Dean Lewis Estates

Land off Old Ashford Road

Lenham, Kent

ECOLOGICAL APPRAISAL

June 2019

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1.0 NON-TECHNICAL SUMMARY

1.1 A residential and sports pitch development with associated landscaping and infrastructure is proposed on a site located to the south-east of Lenham village, Kent. An extended Phase 1 habitat survey and protected species surveys have been undertaken in 2018.

1.2 The site comprises a mix of arable and sheep grazed fields bound by fence lines, hedgerows, grassland, ditches and scrub. The grassland was found to be of low intrinsic and nature conservation importance, with no rare or notable species recorded. A single hedgerow (H12) classified as important under the Hedgerow Regulations and all hedgerows qualified as a habitat of Principal Importance under S41 of the NERC Act (2006).

1.3 There are no internationally or nationally designated sites within a 15km and 2km radius (respectively) of the site. Two non-statutory sites are present within a 1km radius; St Mary's Church yard Local Wildlife Site (LWS) located approximately 430m west of the site and Kiln and Oxley Wood LWS located approximately 520m south-west. Due to the intervening distance it is considered that public pressures upon the designated sites would remain negligible.

1.4 Bat surveys undertaken seasonally in 2018 identified common and widespread bat species using the site, with the majority of activity recorded being that of common pipistrelle *Pipistrellus pipistrellus* and noctule *Nyctalus noctula* bats. Boundary features will be buffered and enhanced, as well as dark corridors maintained around the peripheries of the residential and sports pitch areas. The additional habitat creation will maintain connectivity and benefit the local bat population.

1.5 Six confirmed, probable or possible breeding notable NERC S41, BoCC Red and BoCC Amber listed species were recorded on site. Of these six, two species (dunnock *Prunella modularis* and starling *Sturnus vulgaris*) were recorded as *confirmed* breeders, three species (song thrush *Turdus philomelos*, house sparrow *Passer domesticus* and linnet *Linaria cannabina*) were recorded as *probable* breeders and yellowhammer was recorded as a *possible* breeder. The retention of the majority of boundary features and creation of new breeding habitat (hedgerows/woodland strips), along with provision of nest boxes will ensure continued use of the site by local bird populations.

1.6 Two dormouse nests, one occupied at the time, were recorded; one within the treeline bordering the stream to the eastern boundary of the proposed sports pitches and the second within offsite but connecting habitat to the south. Small sections of habitat where evidence of dormice was recorded are due to be removed to allow access into the sports provision area, however the GI will be designed with specific enhancements for dormice, increasing structure and diversity of native species to enable foraging throughout the year. Works undertaken will need to be carefully timed to ensure that no dormice are harmed during habitat removal, and a Dormouse Method Statement will be prepared at the Reserved Matters stage.

1.7 There were no waterbodies onsite and five waterbodies were identified within a 250m radius of the site, two of which supported a low and medium population of GCN. The site comprised limited suitable terrestrial habitat in the form of field margins, hedgerow bases and scrub. Mitigation measures will be undertaken to ensure that GCN are not harmed during construction works. A licence from Natural England will be applied for once full planning permission has been granted.

1.8 Suitable reptile habitat on site included field margins and scrub. A low population of slow worm, common lizard and grass snake were recorded through presence / likely absence surveys, therefore where suitable habitat is to be lost, a passive displacement exercise will be completed

prior to the commencement of construction activities to ensure that reptiles are not killed or injured during the works.

1.9 The proposed development will retain the boundary hedgerows and create new hedgerows with native planting which will yield fruiting bodies and create refuge for a range of wildlife. The boundaries will be buffered in order to maintain discreet dark corridors for bat species, dormice, reptiles and invertebrates. Small sections of the hedgerows along the northern and southern boundaries of the northern field and a small section of the western field will be removed in order to facilitate the implementation of access and this minor loss will be compensated for through the creation of new habitats as mentioned above.

2.0 INTRODUCTION

2.1 Dean Lewis Estates commissioned FPCR Environment and Design Ltd. to undertake an ecological appraisal of an area of land, approximately 11.25ha in size, located off Old Ashford Road, Lenham, Kent (central grid ref: TQ 907 519).

2.2 This report provides the results of an Extended Phase 1 Habitat and Protected Species surveys undertaken during 2018. The objective of the initial survey was to gain an understanding of the baseline ecology of the application site and immediate surrounding area and to assess its ecological value and any potential constraints or opportunities they might represent for an outline planning application.

Site Context

2.3 The site largely comprises a mix of arable fields and sheep grazed poor semi-improved pastures bound by fence lines, grassland, hedgerows, ditches and scrub. Other habitats present include mature trees, species-poor hedgerows, tall ruderal vegetation, bare ground, ditches and streams, both dry and flowing.

2.4 The site is located within a semi-rural setting to the south-east of Lenham village, Kent. Old Ashford Road borders the site to the north as well as residential properties and associated gardens to the north-east and north-west. Arable fields and grazing pastures surround the remainder of the site. An industrial site lies further to the north with the residential area of Lenham village extending from the western boundaries. A railway line runs further to the south of the site. Much of the surrounding areas comprise open pasture and arable fields as well as Mill Wood, a broadleaved woodland situated c.70m east of the application site.

Development Proposal

2.5 The development proposals include promotion of the arable field within the north of the site for a residential development scheme with associated soft landscaping and planting, in conjunction with sports area provision which includes a sports pavilion, three sports pitches and a play area as well as incorporating cycle and footpath routes to the south of the residential development.

3.0 METHODOLOGY

Desk Study

3.1 The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:

- 15km around the application area for sites of International importance (e.g. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites);
- 2km around the application area for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSI)); and
- 1km around the application site for non-statutory sites of County or Local Importance (e.g. Local Wildlife Sites (LWS)), statutory sites of Local Importance (e.g. Local Nature Reserves (LNR)) and species records (e.g. legally protected or notable species).

3.2 Organisations consulted included:

- Natural England via the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.natureonthemap.naturalengland.org.uk/MagicMap.aspx); and
- KMBRC – Kent and Medway Biological Records Centre.

3.3 Further inspection, using colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

Field Surveys – Habitats / Flora

Extended Phase 1 Habitat Survey

3.4 The survey technique adopted for the habitat assessment followed the Extended Phase 1 habitat survey technique as recommended by Natural England[1]. This comprised a walkover of the site, mapping and broadly describing the principal habitat types and identifying the dominant plant species present within each habitat type and any invasive weeds (where present). The abundance of species was quantified using the DAFOR scale, ranging from Dominant (>75%) to Abundant (75-51%), through Frequent (50-26%) and Occasional (25-11%) to Rare (10-1%). Whilst the plant species lists obtained should not be regarded as exhaustive, sufficient information was obtained to determine broad habitat types. This survey was completed on 23rd April 2018.

Hedgerows

3.5 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)[2]. The aim of the assessment is to allow the rapid recording and ecological appraisal of any given site in the UK, and to allow the grading of the individual hedges present, in order to identify those which are likely to be of greatest significance for wildlife. This method of assessment includes noting down: canopy species composition, associated ground flora and climbers, structure of the hedgerow including height, width and gaps, associated features including number and species of

[1] JNCC. (1990). *Handbook for Phase 1 habitat survey – a technique for environmental audit.* Peterborough: JNCC

[2] Clements, D. and Toft, R. 1992. *Hedgerow Evaluation and Grading System (HEGS), A methodology for the ecological survey, evaluation and grading of hedgerows.*

mature tree and the presence of banks, ditches and grass verges. Each hedgerow is given a grade using HEGS with suffixes '+' and '-' representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score, and denoting hedges of the greatest nature conservation priority) as follows:

- Grade 1 – High to very high value;
- Grade 2 – Moderately high to high value;
- Grade 3 – Moderate value; and
- Grade 4 – Low value.

Hedgerows graded 1 or 2 are considered a priority for nature conservation.

3.6 The hedgerows were also assessed for their potential ecological value under the Hedgerow Regulations 1997 (Statutory Instrument No: 1160)[3] to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance[4]. An assessment of archaeological importance as defined under the Hedgerow Regulations 1997 was beyond the scope of this assessment.

3.7 Hedgerows were also assessed to determine if they met the habitat descriptions for Hedgerow Habitats of Principal Importance as listed within Section 41 of the NERC Act, (i.e. whether they consisted of 80% or more native species).

Field Surveys - Fauna

3.8 During the survey, observations, identification and signs of any species protected under the following list of Acts and Regulations were noted:

- Part 1 of the Wildlife and Countryside Act 1981 (*as amended*)[5];
- The Protection of Badgers Act 1992[6];
- The Conservation of Habitats and Species Regulations 2017[7]; and
- The Natural Environment and Rural Communities (NERC) Act 2006 S41 species of principal importance for the conservation of biodiversity.

3.9 Given the nature of the habitats within and immediately surrounding the site, particular consideration was given to the potential presence of birds, bats, badger *Meles meles*, amphibians and reptiles. In addition to evidence of field signs, the suitability of habitats to support these species was assessed, for example the suitability of mature trees to support roosting bats.

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[3] *The Hedgerow Regulations 1997 – Statutory Instrument 1997 No. 1160.* [Online]. London: HMSO. Available at: http://www.legislation.gov.uk/uksi/1997/1160/contents/made [Accessed 09/04/2016].

[4] DEFRA. 1997. *The Hedgerow Regulations 1997. A Guide to the Law and Good Practice.* London: HMSO

[5] *The Wildlife and Countryside Act 1981* (*as amended*). [Online]. London: HMSO Available from http://www.legislation.gov.uk/ukpga/1981/69 [Accessed 09/04/2016]

[6] *The Protection of Badgers Act 1992 (as amended).* [Online]. London: HMSO Available from: http://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed 09/04/2016].

[7] *The Conservation of Habitats and Species Regulations 2017 – Statutory Instrument 2017 No.1012.* [Online]. London: HMSO. Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed 07/12/2017].

Badger

3.10 All hedgerows and other suitable habitats within the development boundary and accessible land within 30m were searched for evidence of badger activity. Methodology employed followed that outlined by Harris, Creswell and Jefferies (1989)[8].

3.11 Evidence of badger occupation and activity sought included:

- Setts: including earth mounds, evidence of bedding and runways between setts;
- Latrines: often located close to setts, at territory boundaries or adjacent to favoured feeding areas;
- Prints and paths or trackways;
- Hairs caught on rough wood or fencing;

3.12 Other evidence: including snuffle holes, feeding and playing areas and scratching posts. The identification of these latter signs on their own does not necessarily provide conclusive evidence of the presence of badgers. A number of such signs need to be seen in conjunction before badgers can be confirmed as being present.

3.13 The status and the level of activity of setts identified were noted as follows:

- Main sett: usually continuously used with significant signs of activity, including a large number of holes and conspicuous spoil mounds;
- Annexe sett: usually found close to a main sett and connected to it by well used paths. Such setts may not be continuously occupied;
- Subsidiary sett: lesser-used setts usually comprising a few holes and without associated well-used paths. Such setts are not continuously occupied;
- Outlier sett: one or two holes without obvious paths, with a very sporadic use.

3.14 With the level of activity described as:

- Active: clear of debris, trampled spoil mounds and obviously active e.g. presence of prints, dislodged guard hairs;
- Partially active: some associated debris/moss/plants in the entrance. Could be used with minimal amount of excavation usually with signs in the vicinity of the sett e.g. badger paths etc;
- Disused: partially or completely blocked/collapsed.

Bats

<u>Ground Level Tree Assessment</u>

3.15 The trees on site were assessed from ground level during the Phase 1 Habitat Survey for their potential to support roosting bats and to enable recommendations with respect to the proposed works. During the survey Potential Roosting Features for bats such as the following were sought (based on p16, British Standard, Surveying for Bats in Trees and Woodland)[9]:

[8] Harris, S., Cresswell, P. & Jefferies, D. (1989) *Surveying for badgers*. Occasional Publication of the Mammal Society No. [9] Mammal Society, Bristol.

[9] British Standard 2015. BS 8596:2015 *Surveying for bats in trees and woodland – Guide*, October 2015.

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems;
- Woodpecker holes;
- Cracks/splits in stems or branches (horizontal and vertical);
- Partially detached, loose or platy bark;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt rots;
- Compression of forks with occluded bark, forming potential cavities;
- Crossing stems or branches with suitable roosting space between;
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);
- Bat or bird boxes; and
- Other suitable places of rest or shelter not listed above.

