



**South Gillingham Consortium**

**South Gillingham, Dorset**

**Bat Activity Report**

**September 2017**

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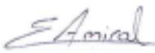
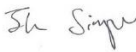
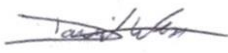
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## Executive Summary

| Contents                           | Summary  |
|------------------------------------|--|
| <b>Site Location and Proposals</b> | The site is located to the south of the town of Gillingham in Dorset, centred on OS grid reference ST819488. It covers an area of approximately 91.8 ha and is divided into three areas. Park Farm, the eastern area is located to the east of Shaftesbury Road. West of Shaftesbury Road lies Ham Farm, the central area. West of Ham Farm lies Newhouse Farm, the western area.  |
| <b>Previous Surveys</b>            | The Ecology Solutions surveys in 2011 identified a soprano pipistrelle roost within a mature tree adjacent to the southern boundary of Ham Farm.   |
| <b>WYG Survey</b>                  | <p>Seven activity surveys were carried out during the optimal surveying season. Surveyors walked on 4 transect routes that incorporated all areas of the site including all habitats likely to be used by foraging and commuting bats.</p> <p>Two automated bat detectors were left at the site for 5 nights each month at two locations on each transect. Data from this detector helped to gain further information on the species present and relative amount of activity through the night.</p>  |
| <b>Results</b>                     | <p>At least eleven species of bat were recorded using the habitats at the Site to forage and commute. The species comprised common pipistrelle, soprano pipistrelle, noctule, serotine, Daubenton's, whiskered/Brandt's, Natterer's, Leisler's, brown long-eared, Nathusius' pipistrelle and lesser horseshoe. Common pipistrelles were the most frequently encountered species and Natterer's, whiskered/Brandt's, Leisler's, brown long-eared and lesser horseshoe were each only recorded on one survey visit.</p> <p>The areas found to support the highest frequency of bat activity / number of bats encountered were the River Lodden and the plantation broadleaved woodland to the north of Park Farm.</p>  |
| <b>Recommendations</b>             | <p>To enhance the site for roosting, foraging and commuting bats. The following measures are proposed to be incorporated within the master plan and proposals:</p> <ul style="list-style-type: none"> <li>• Lighting across the development designed to reduce impacts on bat foraging and commuting habitats;</li> <li>• Avoidance of breathable roof membranes;</li> <li>• Enhancement of connectivity between open space areas through tree planting;</li> <li>• Incorporation of grassland areas and planting of native species of value to foraging and commuting bats into landscape plan; and</li> <li>• Incorporation of landscape planting around road features to reduce the risk of traffic collisions.</li> </ul> <p>It is recommended that construction activity should cease at sunset to avoid impacts to bats during the construction phase.</p> <p>Additional enhancement measures for the proposed developments include the provision of bat boxes on suitable retained trees within the site and bat bricks and access tiles on new properties.</p> |



## 1.0 Introduction

### 1.1 Background

WYG was commissioned by South Gillingham Consortium in April 2015 to complete bat activity surveys at the proposed development site in South Gillingham (hereafter referred to as 'the site'). An extended Phase 1 habitat survey was completed in March 2015 which identified 'moderate' habitat suitability for the site to be utilised by bats. It was recommended that one bat activity survey was completed each month between April – September. Along with two automated bat detectors left along each transect routes for five consecutive nights each month from April to September.

Bat activity surveys were recommended based on:

- The occurrence of bat records in the local area;
- The presence of trees suitable for roosting bats on the site;
- The presence of suitable foraging and commuting habitat on site and in the surrounding landscape (hedgerows, grassland etc); and
- Potential direct/indirect impacts to some of these habitats as a result of the development proposals.

This report details the findings of surveys performed and recommends, where necessary, measures to avoid, mitigate and compensate the potential impacts to roosting, commuting and foraging bats as a result of the proposed development. This report will provide information to inform a planning application for the site.

### 1.2 Site Location

The site is located to the south of the town of Gillingham in Dorset, centred on OS grid reference ST819488. It covers an area of approximately 91.8 ha and is divided into three areas. Park Farm, the eastern area is located to the east of Shaftesbury Road. West of Shaftesbury Road lies Ham Farm, the central area. West of Ham Farm lies Newhouse Farm, the western area. To the north of Ham Farm lies the residential area of Ham Common. West of Ham Common runs the River Lodden, with the Lodden Lakes beyond, which forms the northern boundary of Newhouse Farm. To the south and west of the site lie agricultural areas including both pasture and arable fields, with hedgerow networks. The northern and eastern boundary of Park Farm comprises Fern Brook, with further agricultural areas beyond.



Park Farm comprises a matrix of habitats including improved grassland pasture grazed by horses, sheep and cattle, species-poor hedgerows with mature trees, broadleaved plantation woodland, neutral semi-improved grassland, bare ground and buildings. Ham Farm comprises a matrix of improved grassland pasture grazed by cattle, neutral semi-improved grassland, broadleaved plantation woodland, species-poor and species-rich hedgerows with mature trees and bare ground. Newhouse Farm comprises a matrix of improved grassland pasture grazed by cattle, species-poor hedgerows with mature trees and bare ground. There are six ponds located on site, a running ditch within Newhouse Farm and two watercourses flowing along the northern boundary of Newhouse Farm and the north and east boundaries of Park Farm.

### **1.3 Development Proposals**

The site has been identified within Policy 17 of the emerging North Dorset Local Plan 2011-2026. Development proposals are for up to 1800 residential dwellings with associated schools, new access roads open space and sustainable urban drainage. The masterplan framework for the site includes a significant buffer of approximately 100m from the River Lodden and Fern Brook as well as numerous other features of ecological interest.

### **1.4 Survey and Reporting Objectives**

The ecological investigations for bats undertaken by WYG included the following objectives:

- Bat activity surveys to gain an understanding of bat species' usage of the site and an indication of the value of the bat assemblage on and in the immediate surrounds of the site;
- Identify any issues and constraints which need to be addressed before site development work commences;
- An assessment of the potential ecological constraints to the proposed works at the site relating to bat species and recommendations for further survey, avoidance, mitigation and enhancement where appropriate.



## **2.0 Planning Policy & Legislation**

### **2.1 National Planning Policy**

The National Planning Policy Framework was adopted in March 2012. Section 11 of the NPPF, Conserving and Enhancing the Natural Environment replaces Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation. However, government Circular 06/2005, Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System, which relates to PPS9 remains valid and is referenced within Paragraph 113 of the NPPF.

Circular 06/2005 states that the presence of protected species is a material consideration in the planning process. The NPPF also states that 'planning policies should promote the protection of priority species populations linked to national and local targets'.

### **2.2 Local Planning Policy**

Policy 1.37 of the North Dorset District-Wide Local Plan 2011 includes a requirement protect and enhance the continuity and integrity of landscape features which are of major importance for wildlife. Development will be expected to fully consider nature conservation. Where development is permitted the following should be taken into account:

- (i) Important woodland, wetlands, trees, hedgerows, watercourses, ponds, geological features and other major natural features and habitats are retained;
- (ii) Compensatory provision is made for replacement habitats/features of quality where the loss of existing habitats and/or features is unavoidable;
- (iii) Habitat features, attractive to wildlife including those which meet the needs of particular species, are, where appropriate, incorporated in the development;
- (iv) Full provision is made for the future management of retained and newly created wildlife features.

