and assess ambiguous calls.

#### Automated Static Monitoring

The NBWs were supplemented by the collection of bat sound data via automated/static bat detectors.

Two static detectors (S1NHP12 and S2NHP12) were set out on site in areas of the highest habitat suitability. A map showing the location of these statics can be found in Appendix B.

Table 3.1 below briefly describes the locations of each static detector.

Table 3.1 *Static detector locations*

Static detector number	Location description
S1NHP12	In the western corner of the site parallel to the vegetated railway line.
S2NHP12	In the northeastern corner of site parallel to Parsonage Road along the line of trees running along the northern site boundary.

The static detectors used were a combination of the Wildlife Acoustics Song Meter SM4BAT-FS and Wildlife Acoustics Song Meter SM4BAT-ZC, and each one was in place for a minimum of five nights per month between April and October 2025. The detectors were deployed for the following time periods:

- 16th - 25th April - 7 days;
- 13th - 22nd May - 9 days;
- 19th - 30th June- 11 days;
- 22nd -29th July - 7 days;
- 6th -13th August - 7 days;
- 15th - 21st September - 6 days; and
- 15th - 21st October - 6 days.

The data collected by these static detectors was analysed in office after each deployment period using specialist computer software (Kaleidoscope). Weather data was recorded and reviewed using the OpenWeatherMap<sup>10</sup> during the duration of static detector monitoring deployment to account for variation in activity as a result of weather conditions.

The analysed data were used to determine the following:

- Which species are present and absent;
- The spatial distribution of the species recorded e.g. which species are recorded most/least in which habitats; and
- Temporal distribution – Which species are recorded most/least at different times of year.

## 3.2 SURVEYORS

The NBWs were completed by:

Ben Newbery, Senior Consultant, holds a BSc (International) in Zoology and an MSc in Biodiversity and Conservation. He has over three years' experience in ecological survey and assessment, including PEAs, Biodiversity Net Gain (BNG) calculations and bat surveys. Ben has a strong interest in botanical identification and is accredited as a Level 3 botanist under the Field Identification Skills Certificate (FISC) scheme.

Oliver Hamilton, Assistant Consultant, has a degree in Zoology (BSc Hons) and 2 years' experience in ecological surveying. Oliver assists in a variety of field surveys and related reports such as preliminary Ecological Appraisals and Protected Species Reports, providing recommendations on biodiversity enhancements.

The data analysis was completed by Gemma Abela who has a Natural England Level 1 Bat Licence (2020-46531-CLS-CLS) and has over nine years' experience in bat surveying and assessment.

The report was written by Jess Cole, Senior Consultant, who has a BSc degree in Ecology (Hons) and is an Associate member of CIEEM. Jess holds a Natural England Great Crested Newt Licence and has over eight years' experience in ecological survey and assessment. Jess is accredited as a Level 3 botanist under the Field Identification Skills Certificate (FISC) scheme.

The report was reviewed by Alexandra Wadia-Knowles, Principal Consultant, who has a BSc (Hons) in Biology, and a MSc in Ecology & Environmental Management, and is a Full member of CIEEM.

Alexandra holds a Natural England Great Crested Newt Licence and has over nine years' experience in ecological survey, assessment and reporting.

The report was verified by Mitch Cooke, Director, who has a degree in Ecology (Hons), an MSc in Environmental Assessment and Management, and is a Full member of CIEEM with over 35 years' experience in ecological survey and assessment. Mitch has set up and developed ecological and environmental teams for nearly 20 years and has undertaken and managed numerous ecological surveys and assessments. He is the Director at Greengage and manages the team.

BCT guidelines<sup>2</sup> outlines the different levels of competency to undertake professional bat work which aligns with Charted Institute of Ecology and Environmental Management (CIEEM) definitions<sup>11</sup>.

The survey was designed by Jess Cole who meets the BCT Level 2 (accomplished) competency which is the appropriate level for simple sites such as this one.

This report was written by Jess Cole, reviewed by Alexandra Wadia-Knowles and verified by Mitch Cooke who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;
- Is appropriate given the local site conditions and scope of works proposed; and
- Avoids invalid, biased and exaggerated statements.

### 3.3 LIMITATIONS AND COMMENTARY ON METHODOLOGY

The data collected during the bat activity surveys is considered valid for 24 months in accordance with Chartered Institute of Ecology and Environmental Management (CIEEM) guidance<sup>12</sup> and an updated survey may be required if the works have not started within this timeframe or should site conditions change significantly during this time.

#### Activity surveys

##### NBW

During the April NBW the surveyor finished the survey at 22:00, 18 minutes earlier than BCT guidance<sup>2</sup> suggests. Given the short amount of time missed, this is considered to be a relatively insignificant amount of time, and it is not thought likely that any key bat activity which would not be detected by the automated static detector monitoring would have been missed.

Therefore, it is considered that there were no significant limitations to the NBW surveys. The surveys were undertaken at a suitable time of year and in generally suitable weather conditions.

##### Automated Static Monitoring

Static detector data was collected in suitable weather conditions, with the exception of two nights with spells of light rain across April, and for a few evenings in June and September. October was subject to more rain, with four of the six sampling nights experiencing spells of rain. Temperatures remained above 10°C at sunset throughout the sampling period. The rain recorded is considered to be too infrequent and over a short period of time and is therefore not thought to have significantly constrained the collection of data.

Acoustic data is currently unable to distinguish between sexes, individuals or even effectively between some species within a genus e.g., *Myotis*. Therefore, it is likely that detectors are recording the same individual multiple times across a night/several nights of activity. However, it has been assumed that the number of files recorded by static detector monitoring devices is roughly representative of the number of bats foraging in the area. This is only inclusive of the bats that are easier to detect and identify, as standard limitations to bat presence analysis apply to population monitoring.

##### Presence/Likely Absence Analysis

The effectiveness of any presence/likely-absence analysis requires that all species, including elusive or rarer species, be recorded, and correctly identified in post-collection analysis. As such, the following considerations should be made for the species that have been detected:

- Average number of registrations for common pipistrelle and the soprano pipistrelle may be over/underestimated as echolocation of these species often tends to overlap, especially around the 50kHz.