3.16 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may reduce or enhance the potential value.

3.17 Trees were classified into general bat roost potential groups based upon the presence of these features. *Table 1* (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in Bat Surveys for Professional Ecologists[10].

3.18 Although the British Standard Document[11] groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

[10] Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

[11] British Standard, (2015), BS 8596:2015 *Surveying for bats in trees and woodland – Guide*, October 2015.

Table 1: Bat Survey Protocol for Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) **and** nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. **However,** where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) **and** / **or** nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the roost is affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers **and** / **or** nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed and the roost site is affected a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

** The Conservation of Habitats & Species Regulations 2017 affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "where there is a reasonably high probability that the species concerned will return".*

Foraging / Commuting Habitat

3.19 The potential for the site and immediate surrounds to support foraging and commuting bats was also assessed, with particular regard being given to the presence of continuous treelines, brooks and hedgerows providing good connectivity in the landscape, and the presence of varied habitat such as scrub, woodland, grassland and open water in the vicinity.

Manual Activity Surveys

3.20 The BCT guidance (2016) recommends that any site, regardless of its size, should be subject to activity assessments where suitable habitats or roosting habitats are present. Under this guidance the site was considered to be of low habitat suitability (*Table 4.1, BCT Guidance 2016*) and falls under the seasonal survey requirements *(Table 8.3 BCT Guidance, 2016*), whereby activity transects and static surveys are required once per season taken as Spring (April / May), Summer (June – August) and Autumn (September / October).

3.21 The primary objective of transect surveys was to identify foraging areas, commuting routes and species utilisation of the site. The transect route was predetermined prior to survey in order to comprehensively cover all areas of the site and included point count stops. Each point count was five minutes long, during which time all bat activity was recorded. The point counts were strategically located throughout the site to account for any habitat loss or potential impacts from the proposed development, and to ensure a comprehensive coverage of habitats.

3.22 Dusk transects commenced at sunset and continued for approximately 2 hours.

3.23 The surveys were undertaken by appropriately experienced ecologists from FPCR. Each transect was walked at a steady pace using Wildlife Acoustic Inc. Echo Meter Touch bat detectors in conjunction with Echo Meter Touch app and Apple Inc. iPad to provide back-up information and enable identification of bats encountered. When a bat passed by, the species, time and behaviour was recorded on a site plan.

3.24 Post-survey, bat calls were analysed using Kaleidoscope Viewer (Version 4.5.4), by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. Analysis was undertaken by experienced ecologists from FPCR. From this, the level of bat activity across the site in relation to the number of foraging and commuting contacts was assessed.

3.25 The timings and weather conditions for the activity transects are shown in *Table 2.*

Table 2: Nocturnal Activity Survey Timings and Weather Conditions

Survey Ref / Date	Survey Type	Sunset Time	Start Time	Finish Time	Weather Conditions (temp °C; cloud cover %; wind; and rain)
Activity Transects					
Transect 1 – 15th May 2018	Transect – dusk	20:41	20:41	22:49	15ºC, 5% cloud, moderate breeze, no rain
Transect 2 – 25th July 2018	Transect – dusk	20:55	20:55	23:00	23ºC, 20% cloud, no breeze, no rain
Transect 3 – 11th September 2018	Transect – dusk	19:22	19:20	21:22	18ºC, 100% cloud, moderate breeze, no rain

Automated Activity Surveys

3.26 Static passive recording broadband detectors were deployed on site during 2018 to supplement the activity transect surveys. These automated logging systems Wildlife Acoustics Inc. Song Meter SM4BAT FS detectors, herein referred to as SM4BAT detectors, save all recordings onto an internal storage device for analysis. These were positioned at locations where habitats would be impacted as a result of development, and at locations that were considered to be suitable as bat navigational / foraging routes.

3.27 In May, July and September a single device was placed in locations around the site for a minimum of five nights of suitable and / or typical weather conditions. The detector was programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes following sunrise. The output from this detector was subjected to analysis using the Kaleidoscope Viewer (Version 4.5.4).

3.28 The analysis of the recorded SM4BAT files can highlight the presence of more than one bat if they are recorded simultaneously on the same sound file. However, it is not possible to determine whether consecutive sound files have been recorded as the result of a single bat passing the detector as it commutes across the landscape or by one bat repeatedly triggering the detector as it forages in close proximately for an extended period. Therefore, each sound file is counted as a single bat registration. The number of bat registrations does however reflect the relative importance of the location of the detector by calculating the bat registration per hour.

3.29 The timings of the automated activity surveys completed and the description of unit locations are detailed in *Table 3* below with the location also shown on *Figure 4*.

Table 3: Static Detector Survey Dates

Position	Periods Deployed	Area Covered
Unit A	15th – 20th May 2018	Eastern extent of hedgerow H5
Unit B	25th – 29th July 2018	Western extent of hedgerow H3
Unit C	11th – 16th September 2018	Western extent of hedgerow H5

Breeding Bird Surveys

3.30 The survey methodology employed was broadly based on that of territory mapping[12], as developed by the British Trust for Ornithology (BTO). Standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex and age where appropriate.

3.31 The criteria used in the assessment of breeding birds has been adapted from the standard criteria proposed by the European Ornithological Atlas Committee (EOAC)[13] and are grouped into four categories:

- *Non-breeder* e.g. flyover or observed in unsuitable habitat;
- *Possible breeder* e.g. birds observed in suitable habitat or a singing male(s) recorded;
- *Probable breeder* e.g. pair in suitable habitat, defended territory, agitated behaviour or nest building; and
- *Confirmed breeder* e.g. recently fledged young observed, or adult birds carrying food for young.

3.32 The survey was conducted to ascertain the potential for the application site to support bird species with an associated conservation status as Wildlife and Countryside Act Schedule I, NERC Section 41 and / or BoCC Red or Amber listed species. These species are likely to be of the greatest concern in relation to their susceptibility to further decline and are commonly referred to as 'notable' species.

3.33 Three breeding bird surveys were undertaken during the hours after dawn in May and June 2018 (*Table 4*). A route was pre-planned prior to the survey being undertaken, paying particular attention to any linear features, such as hedgerows and tree lines, and natural features such as scrub and waterbodies. The survey was not undertaken in unfavourable conditions, such as heavy rain or strong wind, which may have negatively affected the results. The weather conditions under which surveys were conducted are provided in *Table 4* below.

Table 4: Breeding Bird Survey Dates and Weather Conditions

Date	Sunrise	Cloud Cover (%)	Rain	Wind	Visibility
15.05.18	05:07	10	0	3	Excellent
05.06.18	04:44	100	Light drizzle	2-3	Good
27.06.18	04:43	100	0	3	Good

Assessment Methodology for Breeding Bird Surveys

3.34 The conservation value of bird populations has been measured using two separate approaches; nature conservation value and conservation status. The CIEEM guidance on ecological impact assessment evaluates nature conservation value within a geographical context[14]. To attain each level of value, an ornithological resource, or one of the features (species population or assemblage of species) should meet the criteria set out in *Table 5* below. In some cases, professional judgement may be required to increase or decrease the allocation of a specific value, based upon local knowledge.

[12] Bibby, C.J., Burgess, N.D., Hill, D, A., Mustoe, S. & Lambton, S. (2000). Bird Census Techniques
[13] EOAC (1979) Categories of Breeding Bird Evidence. European Ornithological Atlas Committee.
[14] CIEEM (2016). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.

3.35 The most recent county annual bird report, The Kent Bird Report 2014, as published by the Kent Ornithological Society (2016), was consulted to inform the assessment.

Table 5: Evaluation Criteria

Nature Conservation Value	Selection Criteria
International	A species which is part of the cited interest of an SPA and which regularly occurs in internationally or nationally important numbers. A species present in internationally important numbers (>1% of international population).
National	A species which is part of the cited interest of a SSSI and which regularly occurs in nationally or regionally important numbers. A nationally important assemblage of breeding or over-wintering species. A species present in nationally important numbers (>1% UK population). Rare breeding species (<300 breeding pairs in the UK).
Regional	Species listed as Priority Species under Schedule 41 of the Natural Environment and Rural Communities (NERC) Act (2006), which are not covered above, and which regularly occurs in regionally important numbers. Species present in regionally important numbers (>1% of regional population). Sustainable populations of species that are rare or scarce within a region. Species on the BoCC Red List and which regularly occurs in regionally important numbers.
County	Species listed as Priority Species under Schedule 41 of the NERC Act, which are not covered above and which regularly occurs in county important numbers. Species present in county important numbers (>1% of county population). Sustainable populations of species that are rare or scarce within a county, or listed as priority species for nature conservation under S41 of the NERC Act. A site designated for its county important assemblage of birds (e.g. a SINC Site). Species on the BoCC Red List and which regularly occur in county important numbers.
Local	Other species of conservation interest (e.g. all other species on the BoCC Red and Amber List or listed as Priority Species under Schedule 41 of the NERC Act which are not covered above) regularly occurring in locally sustainable populations. Sustainable populations of species which are rare or scarce within the locality.
Site	Species that are common and widespread.

Great Crested Newt

3.36 Aerial images and OS maps were reviewed for the presence of ponds within a 500m radius of the site and their potential connectivity to the site assessed. Habitats present within the site were assessed during the extended Phase 1 Habitat Survey for their potential to provide suitable areas of rest or shelter for GCN.

Habitat Suitability Index (HSI)

3.37 Where access was granted and where there were no barriers to dispersal, waterbodies within a 500m radius (*Figure 3*) of the site were assessed, using the Habitat Suitability Index (HSI) for their potential suitability for GCN. The HSI provides a measure of the likely suitability that a waterbody

will support newts[15]. In general, waterbodies with a higher score are more likely to support GCNs than those with a lower score and there is a positive correlation between HSI scores and waterbodies with newts recorded. Ten separate attributes are assessed for each waterbody:

- Geographic location;
- Pond area;
- Pond drying;
- Water quality;
- Shade;
- Presence of waterfowl;
- Presence of fish;
- Number of linked ponds;
- Terrestrial habitat; and
- Macrophytic coverage.

3.38 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Waterbody suitability is then determined according to the following scale:

Table 6: Habitat Suitability Index Scores and Waterbody Suitability

HSI Score	Waterbody Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

3.39 An assessment of the suitability of the terrestrial habitats to support GCNs was completed at each waterbody. Suitable terrestrial habitat includes refuge opportunities such as scrub and rank vegetation and habitat that could provide suitable hibernation sites such as rubble piles or tussock grassland.

Aquatic Surveys

3.40 Survey methods follow those recommended by Natural England as detailed in the Great Crested Newt Mitigation Guidelines[16]. To determine the presence or absence of GCNs, four survey visits were undertaken between May and June 2016. On each survey occasion three of a possible four

[15] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus).* Herpetological Journal 10 (4), 143-155.
[16] English Nature (2001) Great crested newt mitigation guidelines

different survey techniques were employed (egg searches, sweep netting, bottle trapping and torching). A summary of these techniques is detailed below.

Bottle Trapping:

3.41 Bottle traps are set within the waterbody in the evening at densities of one trap per two meters of shoreline (where feasible) and left overnight for inspection in the morning. Traps are partially submerged in the water leaving an air bubble in the bottle and secured by a cane. Care is taken to ensure that trapping does not occur during excessively warm weather, when the temperature inside the trap could rise considerably, reducing oxygen levels and potentially suffocating the newts.

Sweep Netting:

3.42 Long handled sweep-nets are used to sample the margins of the waterbody for GCNs with approximately 15 minutes of netting per 50m of shoreline.

Torching:

3.43 Torching involves searching the waterbody after dusk using high-powered torches to scan the margins and potential display areas for newts. The perimeter of the waterbody is walked slowly spending approximately 15 minutes torching each 50m of shoreline recording any newts observed. Torch surveys are unsuitable within heavily vegetated and/or turbid waterbodies or after periods of heavy rain as visibility is diminished.

Egg Searching:

3.44 Newts lay single eggs on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. GCN eggs can be distinguished from those of other newts by their size, shape and colour. Submerged vegetation was examined for newt eggs and folded leaves gently opened to check for eggs. Once a GCN egg is identified, no further leaves need to be examined to minimise any further potential disturbance.

3.45 Appropriately licenced /accredited ecologists from FPCR completed all of these surveys during suitable conditions i.e. when the ambient air temperature exceeds 5°C, with little/no wind and no rain.