Under 1.137 of Policy 1.37 it states; 1.137 when considering relevant development proposals the Council will seek and act on the advice of wildlife conservation bodies, in order to safeguard the habitats of protected species or determine appropriate mitigatory works such as the provision of alternative nesting and roosting boxes.



## 2.3 Legislation

All 18 British bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended), as European Protected Species. Furthermore, the Countryside and Rights of Way Act 2000 (Schedule 12, Paragraph 5) has amended Section 9 of the 1981 Act. They are, therefore, fully protected under Section 9 of the 1981 Act and under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 (as amended), which transposes the Habitats Directive into UK law.

This makes it an offence to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb bats, in particular where it is likely to:
  - Impair their ability to breed or reproduce, or to rear or nurture their young;
  - Impair their ability to hibernate or migrate; or
  - Affect significantly the local distribution or abundance of bats.
- Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
- Damage or destroy a bats breeding site or resting place.

The direct loss or modification of bat roosts are therefore offences under this legislation. So too is the disturbance of roosting bats while they occupy a place of rest. Any construction or demolition works to, or in proximity to, a bat roost may require an EPSM licence in order to proceed without causing an offence.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes seven species of bat; barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*).





## 3.0 Methodology

### 3.1 Bat Activity Survey

According to Hundt (2012) the site is a large-sized site (site area >15ha). The habitat on site was considered to be of 'medium quality' due a matrix of habitats including small areas of woodland, watercourses, fields of improved and semi-improved grassland, hedgerows and ponds, which would provide potentially suitable habitat for foraging and commuting bats. Accordingly, the survey design comprised one visit per month (April – September).

Four surveyors were onsite at a time walking one transect route each which incorporated all boundaries features. Surveys commenced fifteen minutes prior to sunset and concluded approximately two and three quarter after sunset.

Weather conditions (temperature, precipitation and wind speed) were recorded on each survey. All surveys were completed in suitable weather conditions (not in heavy rain, low temperatures or strong winds) as recommended within Hundt (2012).

The surveyors made a note of bat activity, using both visual observation and audio bat detectors to identify foraging and/or commuting behaviour. Surveyors recorded the time of any activity and made detailed notes on the nature of the activity. Where bats were visually observed, the flight patterns and directions were also recorded. All surveyors were qualified ecologists with experience in conducting bat surveys. Surveyors utilised Elekon Batlogger (full spectrum) bat detectors to record calls and walked along the transect route at a steady pace. The start position of the transect route was and altered between survey visits to record activity in different locations over a range of times. Surveyors also stopped at listening points along the transect route at different times during each survey visit. Bat calls were recorded by the detector, and these recordings later analysed using Bat Explorer software. The analysed recordings and field notes were combined to help build a picture of bat use across the site and to identify areas of heightened activity.

### 3.2 Automated Bat Activity Surveys - External

In accordance with Hundt (2012), automatic bat detectors (Song Meter SM2) was deployed on site on each month between April and September for five consecutive nights. The automatic bat detector was used in order to record bat activity at two locations on each transect within the site over a prolonged period of time. The captured recordings were analysed to gain further information on the species present and relative amount of activity through the night. Locations of the remote bat detector placements are shown in Figure 7.



### 3.3 Weather Conditions, Timings and Limitations for Nocturnal Bat Surveys

Tables 1 and 2 below show the survey dates, times and weather conditions during each of the surveys. Temperature readings and cloud cover assessments were undertaken in-situ whilst detailed wind-speed data has been sourced from the Met Office website (Met Office, 2015).

| Month  | Date       | Weather  |
|--------|------------|--|
| April  | 30/04/2015 | 11.0 °C; wind speed 24.1 km/h; Scattered Clouds  |
| May    | 01/05/2015 | 7.0 °C ; wind speed 14.8 km/h ; Partly Cloudy    |
|        | 02/05/2015 | 10.0 °C ; wind speed 20.4 km/h; Mostly Cloudy    |
|        | 03/05/2015 | 13.0 °C ; wind speed 27.8 km/h; Scattered Clouds |
|        | 04/05/2015 | 12.0 °C ; wind speed 24.1 km/h; Scattered Clouds |
|        | 05/05/2015 | 12.0 °C ; wind speed 40.7 km/h; Partly Cloudy    |
|        | 20/05/2015 | 11.0 °C ; wind speed 9.3 km/h; Clear             |
|        | 21/05/2015 | 14.0 °C ; wind speed 14.8 km/h; Clear            |
|        | 22/05/2015 | 16.0 °C ; wind speed 5.6 km/h; Partly Cloudy     |
|        | 23/05/2015 | 9.0 °C ; wind speed 5.6 km/h; Clear              |
|        | 24/05/2015 | 13.0 °C ; wind speed 5.6 km/h; Partly Cloudy     |
|        | 25/05/2015 | 12.0 °C ; wind speed 3.7 km/h; Mostly Cloudy     |
|        | 26/05/2015 | 15.0 °C ; wind speed 11.1 km/h; Clear            |
| June   | 16/06/2015 | 16.0 °C ; wind speed 9.3 km/h; Clear             |
|        | 17/06/2015 | 21.0 °C ; wind speed 13.0 km/h; Mostly Cloudy    |
|        | 18/06/2015 | 16.0 °C ; wind speed 11.1 km/h; Partly Cloudy    |
|        | 19/06/2015 | 15.0 °C ; wind speed 3.7 km/h; Clear             |
|        | 20/06/2015 | 17.0 °C ; wind speed 9.3 km/h; Partly Cloudy     |
|        | 21/06/2015 | 17.0 °C ; wind speed 13.0 km/h; Scattered Clouds |
|        | 22/06/2015 | 12.0 °C ; wind speed 18.5 km/h; Scattered Clouds |
|        | 23/06/2015 | 13.0 °C ; wind speed 7.4 km/h; Clear             |
| July   | 22/07/2015 | 17.0 °C ; wind speed 9.3 km/h; Partly Cloudy     |
|        | 23/07/2015 | 16.0 °C ; wind speed 7.4 km/h; Clear             |
|        | 24/07/2015 | 13.0 °C ; wind speed 14.8 km/h; Scattered Clouds |
|        | 25/07/2015 | 15.0 °C ; wind speed Calm; Partly Cloudy         |
|        | 26/07/2015 | 16.0 °C ; wind speed 27.8 km/h; Scattered Clouds |
|        | 27/07/2015 | 17.0 °C ; wind speed 22.2 km/h; Partly Cloudy    |
| August | 26/08/2015 | 15.0 °C ; wind speed 27.8 km/h; Clear            |
|        | 27/08/2015 | 13.0 °C ; wind speed 9.3 km/h; Clear             |
|        | 28/08/2015 | 15.0 °C ; wind speed 14.8 km/h; Clear            |
|        | 29/08/2015 | 16.0 °C ; wind speed 5.6 km/h; Light Rain        |
|        | 30/08/2015 | 16.0 °C ; wind speed 11.1 km/h; Mostly Cloudy    |



| Month     | Date       | Weather                                       |
|-----------|------------|---|
|           | 31/08/2015 | 14.0 °C ; wind speed 13.0 km/h; Mostly Cloudy |
| September | 01/09/2015 | 12.0 °C ; wind speed 3.7 km/h; Shallow Fog    |