- It is sometimes difficult to differentiate between the Leisler's and serotine bats in areas of high clutter as their frequency bandwidth often overlaps. This is also true of the noctule and Leisler bats at lower frequencies, depending on the type of call they emit.
- Bats from the *Myotis* genus are notoriously difficult to identify to species level. Therefore, *Myotis* species have been identified to genus level and precautionary assumptions have been made when assessing assemblage.
- Brown long-eared bats are very common and widespread throughout Great Britain but are notoriously difficult to capture as their calls due to their extremely low volume which means that they need to be flying in close proximity to the microphone of the detector to be recorded.

### Spatial Analysis

Two static detectors (S1NHP12 and S2NHP12) were set out on site in areas of highest habitat suitability. A third static was not used in an area of comparably poor habitat (paired approach as per BCT guidelines<sup>2</sup>). However, the data collected during 2025 is deemed sufficient to measure relative importance of habitats across the site and determine the general diversity of bat species present. Average nightly and hourly pass rates were used for comparison to account for any variation in numbers of nights of data collection.

### Temporal Analysis

Any records of population changes or trends in activity levels should be highly tempered here. Beyond the natural difficulties of population monitoring mentioned previously, the relationship between activity levels and population levels is undefined. For example, an increase/decrease in activity does not mean an equal increase/decrease in population. Considering the inter and intraspecific interactions of bat species and their roosting/foraging locations, it is unlikely that there is a linear relationship between activity levels and population fluctuations. Therefore, precise changes in populations or activity levels cannot be concluded from this analysis.

A constraint that must be considered with the analysis of the bat activity is that the northern most static bat detector (S2NPH12) only recorded for one day in June (28th), which is indicative of kit failure. This means that data from June is missing for the north of the site, however, data from May and July give a good idea of levels of activity during late spring/mid-summer, and therefore this is not thought to be a significant constraint.

## 4.0 RESULTS AND INTERPRETATION

### 4.1 NIGHT-TIME BAT WALKOVER

#### 28th April 2025

At the start point, no bat emergences from the Former Novartis Building were observed. The first bat, a common pipistrelle, was recorded as a faint Heard Not Seen (HNS) at the start point at 20:43, 25 minutes after sunset (20:18). The average emergence time for common pipistrelle is 20 minutes after sunset, therefore, the timing of this observation may indicate the presence of a common pipistrelle roost close to the site. No further bat activity was recorded at the start point and the surveyor therefore began their pre-determined transect route around the site at 20:48 (30 minutes after sunset).

Bat activity was next recorded near to the central line of trees on site at 21:14 where foraging soprano pipistrelle were recorded along the vegetated railway line.

For the remainder of the survey, sporadic bat activity was recorded from common pipistrelle, soprano pipistrelle, noctule and serotine, with most instances being HNS, though soprano pipistrelle bats and serotine bats were seen foraging along the vegetated northern boundary of the site.

Key activity is mapped in Appendix B.

#### 19th June 2025

At the start point, no bat emergences from the Former Novartis Building were observed. The first bat, a soprano pipistrelle, was recorded at 21:38, 19 minutes after sunset (21:19) which was HNS. The average emergence time for soprano pipistrelle is 20 minutes after sunset, therefore, the timing of this observation may indicate the presence of a soprano pipistrelle roost close to the site.

The next bat, a soprano pipistrelle, was recorded at 21:51, foraging along the site's southern boundary. This was the only bat seen foraging in this area during the survey.

The majority of activity from the rest of the survey was foraging from common and soprano pipistrelle concentrated around the central line of trees on site. Serotine and noctule were also recorded though these were HNS and likely to be flying high, commuting over the site.

The last bats recorded were at 23:24 at the survey end point. These were soprano and common pipistrelle, which were not seen or heard by the surveyor, but were picked up on the bat detector.

Key activity is mapped in Appendix B.

#### 22nd September 2025.

At the start point, no bat emergences from the Former Novartis Building were observed and no bats were recorded.

The first bats, a common pipistrelle and soprano pipistrelle were recorded at 19:21, along the vegetated northern boundary of the site. These bats were seen foraging in this area and the surveyor described this activity as constant. It was in this part of the site, at the start of the transect, that the most activity was recorded.

For the remainder of the survey sporadic bat activity was recorded from common pipistrelle, soprano pipistrelle, noctule and *Myotis* sp. The majority of this activity was around the vegetated northern boundary and the central line of trees. Little activity was recorded along the site's southern boundary, parallel to the railway line.

The last bat recorded was at 20:58 at the survey end point. This bat was HNS noctule, recorded along the sites central tree line.

Key activity is mapped in Appendix B.

## 4.2 AUTOMATED/ STATIC MONITORING

### Species Presence/Likely-absence

A summary of the total number of species registrations detected between September - October 2025 is shown in Table 4.1 below.