Table 7: GCN Survey Dates and Weather Conditions 2018

Survey Dates	Weather Conditions
8th May 2018	No rain and gentle breeze; evening air temperature: 19°C; morning air temperature: 14°C.
14th May 2018	No rain and gentle breeze; evening air temperature: 15°C; morning air temperature: 10°C.
17th May 2018	No rain and gentle breeze; evening air temperature: 14°C; morning air temperature: 8°C.

Survey Dates	Weather Conditions
24th May 2018	No rain and gentle breeze; evening air temperature: 16ºC; morning air temperature: 14ºC.
7th June 2018	No rain or wind; evening air temperature: 17ºC; morning air temperature: 14ºC.
14th June 2018	No rain and gentle breeze; evening air temperature: 19ºC; morning air temperature: 16ºC.

Population Size Class Assessment

3.46 Population size class assessments are based on the highest maximum (peak) count of adult GCNs observed on any one survey occasion. The below table details the population size class assessment.

Table 8: Determining GCN Population Size Class

Population Size Class	Peak Counts
Low Population	0 – 10 animals
Medium Population	11 – 100 animals
High Population	> 101 animals

Hazel Dormouse

Nesting Tubes

3.47 Dormouse surveys have been undertaken in accordance with current good practice guidelines[17]. Surveys involved placing standard dormouse nest tubes every 20m in the suitable habitats, approximately 1.5m above ground. A total of 90 tubes were installed within the survey area during May 2018 (*Figure 5*) and with surveys commencing between June and November 2018.

3.48 The survey results are used in conjunction with an index of probability, which indicates the likelihood of finding dormice during this period (*see Table 9*). The survey is scored for effort according to the method developed from the South West Dormouse Project[18]. The scoring system provides an overall index of effort by multiplying the sum of the months the tubes were checked by the number of tubes used. A score of 20 (or above) is deemed a thorough survey.

Table 9: Index of Probability for Recording Dormice in Nesting Tubes (per 50 tubes)

Month	Index of Probability
April	1

[17] Bright P., Morris P. & Mitchell-Jones, T. 2006. *The Dormouse Conservation Handbook*. English Nature, Peterborough.
[18] Chanin and Woods 2003. *Surveying dormice using nest tubes: results and experiences from the South West Dormouse Project.* English Nature Research Report No 524. Peterborough: English Nature.

Month	Index of Probability
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Reptiles

3.49 A strategic reptile presence/likely absence survey has been undertaken based on methodology detailed in the Herpetofauna Workers Manual[19] and the Froglife Advice Sheet 10 - Reptile Survey[20]. Methods involved a search for basking reptiles on/under naturally occurring and strategically positioned artificial refugia. These were placed in locations that offered the most suitable habitat for common reptiles, i.e. structurally diverse 'edge' habitats with areas of bare ground/short vegetation.

3.50 A total of 75 artificial refugia (0.5m² sections of roofing felt) were placed within the site in habitats considered most suitable for reptiles on 14th May 2018. Suitable habitats consisted of poor semi-improved grassland, hedgerow margins, and areas of surrounding scrub, and measured approximately 2.5ha. This is in accordance with the Froglife Advice Sheet 10 (1999) which recommends that refugia should be placed at a density of 10 per ha of suitable habitat.

3.51 The refugia were left to 'bed in' for approximately 2 weeks, followed by seven separate surveys. Each survey visit will be undertaken in accordance with guidelines as follows:

- At temperatures of between 9°C - 18°C;
- On sunny / cloudy days with little or no wind;
- Before 1100 hours and after 1600 hours;
- Approaching refugia from downwind and avoiding casting a shadow and with care so as to not disturb basking animals when checking;
- That lifting and replacing tins, to check for the presence of reptiles underneath in hot weather is undertaken with care, to avoid potential harm to any animals underneath; and
- That the location and number of tins are mapped to aid survey and avoid the possibility of leaving tins *in situ* after completion of the survey.

3.52 In some circumstances, conditions may be more suitable, but fall outside of the guidelines mentioned above; for example, sunny periods after rainfall but after 11am. Such conditions would be more favourable to reptiles and likely increase the probability of positive encounters. Therefore, the guidelines are only suggested periods, surveyors' experience and weather assessment can prove to be fruitful outside of guidance periods, but only where conditions are suitable.

[19] Gent, T & Gibson, S (2003) *Herpetofauna Worker's Manual*. JNCC, Peterborough.

[20] Froglife (1999) *Reptile Survey; an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10*. Froglife, Halesworth.

3.53 As per guidelines seven survey visits have been completed, the dates and weather conditions of which are detailed in *Table 10* below:

Table 10: Dates and Survey Conditions for Reptile Surveys

Date	Time	Weather Conditions
5th June 2018	15:33	15ºC, bright, clear, sunny, rain earlier in day, 50 - 60% cloud cover, light breeze
15th June 2018	10:09	14ºC, bright, clear, sunny, 50-60% cloud cover, moderate breeze
18th June 2018	09:45	16ºC, bright, clear, sunny, 20 – 30% cloud cover, moderate breeze
7th September 2018	08:32	14ºC, bright, clear, sunny, 0-10% cloud cover, moderate breeze
14th September 2018	08:48	14ºC, bright, clear, sunny, 20-30% cloud cover, light breeze
21st September 2018	11:00	15ºC, bright, clear, sunny, 20 – 30% cloud cover, moderate breeze
28th September 2018	15:02	17ºC, bright, clear, sunny, 0-10% cloud cover, moderate breeze

3.54 Reptile populations were assessed in accordance with population level criteria as stated in the Key Reptile Site Register[21]. This system classifies populations of individual reptile species into three population categories assessing the importance of the population *(Table 11)*. These categories are based on the total number of adult animals observed during individual survey occasions.

Table 11: Key Reptile Site Survey Assessment Categories (Froglife, Advice Sheet 10)

Species	Low Population (No. of individuals)	Good Population (No. of individuals)	Exceptional Population (No. of individuals)
Adder	<5	5 - 10	>10
Common lizard	<5	5 - 20	>20
Grass snake	<5	5 - 10	>10
Slow-worm	<5	5 - 20	>20

Water Vole

3.55 During the initial survey on 23rd April 2018, the streams on site (S1 and S2, Figure 2) and the ditches (D1A, D1B and D2, Figure 2) were surveyed by an experienced ecologist from FPCR Environment & Design Ltd. to look for evidence of the presence of water vole. An offsite stream S3 was also surveyed as it runs close to S1. Two subsequent water vole surveys were undertaken on the steams to assess whether water voles were utilising these watercourses.

3.56 The survey followed the standard methodologies outlined within The Water Vole Conservation Handbook[22]. This involved identification of evidence of water vole activity. Field signs searched for included:

[21] Froglife (1999) *Reptile Survey; an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10*. Froglife, Halesworth.

[22] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series*). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

- **Faeces -** these are 8 - 12mm long and 4 - 5 mm wide, cylindrical with blunt ends. The colour is variable, though often green, and they are generally odourless or have a faint musky smell;
- **Latrines** - the majority of droppings are deposited at latrine sites, used to mark range boundaries, favoured spots close to nests and where they leave and enter water. Latrines often consist of a flattened mass of old droppings topped with fresh ones;
- **Feeding stations -** water voles often bring pieces of cut vegetation to favoured feeding stations close to the water's edge and leave remains in neat piles. The cut vegetation is typically 100mm long and is cut at a 45° angle;
- **Burrows** - many burrows can be found in riverbanks, but those constructed by water voles are typically wider than they are high, with a diameter of 4 - 8cm. The holes are generally closer to the water's edge than those made by other species. Around these holes, well-grazed 'lawns' can often be found, where the water voles have chewed the vegetation short;
- **Footprints** – identifiable prints in soft margins of the watercourse; and
- **Runways** – low tunnels that are pushed through the vegetation often leading to burrows or feeding stations.

4.0 RESULTS

Desk Study

Designated Sites

4.1 Locations of statutory and non-statutory sites referred to in the following section are illustrated on *Figure 1: Site Location & Consultation Results Plan*.

Statutory Sites of International Conservation Value / National Conservation Value

4.2 Within 15km of the application site is one site of international importance, with one site of national importance also present within 2km of the site.

4.3 The Swale SPA & Ramsar is located 13km north-east of the site and is designated primarily for its estuarine and marshland habitats which shelter several species of protected bird species throughout the year.

4.4 Lenham Quarry SSSI is located 572m north-east from the site. It has been designated primarily for its geological importance, with marine fossils from the poorly represented Pliocene time period present.

Non-Statutory Sites of Local Conservation Interest

4.5 There are two Local Wildlife Sites (LWS), which are county level designations, present within 1km of the application site. Kiln Wood and Oxley Wood LWS is located 520m south-west of the site. Kiln Wood is ancient woodland, consisting mainly of oak *Quercus robur*, hazel *Corylus avellana* and hornbeam *Carpinus betulus* with some field maple *Acer campestre*, willow *Salix* sp. and birch *Betula* sp. St Mary's Churchyard LWS is located 430m west of the site boundary and the record centre provided no additional biological information.

4.6 There are four ancient semi-natural woodlands present within 1km of the application site. Round Wood is 285m south-west, East Lenham Roughett is 460m south-east, Oxley Wood is 530m south-west and Wheatgratten Wood is 965m south-east of the site boundary. The record centre provided no additional biological information on these sites.

Protected and Priority Species

4.7 Records of protected or otherwise notable taxa provided by the Kent and Medway Biological Records Centre are listed in *Table 12* below. Locations of these records are presented in *Figure 1*: *Consultation Plan*. There were no records returned from within the application site. Most records included, are up to 1km from the application boundary. However, records provided for some notable species of conservation importance were located further away than this. Due to their high protection status, these species are also included in the table where appropriate.

4.8 Only records since 2008 are included, however older records were checked before discounting them, in case there were any highly protected species not represented with more recent records, or records of them from different locations.

4.9 A number of species records with four figure (low resolution) grid references adjacent to, or within the site were also provided. These included many common and widespread species, as well as species of conservation concern i.e. listed on Schedule 5 of the Wildlife and Countryside Act, Section 41 of the NERC Act, or the Kent Biodiversity Action Plan (KBAP). Owing to the low resolution of these records it is not possible to give definitive distances of each from the site.

Table 12: Protected and Notable Species Records

Species	Dates	Relevant Legislation	Approximate Location Relative to Site
Terrestrial mammals			
Western European Hedgehog *Erinaceus europaeus*	2014	NERC41; WCA5; KBAP	Multiple records west of site, closest record located 930m from the site.
Hazel Dormouse *Muscardinus avellanarius*	2016	WCA5; CRoW, KBAP	Single record 1715m west of the site. (Additional single record from 1994 located in same woodland).
Mammals (Bats)			
Pipistrelle species *Pipistrellus sp.*	2010	HabDir:A4; Bern:A3; Bonn:A2; WCA5 (KBAP if Soprano)	Single record 1020m west of the site.
Herpetofauna			
Slow worm *Anguis fragilis*	2013	Bern: A3; WCA5; KBAP	Two records, closest record 790m north-west of the site.
Great Crested Newt *Triturus cristatus*	2014	HabsDirA4; Bonn:A3; Bern:A2, WCA5; KBAP	Multiple records, closest record 235m north-west of the site.

Key: NERC41 – Section 41 of the Natural Environment and Rural Communities Act 2006; HabsDirA2 – Habitats Directive Annex II species, HabsDirA4 – Habitats Directive Annex IV species, HRegs – The Conservation of Habitats and Species Regulations 2017; KBAP – Kent Biodiversity Action Plan; WCA1/ WCA5/ WCA9 – species listed on Schedules 1, 5 and/or 9 of the Wildlife and Countryside Act 1981 respectively

Bird Species

4.10 A number of bird species records from 2008 onwards and within 1km of the site boundary were provided. These included many common and widespread species, as well as species of conservation concern i.e. listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), Section 41 of the NERC Act (2006), or the Kent Biodiversity Action Plan.

4.11 Records of species on the Birds of Conservation Concern Amber or Red lists or on the Wildlife and Countryside Act 1981 (as amended) Schedule 1 and have the potential to utilise the habitats on site include: mallard Anas platyrhynchos, red kite *Milvus milvus*, kestrel *Falco tinnunculus*, lapwing *Vanellus vanellus*, barn owl *Tyto alba*, lesser spotted woodpecker *Dendrocopus minor*, skylark *Alauda arvensis*, fieldfare *Turdus pilaris*, redwing *Turdus iliacus*, spotted flycatcher *Muscicapa striata*, linnet *Carduelis cannabina* and yellowhammer *Emberiza citrinella*.