**Table 2: Weather conditions during bat surveys at South Gillingham, Dorset**

| Survey Effort           | Date       | Dusk / Dawn Times | Survey Times  | Survey Commencement Weather Conditions                       | Survey End Weather Conditions                             |
|-------------------------|------------|-------------------|---------------|--|---|
| Manual Activity Surveys | 30.04.2015 | 20:30             | 20:15 – 22:32 | 12°C; 25% cloud cover; slight wind; nil precipitation.       | 7°C; 00% cloud cover; slight wind; nil precipitation.     |
|                         | 13.05.2015 | 20:45             | 20:50 – 23:30 | 9.9°C; 15% cloud cover; light wind; nil precipitation.       | 9.4°C; 0% cloud cover; light wind; nil precipitation.     |
|                         | 16.06.15   | 21:26             | 21:10 – 00:10 | 15.6°C; 70% cloud cover; very light wind; nil precipitation. | 11.5°C; 50% cloud cover; nil wind; nil precipitation.     |
|                         | 22.07.15   | 21:05             | 20:50 – 23:23 | 14.8°C; 20% cloud cover; very light wind; nil precipitation. | 8.7°C; <10% cloud cover; nil wind; nil precipitation.     |
|                         | 20.08.15   | 20:19             | 20:07 – 23:07 | 19°C; 100% cloud cover; light wind; nil precipitation.       | 19°C; 100% cloud cover; moderate wind; nil precipitation. |



|  |          |       |                  |   |   |
|--|----------|-------|------------------|---|---|
|  | 01.09.15 | 19:56 | 19:41 –<br>22:41 | 16.0 °C; 100% cloud cover; light wind; nil precipitation. | 10.0 °C; 100% cloud cover; light wind; nil precipitation. |
|  | 02.09.15 | 06:24 | 03:24 –<br>06:24 | 8.0 °C; 100% cloud cover; light wind; nil precipitation.  | 9.0 °C; 100% cloud cover; light wind; nil precipitation.  |

### 3.4 Limitations

All surveys were executed within the optimal period bat assessment. The surveys were carried out during periods of suitable weather conditions (i.e. not during heavy rain, low temperatures or strong winds) as recommended by Hundt (2012).

Since the surveys were completed, updated bat survey guidelines have been published (Collins, 2016). The survey methodology used conforms with these updated guidelines therefore the methodology is not considered to be a limitation.

Some bat species, such as some bats of the *Myotis* genus, are more difficult to detect as their calls are quieter than other bats such as those of the *Pipistrellus* genus. As such, the louder bats are likely to have been identified more often than quieter species, which may have been under recorded.

Bats are mobile species and may use a variety of roosts, commuting routes and foraging areas during their yearly lifecycle, which is influenced by a range of factors such as breeding status, energetic requirements and the availability of prey. These surveys provide what is considered a sufficient sampling method to obtain the relative abundance and diversity of bats using the survey area. The methods used are unable to provide a full account of all bat activity in the survey at all times.

An update site assessment was completed in March 2017 which confirmed that there had been no significant change in conditions on site. Therefore, the results of this survey are considered to remain valid until the commencement of 2019 survey season (March/April 2018). If works have not commenced by this time, an update site assessment should be completed to determine if an update survey is required. An update site assessment should also be completed if there is any change in site conditions or operation.



### 3.5 Value of the On-site Bat Population in a Wider Ecological Context

The assessment of the value of the bat population on site is based on the article in the Chartered Institute of Ecology and Environmental Management (CIEEM) In Practice magazine – *Valuing Bats in Ecological Impact Assessment*, No. 70, December 2010 (Wray *et al.* 2010). Where bats (species and number) are found using certain habitats, (to roost, commute or forage) their population is assigned a relative ecological value. The value to the species is partly based upon how often a habitat is used upon the rarity of the specific bat species. In the case of commuting routes or foraging areas the number of nearby confirmed roost is also a factor. Once the value of the bat population has been calculated, robust mitigation for any impact on the bats can be determined.

British bat species have been subdivided into groups, dependant on how common they are: common, rarer and rarest. These have been further subdivided based upon the location surveyed. Table 2.6 presents the rarity categorisation of bats in England. The tables below have been adapted from *Valuing Bats in Ecological Impact Assessment* (Wray *et al.* 2010).

**Table 3: Categorising bat species by distribution and rarity in England, UK**

| Rarity        | Country  |
|---------------|--|
|               | England  |
| <b>Rarest</b> | Greater horseshoe<br>Bechstein's<br>Alcathoe<br>Greater mouse-eared<br>Barbastelle<br>Grey long-eared                                |
| <b>Rarer</b>  | Lesser horseshoe<br>Whiskered<br>Brandt's<br>Daubenton's<br>Natterer's<br>Leisler's<br>Noctule<br>Nathusius' pipistrelle<br>Serotine |
| <b>Common</b> | Common pipistrelle<br>Soprano pipistrelle<br>Brown long-eared  |

The value assigned for rarity is then combined with the type of roost found to give a value for bats as an ecological receptor (Table 4).

**Table 4: Valuation of bat roosts**

| Geographic Frame of Reference    | Roost Types  |
|----------------------------------|--|
| <b>District, Local or Parish</b> | Feeding perches (common species)<br>Individual bats (common species)<br>Small numbers of non-breeding bats (common species)<br>Mating sites (common species)   |
| <b>County</b>                    | Maternity sites (common species)<br>Small number of hibernating bats (common and rarer species)<br>Feeding perches (rarer/rarest species)<br>Individual bats (rarer/rarest species)<br>Small numbers of non-breeding bats (rarer/rarest species) |
| <b>Regional</b>                  | Mating sites (rarer/rarest species) including well-used swarming sites<br>Maternity sites (rarer species)<br>Hibernation sites (rarest species)<br>Significant hibernation sites for rarer/rarest species or all species assemblages             |
| <b>National/UK</b>               | Maternity sites (rarest species)<br>Sites meeting Sites of Special Scientific Interest (SSSI) guidelines   |
| <b>International</b>             | Special Areas of Conservation (SAC) sites  |

To calculate the final score for commuting routes, the numerical values from each column below are added (Table 5).

**Table 5: Valuation of commuting routes**

| Species     | Number of Bats            | Roosts/Potential Roosts Nearby                | Type and Complexity of Linear Features   |
|-------------|---------------------------|---|--|
| Common (2)  | Individual bats (5)       | None (1)                                      | Absence of (other) linear features (1)   |
|             |                           | 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 (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 rivers/streams (5)      |

To calculate the final score for foraging areas, the numerical values from each column below are added (Table 6).

**Table 6: Valuation of foraging areas**



| 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)                           |
|             |                           | 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 (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)                                    |

In order to calculate the overall value for commuting routes and foraging areas, the calculated scores are compared against the categories of the final scoring table below (Table 7).

**Table 7: Final scoring system for valuing commuting and foraging bats**

| Geographic Frame of Reference    | Score |
|----------------------------------|-------|
| <b>International</b>             | >50   |
| <b>National</b>                  | 41-50 |
| <b>Regional</b>                  | 31-40 |
| <b>County</b>                    | 21-30 |
| <b>District, local or parish</b> | 11-20 |
| <b>Not important</b>             | 1-10  |



## **4.0 Survey Results**

### **4.1 Bat Activity Surveys – Manual Transect Walks**

#### **4.1.1 30<sup>th</sup> April 2015**

Refer to Appendix A, Figures 1a – 1b for a plan showing the bat activity at the site during this survey.

##### **Park Farm**

Two species were recorded; common and soprano pipistrelle. A low level of activity was observed with the majority of registrations being of common pipistrelle foraging along the boundaries of the south-east field. Only two soprano pipistrelle passes were noted, one within this field and one south of the garden centre.