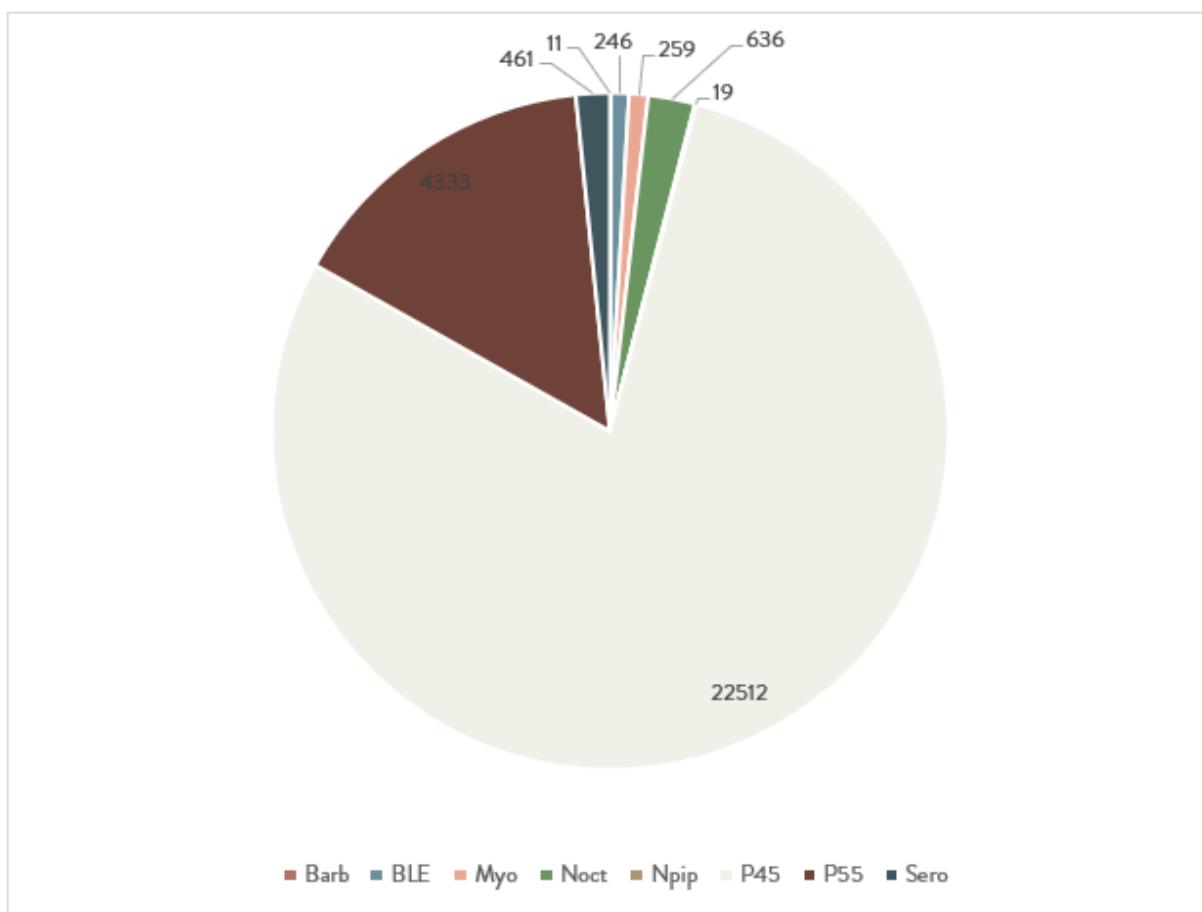
Table 4.1 Total number of registrations per species

Species (Species label)	Total number of registrations
Barbastelle <i>Barbastella barbastellus</i> (Barb)	11
Brown long-eared (BLE)	246
Myotis species (Myo)	259
Noctule (Noct)	636
Nathusius pipistrelle (N.pip)	19
Common pipistrelle (P45)	22,512
Soprano pipistrelle (P55)	4,333
Serotine (Sero)	461
<b>Total</b>	<b>28,477</b>

The most commonly detected species was common pipistrelle accounting for 79% of the registrations, followed by soprano pipistrelle (15%) then noctule (2%).

Figure 4.1 below visually represents the split of species recorded.

Figure 4.1 Species/species group division with the numbers representing the total number of registrations for each species



### Importance of Assemblage

The National Bat Monitoring Programme (NMBP)<sup>13</sup> have determined that the majority of bat species recorded on site have maintained a stable and/or increasing population trends up to 2024. The NMBP<sup>13</sup> do not report of the status of barbastelle and *Nathusius pipistrellus*, though Sussex is one of the known ranges of these species. Whilst some *Myotis* species are stable and increasing, the population trends of other *Myotis* species along with the *Nathusius pipistrellus* are not currently produced by NBMP<sup>13</sup>.

The results from the site, therefore, appear to reflect national trends.

Greengage have assessed the importance of the species assemblage on site for Southern England as per Table 3.3 of the Bat Mitigation Guidelines<sup>3</sup> which allocates a score for each bat species based on rarity within geographical location in the UK. Table 4.2 below sets out the scores for each species found on site.

Please note that as it has not been possible to separate out the *Myotis* detected to species level, as a precaution, it is therefore assumed that Daubenton's, whiskered, Natterer's were present on site, as these were the species recorded within the data search exercise (see Section 2.3 above).

Table 4.2 Species scores

Species	Score*
Common pipistrelle	1

Species	Score*
Soprano pipistrelle	1
Nathusius pipistrelle	3
Noctule	2
Serotine	3
Brown long-eared	1
Barbastelle	4
Daubenton's	2
Whiskered	2
Natterer's	2
<b>Total</b>	<b>21</b>

\*These numbers are based on the rarity of species within southern England.

The species assemblage on site scores 21 out of a possible 45 (which equates to 46%). This relates to an assemblage of County Importance in southern England, where 45% is the threshold for county importance.

The barbastelle was recorded only 11 times over August (10th and 11th) and September (17th). As this species is typically a woodland specialist, it is considered unlikely that either the site or the surrounding habitat holds significant value for it; the individual or individuals recorded may have been temporarily deviating from their usual commuting or foraging route.

### Spatial analysis

Figure 4.2 below shows the levels of activity (averaged out across the survey season/sampling period) differ between the two statics detector locations on site.