Badgers

4.12 Records of badgers were received within the 1km study area, however due to the sensitive nature of badgers, the locations remain undisclosed.

Other Records

4.13 Additional records of species that could not be accurately mapped or were further than the recommended 1km study area were received that are still considered to be relevant to the site. This included several bat records, such as three bat roosts and a maternity roost that were recorded in Lenham village approximately 250m west of the application site for an undisclosed bat species and two bat roosts 530m south-east of the application site. Several records for a hibernation site for Bechstein's bats *Myotis bechsteinii* approximately 1.4km north of the site were also returned. Other records included water vole *Arvicola amphibious* and Eurasian water shrew *Neomys fodiens*.

Field Survey – Habitats

4.14 The habitats described below correspond to those mapped at *Figure 2 Phase 1 Habitat Plan*. Plant species recorded during the survey are listed in *Appendix A*.

Arable

4.15 The dominant habitat within the site was arable land, present within three of the five field compartments (F1, F4 and F5, Figure 2). At the time of the survey a rapeseed *Brassica napus* crop was being cultivated in all the arable fields. Patches of field F1 had recently been cut and ploughed, with areas of bare ground and stubble remaining from the cutting. Surrounding the crop was a field margin which hosted tall ruderal plant species and a poor semi-improved grassland strip.

Photo 1: Arable field (F1)

Poor Semi-improved Grassland

4.16 The field margins ranged from 1-7m in width and comprised frequent perennial rye-grass *Lolium perenne,* cock's-foot *Dactylis glomerta* and Yorkshire fog *Holcus lanatus.* Sections of the margin were left unmanaged forming greater sward density and tussock areas.

Photo 2: The field margins surrounding the northern arable field F1.

4.17 A track had formed along the field margins where grass height was shorter. It was evident that some areas of the track were used for vehicular access with some impact from footfall from walkers and livestock. Other occasional herb species included white clover *Trifolium repens,* creeping buttercup *Ranunculus repens,* and ground ivy *Glechoma hederacea.*

4.18 Two field compartments (F2 and F3) comprised poor semi-improved grassland. F2 was noted to be heavily sheep grazed. Composition of grass species included abundant meadow-grass species *Poa* sp.*,* bent grass species *Agrostis* sp., and cock's-foot as well as occasional perennial rye-grass, Yorkshire fog and red fescue *Festuca rubra* agg*.* The assemblage of other short herb species was poor, however there were rare occurrences of garlic mustard *Alliaria petiolata.* Stream S1 flows from the residential pond (P1) southwards and lies between field compartments F2 and F3. Due to the stream there is a presence of vegetation that is associated with damp and wetland habitats such as lesser celandine *Ficaria verna,* hard rush *Juncus inflexus* and hairy sedge *Carex hirta.*

4.19 Field F3 lies to the west of F2 and these fields are bisected by stream S1, as well as a treeline on either side of the watercourse. This area of semi-improved grassland is also sheep grazed, albeit less intensively. Yorkshire Fog was the most frequent species of grass present, as well as red fescue and hairy sedge. This field compartment had a higher assemblage of other short herb species, including occasional creeping cinquefoil *Potentilla reptans,* bird's-foot trefoil *Lotus corniculatus* and silverweed *Argentina anserina.* Other tall ruderal species were present throughout the field, including common nettle *Urtica dioica* and creeping thistle *Cirsium arvense.* A patch of unmanaged dense scrub was present on the western boundary (see TN2 and TN3, Figure 2) and comprised bramble *Rufus fruticosus* agg*,* common nettle and hard rush.


Photo 2 and 3: Semi-improved grassland within Field F2 (left) and F3 (right)

Ruderal Vegetation

4.20 Common nettle was the most abundant species, with frequent swathes of cleavers *Galium aparine,* spear thistle *Cirsium vulgare* and white dead-nettle *Lamium album* lining sections of the margins which ranged from 1-7m in width.

Hedgerows

4.21 Hedgerows were of moderate and moderately high ecological value when assessed against the HEGS criteria. Most hedgerows had been recently managed and formed arable field boundaries. Hedgerow H12 was classified as important under the Hedgerow Regulations and all hedgerows qualified as a habitat of Principal Importance under S41 of the NERC Act (2006). *Table 13* provides a summary of the composition of all hedgerows.

Table 13: Hedgerow Survey Results

Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	HEGS Grade	Import. HR
H1	*Cm, Sn, Ac, Ca, Ps, Rf*	2-4/1-2	138	3	No gaps, one end connection, arable field boundary. *Cm* dominant.	-3	NO
H2	*Sn, Cm, Ps*	2-4/1-2	210	1	30%+ gaps, no end connection, *Cm* dominant. Dry ditch on one side choked with vegetation 1m-1m.	-3	NO
H3	*Cm, Rc*	4+/0-1	20	1	10-0% gaps, no end connection, arable field boundary, close to scrub.	-3	NO

Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	HEGS Grade	Import. HR
H4	*Cm*	1-2/1-2	15	1	No gaps, two end connections, *Cm* dominant residential hedgerow.	3+	NO
H5	*Cm, Ps, Rc, Sn, Rf*	1-2/1-2	381	3	10-0% gaps, two end connections, *Cm* dominant, arable field and roadside boundary.	3+	NO
H6	*Cm, Sn, Ps, Ac, Ca, Fe*	4+/2-3	191	1	30%+ gaps, no end connections. *Cm* dominant, field boundary. Stream running on one side (S1).	-3	NO
H7	*Ac, Rf, Ps, Cm*	4+/1-2	79	1	30-10% gaps, one connection, *Ac* dominant. Field boundary hedge. Dry ditch on one side 0-1.5m.	-3	NO
H8	*Fe, Sn, Cm, Salix sp., Rf, Ps*	4+/3+	120	2	No gaps, no connections. *Salix* sp. dominant. Field compartment boundary. Stream running on one side.	-2	NO
H9	*Cm, Ps, Sn*	4+/3+	59	1	10-0% gaps, two end connections, *Cm* dominant. Field compartment boundary.	2	NO
H10	*Ps, Sn, Cm*	4+/3+	50	2	No gaps, two end connections, *Cm dominant*. Stream running on one side (S2). Arable field boundary.	-3	NO
H11	*Salix sp., Cm, Sn, Ps*	4+/3+	81	1	No gaps, no end connection. *Cm* dominant. Stream running on one side (S2). Arable field boundary.	2	NO
H12	*Sn, Fe*	4+/3+	50	1	10-0% gaps, one end connection. *Cm* dominant. Stream running on one side (S2). Arable field boundary.	2	YES Supports dormice
H13	*Cm, Ca, Fe, Sn, Rc*	4+/3+	50	1	10-0% gaps, 1 end connection. *Cm* and *Sn* dominant. Stream (S2) running on one side. Field compartment boundary.	2	NO
H14	*Salix sp., Cm, Sn, Rf, Fe, Rc*	4+/1-2	57	1	No gaps, no connections. *Cm* dominant. Stream (S1) running on one side. Field compartment boundary.	2	NO
H15	*Cm, Rc, Sn, Salix sp.*	4+/1-2	57	1	No gaps, one end connection. Stream (S1) running on one side. Field compartment boundary.	3	NO

***Key to hedgerow species**: Ac Acer campestre* – field maple, *Ca Corylus avellena* – hazel, *Cm Crataegus monogyna* - hawthorn, *Fe Fraxinus excelsior* – ash, *Ps Prunus spinosa* – blackthorn, *Rc Rosa canina* - Dogrose, *Rf Rubus fruticosus agg.* - bramble, *Salix sp.* – willow species, *Sn Sambucus nigra* – elder.

Streams and Ditches

4.22 A series of streams and ditches occurred across the site. Stream S1 was flowing southwards from within an adjacent residential garden. The depth of the stream was approximately 5-10cm with clear water flowing gently and was noted to have a stone and pebble substrate. The overall width of the watercourse was 1-2m and ran for approximately 230m within the site, continuing south offsite from the application boundary. The start of the stream within the residential garden was choked with vegetation (TN2 Figure 2) including water cress *Nasturtium officinale*, rosebay willowherb *Chamaenerion angustifolium*, brooklime *Veronica beccabunga* and lesser water parsnip *Berula erecta*; however this opened up on site, beneath the treeline occurring on the banks.

4.23 Stream S2 also flows southwards and occurs to the south-west of S1. The water was clear with a depth of 20-30cm, which flowed gently over a substrate of silt. The watercourse was 1-2m in width and occurs for approximately 180m of the site. The banks of the ditch were densely vegetated with species such as common nettle, cleavers and also willowherb species *Epilobium* sp. Aquatic vegetation occurred within the ditch which was densely vegetated in some places and open in others.

4.24 Stream S3 occurs offsite to the south of the site boundary, however, is in close proximity to stream S1. The water flows eastward along the boundary of Mill Wood towards ponds P4 and P3 in the wider area. The water was a depth of 10-20cm and clear within the woodland with a hard gravel substrate. In the open habitat the stream became choked with vegetation including willowherb species and hard rush.

4.25 In addition to the streams which occur on site, there was also a series of ditches. Ditches D1A and D1B are located in the northern arable field F1 adjacent to hedgerow H3. D1A was a dry ditch that was choked with vegetation such as common nettle. D1B was a wet ditch at the time of the initial survey with 5cm of standing water. It was also choked by vegetation with species including willowherb sp., broad-leaved dock *Rumex obtusifolius* and cuckooflower *Cardamine pratensis*. This ditch was noted to have dried out during observations in subsequent visits. Ditch D2 was a dry and shallow ditch occurring on the west boundary of the site adjacent to hedgerow H7. The ditches on site lacked evidence of aquatic vegetation growing, suggesting they are dry for the majority of the year.


Photo 4 and 5: Stream S1 (left) and Stream S2 (right)

Waterbodies

4.26 No standing waterbodies in the form of ponds or lakes were present within the application site, however four ponds occurred within a 250m radius of the site. These ponds are described in more detail in the great crested newt section below.

Field Survey – Fauna

Badger

4.27 No evidence of badger setts, latrines, runs or squeezes were identified on site during the initial site visit. However, the habitat on-site and in the wider area provides ample foraging and commuting opportunities. During subsequent visits to the site no further evidence of badger was found.

Bats

Tree Roost Assessment

4.28 The site contained a number of trees, largely recorded to be in good health and mostly assessed to have negligible potential to support roosting bats (in accordance with Table 1).

4.29 Five trees were identified on site as having bat roosting potential; locations are shown in *Figure 2*. Further details are provided in *Table 14* below:

Table 14: Details of Trees with Bat Roosting Potential

Tree	Species	Bat Potential (Ground Assessment)	Features
T1	Ash *Fraxinus excelsior*	Low	Canker cavity, 3m high on north-east aspect.
T2	Field Maple *Acer campestre*	Low	Deadwood, 5m high on south-east aspect. Feature exposed and tree off-site.
T3	Field Maple *Acer campestre*	Low	Branch tear out, 3m high on northern aspect.
T4	Ash *Fraxinus excelsior*	Low	Three rot holes, 3.5m high on north-east aspect, 4m high on eastern aspect and 1m high on eastern aspect.
T5	Elder *Sambucus nigra*	Low	Branch tear out, 1m high on western aspect.

Manual Activity Surveys

4.30 The perimeter hedgerows, local broadleaved woodland, trees and running streams provided potential foraging and commuting habitat for bats while the semi-improved grassland and arable fields were considered to provide limited foraging potential for bats.

4.31 In total, six bat species / species groups were recorded on site during activity transects. The most recorded bat across all the surveys was common pipistrelle, which accounted for 51% of contacts, this was followed by soprano pipistrelle (20%), *Nyctalus* sp. (11%), Noctule (9%), *Plecotus* sp. (3.5%), *Myotis* sp. (3.5%) and *Pipistrellus* sp. (2%).

4.32 Over the duration of the manual activity surveys the activity levels were highest during the autumn transect with 29 contacts being made compared to both the spring and summer transects which had 13 each.

4.33 The majority of activity occurred in the most southern part of the site and along the eastern boundary with increased activity associated with established vegetation. See *Table 15* for a summary of the activity and *Figures 4 – 7* for the transect routes and locations of bat contacts.