##### **Ham Farm**

Six species were recorded; common, soprano and Nathusius' pipistrelle, noctule, brown long-eared bat and an unidentified Myotis bat (likely Daubenton's). A low level of activity was noted with the majority along the River Lodden north of the site. Occasional passes by common and soprano pipistrelle were recorded along a mature tree line to the west of the site and mature hedgerows at the north-east corner of the site.

#### **4.1.2 13<sup>th</sup> May 2015**

Refer to Appendix A, Figures 2a – 2b for a plan showing the bat activity at the site during this survey.

##### **Park Farm**

Four species were recorded; common and soprano pipistrelle, noctule and serotine. A moderate level of activity was observed with the majority of registrations being of common pipistrelle foraging along the boundaries of the south-east field, and common and soprano pipistrelles foraging within the plantation woodland to the north. Pond 3 within the woodland was an area of constant foraging activity. Only one pass each of noctule and serotine were recorded, most likely commuting over the site.

##### **Ham Farm**

Three species were recorded; common and soprano pipistrelle and brown long-eared bat. A low level of activity was noted with the majority of registrations being common and soprano pipistrelles foraging





above the River Lodden at the north-west corner of the site. A single noctule pass was recorded at the southern extent of the site adjacent to Cole Street Lane, likely commuting over the site.

#### **4.1.3 16<sup>th</sup> June 2015**

Refer to Appendix A, Figures 3a – 3b for a plan showing the bat activity at the site during this survey.

##### **Park Farm**

Five species were recorded; common and soprano pipistrelle, noctule, serotine and a Myotis bat (likely whiskered/Brandt's bat). A high level of activity was observed with the majority of registrations being of common pipistrelle foraging along the boundaries of the south-east field or common and soprano pipistrelle within the plantation woodland. As with May, constant foraging took place above Pond 3. Only two Myotis passes were noted, both within the plantation woodland, and one serotine. A total of 11 noctule passes were noted. Most were associated with hedgerows and were likely commuting. Foraging was recorded west of the site within an adjacent housing estate and further foraging was recorded within the plantation woodland.

##### **Ham Farm**

Four species were recorded; common and soprano pipistrelle, noctule and serotine. A high level of activity was noted with the majority of registrations being of foraging common pipistrelle along many of the hedgerows on site. Foraging serotine were recorded within two fields to the north of the site. Noctule passes were much less frequent than Park Farm with only four.

#### **4.1.4 22<sup>nd</sup> July 2015**

Refer to Appendix A, Figures 4a – 4b for a plan showing the bat activity at the site during this survey.

##### **Park Farm**

Six species were recorded; common and soprano pipistrelle, noctule, serotine and two Myotis species (likely whiskered/Brandt's and Natterer's). A moderate level of activity was observed with the majority of registrations of all species being along the boundaries of the south-east field. Common pipistrelle and occasional serotine were also recorded within the north-west field and plantation woodland.

##### **Ham Farm**



Four species were recorded; common and soprano pipistrelle, noctule and serotine. A high level of activity was noted with the majority being common pipistrelles foraging along many of the hedgerows across the site. Several commuting noctules were recorded along the River Lodden to the north. Serotine were recorded along the boundaries of the south-east field and in proximity to Pond 12 near the centre of the site.

### **4.1.5 20<sup>th</sup> August 2015**

Refer to Appendix A, Figures 5a – 5b for a plan showing the bat activity at the site during this survey.

#### **Park Farm**

Six species were recorded; common and soprano pipistrelle, Daubenton's bat, serotine, noctule and brown long-eared bat. A high level of activity was observed with the majority of registrations being of foraging and commuting along the boundaries of the south-east field, and the southern hedgerow of the north east field by all species.

#### **Ham Farm**

Six species were recorded; common and soprano pipistrelle, noctule, serotine, Daubenton's bat and Leisler's bat. A moderate level of activity was noted with the majority along the River Lodden north of the site. Common pipistrelle and serotine were also recorded at the centre of the site foraging in proximity to Pond 12.

### **4.1.6 1<sup>st</sup> – 2<sup>nd</sup> September 2015**

Refer to Appendix A, Figures 6a – 7b for a plan showing the bat activity at the site during this survey.

#### **Park Farm**

At dusk six species were recorded; common and soprano pipistrelle, noctule, serotine, Daubenton's bat and lesser horseshoe. A moderate level of activity was observed with the majority of registrations being of common and soprano pipistrelle foraging along the boundaries of the two southern fields. Noctule and serotine were recorded infrequently along the southern boundary of the site and southern boundary of the northern field. Only one lesser horseshoe pass was recorded, along the southern boundary of the site.

At dawn three species were recorded; common and soprano pipistrelle and serotine. A low level of activity was noted with the majority of registrations being common pipistrelle foraging off-site to the west.



### Ham Farm

At dusk five species were recorded; common and soprano pipistrelle, noctule, serotine and Daubenton's bat. A high level of activity was noted with the majority along the River Lodden north of the site by all species. A high level of activity was also recorded along the boundaries of the central fields adjacent to Pond 12. Very little activity was recorded elsewhere on site.

At dawn two species were recorded; common and soprano pipistrelle. A low level of activity was noted with the majority of registrations being common pipistrelle foraging along the boundaries of the central fields adjacent to Pond 12.

## **4.2 Automated Bat Activity Surveys**

Automated bat detectors were left on site for a minimum of five nights each month between April and September 2015. Refer to Appendix A, Figure 8 for locations of the automated bat detectors.



## 5.0 Constraints & Opportunities

### 5.1 Evaluation of Results

At least eleven species of bat were recorded using the habitats at the Site to forage and commute. The species comprised common pipistrelle, soprano pipistrelle, noctule, serotine, Daubenton's, whiskered/Brandt's, Natterer's, Leisler's, brown long-eared, Nathusius' pipistrelle and lesser horseshoe. Common pipistrelles were the most frequently encountered species and Natterer's, whiskered/Brandt's, Leisler's, brown long-eared and lesser horseshoe were each only recorded on one survey visit.

The areas found to support the highest frequency of bat activity / number of bats encountered were the River Lodden and the plantation broadleaved woodland to the north of Park Farm.

Based on the above, the roost identified on Site (small numbers of non-breeding common species) would be valued at the local level.

The commuting routes (rarer species, individual bats, unknown number of roosts, gappy/flailed hedgerows) would score 17 and be valued at the local level.

The foraging areas (rarer species, individual bats, unknown number of roosts, isolated woodland) would score 17 and be valued at the local level.

### 5.2 Impacts

#### 5.2.1 Effects on roosts

One bat roost valued at the local level has been identified adjacent to the site. The roost will not be adversely impacted as a result of the development and no further roosts have been identified.

#### 5.2.2 Foraging and Commuting Bats

The site has been assessed as having value at the local level for foraging and commuting bats. The development proposal includes the construction of residential properties with associated access, landscaping, and car parking. The proposed development will retain valuable boundary features for commuting bats, the woodland and hedgerows. The development proposes to include a large area of informal open space to the north of the site which will improve the foraging opportunities on site for bats.



There is potential for bats that continue to forage and commute within areas of retained habitat to be impacted by lighting during the construction and operational phases of the development. Some common bats, such as those of the *Pipistrellus* genus, are attracted to certain types of lighting as it attracts their invertebrate prey (Rydell and Racey, 1995). However lighting can also illuminate the bats themselves and make them more vulnerable to being predation. Where inappropriate lighting occurs close to roost sites, bats may abandon their roost or delay their emergence, which limits their foraging opportunities (Stone, 2013). Lighting a commuting or foraging route may also impact upon the integrity of a roost, even if the roost itself is not directly affected. Bats from the *Myotis* genus are more sensitive to ambient lighting and may be deterred from using areas of the site, if the lighting is not sensitively designed.