Figure 4.2 Species composition at each static detector location on site (seasonal average)

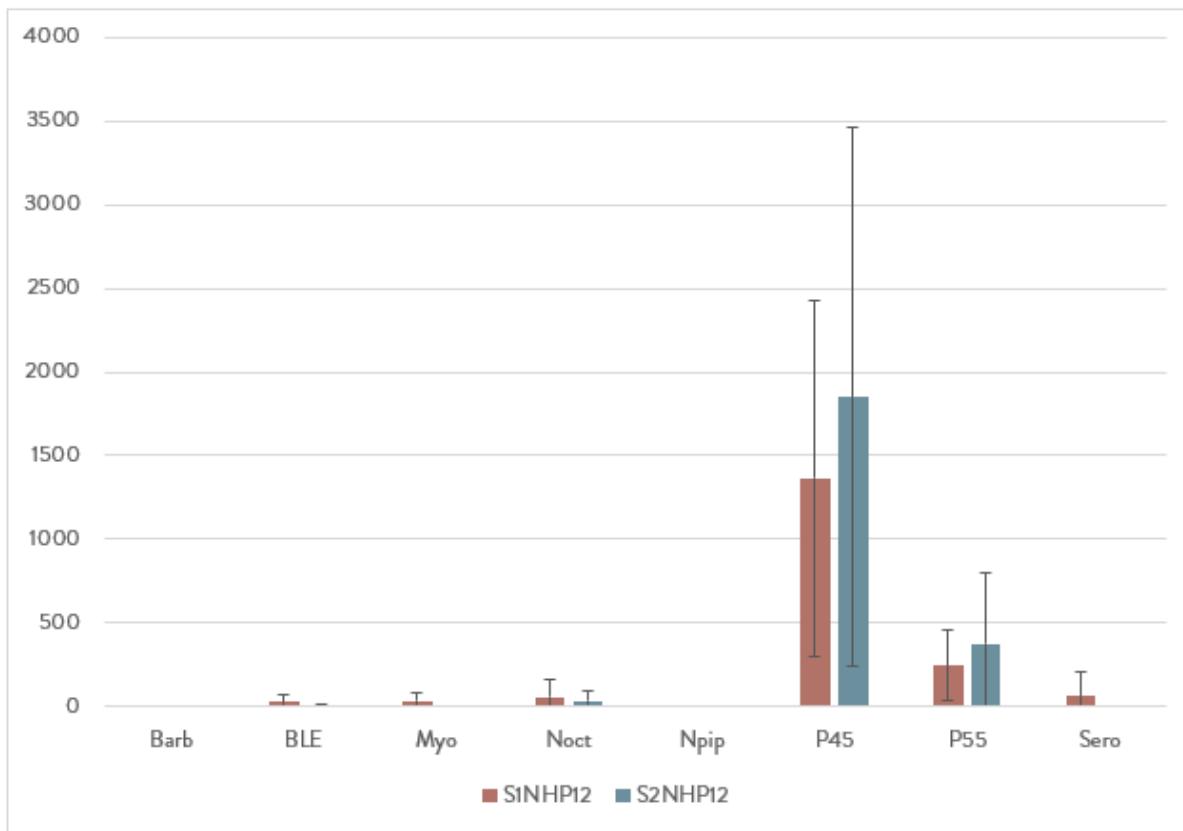


Figure 4.2 above shows soprano and common pipistrelle to be the greatest proportion of species registrations at each static detector location, followed by noctule.

Most species were recorded in the highest numbers at S1NHP12. These results also suggest that the railway to the south of site provides a commuting route for a wide range of the local bat population.

The only species recorded in higher numbers at S2NHP12 were common, soprano and Nathusius pipistrelle. As pipistrelle species are more light-tolerant than other species, this result may be due to possible light spill originating from Parsonage Road.

Figure 4.3 Number of registrations at each static detector location across the monitoring months (seasonal average)



Higher recordings at S2NHP12, as shown by Figure 4.3 above is owing to the higher percentage of common and soprano pipistrelle species recorded at this static.

Artificial light spill from Parsonage Road may also play a role in this result, with lighting attracting more invertebrate prey, and in turn attracting more light tolerant bat species such as common and soprano pipistrelle, to forage in the area.

### Temporal analysis

For the purposes of analysis at the site, activity levels detected month to month can show how the population changes throughout the year. The results of temporal analysis in bat registrations have been presented in Figure 4.4 below.

Figure 4.4 Number of registrations per month April -October 2025 (seasonal average)



The highest number of registrations was in May, with the lowest number in April and October. This is not an unusual trend when considering the annual lifecycle of a bat, with nursery period peaking in May/June/July, meaning mothers are actively foraging regularly to provide milk for pups, as well as juvenile bats beginning to venture out to forage independently. During September and October bats leave their summer foraging grounds and summer roosts to go to swarming sites (often associated with underground hibernation sites), where breeding and socialising occurs before the hibernation season.

The dip in numbers during June can be explained by the failure of S2NHP12 which only recorded for 1 day (see Section 3.3 above).

## 5.0 RECOMMENDATIONS AND CONCLUSIONS

### 5.1 SUMMARY OF ACTIVITY SURVEYS

#### NBW

Overall, bat activity levels observed on site were moderate to high, with three different species groups, common pipistrelle, soprano pipistrelle, noctule, serotine and *Myotis* species observed during the NBWs. Activity was concentrated around the vegetated northern boundary and the central line of trees.

#### Automated Static Monitoring

Species identified during the static detector monitoring surveys include common pipistrelle, soprano pipistrelle, serotine, noctule bat, *Nathusius's pipistrelle*, brown long-eared bat, *Myotis* species and barbastelle. In accordance with the Bat Mitigation Guidance<sup>3</sup>, this is an assemblage of county importance.

The dominant species recorded on site was common pipistrelle, followed by soprano pipistrelle and noctule. Therefore, it is considered that the site is predominantly supporting common and widespread species with steady population trends<sup>13</sup>.

Most bat activity on site was recorded by the northern most static detector (S2NHP12), associated with the vegetated northern boundary of the site along Parsonage Road. However, the static located close to the railway line in the south (S1NHP12) recorded the most species diversity. Therefore, it is considered the tree line along the northern boundary is of value as a foraging resource for more common bat species but the railway line in the south may provide a commuting route for the local bat population.

Bat activity within the site peaked during mid-spring before plateauing in late summer and gradually reducing over autumn.

### 5.2 AVOIDANCE OF LOSS OF FORAGING/COMMUTING HABITAT

In the first instance, to minimise impacts upon local bat populations identified at the site, valuable habitat e.g trees and other neutral grassland should be retained within the scheme where possible.

However, it is already known that the majority of the existing vegetated habitats on site will be lost to facilitate the development. Therefore, compensatory habitat must be provided (see section 5.3 below).