Table 15: Bat Transect Summary of Results 2018

Date	Total Contacts	Species Recorded (No. contacts)	Activity Summary
15th May 2018 (Spring) Figure 4	13	Common pipistrelle (6) Soprano pipistrelle (5) *Myotis* species (1) *Plecotus* species (1)	The majority of the bats were found in the most southern part of the site with all four species recorded being found in this area. The most active point count was along hedgerow H10 with three bats being recorded. Only five other contacts were made outside of the southern section, these were spread across the rest of the site. They were all common pipistrelles apart from a single soprano pipistrelle contact recorded along the fence line which cuts through the middle field. This soprano pipistrelle, along with one common pipistrelle was found to be foraging along this fence line.
25th July 2018 (Summer) Figure 5	13	Common pipistrelle (8) Soprano pipistrelle (2) *Nycaltus* species (2) *Myotis* species (1)	Bat activity was dominated along the eastern section of the site with ten of the bats making contact along this stretch. Point count J, which is situated along the eastern boundary, received the largest amount of contacts and species variation with four bats being recorded including common pipistrelle, soprano pipistrelle and a *Myotis* species. A solitary common pipistrelle was recorded passing along the stream which cuts across the middle of the site and the two *Nyctalus* species were noted in the western section of the northern field towards the end of the survey.
11th September 2018 (Autumn) Figure 6	29	Common pipistrelle (14) Noctule (5) Soprano pipistrelle (4) *Nyctalus* species (4) *Plecotus* species (1) Pipistrelle species (1)	There was a spread of bats across the whole site. Three of the soprano pipistrelles were recorded in the southern part of the site with one being seen commuting along hedgerow H9. Three bats were recorded at Point count D which was situated beside the stream on the eastern boundary along with three other bat contacts being made either side of this, common pipistrelle, nocule and a *Plecotus* species were recorded here. Six common pipistrelles and a single soprano pipistrelle were recorded along hedgerow H2, contacts were made at different points during the survey and the bats were recorded either side of the hedgerow (H2). Point count H was the busiest point count with four bat contacts being made, common pipistrelles, *Nyctalus* species and a noctule were all detected. This took place in the north-west part of the site where two *Nyctalus* species and a noctule were seen at the previous point count and on the way to Point count H. The unknown pipistrelle species was recorded at point count L which was on the western boundary of the middle field. Other common pipistrelle, noctules and *Nyctalus* species were recorded throughout the site.

Automated Activity Surveys

4.34 The following paragraphs detail the findings of the automated activity surveys. In this context, the term 'registration' refers to a unique sound file created over the course of a number of seconds. Based on this, numerous 'registrations' does not necessarily refer to multiple bats (unlike the manual activity survey section above where the number of bats can often be visually identified), as one bat can create a number of registrations, for example a bat which is foraging in the area surrounding the microphone for a sustained period of time.

Overall Summary

4.35 Automated surveys have been completed seasonally in the months of May, July and September with nine bat species / species groups recorded. In order of abundance these are common

pipistrelle (approximately 52% of registrations), noctule (33.7%), soprano pipistrelle (6.7%), *Nyctalus* sp. (4.8%), *Myotis* sp. (0.9%), serotine (0.8%), *Pipistrellus* sp. (0.5%), Nathusius pipistrelle (0.4%) and *Plecotus* sp. (0.1%).

4.36 *Table 16* summarises the activity levels recorded and the locations of the units with full results in *Appendix B.* Please see *Figure 2* for static detector unit locations.

Table 16: Automated Activity Survey Summary 2018

Survey Period	Unit Reference (Figure 2) / Location	Total Registrations Over 5 nights	Species Recorded (No. Registrations)	Summary of Activity
15th - 20th May 2018	A / Within the eastern extent of hedgerow H5	34	Common pipistrelle (22) Noctule (7) *Nyctalus* sp. (3) *Myotis* sp. (1) Soprano pipistrelle (1)	Common pipistrelles were the most recorded species with 64.7% of activity. The next frequent was noctule with 20.6% and then *Nyctalus* species with 8.8%. A single *Myotis* species and soprano pipistrelle was recorded across the survey. The 15th May was the busiest night with no bats being recorded on the 16th May. The busiest time period was between 22:00-23:00.
25th - 30th July 2018	B / Within western extent of hedgerow H3	352	Common pipistrelle (276) Soprano pipistrelle (46) *Nyctalus* sp. (16) Serotine (5) Noctule (3) *Pipistrellus* sp. (3) *Myotis* sp. (2) Nathusius' pipistrelle (1)	Common pipistrelles were the most frequently recorded species with 78.4% of activity followed by soprano pipistrelles which accounted for 13.1% of activity. *Nyctalus* species accounted for 4.5% and serotine 1.4%. The rest of the species were only recorded on a few occasions or less. The busiest night was the 28th July with the busiest part of the night occurring between 22:00-00:00.
11th - 16th September 2018	C / Within the western extent of hedgerow H5	385	Noctule (250) Common pipistrelle (103) *Nyctalus* sp. (18) Soprano pipistrelle (5) *Myotis* sp. (4) Nathusius' pipistrelle (2) Serotine (1) *Pipistrellus* sp. (1) *Plecotus* sp. (1)	The most active species was noctule, accounting for 64.9% of activity. The next busiest was common pipistrelle with 26.8% and then *Nyctalus* species with 4.7%. Soprano pipistrelles and *Myotis* species were recorded in low numbers with the rest of the species only making a single contact. The 15th September was the busiest night with activity peaking between 20:00-21:00 and 02:00-04:00.

Intentionally Blank

Breeding Birds

4.37 The site provides suitable nesting and foraging habitat for urban, wetland, woodland edge and farmland birds in the form of hedgerows, scrub, waterbodies and arable land. The arable fields provide habitat for ground nesting birds such as skylark *Alauda arvensis*, and due to the mosaic of habitats within the application site, breeding bird surveys have been completed, the results of which are detailed below.

4.38 A total of 37 bird species were recorded within the application site boundary, and comprised 12 non-breeding species, four probable breeding species, 13 possible breeding species and eight confirmed breeding species. A full table of results that includes the breeding status of each species identified is provided in *Appendix C.*

4.39 Of the 37 observed bird species, 15 are of some conservation importance as either NERC Section 41 species and / or BoCC red or amber listed species. Of these 15 'notable' species, two species (dunnock and starling) were recorded as confirmed breeders and three species (song thrush, house sparrow, and linnet) were recorded as probable breeders. One species was recorded as a possible breeder (yellowhammer), with the remaining nine species (mallard, black-headed gull, common gull, lesser black-backed gull, herring gull, stock dove, swift and house martin) recorded as non-breeders. These are shown in *Table 17* below along with their breeding status, as assessed on the application site, and within the county of Kent.

4.40 No WCA Schedule I species were recorded within the application boundary, and no significant numbers of either individuals, or breeding pairs, were recorded on the application site.

Table 17: NERC Section 41, and/or BoCC Red- or Amber-Listed Bird Species Recorded at Old Ashford Road, Lenham, during Breeding Bird Surveys 2018 and Their Recent Status in Kent

Species	Conservation Status	Survey Area Breeding Status	Breeding Status in Kent†
Mallard *Anas platyrhynchos*	Amber list	Non-breeder Mallard were observed in small numbers in during the May and late June surveys (two and four respectively), all of which consisted of birds crossing the site in flight.	Widespread and common breeding species and winter visitor.
Lapwing *Vanellus vanellus*	Red list NERC	Non-breeder Lapwing were observed in May and early June in small numbers (five and four respectively). All the birds observed in May were flying in westerly direction off-site. Two of the four individuals observed in early June were flyovers, however the other two were observed calling on the edge of the arable fields.	Widespread but declining breeding species. Common passage migrant and winter visitor.
Black-headed gull *Chroicocephalus ridibundus*	Amber list	Non-breeder Black-headed gull were observed on every survey, peaking in late June with 15 individuals, all of which were observed flying north over the northeast field compartment. The majority of other sightings were also of flyovers, with two individuals seen loafing on the northern margin on the most southerly field.	Common and widespread breeding species, passage migrant and winter visitor.
Common Gull *Larus canus*	Amber list	Non-breeder	Common passage migrant and winter visitor that breeds

Species	Conservation Status	Survey Area Breeding Status	Breeding Status in Kent†
		A single common gull was observed during late June flying over the north-eastern field in a westerly direction.	annually in small numbers.
Lesser black-backed gull *Larus fuscus*	Amber list	Non-breeder Lesser black-backed gulls were observed in low numbers every survey, peaking in late June with four individuals, all of which were observed at various points around the site flying overhead.	Widespread passage migrant and regular winter visitor. Breeds in small but increasing numbers.
Herring gull *Larus argentatus*	Red list NERC	Non-breeder Herring gull were observed during both June survey, with no more than three observed on either occasion. These comprised sporadically distributed observations of single individuals in flight passing over the site.	Passage migrant and winter visitor; numerous and increasing resident breeding species.
Stock dove *Columba oenas*	Amber list	Non-breeder Two stock doves were observed in May, one of which was passing over the site from the eastern boundary of the site, the other recorded singly from the linear tree line running north through the middle of the site.	Widespread and increasing resident species. Some passage is noted in most years.
Swift *Apus apus*	Amber list	Non-breeder Six swifts were observed during the survey in late June, five of which were seen flying southeast along the dry ditch on the southern edge of the northeast field, towards hedgerow H2, the other was flying east across an arable field to the south.	Common summer visitor and passage migrant.
House Martin *Delichon urbica*	Amber list	Non-breeder Only encountered in late June, four individuals were observed flying over the arable field compartments at the south of the site, travelling in varying directions.	Widespread summer visitor and passage migrant. Occasionally in large numbers in autumn.
Starling *Sturnus vulgaris*	Red list NERC	**Confirmed** Starling were encountered in varying numbers across all three surveys, peaking in early June with 34, and a low of three in May. All 16 birds observed in late June were observed flying over site in various directions. Twenty-six of the 34 starlings observed in early June, and all three in May were seen in association with arable field compartments.	Abundant and widespread but declining breeding species, passage migrant and winter visitor.
Song thrush *Turdus philomelos*	Red list NERC	**Probable** Song thrush were encountered in early and late June (four and five individuals respectively), all of which were associated with hedgerows and b0undary habitats, with a pair observed together in early June at the northern end of hedgerow H8.	Common and widespread but declining resident. Passage migrant and winter visitor.
Dunnock *Prunella modularis*	Amber list NERC	**Confirmed** Dunnock were regularly observed in small numbers across all three surveys, peaking in early June, during which seven individuals were encountered singly, and family group were encountered together within the linear treeline running north through the	Abundant resident and passage migrant.

Species	Conservation Status	Survey Area Breeding Status	Breeding Status in Kent†
		centre of the site. The observation of a family group confirmed on-site breeding. The majority of dunnock were encountered in associated with hedgerows and treelines on the peripheries of the field compartments.	
House sparrow *Passer domesticus*	Red list NERC	**Probable** House sparrows were observed on all three surveys, with two or three individuals observed on each, along with larger colony groups, indicating the breeding is probable. Peak numbers were observed in late June, with three individuals and two colonies recorded. House sparrows were typically observed in association with boundaries adjacent to residential areas, and hedgerows.	Common but declining resident, particularly associated with human habitation.
Linnet *Carduelis cannabina*	Red list NERC	**Probable** Linnet were observed on all three surveys, with numbers peaking in late June with 37. Numbers were similar in early June (35), but substantially lower in May. Fourteen linnet, in groups of 2-4, and a flock of 24 in late and early June respectively were observed within the arable field compartments. The remaining linnet were observed flying across the arable fields in various directions.	Widespread summer visitor and passage migrant, with only small flocks overwintering.
Yellowhammer *Emberiza citronella*	Red list NERC	**Possible** Yellowhammer were only observed during the June surveys, in both instances occurring in low numbers, peaking in late June with a count of three. Yellowhammer were encountered in associated with hedgerows bordering arable fields, habitat conducive for breeding, though were seen paired or nest building.	Common but declining resident, particularly in rural areas. Occasional passage migrant.

†The Kent Bird Report (2014) The Kent Ornithological Society.

Great Crested Newt

4.41 Three records of GCN were returned from the consultations. There are no waterbodies within the application site, however the site does provide some suitable terrestrial habitat for great crested newts in the form of hedgerow bases and field margins, albeit these habitats are limited to the field boundaries.