Mitigation recommendations to offset the potential development and operational impacts are provided in the following section.

## **5.3 Recommendations**

### **5.3.1 Lighting**

Stone (2013) summarises the findings of the Bats and Lighting Research Project to date. This has found that artificial lighting tends to have an adverse effect on bats and recommends a series of measures to avoid or reduce this impact. It is recommended that lighting on the development site comprise LED lamps, with a low colour correlated temperature – preferably below 3500K (warm white). Lighting should be directed groundward to avoid light spillage, with hoods/shields as necessary. Light spill on boundary features to be used by commuting bats should be a maximum of 1lux. It is recommended that the informal open space is unlit as these areas are likely to be highly used by foraging bats.

During the construction phase (between April and October), it is recommended that construction activity ceases 30 minutes before sunset, to avoid delaying the emergence of locally roosting bats because of artificial lighting. It is also recommended that construction activity commences again after sunrise to ensure that impacts to bats returning to local roosts does not occur.

### **5.3.2 Landscape design**

A diverse collection of native planting will be incorporated into the landscaping design within the proposed development site. Structurally diverse vegetation and inclusion of native evening-blooming plants will attract insects which in turn will help to enhance the site for foraging bats.



### **5.3.3 Breathable roof membranes**

It is recommended that the use of Breathable Roof Membranes (BRM) is avoided where possible. Instead, Type 1F bitumen and hessian under felt is proposed as an alternative. BRM must be avoided within the roof space of the main building to be retained as a bat roost. Ongoing research has confirmed that no BRM are bat-friendly and all pose a risk to bats. As the membranes wear over time the fibres in the membrane become loose. Bats become entangled in the fibres and, unable to escape, dehydrate, and starve to death. As well as posing a risk to bats, BRMs are also degraded by bats and the efficiency of the membrane is impaired (i.e. the use of BRMs in situations where bats are present is detrimental to the efficient functioning of the BRM as well as to bats. The research is summarized at <http://www.batsandbrms.co.uk/images.php>), further detail is provided in Waring et al. (2013).

### **5.3.4 Reducing the risk of predation by pets**

Reducing the impact of predating cats on bats is not easy - one answer would be to recommend that new home owners keep their cat indoors around the time bats are likely to be emerging, to allow roosting bats uninterrupted access to and from their roosts. However this measure is difficult to enforce. New roost sites for bats will be provided on buildings across the site to provide increased roosting opportunities to bats. Any new roost sites must not be accessible to cats. It is anticipated that installing artificial roosts in walls at a minimum height of 4m will render them inaccessible to cats.

## **5.4 Enhancement**

Whilst enhancement is not a legal requirement, it is encouraged on site as it helps to meet the government objectives for planning to protect and enhance biodiversity, in accordance with the *National Planning Policy Framework (NPPF)*.

A number of the measures outlined in the mitigation section, such as the planting of 'bat-friendly' plants have the potential to enhance the site for bats.

Additional measures to enhance the site for bats include the provision of tree-mounted bat boxes to be attached to suitable retained trees within the retained site boundaries. The model of bat box will be suitable for both crevice-dwelling and larger bat species (Schwegler 2FN or similar). In addition to tree-mounted features, artificial roosting features will be installed in new dwellings in the form of bat bricks and access tiles. Lighting should be directed away from these new roost sites.

Bat boxes will be located away from footpaths and areas subject to disturbance, which will reduce recreational pressure on these new roosting locations.



Three tree bat boxes will be sited as high as possible (no lower than 3m) and clear of any overhanging branches so that the bats have direct and easy access to them. Ideally two boxes should be erected facing in differing directions (between southeast and southwest) around the trunk of the tree, to provide variety in conditions. Boxes should be attached to the tree using an aluminium nail or tied in position using wire/leather.



## 6.0 References

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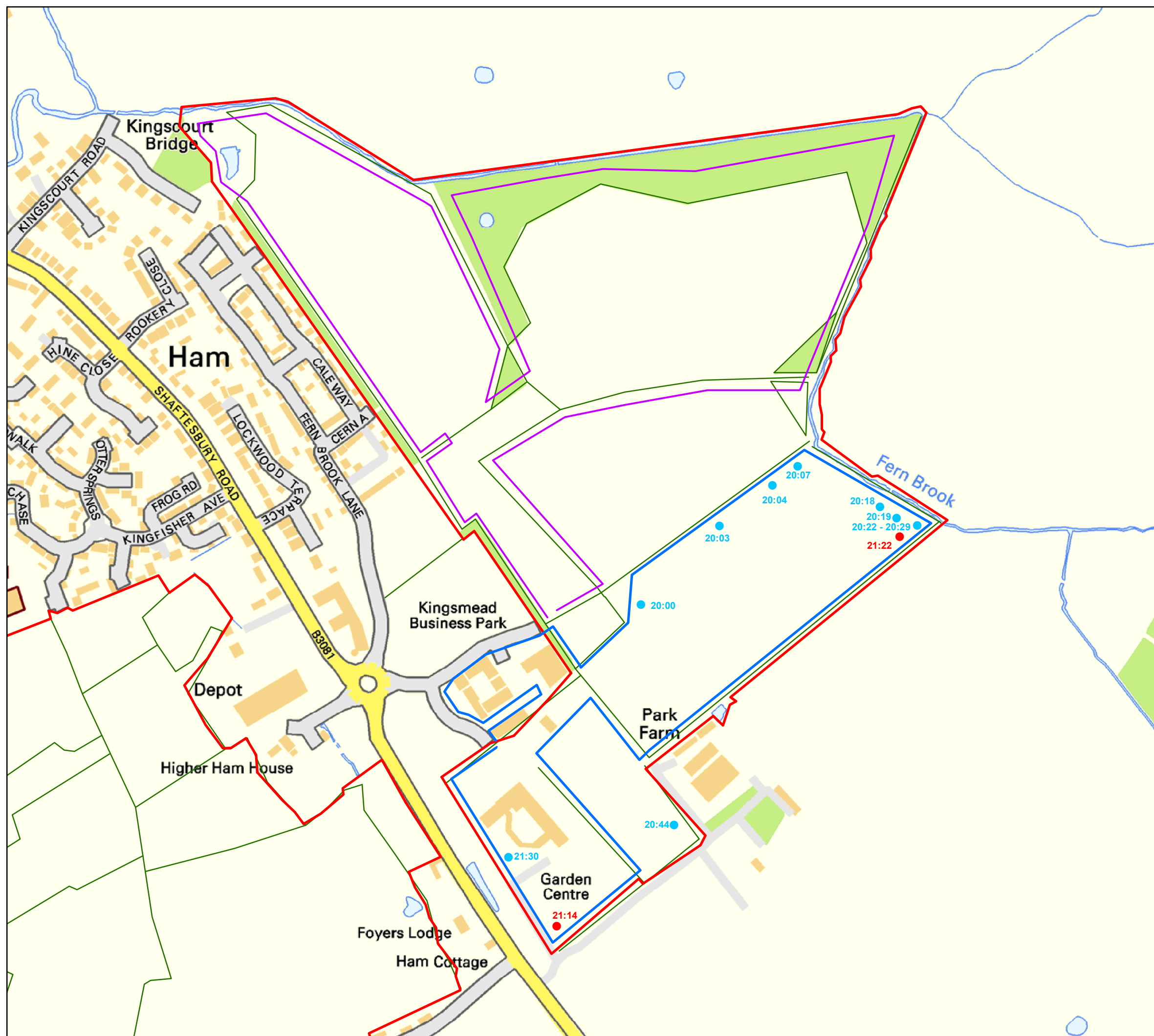