### 5.3 COMPENSATION FOR LOSS OF FORAGING/COMMUTING HABITAT

Areas of the site covered by sparsely vegetated urban land, other standing water, bramble scrub, dense scrub, other neutral grassland, modified grassland, other woodland - mixed - mainly conifer, other native hedgerow and willow scrub will be lost through the proposed development. These areas do provide some

floral diversity and, therefore, may support a foraging resource for bats. Loss of this habitat should therefore be compensated for through new planting of native trees, shrubs and wildflowers.

Proposals include the provision of rain gardens/ Sustainable Drainage System (SuDS), wildflower meadow, extensive tree planting and introduced shrub.

The detailed design and planting schedules for these habitats are not yet available, therefore, Table 5.1 below makes recommendations for species which should be included within the design, with focus on night scented species which will attract moths and other night flying insects that provide prey for bats. Plant species selection should follow BCT Landscape and urban design for bats and biodiversity<sup>14</sup>.

Table 5.1 Suitable species for attracting bat invertebrate prey

Common name	Scientific Name
<b>Shrubs</b>	
Hazel	<i>Corylus sp</i>
Hawthorn	<i>Crataegus monogyna</i>
Willow species	<i>Salix sp</i>
Hebe species	<i>Hebe sp</i>
Lavender	<i>Lavandula sp</i>
Blackthorn	<i>Prunus spinosa</i>
Dog rose	<i>Rosa canina</i>
Guelder rose	<i>Viburnum opulus</i>
<b>Herbaceous</b>	
Yarrow	<i>Achillea millefolium</i>
Bugle	<i>Ajuga reptans</i>
Kidney vetch	<i>Anthyllis vulneraria</i>
Cuckoo flower	<i>Cardamine pratensis</i>
Knapweed	<i>Centaurea sp</i>
Red Valerian	<i>Centranthus ruber</i>
Sweet rocket	<i>Hesperis matronalis</i>
Birds-foot trefoil	<i>Lotus corniculatus</i>
Ornamental tobacco	<i>Nicotiana sylvestris</i>
Night-scented stock	<i>Matthiola longipetala</i>
Evening primrose	<i>Oenothera biennis</i>
Marjoram	<i>Origanum majorana</i>
Red campion	<i>Silene dioica</i>
Wild carrot	<i>Daucus carota</i>
Climbers	

Common name	Scientific Name
Honeysuckle	<i>Lonicera periclymenum</i>
Jasmine	<i>Jasminum officinale</i>
Ivy	<i>Hedera helix</i>
<b>Trees</b>	
Oak	<i>Quercus sp</i>
Ash	<i>Fraxinus excelsior</i>
Silver birch	<i>Betula pendula</i>
Field maple	<i>Acer Campestre</i>
Elder	<i>Sambucus nigra</i>

## 5.4 MITIGATION FOR IMPLEMENTATION OF ARTIFICIAL LIGHTING

Artificial lighting can cause disturbance to bat species' foraging and commuting activity, by drawing away foraging resource to brighter areas which can only be utilised by light-tolerant bat species, and by making bats more obvious to predators.

Proposals should, therefore, impose measures to limit additional light disturbance at site following development. Bat-sensitive lighting should be incorporated into the scheme to minimise any potential impacts of increased lighting levels on foraging, commuting and socialising bats. Lighting design should follow guidance provided by the Institute of Lighting Professionals (ILP) and BCT<sup>4</sup>, specifically:

- Avoid use of metal halide and fluorescent light sources;
- 'Warmth' of luminaires. Any external areas will incorporate light at a <2700K where possible, with peak wavelengths higher than 550nm;
- Use of screens/hoods to make any external lighting as directional as possible, avoiding light spill on natural features, in particular the retained tree line to the north and the vegetated railway lines adjacent to site;
- Where possible, external lights will be as low to the ground as possible and use of bollard lighting should be avoided;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered. Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Lighting controls in place where appropriate to minimise the duration lights are illuminated, this could be for example instated through motion sensor lighting or subject to curfews;
- Dark corridors should be created with light levels below 0.5lux or below as existing over the retained tree line to the north and the vegetated railway lines adjacent to site;
- Measures should be taken in internal light placement to reduce risk of light spill from windows;

Lighting at site should be modelled to confirm predicted intensity and spill which should be reviewed by a Suitably Qualified Ecologist (SQE). Is it anticipated that this level of detail can be provided at the condition stage.

By providing compensatory foraging habitat through landscaping proposals, and minimising the impacts of external lighting, impacts upon foraging and commuting bats will be sufficiently minimised.

## 5.5 ENHANCEMENT

In addition to the above best practice mitigation, the following enhancement measures are also recommended due to the suitability for bats at the site.

### Bat boxes

Greengage have recommended provision of bat boxes within the fabric of the new building on site and on retained trees within the bat emergence survey report<sup>15</sup>.

### Wildlife friendly habitat creation

By increasing the diversity of habitats on site the scheme will be increasing the diversity of bat invertebrate prey species. The following habitat types are to be incorporated into the landscaping plans:

- Wildlife friendly landscaping (introduced shrub and mixed scrub) across the site. Areas of communal grassland which should incorporate wildflower turf or sown with a wildflower mix which provide higher provision of wildflowers and nectar sources for invertebrate prey. Introduced shrub should include native shrubs or perennials such as those listed within Table 5.1 or those with known value to wildlife such as those listed on the Royal Horticulture Society (RHS) Plants for pollinators<sup>5</sup>;
- Tree lines and hedges planted to create linear features for commuting and should include a diverse mix of native species such as those listed within Table 5.1; and
- SuDS features such as rain gardens, swales and attenuation basins to be incorporated to provide ephemeral wetland habitats. Water features are particularly associated with soprano pipistrelles and Daubenton's bats. Water features provide foraging habitat as bats forage on emerging insects. Wetland features should include marginal planting which could be created using pre-established coir pallet with a diverse mix of marginal and wetland planting which will provide additional habitat structure that will benefit a range of taxa through an ecosystem cascade effect, including invertebrates and subsequently foraging bats.