4.42 Six waterbodies were identified within a 250m radius (*Figure 3*). During the survey season presence/likely absence surveys were carried out on P1, P2. P3 and P4. No access was permitted to ponds P5 and P6, however records of GCN were returned from KMBRC at both of these ponds (dated 2014). P5 and P6 are separated from the site by an access road, a residential dwelling and associated outbuildings along with a sheep grazed field.

4.43 No breeding habitat is present on site; however, the four ponds that are located within a 250m radius of the site (*Figure 3*) were assessed using the Habitat Suitability Index (HSI), the results of which are shown in *Table 18*.

Table 18: Habitat Suitability Index Assessment

Pond	HSI Score	Predicted Presence	HSI Category
P1	0.59	20%	Below Average
P2	0.66	55%	Average
P3	0.63	55%	Average
P4	0.33	3%	Below Average

4.44 Waterbody P1 was located approximately 10m north-west of the site and situated within a private residential garden. The base of the pond was constructed by stone and cement and was filled naturally with the spring that occurs within the garden and drains in to stream S1. The water was approximately 1m deep with a thick layer of silt and algae substrate on the bottom. The majority of the pond was open and lacked vegetation however some yellow iris *Iris pseudacorus* was present. A single mature fish was present as well as some juvenile fish. The surrounding habitat included hardstanding around the pond as well as amenity grassland and some ornamental planting. The garden is surrounded by timber clad fencing.

4.45 Pond P2 was located 55m to the east of the application site. This pond was situated within a sheep grazed paddock that was heavily poached around the pond edges. The pond was naturally dug however had some hard gravel and stone within the substrate on the bottom. The water was approximately 0.5m deep. Vegetation within the pond included water-cress *Rorippa nasturtium-aquaticum* and bogbean *Menyanthes trifoliate.*

4.46 Waterbody P3 is a much larger pond that is adjacent to pond P2, occurring approximately 55m to the east of the application site. It is approximately 120m in length with a small vegetated island in the middle. The overall depth of the pond is unknown however areas of the pond edge were approximately 0.5m deep with silt and hard stone substrate. The surrounding habitat included additional sheep grazed pasture, amenity grassland and areas of scrub. The pond was predominantly open with some emergent vegetation on the banks including yellow iris as well as mature trees surrounding the pond including horse chestnut *Aesculus hippocastanum* and hawthorn *Crataegus monogyna.* Both waterfowl and large fish were noted to be present within this pond.

4.47 A further fourth pond, P4, was located approximately 165m to the east of the application site which adjoined stream S3. This pond appeared to be man-made with a hard stone and gravel base. The banks were natural earth with encroaching short ephemeral vegetation and scrub. The pond lacked aquatic vegetation and was open, however the surrounding habitat included semi-improved grassland with some scrub and scattered willow trees *Salix sp.* It is possible that fish were present within this pond. The pond was approximately 1m deep.

Field Surveys

4.48 Presence / likely absence surveys were undertaken on waterbodies P1, P2, P3 and P4. A moderate population GCN was recorded in P2 and a low population of GCN was recorded in P3. Smooth

newts were recorded in all four waterbodies and palmate newts recorded in P2, P3 and P4 (see *Table 19*).

4.49 Two incidental sightings of great crested newt occurred within the site's terrestrial habitat under artificial refugia during a reptile survey.

Table 19: Pond Survey Data Summary

Survey Date	Weather Conditions / Evening Air Temperature	Pond Ref	Survey Techniques Employed	Results – Peak Counts	Breeding Evidence
8th May 2018	No rain and gentle breeze; evening air temperature: 19ºC	P1	B, T, E	4 unknown sm	-
		P2	B, T, E	19 ♂ gcn, 14 ♀ gcn, 8 ♂ sm, 3 ♀ sm, 2 unknown sm	gcn, sm
		P3	B, T, E	6 ♂ sm, 6♀ sm, 1♀ pm,	gcn, sm
		P4	B, T, E	1 ♂ sm. 1 unknown sm	sm
14th May 2018	No rain and gentle breeze; evening air temperature: 15ºC	P1	B, T, E	-	-
		P2	B, T, E	9 ♂ gcn, 13 ♀ gcn, 3 ♀ sm	-
		P3	B, T, E	5 ♀ sm, 1 ♂ sm, 1 ♂ gcn	-
		P4	B, T, E	1 ♀ sm, 1 ♀ pm	-
17th May 2018	No rain and gentle breeze; evening air temperature: 13ºC	P1	B, T, E	-	-
		P2	B, T, E	8 ♂ gcn, 48 ♀ gcn, 5 ♂ sm, 9 ♀ sm, 1 ♂ pm, 4 ♀ pm	-
		P3	B, T, E	4 ♀ sm, 2 ♂ sm	-
		P4	B, T, E	1 ♂ pm, 1 unknown sm	-
24th May 2018	No rain and gentle breeze; evening air temperature: 15ºC	P1	B, T, E	-	-
		P2	B, T, E	14 ♂ gcn, 21 ♀ gcn, 21 unknown adult gcn, 4 ♂ sm, 2 ♀ sm, 2 ♀ pm, 1 ♂ pm.	-
		P3	B, T, E	1 ♀ gcn, 4 ♀ sm, 3 ♂ sm, 3 ♀ pm	-
		P4	B, T, E	2 unknown sm, 1 ♂ pm	-
7th June 2018	No rain and gentle breeze; evening air temperature: 17ºC	P2	B, T, E	11 ♂ gcn, 13 ♀ gcn, 11 unknown gcn, 1 ♀ sm, 1 ♂ sm, 50 newt larvae	-
		P3	B, T, E	2 ♀ sm	-
		P2	B, T, E	41 ♀ gcn, 5 ♂ gcn, 2 ♀ sm	-

Survey Date	Weather Conditions / Evening Air Temperature	Pond Ref	Survey Techniques Employed	Results – Peak Counts	Breeding Evidence
14th June 2018	No rain or wind; evening air temperature: 19ºC	P3	B, T, E	-	-

Key to symbols: ♀ - female; ♂ - male; gcn – great crested newt; sm - smooth newt; pm – palmate newt; B - bottling; T - torching; E - Egg searching.

Hazel Dormouse

4.50 The hedgerows were considered suitable for dormice, they were structurally dense with some species that could be utilised for foraging including hazel, hawthorn and bramble. The onsite linear features provide linkages to offsite habitats which also have opportunities to support dormice. Records returned by Kent and Medway Biological Records Centre included a single record of a dormouse encountered 1.71km west of the application site from 2016.

4.51 Dormouse tubes were installed within hedgerows and scrub bounding the field compartments during May 2018 (See *Figure 8*), and subsequently checked on the following dates: 14th June 2018, 25th July 2018, 17th August 2018, 10th September 2018, 26th October 2018 and 21st November 2018. The survey effort for this survey period is 20, in accordance with the best practice guidance.

4.52 During the October survey, a dormouse nest with an adult dormouse inside was found along the treeline bordering the stream in the eastern extent of the proposed sports area. The November survey found an additional dormouse nest within an offsite area that connects to hedgerow H12 in the southern extent of the site.

Reptiles

4.53 The majority of the site's arable field and semi-improved grassland was considered to provide sub-optimal habitat for reptile species due to the sheep grazing and intensive management. However, a mosaic of habitats was recorded across the site that is favoured by reptiles and included the field margins with tussocky grassland and tall ruderal species (*see TN4, Figure 2*), patches of scrub, ditches and hedgerow bases. The ditches and streams on site provide commuting opportunities for species such as grass snake. Hibernation opportunities were limited to the hedgerow and tree bases around the site perimeter.

4.54 The site has good connectivity to neighbouring suitable habitats via hedgerows, streams and ditches.

4.55 Low populations of slow worm (peak count of eight adults), common lizard (peak count of three adults) and grass snake (peak count of one adult) were recorded on site during the surveys. All three species were mainly recorded along the western boundary of the site and along hedgerow H10 in the south. Slow worms were also recorded along hedgerows H1 and H3. *Figure 9* shows the approximate location of sightings and *Table 20* below provides details of the survey findings.

Table 20: Reptiles Recorded During Surveys in 2018

Survey Ref / Date	Slow Worm	Common Lizard	Grass Snake
1 5th June 2018	2 Adult Male 2 Adult Female 1 Juvenile	1 Adult Male 1 Juvenile	1 Unknown Adult 1 Juvenile
2 15th June 2018	2 Adult Male 6 Adult Female	1 Adult Male	None recorded
3 28th June 2018	3 Adult Female	None recorded	None recorded
4 7th September 2018	2 Adult Male 2 Juvenile	1 Unknown Adult	None recorded
5 14th September 2018	4 Adult Male 1 Adult Female 2 Juvenile	None recorded	1 Unknown Adult 1 Juvenile
6 21st September 2018	1 Adult Male 4 Adult Female	2 Unknown Adult 1 Adult Female 1 Juvenile	1 Juvenile
7 28th September 2018	1 Adult Male 2 Adult Female 2 Juvenile	1 Unknown Adult	1 Unknown Adult 1 Juvenile

4.56 Several incidental records of reptiles were made during other protected species surveys onsite. This included two gravid female slow worms, one juvenile slow worm, two juvenile common lizards basking in field margins and two observations of grass snakes using the waterbodies P3 and P4 offsite during great crested newt surveys.

Water voles

4.57 Two riparian mammal surveys were undertaken that focused on streams S1 and S2 that run in a southerly direction along the western section of the site as well as S3 which occurs offsite to the

south. Only areas that were safely accessible were surveyed. Southern parts of stream S1 were not accessible due to the banks being steep and overgrown with dense vegetation.

4.58 Small burrows were noted that are more likely to be used by smaller species of vole and other mammals. Two small grazed patches of feeding evidence were identified however were not stereotypical of a water vole feeding remains. No other field signs such as latrines, feeding stations or footprints were identified across the watercourses. The structure of the banks, and the vegetation present, were confirmed to provide suitable burrowing and foraging opportunities for water vole, however no conclusive evidence of water vole was identified.

Other Protected and Notable Species

4.59 Records of hedgehog were returned during the desktop study which indicated their presence. An incidental sighting of two hedgehogs occurred during a great crested newt torching survey that was undertaken to the east of the site within the wider area. No hedgehogs were encountered during any of the surveys on site.

5.0 DISCUSSION AND RECOMMENDATIONS

Statutory and Non-Statutory Designations

5.1 The Swale SPA & Ramsar is located 13km north-east of the site and is designated primarily for its estuarine and marshland habitats which shelter several species of protected bird species throughout the year. A single site of national importance, Lenham Quarry SSSI is situated approximately 572m north-east of the site, designated for its geological importance. The application site does not fall within Natural England's SSSI impact risk zone for residential development for this SSSI.

5.2 The residents from the proposed application site are unlikely to travel to those sites named above on a regular basis due to the intervening distance, limited access (Lenham Quarry SSSI) and occurrence of closer opportunities for recreation (such as the sports fields within the application site).

5.3 Two non-statutory designations were identified within 1km of the site; St Mary's Churchyard LWS located approximately 430m west and Kiln Wood and Oxley Wood LWS situated approximately 520m south-west of the site. At these distances, these designations will not be subject to land take and no direct effects, such as dust pollution or noise, are anticipated as a result of development within the site. Only St Mary's Churchyard LWS has public access, but due to the nature of the site and a network of footpaths surrounding the site, is it considered unlikely that residents would frequently visit this LWS.

5.4 On this basis, potential impacts to statutory or non-statutory designated sites of nature conservation interest are therefore not considered to be a constraint to the proposed development.

Habitats

5.5 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:

- Inclusion within specific policy (e.g. veteran trees, ancient woodland and linear habitats in NPPF, or non-statutory site designation); and
- Identification as a habitat of principal importance for biodiversity under the NERC Act 2006 and consequently identification as a Priority Habitat within England and the local area.

5.6 Under NPPF, development should seek to contribute a net gain in biodiversity with an emphasis on improving ecological networks and linkages where possible. The ecological corridors of value within the site comprise the network of hedgerows, scrub and trees around the site. These networks will be retained and enhanced, with large buffers created incorporating native tree and scrub.