# **APPENDIX A –Manual Bat Activity Figures**



## Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Transect 1
- Transect 2
- Site boundary
- Hedgerows



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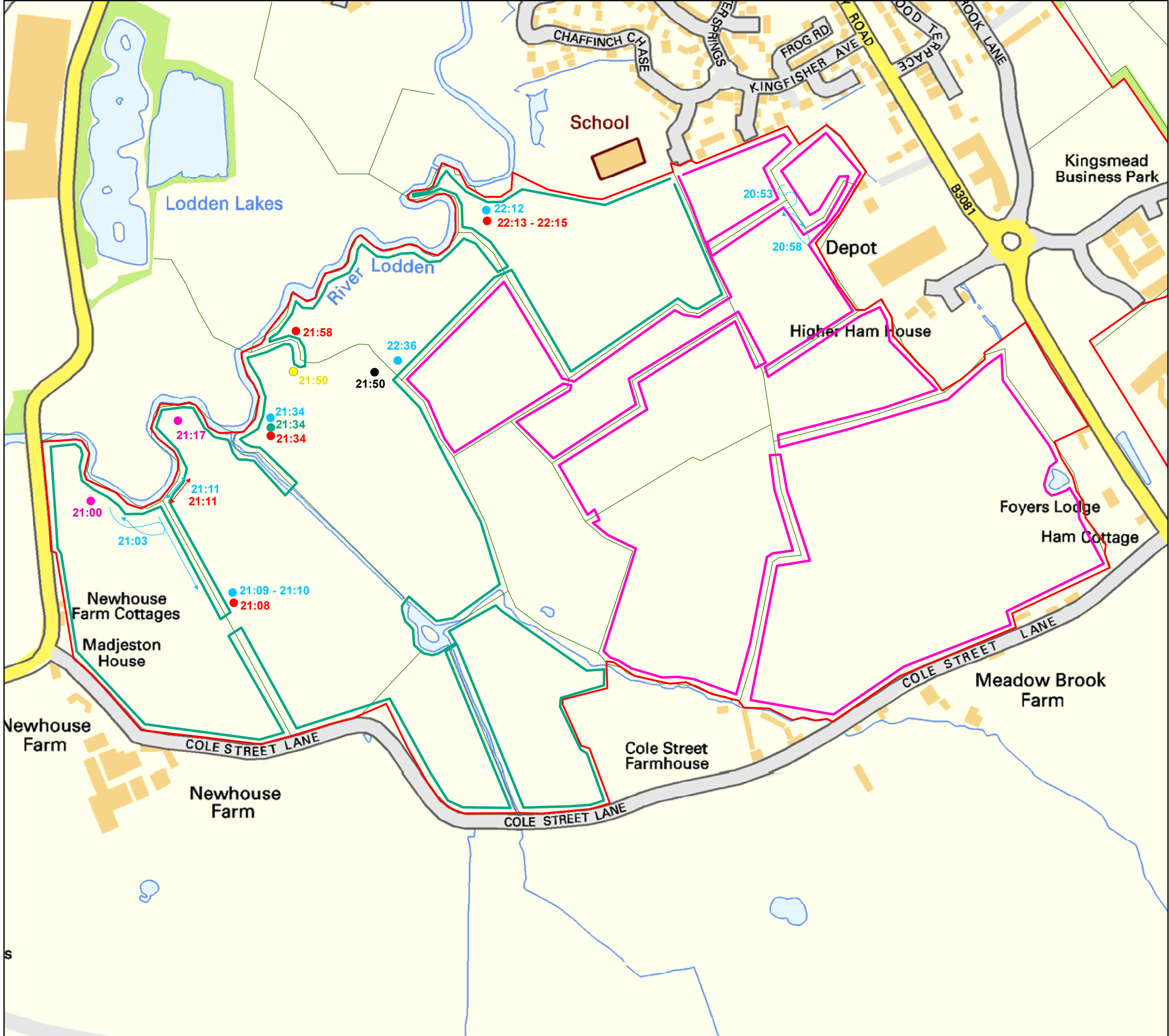
  
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## April Activity Transect 1 and 2

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| A092344     |      | EA 25/11/15     | BC 04/02/16       | TC 04/02/16        |
| Office      | Type | Drawing No.     |                   |                    |
| 45          | 94   | Figure 1a       |                   |                    |
|             |      | Revision        |                   |                    |

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Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Nathusius's pipistrelle, heard not seen
- Noctule, heard not seen
- Brown long-eared, heard not seen
- Myotis species, heard not seen
- Common pipistrelle
- Soprano pipistrelle
- Hedgerows
- Site boundary
- Transect 3
- Transect 4

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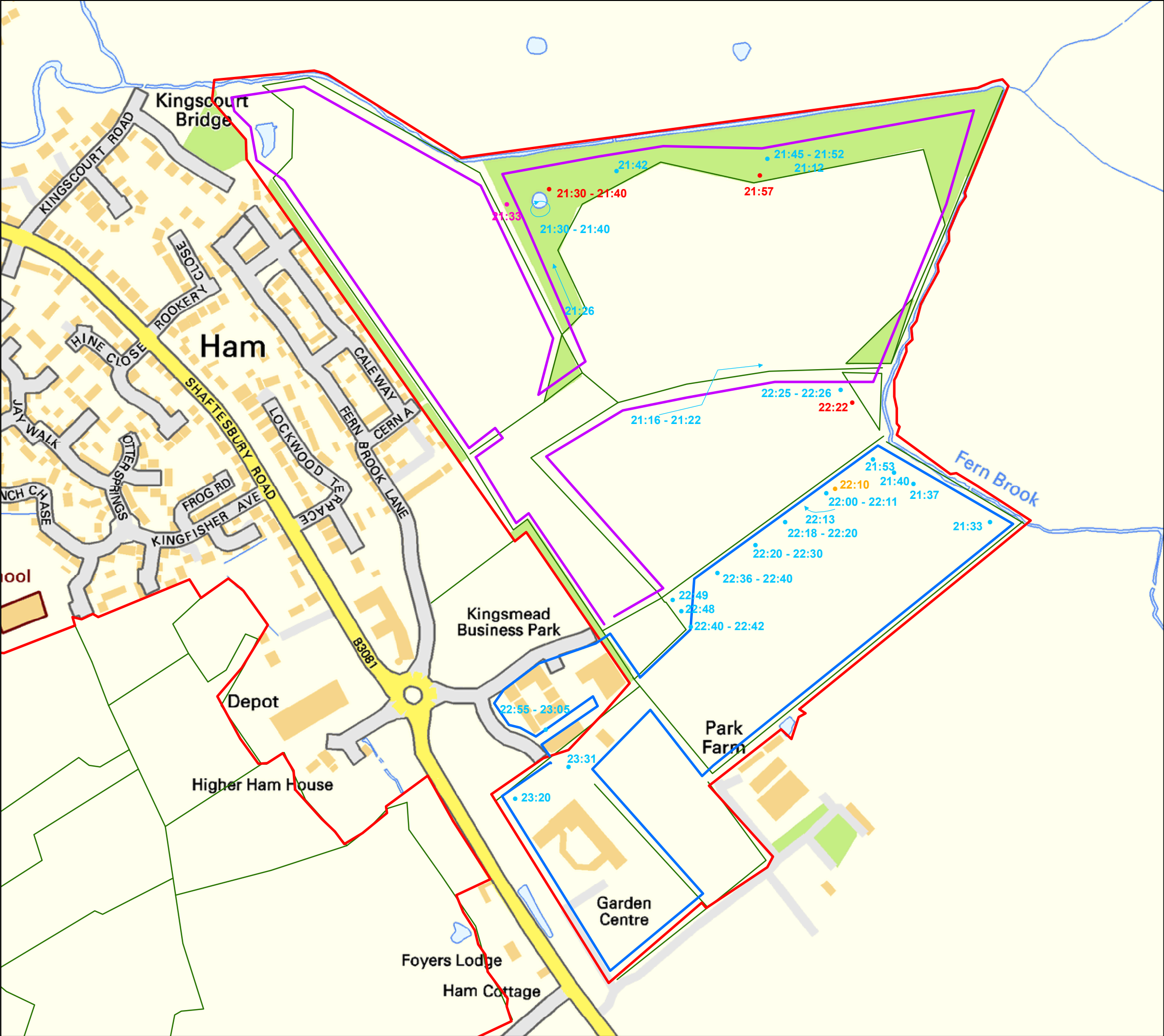
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April Activity Transect 3 and 4