The development presents the opportunity to benefit a range of taxa through incorporation of ecological features and provision of new habitats that would encourage species to the site. Assuming appropriate mitigation and compensation actions are followed, alongside enhancements described above, it should be possible to deliver an increase in value for local bat populations.

## 6.0 SUMMARY AND CONCLUSION

Greengage was commissioned to undertake a bat activity survey by Lovell of a site known as Novartis Phase 1&2, in Horsham, West Sussex, to assess the levels of bat activity.

A PEA<sup>1</sup> undertaken by Greengage in November 2024 determined the site was considered to provide moderate suitability to support foraging and commuting bats, and as such, in accordance with the BCT guidelines<sup>2</sup>, bat activity surveys were conducted, comprising a total of three NBWs, supplemented by automated static detector surveys over the course of April - October 2025.

The NBWs and analysis of the automated static detector data confirmed the majority of bat activity on site was recorded by the northern most static detector (S2NHP12), associated with the vegetated northern boundary of the site along Parsonage Road. However, the static located close to the railway line in the south (S1NHP12) recorded the most species diversity. Therefore, it is considered the tree line along the northern boundary is of value as a foraging resource for more common bat species, but the railway line in the south may provide a commuting route for the local bat population.

Activity was recorded from at least eight species/species groups including common pipistrelle, soprano pipistrelle, serotine, noctule bat, *Nathusius's pipistrelle*, brown long-eared bat, *Myotis* species and barbastelle. In accordance with the Bat Mitigation Guidance<sup>3</sup>, this is an assemblage of county importance.

Proposals would result in the removal of existing vegetation site. Though foraging and commuting bats are not legally protected, in accordance with planning policy and good practice, measures to mitigate and compensate for foraging bats and enhance the site for both roosting and foraging bats are recommended. These measures all detailed within Section 5 of this report.

Should the mitigation, compensation and enhancement measures described in this report be successfully implemented, the development is predicted to have a negligible impact upon foraging and commuting bats. Furthermore, the enhancement measures to be implemented will likely result in the development providing a long-term positive impacts for bats.

## APPENDIX A LEGISLATION AND POLICY

### A.2 LEGISLATION

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

The Wildlife & Countryside Act 1981 (WCA)<sup>16</sup> was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annex IV of the Habitats Directive<sup>17</sup>, 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019<sup>18</sup>, which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England. Additionally, although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

### A.3 PLANNING POLICY

#### National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) 2024<sup>19</sup> sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the

natural environment, stating plans should 'identify and pursue opportunities for securing measurable net gains for biodiversity'.

It goes on to state: 'if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused'. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

## Regional

### West Sussex Planning Policy

#### *Climate Change Resilience*

No formal environmental strategy is included however key points within this document include increasing access to nature, prioritising natural flood solutions and increasing opportunities for BNG to promote the following:

- Green tourism;
- Natural capital investment funding when available
- Sustainable businesses
- Sustainable business growth
- Green innovation amongst business

## Local

### Horsham District Planning Framework (2015)<sup>20</sup>

#### *Policy 25 - The Natural Environment and Landscape Character*

The natural environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats will be protected against inappropriate development. The Council will support development proposals which:

1. Protects, conserves and enhances the landscape and townscape character, taking into account areas identified as being of landscape importance, the individual settlement characteristics, and maintains settlement separation;
2. Maintain and enhances the Green Infrastructure Network and addresses any identified deficiencies in the District;
3. Maintains and enhances the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and ensures no net loss of wider biodiversity and provides net gains in biodiversity where possible; and,
4. Conserve and where possible enhance the setting of the South Downs National Park.

### *Policy 26 - Countryside Protection*

In addition, proposals must be of a scale appropriate to its countryside character and location. Development will be considered acceptable where it does not lead, either individually or cumulatively, to a significant increase in the overall level of activity in the countryside, and protects, and/or conserves, and/or enhances, the key features and characteristics of the landscape character area in which it is located, including;

1. The development pattern of the area, its historical and ecological qualities, tranquillity and sensitivity to change;
2. The pattern of woodlands, fields, hedgerows, trees, waterbodies and other features; and,
3. The landform of the area.

### *Policy 27 Settlement Coalescence*

Landscapes will be protected from development which would result in the coalescence of settlements. Development between settlements will be resisted unless it can be demonstrated that:

4. Proposals contribute to the conservation, enhancement and amenity of the countryside, including where appropriate enhancements to the Green Infrastructure network or provide opportunities for quiet informal recreation.

### *Policy 31 Green Infrastructure and Biodiversity*

1. Development will be supported where it can demonstrate that it maintains or enhances the existing network of green infrastructure. Proposals that would result in the loss of existing green infrastructure will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained.
2. Development proposals will be required to contribute to the enhancement of existing biodiversity and should create and manage new habitats where appropriate. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will also support development which makes a positive contribution to biodiversity through the creation of green spaces, and linkages between habitats to create local and regional ecological networks.
3. Where felling of protected trees is necessary, replacement planting with a suitable species will be required.
4. a) Particular consideration will be given to the hierarchy of sites and habitats in the district as follows:
  - i. Special Protection Area (SPA) and Special Areas of Conservation (SAC)
  - ii. Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)
  - iii. Sites of Nature Conservation Importance (SNCIs), Local Nature Reserves (LNRs) and any areas of Ancient woodland, local geodiversity or other irreplaceable habitats not already identified in i & ii above.

5. b) Where development is anticipated to have a direct or indirect adverse impact on sites or features for biodiversity, development will be refused unless it can be demonstrated that:
  - i. The reason for the development clearly outweighs the need to protect the value of the site; and,
  - ii. That appropriate mitigation and compensation measures are provided.
6. Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a HRA to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan.

### *Policy 33 Development Principles*

In order to conserve and enhance the natural and built environment developments shall be required to:

1. Presume in favour of the retention of existing important landscape and natural features, for example trees, hedges, banks and watercourses. Development must relate sympathetically to the local landscape and justify and mitigate against any losses that may occur through the development.