5.7 All hedgerows are important in their functions as corridors and foraging and nesting habitats for wildlife and as such are identified as valuable habitats. Fifteen hedgerows were recorded within the site associated with field boundaries, only one hedgerow (H12) was assessed as important hedgerows under the Hedgerow Regulations 1997, as the hedgerow supports a protected species (dormice) listed in the Wildlife and Countryside Act 1981. Six hedgerows (H8 – H9 and H11 – H14) were considered to be of moderately high to high nature conservation priority in accordance with HEGS and the all are classed as Habitats of Principal Importance under the NERC Act (2006) due to the dominance of native species, and therefore require consideration under the NPPF. In

addition, hedgerows are listed within Kent's Biodiversity Strategy[23] whereby current targets aim to retain and increase the number of hedgerows and hedgerow trees within Kent.

5.8 The network of hedgerows provides connectivity between habitats both within the application site and within the wider landscape. All hedgerows will be retained and buffered within the proposals, with the exception of small sections of hedgerows H5 on the northern boundary, H6 on the western boundary, H9 on the western boundary which are proposed to be removed for pedestrian and vehicular access. Owing to the proposed planting of native trees and shrubs along hedgerow buffers and the extensive gapping up, the small losses will be compensated for, and connectivity will be maintained.

5.9 The grassland habitat on site was found to be species-poor and of limited ecological value due to the low species diversity. The majority of this low quality habitat will be lost which does not represent a constraint to development. To increase biodiversity within the site new grassland habitats will be created within the GI. These will provide a diverse range of structures, created through a rotational cutting regime, and a species content that will provide increased nectar sources for wildlife, particularly invertebrates.

5.10 The streams and ditches throughout the site will be retained and enhanced for biodiversity. It is considered that once enhancement and management measures are undertaken as part of the ongoing management for the greenspace around the development, then the value for biodiversity of the running water resource around the site will be increased.

5.11 During construction, all retained aquatic habitats (both running and standing water) should be protected, and it is recommended that best practice is followed to ensure the risk of any potential impacts from pollution events are minimised. Best practice should follow the recommendations of the Guidance for Pollution Prevention (GPP).

Mitigation and Enhancements

5.12 The retained hedgerows will be enhanced and strengthened by additional planting, and buffer zones will be allowed to develop consisting of strips of natural ground flora at the base. This will increase the value of the hedgerows as corridors for wildlife movement, and result in an overall biodiversity gain in the long term. A proposed woodland belt will be created on a bund along the eastern boundary of the proposed residential area, which will provide potential habitats for invertebrates, nesting birds and other wildlife.

5.13 The on-site hedgerows and trees will be protected from damage and from soil compaction during works by erecting and maintaining fenced Root Protection Areas (RPAs); these areas will be fenced off following at least the canopy spread and will remain in place until construction is complete. Such measures will protect against direct damage but also from soil compaction which can have long term effects on the health of species. This habitat will be supplemented through planting of trees and shrubs throughout the buffers around site boundaries.

5.14 Native broadleaved woodland areas will be created along all boundaries of the site. These additional woodland habitats should comprise a variety of native canopy tree species and understorey shrub species, incorporating native species already found onsite and in the local area. A supporting understory should include woody shrub species including hazel, elder, common

[23] Kent Biodiversity 2020 and Beyond – a Strategy for the Natural Environment 2015 – 2025. [ONLINE] Available at http://kentnature.org.uk/assets/files/Nat-Env/Kent-Biodiversity-Strategy-final.pdf (Accessed on 13.11.18).

dogwood and wild privet. These woodland strips will provide important foraging and commuting habitat around the site for a range of species including dormice, bird and bat species. Preference should be given within the planting scheme to the use of locally native woody species, with an emphasis on species bearing nectar, berries, fruit and nuts, as these enhance the foraging opportunities for local wild fauna including birds and invertebrates. Suitable small tree species should be included within residential gardens and amenity areas, which include species such as field maple, silver birch *Betula pendula*, wild cherry *Prunus avium*, bird cherry *P. padus*, holly *Ilex aquifolium*, domestic apple *Malus domestica* and rowan *Sorbus aucuparia*. Other shrub species suitable for inclusion within the soft landscaping design include hawthorn, hazel, blackthorn (limited due to spread), dog rose, honeysuckle *Lonicera periclymenum*, guelder-rose *Viburnum opulus* and wild privet *Ligustrum vulgare*.

5.15 Retained hedgerows should be subject to ongoing management, using standard hedgerow management practices such as flailing, trimming, coppicing, gapping-up, and grubbing-out; however, where possible hedgerow laying should be used, especially on new hedgerows that can be manipulated easily. Cutting should be done on a three-year rotational basis to ensure some foraging resource / cover is retained each year with cuts to take place in late winter. To maximise the biodiversity value of the hedgerows, the creation of 1-2m wide headlands along the base is recommended, to promote the establishment of diverse tussock grassland habitats which would increase the value of the hedgerows as wildlife corridors.

5.16 Within the GI areas it is suggested that different types of grassland habitats are created, which have different ecological benefits, but all can be designed to ensure public interaction with mown paths running through them. It is proposed that a grassland mix rich in native wildflower species is incorporated, which will not only provide a rich nectar source for pollinators, but that is also attractive for recreational use. Tussock grassland will be encouraged in areas around existing or new hedgerows and the woodland strip, and will provide opportunities for small mammals, reptiles and amphibians.

5.17 Species-rich grassland will be created through sowing of a suitable seed mixes and managed through a traditional hay meadow cutting regime, involving a single cut in late summer / early autumn after the flowering season. Tussock grassland is unlikely to require sowing and will be managed on a 2 – 3 year rotational cutting regime.

5.18 Where possible, planting within the site should seek to provide additional habitat for urban and suburban wildlife. While native species are often of value to biodiversity, generally it is now clear that many cultivated varieties and exotic plants are also good for wildlife, provided that their flowers are not too complex or that hybrid varieties, which may produce little or no pollen or nectar and so are not of interest to bees, butterflies or other pollinating insects, are not used. The planting strategy, both within private and public areas, should therefore combine a range of native species and where appropriate, such as gardens and more formal areas, a range of ornamental species with an accepted value for biodiversity. A range of small shrubs, low growing woody species, grasses and perennials, would provide a range of forms, sizes and finer scale variation to enhance the future structural and three-dimensional complexity of the site post development which would benefit wildlife.

5.19 Installation of dog bins within the GI, and appropriate management should ensure that nutrient enrichment of the soil is avoided which might otherwise affect floral assemblages within grassland and retained habitats.

Fauna

5.20 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017. Some species, for example badgers, also have their own protective legislation (Protection of Badgers Act 1992 as amended). The impact that this legislation has on the planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory obligations and their impact within the Planning System.

5.21 This guidance states that as the presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions for example.

5.22 In addition to protected species, there are those that are otherwise of conservation merit, such as species of principal importance for the purpose of conserving biodiversity under the NERC Act 2006. These are recognised in the NPPF which advises that when determining planning applications, LPA's should aim to conserve and enhance biodiversity by applying a set of principles including:

- *If significant harm to biodiversity resulting from a development cannot be avoided……., adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure net gains for biodiversity.*

5.23 The implications that various identified species or those that are thought reasonably likely to occur may have for developmental design and programming considerations are outlined below:

Fauna

Badger

5.24 Badgers are protected under the Protection of Badgers Act 1992[24]. This act is based on the need to protect badgers from baiting and deliberate harm or injury and makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so; and
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

5.25 A sett is defined as:

- "Any structure or place that displays signs indicating current use by a badger".

[24] The Protection of Badgers Act 1992 (as amended). London: HMSO [Online]. Available from: http://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed 03/05/2016].

5.26 Due to the lack of badger evidence on site or within the immediate surrounding area, this species poses no constraint to the proposed development. However, since badgers can be transient in nature, it is recommended that a further survey of the site is completed two months prior to the commencement of construction to determine the status of badger and check for newly created setts.

5.27 As a precautionary measure, during the construction phase of development, any excavations such a ditches or foundations should be covered overnight, or a means of escape provide which should include sloping banks, as this will prevent badgers and other mammals falling in and becoming injured and trapped. Any piping such as that used for drainage, should also be covered and inspected before use, to ensure that mammals have not become trapped.

Bats

5.28 All UK species of bat are listed on the Conservation of Habitats and Species Regulations 2017 making it illegal to deliberately disturb any such animal or damage / destroy a breeding site or roosting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (*as amended*). Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection. Some bat species, including soprano pipistrelle, are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC).

Tree Roost Assessment

5.29 From the completed survey work five trees were noted to possess low potential bat roost features, including rot holes and branch tear outs. On assessment, the features appeared to be quite exposed and so provided limited potential for roosting bats. All of these trees are due to be retained, and will not be affected by the proposed framework, ensuring they are not subject to disturbance through noise or lighting and will remain connected to other features to prevent isolation.

Activity Surveys

5.30 The activity surveys recorded five bat species (order of abundance) common pipistrelle, noctule, soprano pipistrelle, serotine and Nathusius pipistrelle, and four identified to genus level, *Nyctalus* species, *Myotis* species, *Pipistrellus* species and *Plecotus* species. The most frequently recorded species was common pipistrelle, with a peak of 14 contacts during the autumn manual activity survey, and a peak of 276 registrations during the summer automated activity survey. Noctule activity peaked in the autumn surveys with a peak count of 5 contacts during the manual activity survey and a peak of 250 registrations during the automated activity survey.

5.31 The site is considered to provide limited opportunities for bats based on the data collected and low numbers of contacts and registrations recorded in May, July and September. This reflects the limited floral / structural diversity within the site, and it is considered that the hedgerows and scrub mostly function as commuting corridors since under-canopy habitats are largely absent and species-poor reducing opportunities for prey items.

5.32 Based on the survey data it is considered that the habitats within the site are of site value, as they only support a small assemblage of common / widespread bats with the vast majority of activity from common pipistrelles, the commonest and most widespread bat in the UK[25].

Mitigation and Enhancements for the Local Bat Population

5.33 The retention of the hedgerows around the peripheries will ensure connectivity is maintained; and the inclusion of GI will have a beneficial effect on the local bat assemblages, particularly in the south where new foraging and commuting opportunities will be provided with the structural planting.

5.34 To minimise impacts on bats, proposals will adopt a sensitive external lighting scheme which will be designed to minimise light spill on retained and proposed habitats of value to commuting and foraging bats. The lighting scheme would be designed with regard to current guidance provided by the Bat Conservation Trust[26] and the Institution of Lighting Professionals[27] and adopt the following principles:

- The avoidance of direct lighting of existing trees, hedgerows, scrub, woodland, or proposed areas of habitat creation/landscape planting;
- Buffer zones and GI are not to be illuminated;
- The implementation of 'hop-overs' adjacent to any hedgerow gaps greater than 7m wide will allow continued echolocation across the break thereby allowing continued usage of the hedgerow as a foraging/commuting area. It will also reduce the potential for road traffic accidents to bats (and also for birds);
- During the construction period, no lighting should be used in proximity to boundary features, if needed lights will be directionally focused/shrouded;
- Lighting that is incorporated into the development design should comprise low pressure sodium lights, as they emit at one wavelength so attract less insects;
- Directional lighting and avoidance of upward lighting and/or light spillage;
- Lighting columns to be as short as possible, although in some locations taller columns would allow reduced horizontal spill; and
- Security lighting on properties backing on to sensitive hedgerows and woodland will be low wattage LED, which will be installed on properties at the construction stage to forestall a future homeowner installing unsuitable lighting which could impact on bats.

5.35 The peripheries of the site will be buffered and will distance the residential and sports units away from more natural habitats, where dark corridors will be maintained. Furthermore, the creation of attenuation will attract a variety of prey items, which is likely to increase the foraging potential and value of the site to bats.

5.36 Roosting opportunities should be enhanced through the installation of bat boxes on retained trees or incorporated on to selected new buildings. These could include Ibstock bat bricks or Schwegler 1FR Bat Tubes which can easily be incorporated into the walls of the new buildings and Schwegler

[25] Bat Conservation Trust (2010) Common Pipistrelle Factsheet
[26] Bat Conservation Trust (2011) Statement of the impact and design of artificial light on bats
[27] Institution of Lighting Professionals (2011) Guidance Notes for Reduction of Obtrusive Light

1F and 2FN bat boxes for trees. The provision of such features would be in accordance with National and Local Planning Policy helping to enhance biodiversity within the local area.

5.37 The strategic implementation of these general measures and habitat enhancements / creation will ensure that the potential for any indirect impacts upon foraging and commuting habitats used by the local bat population would be reduced. In addition, the proposals will enhance features already present along with creating new areas of grassland, hedgerows and woodland, which will have a minor / moderate beneficial effect at a site / local level.