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| Project No: |  | Office |  | Type |  | Drawing No. |  | Revision |  |
| A092344     |  | 45     |  | 94   |  | Figure 1b   |  |          |  |

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Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Noctule, heard not seen
- Serotine, heard not seen
- Common pipistrelle
- Noctule
- Transect 1
- Transect 2
- Site boundary
- Hedgerows

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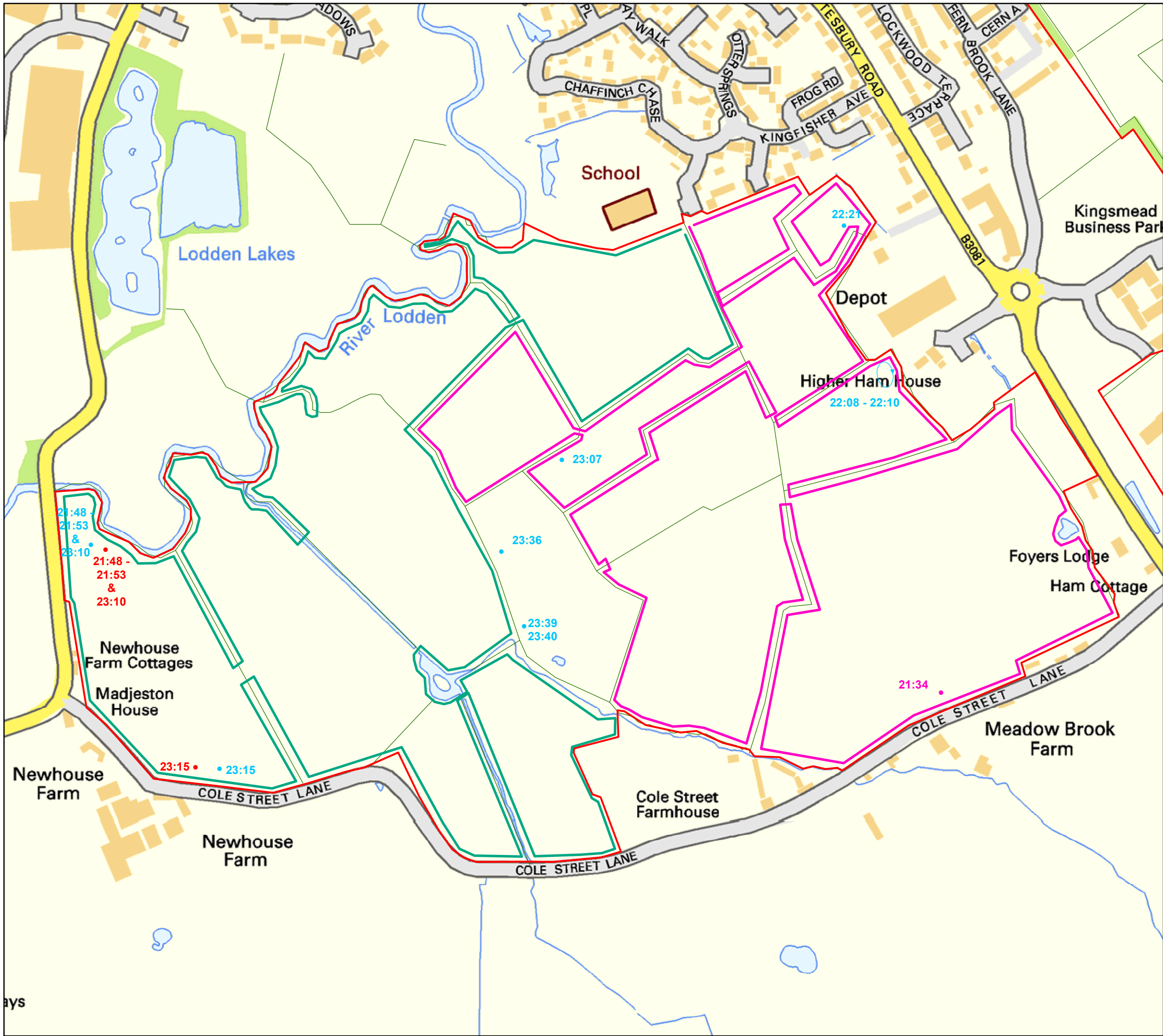
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May Activity Transect 1 and 2

|             |  |        |  |      |  |             |  |          |  |
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# Legend

Common pipistrelle, heard not seen

Soprano pipistrelle, heard not seen

Noctule, heard not seen

Common pipistrelle

Transect 3

Transect 4

Site boundary

Hedgerows

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May Activity Transect 3 and 4

|             |  |        |  |      |  |             |  |          |  |
|-------------|--|--------|--|------|--|-------------|--|----------|--|
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| A092344     |  | 45     |  | 94   |  | Figure 2b   |  |          |  |

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## Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Noctule, heard not seen
- Serotine, heard not seen
- ▲ Likely Whiskered/Brants
- Soprano pipistrelle
- Common pipistrelle
- Transect 1
- Transect 2
- Hedgerows