### Draft Horsham District Local Plan 2019-2036

#### *Policy 27 - The Natural Environment and Landscape Character*

The Natural Environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats, will be protected against inappropriate development. The Council will expect development proposals to be landscape led from the outset so that they clearly inform the design and layout. Proposals will also be required to:

1. Protect, conserve and enhance the landscape and townscape character, taking into account areas identified as being of landscape importance, the individual settlement characteristics, and maintain settlement separation;
2. Maintain and enhance the Green Infrastructure Network, the Nature Recovery Network and, where practicable, help to address any identified deficiencies in the District;
3. Maintain and enhance the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and secure net gains in biodiversity;
4. Incorporate SUDS into a scheme in an optimal location for their purpose whilst also securing landscape enhancements and good quality spaces. Proposals will be expected to provide details to demonstrate that the whole life management and maintenance of the SUDS are appropriate, deliverable and will not cause harm to the natural environment and/or landscape; and,
5. Where applicable, conserve and, where possible, enhance the setting of the South Downs National Park and the High Weald Area of Outstanding Natural Beauty.

### *Policy 28 - Countryside Protection*

1. Outside built-up area boundaries and unclassified settlements, the rural character and undeveloped nature of the countryside will be protected against inappropriate development. Any proposal must be essential to and justify its countryside location, and must meet one of the following criteria:
  - a. Support the needs of agriculture or forestry
  - b. Enable the extraction of minerals or the disposal of waste;
  - c. Provide for quiet informal recreational use; or,
  - d. Enable the sustainable development of rural areas.
2. In addition, all proposals must be appropriately integrated within the landscape and be of a scale appropriate to its countryside character and location. Development will be considered acceptable where it does not lead, either individually or cumulatively, to a significant increase in the overall level of activity in the countryside, and protects, conserves, and seeks to enhance, the key features and characteristics of the landscape character area in which it is located, including:
  - a. The development pattern of the area, its historical and ecological qualities, tranquillity and sensitivity to change;
  - b. The pattern of woodlands, fields, hedgerows, trees, waterbodies and other features; and,
  - c. the landform of the area; and,
  - d. Where relevant, the designated South Downs National Park 'International Dark Sky Reserve' (IDS).

### *Policy 29 - Settlement Coalescence*

1. Landscapes will be protected from development which would result in the coalescence of settlements in order to protect local identity and a sense of place. Development between settlements will be resisted unless it can be demonstrated that:
  - a. c. Proposals respect the landscape and contribute to the enhancement of their countryside setting, including, where appropriate, enhancements to the Green Infrastructure network, the Nature Recovery Network and/or provide opportunities for quiet informal countryside recreation.

### *Policy 31 - Green Infrastructure and Biodiversity*

1. Development will be supported where it can demonstrate that it maintains and enhances the existing network of green infrastructure, the Nature Recovery Network, natural capital and biodiversity. Proposals that would result in the loss of existing green infrastructure or part of the Nature Recovery Network will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained.

2. Proposals will be expected to retain and enhance existing fresh water features, hedgerows, trees and deciduous woodland and the provision of additional hedgerow and tree planting will be sought subject to appropriate consideration of local and wider context, habitats and species.
3. Where the felling of a tree is necessary, for example due to disease, replacement planting with a suitable species and location to retain the link with the wider network of habitats and Green Infrastructure, will be required.
4. Development proposals will be expected to remove invasive species and will be required to contribute to the enhancement of existing biodiversity and deliver, as a minimum, a 10% net gain through the delivery of appropriate on-site biodiversity net gain or, where this is not practicable, to off-set the delivery to the Nature Recovery Network.
5. Proposals should create and manage appropriate new habitats, taking into account pollination, where practicable. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will also support development which makes a positive contribution to biodiversity, and where appropriate the Nature Recovery Network, through the creation of green spaces, and linkages between habitats to create local and regional ecological networks and allow the movement of wildlife through development sites.
6. Particular consideration will be given to the hierarchy of sites and habitats in the District as follows:
  - a. Special Protection Area (SPA) and Special Areas of Conservation (SAC)
  - b. Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)
  - c. Local Wildlife Sites (LWS), Local Nature Reserves (LNRs) and any areas of Ancient woodland, traditional orchards, local geodiversity or other irreplaceable habitats not already identified in a & b above.
7. Where development is anticipated to have a direct or indirect adverse impact on sites or features of importance to nature conservation, development will be refused unless it can be demonstrated that:
  - a. The objectives of a site's designation, where applicable, and integrity of the area will not be undermined;
  - b. The reason for the development clearly outweighs the need to protect the value of the site; and,
  - c. That appropriate mitigation and compensation measures are provided.
8. Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a Habitats Regulation Assessment to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan.

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## APPENDIX B BAT SURVEY MAPPING

# NOVARTIS PHASE 1&2

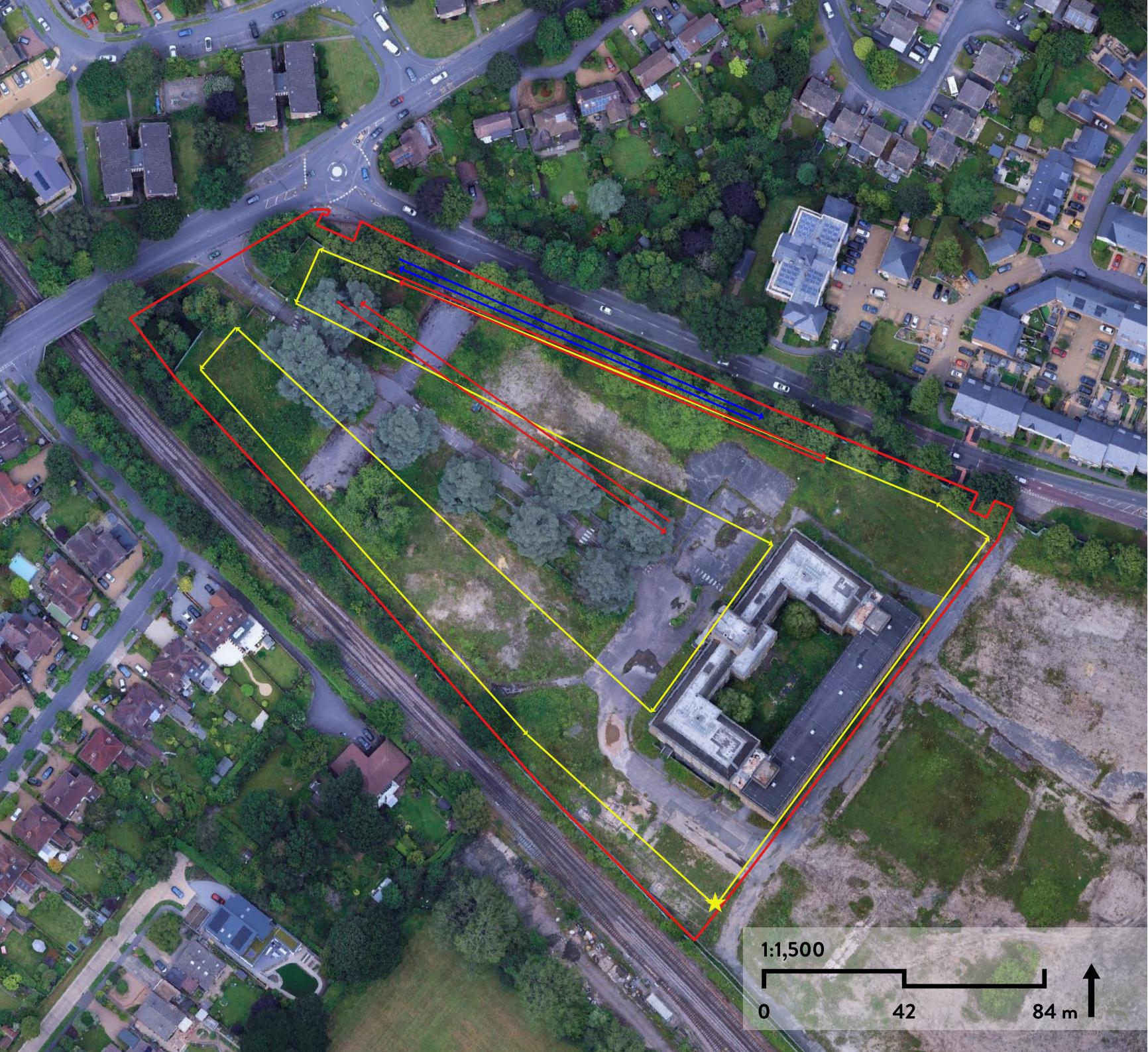
- Common and soprano pipistrelle activity
- Serotine Activity
- Transect Route
- ★ Start Point
- Site Boundary

Title: April NBW Results

Drawn by: JC  
Date: 20/11/2025

Reviewed by: AWK  
Date: 20/11/2025

Project number: 552979



# NOVARTIS PHASE 1&2

- Soprano pipistrelle Activity
- Common and soprano pipistrelle activity
- Transect Route
- ★ Start Point
- Site Boundary

Title: June NBW

Drawn by: JC  
Date: 20/11/2025

Reviewed by: JC  
Date: 20/11/2025

Project number: 552979



# NOVARTIS PHASE 1&2

- Soprano pipistrelle Activity
- Common and soprano pipistrelle activity
- Transect Route
- ★ Start Point
- Site Boundary



Title: September NBW

Drawn by: JC  
Date: 20/11/2025

Reviewed by: AWK  
Date: 20/11/2025

Project number: 552979



# NOVARTIS PHASE 1&2

- Static
- Site Boundary



## APPENDIX C AUXILIARY SURVEY DATA

Table C.1 Auxiliary survey data

Survey type	Date	Sunset	Start -End	Conditions
April NBW	28/04/2025	20:18	20:03 - 22:00	Start 15°C End 13°C Clear sky Wind E 5mph No rain
June NBW	19/06/2025	21:19	21:04 - 23:24	Start 17°C End 13°C Clear sky Wind E 7mph No rain
September NBW	22/09/2025	19:58	19:43 - 21:58	Start 14°C End 9°C Cloudy Wind NNE 5mph No rain

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<sup>3</sup> Reason, P.F and Wray, S. (2025). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for development affecting bats. Version 1.2.* Chartered Institute of Ecology and Environmental Management, Ampfield.

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<sup>5</sup> Royal Horticultural Society (RHS) Plants for Pollinators. Available from: <https://www.rhs.org.uk/science/research/plants-for-pollinators>

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<sup>7</sup> Hampshire County Council. (2019); *Ecological Appraisal & Phase II Protected Species Surveys.*

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<sup>9</sup> Mitchell-Jones, A.J. & McLeish, A.P. (2004) *Bat Works Manual, 3<sup>rd</sup> Edition*

<sup>10</sup> Open Weather. Available from: <https://openweathermap.org/api>

<sup>11</sup> Chartered Institute of Ecological and Environmental Management (CIEEM) (2021) *Competency Framework /*

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<sup>13</sup> National Bat Monitoring Programme, (2023) Available from: [NBMP annual report 2023: Worrying signs of change - News - Bat Conservation Trust](#)

<sup>14</sup> Gunnell, K., Grant, G. and Williams, C. 2012. *Landscape and urban design for bats and biodiversity.* Bat Conservation Trust

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<sup>16</sup> HM Government, (1981); *Part I and Part II of Wildlife and Countryside Act (as amended).* HMSO

<sup>17</sup> CEC (Council of the European Communities), (1992); *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora*

<sup>18</sup> HM Government, (2019); *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Statutory Instrument 2019 no. 579*

<sup>19</sup> GOV.UK. (2024). *National Planning Policy Framework.* [online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

<sup>20</sup> Horsham District Council (2015) *Horsham District Planning Framework (excluding South Downs National Park)* [Online] Available at: <https://www.horsham.gov.uk/planning/local-plan/read-the-current-local-plan>