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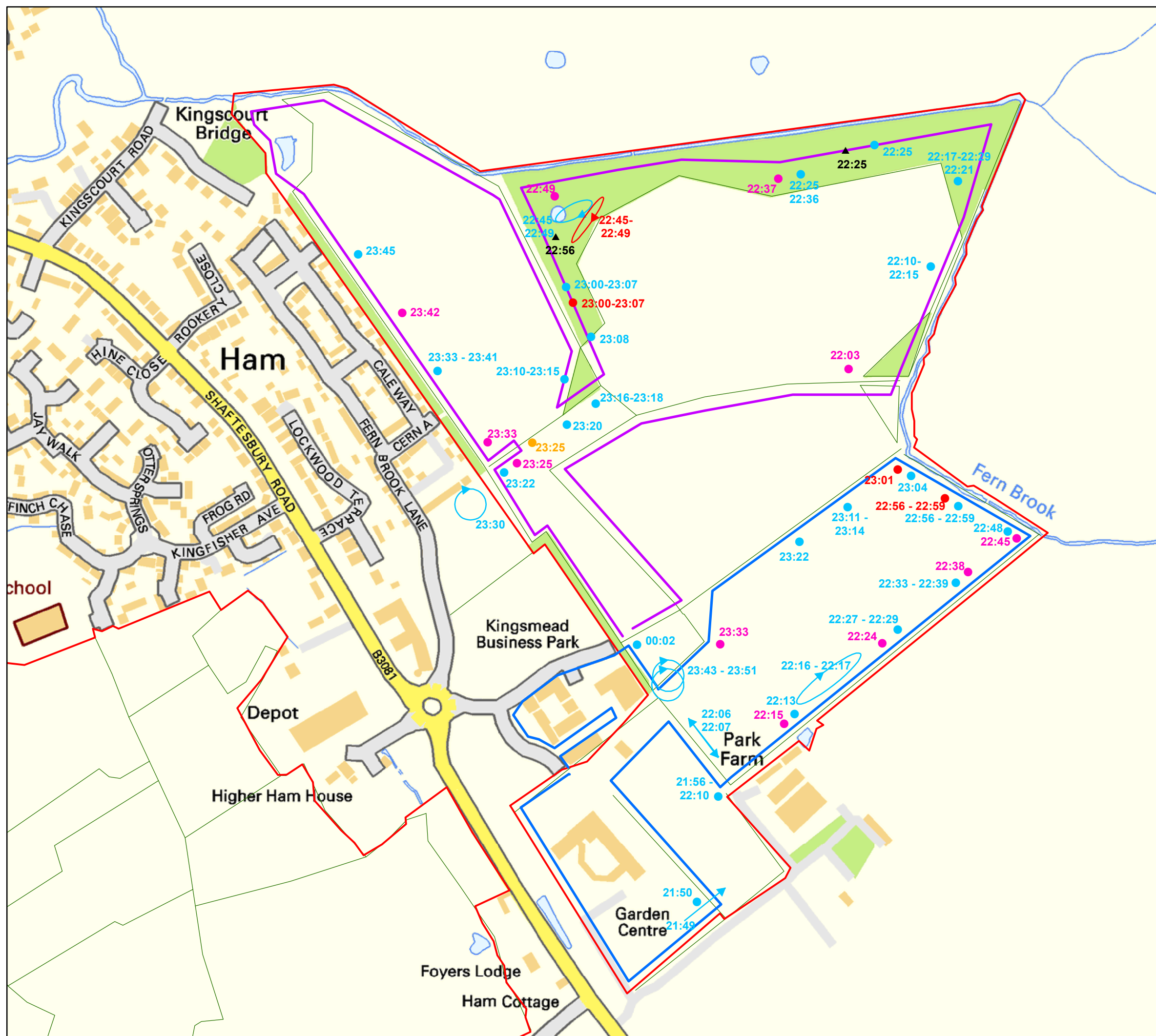
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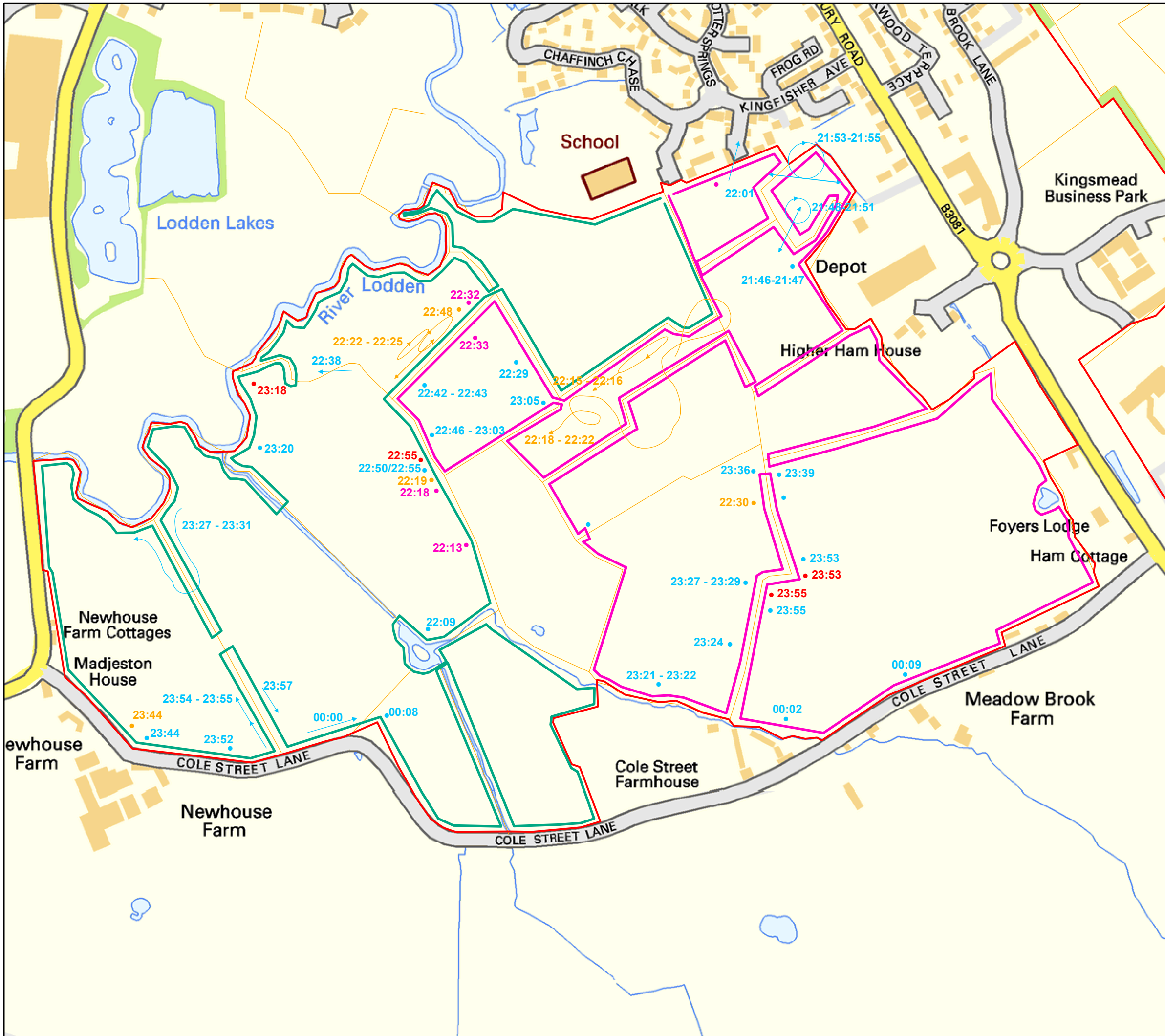
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## June Activity Transect 1 and 2

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| Drawn by: Date: |  | Checked By: Date: |      | Approved By: Date: |          |
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## Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Noctule, heard not seen
- Serotine, heard not seen
- Common pipistrelle
- Serotine
- Transect 3
- Transect 4
- Hedgerows

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## Activity Transect 1 and 2

|                        |                                |            |                                  |  |                                   |  |
|------------------------|--------------------------------|------------|----------------------------------|--|-----------------------------------|--|
| Project No:<br>A092344 | Drawn by: Date:<br>EA 25/11/15 |            | Checked By: Date:<br>DW 26/11/15 |  | Approved By: Date:<br>TC 26/11/15 |  |
|                        | Office<br>45                   | Type<br>94 | Drawing No.<br>Figure 3b         |  | Revision                          |  |

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