Breeding Birds

5.38 The Wildlife and Countryside Act 1981 (as amended) is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built; and
- Take or destroy the egg of any wild bird.

5.39 Additional conservation status is given to birds in the UK through their listing as Species of Principle Importance under Section 41 of the NERC Act 2006, and / or as Amber (greater than 25% decline over 25 years) or Red (greater than 50% decline over 25 years) listed species under the Birds of Conservation Concern (BoCC) traffic light system.

Evaluation

5.40 The most likely negative effects from a residential development of this type on the assemblage recorded would be as a result of:

- Direct loss / change of breeding habitat; and
- Disturbance during construction and / or operation.

5.41 The overall breeding bird assemblage recorded within the application site was typical of edge-of-settlement farmland, with common and widespread generalist woodland / garden species present. The site provides suitable nesting and foraging habitat for urban, woodland edge and farmland birds in the form of hedgerows, scrub, and arable land, with the majority of species recorded in association with these features.

5.42 The site supported a number of notable species with a confirmed or likely breeding status on the application site. Of these, starling and dunnock, BoCC Red and Amber listed species respectively, were assessed as confirmed breeding species. Song thrush, house sparrow, and linnet, all of which are both NERC Section 41 and BoCC Red listed birds, were assessed as probable breeding species, while yellowhammer, another BoCC red listed species, was assessed as a possible breeder.

5.43 The remaining nine notable species identified within the application site comprised seven BoCC Amber listed species, including mallard, black-headed gull, common gull, lesser black-backed gull, stock dove, swift, and house martin, as well as a further two BoCC Red listed and NERC S41 species, lapwing and herring gull. The majority of these observations were of individuals, or small groups of two-eight flying over the site, with only three black-headed gulls and four lapwing

observed loafing on-site. As these observations were fly-overs or small numbers of birds in unsuitable breeding habitat, these are thus considered non-breeding species.

5.44 The species observed on the application site are largely common and widespread, both nationally and within Kent, and as such their presence on the survey is considered typical and would be expected on a site of this nature. The species recorded on-site that are arguably the most vulnerable to impacts resulting from the proposed development are the confirmed, probable and possible breeding 'notable' species, which in this case were limited to dunnock, starling, song thrush, house sparrow, linnet and yellowhammer, all of which are considered to be of local level importance. The 'notable' non-breeding species are considered unlikely to be negatively impacted by the proposals.

5.45 Two notable species typically associated with farmland habitats were recorded on-site; the probable breeding linnet and possible breeding yellowhammer, with these predominantly observed within arable field compartments or associated hedgerows. Linnet numbers peaked in late June, with a total of 37 birds observed across the application site, of which 14 were in small groups, or individuals observed flying over the site, 15 were birds in groups of two-four scattered throughout the arable fields to the southwest, and the remaining eight were moving to and from across the larger northern arable field. Total numbers of linnet recorded in early June were similar (35), though a substantial flock of 24 were recorded from the southwestern-most arable field compartment, in addition to several other smaller groups scattered across the site. These numbers do appear to be unusually high, for both the time of year surveyed and relative to many other parts of Kent (with a few exceptions) and as such are considered to constitute a notable population[28]. In contrast, yellowhammer were only observed in small numbers during the June surveys, with one on the 5th and three on the 27th. However, these numbers appear to be lower than or consistent with those recorded in other parts of the county and are thus not unusual.

5.46 It is likely that the majority of these arable specialist bird species will be displaced from the application site post-development due to the land use change from farmland to residential development, and therefore will be adversely impacted. However, through appropriate management of new and existing scrub habitats within the proposed sports area, this adverse effect will be minimised. In addition, the site is situated amongst large expanses of arable land and it is likely that the current populations of linnet and yellowhammer will use these off-site areas in addition to the site, and these will continue to be a resource for them. To further compensate for the adverse effect on both linnet and yellowhammer, a nest box scheme designed to target similarly valued NERC Section 41 and BoCC Red / Amber species that co-habit with humans will be implemented.

5.47 The confirmed breeding dunnock, and probable breeding song thrush were recorded in association with the various hedgerows, treelines and field margins which border the site, and demarcate the various field compartments. Under the proposals the large majority of these habitats are to be retained. In addition, these species will benefit from supplementary planting of native species, which is proposed to strengthen most of the existing site boundaries and retain connectivity to the wide landscape. Further supplementary planting will be included within the development footprint by virtue of the resulting network of residential gardens. Additional newly created habitat, in the form of a 5m high bund, with woodland planting, is also proposed for the eastern boundary of the residential area. The proposed habitat creation and enhancement will create additional breeding

[28] The Kent Bird Report 2014 The Kent Ornithological Society.

and foraging resources for both dunnock and song thrush, resulting in a minor positive, long term impact. Furthermore, the new woodland habitat, when mature, will have the potential to attract new species associated with areas of woodland edge and scrub, such as bullfinch *Pyrrhula pyrrhula* (Amber-listed / S41 NERC Act).

5.48 The confirmed breeding starling and probable breeding house sparrow were also recorded largely in association with boundary hedgerows and tree lines, a few of which were adjacent to existing residential properties. Both species preferentially nest in holes and cavities, readily utilise nest boxes, and typically live in close association with human dominated landscapes. Owing to this behaviour and given the appropriate provision of nest boxes (see below), green infrastructure and residential gardens, it is considered that a minor positive impact will result for both species post-development.

Mitigation and Enhancement

5.49 Habitats to be lost to the proposed development include the arable habitat comprising the northern and southernmost field compartments which will accommodate the proposed residential area and the sports pitches. Small sections of hedgerows H5, and H8 are likely to be lost in order to facilitate access around the site for pedestrian footpaths and roads. Linnet and yellowhammer are the only 'notable' species likely to be negatively affected by the changes in land use.

5.50 The retention and enhancement of the majority of features present within the site that are suitable for breeding birds, particularly the hedgerows and tree lines, will ensure continued use of the site by local bird populations. Hedgerow enhancements through supplementary standard native tree planting will increase foraging and nesting resources available for local bird populations, while appropriate management (see below) will help protect nesting birds from predation. In addition, creation of new hedgerows, woodland belts, residential gardens and the provision of a range of nest boxes within appropriate locations across the site will provide further enhancements. A mixture of nest box types can be sited within retained habitats, or designed into the built environment, and may include:

- A mixture of small hole (26mm and 32mm) boxes placed throughout the site on suitable trees and buildings will provide nesting opportunities for blue tit *Cyanistes caeruleus* and great tit *Parus major*. These boxes generally have a high uptake rate;
- Larger nest boxes with a 45mm hole should be placed under the eaves of buildings, or approximately 2.5m above ground in trees in order to provide nesting opportunities for starling; and larger terraced style or multiple single holed 32mm nest boxes should be placed on buildings to attract house sparrows;
- Small open fronted nest boxes should be placed throughout the site, especially on trees that support a climber such as ivy *Hedera helix,* which provides a degree of concealment for the nest. These boxes typically attract robin, blackbird and spotted flycatcher *Muscicapa striata*; and;
- A mixture of more specialised nest boxes should be placed on retained trees and new buildings particularly on the eastern edge of the essential part of the site, and should include boxes for stock dove, kestrel, swallow, house sparrow and swift.

5.51 Appropriate enhancement and management of hedgerows will create thick structures with dense bases to help protect nesting birds from predation. Structural diversity of hedgerows will be

encouraged through the planting of standard trees and implementation of a management regime (hedge laying or cutting; see below) in order to increase the diversity of nesting birds. The buffered areas adjacent to hedgerows and areas of grassland under informal management should be planted with a species rich grassland mix, as these provide necessary seeds for seed specialists such as linnet and stock dove.

5.52 The construction work most likely to disturb and impact on nesting birds is the initial ground works, vegetation clearance and activities which result in noise and vibration. The following is recommended to be included within a Construction and Environmental Management Plan:

- Removal of any vegetation suitable to support nesting birds will take place outside of the bird breeding season (March to August inclusive) to protect nesting birds and prevent an offence under the Wildlife and Countryside Act 1981;
- If vegetation is proposed for removal during the bird breeding season (March to August inclusive), it should first be inspected by a suitably qualified ecologist to ensure an offence under the Wildlife and Countryside Act 1981 is not committed. If an active nest is discovered, the vegetation containing the nest will remain *in situ* and an appropriate buffer will be adopted, as stipulated by the ecologist, until the young have fledged;
- The retained hedgerows and other woody nesting habitat should be buffered and protected with Heras fencing during construction to protect it from accidental damage or disturbance.

5.53 The proposed scheme will lead to a **negligible** short-term effect on the breeding bird assemblage with an overall **minor positive** effect in the medium to long term as the new habitat provision matures.

Great Crested Newt

5.54 GCN are afforded full protection under the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). They are also a Species of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006[29] and are listed as a Priority Species within Kent.

5.55 Numerous records of GCN were returned from the data consultation, with the closest located 214m north-west of the site in 2014. The site provides limited suitable terrestrial habitat for GCN in the form of field margins, hedgerow bases and ditches. This, along with the presence of nearby ponds and the consultation results for this species has necessitated further surveys to determine their status in the area.

5.56 Six offsite waterbodies were located within 250m of the site boundary, the accepted maximum commuting distance for GCN. Research published by Natural England, suggests that although a maximum routine migratory range has been estimated to be 500m, the majority of movements for GCN are approximately 250m from a breeding pond, with much reduced distances where adjacent habitats are of good quality.

5.57 Further surveys were carried out on four ponds (P1, P2, P3 and P4) which were located to the east, south and west of the site (1m west, 50m south-east, 52m south-east and 140m south

[29] The Natural Environment and Rural Communities Act 2006. [Online]. Available from: http://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed 11/11/2013]

respectively). Access was not permitted to undertake surveys on P5 and P6 however, there were records of GCN within these ponds returned by KMBRC.

5.58 During subsequent surveys GCN were recorded within ponds P2 and P3, with numbers constituting a medium and low class population, respectively. The intervening land between these two ponds and the site is under intensive management (sheep grazing), therefore it is expected these habitats are not likely to be crossed by GCNs due to the absence of cover and refuge. However, two terrestrial GCN were found during reptile surveys undertaken on 7th September and 28th September. The first GCN was found in the north-west corner of the proposed residential boundary and the second was found in the southern extent of the site, along the field margin, close to stream S2.

5.59 No breeding habitat will be lost to the development, however due to the proximity of confirmed breeding ponds (50 and 52m south-east) and the identification of GCN on site, it is likely that terrestrial habitat will be lost to proposals. To mitigate for the loss of terrestrial habitat for GCN, a Natural England licence will be required in order for the development to commence. This will be applied for through the Kent District Level Licensing scheme, which involves paying a financial contribution for the creation of new offsite compensatory habitat.

5.60 Proposals incorporate substantial areas of GI along all site boundaries, and this will be designed to maintain and enhance ecology on site. The green buffers will provide enhanced terrestrial habitats for amphibians through creation of species rich and tussock grassland, native shrub and hedgerow planting which provides more optimal foraging, commuting and cover opportunities than currently existing. If the proposed attenuation basin is engineered to provide permanent aquatic habitats, this will also provide additional breeding habitat for amphibians on site.

5.61 Amphibians (as well as reptiles and hedgehogs) are known to utilise residential gardens, therefore to ensure connectivity between the gardens it is recommended that residential garden fences should include small holes at the base (approximately 13cm x 13cm) in order to keep connectivity and enable free movement for these species which is vital to ensure they have access to sufficient areas of habitat.

Hazel Dormice

5.62 Dormice are protected under Section 41 of the Conservation of Habitats and Species Regulations 2017 and the Wildlife and Countryside Act 1981 (as amended). They are listed as Species of Principal Importance under NERC Act (2006).

5.63 The hedgerows and scrub habitats around the application site peripheries provide suitable habitat for dormice. Dormouse nests have been recorded in the northern extent of stream S1 on-site, and off-site to the south along stream S2.

5.64 Prior to the implementation of mitigation, the presence of this species represents a constraint to the proposed development as dormice are protected under the EC Habitats Directive. Although the law provides strict protection to dormice, it also allows derogation from this protection under Section 53 of the Conservation of Habitats and Species Regulations 2017 through the issuing of European Protected Species licences for development works. These licences in England are currently determined by Natural England. However, The Dormouse Conservation Handbook states that:

'No licence is required if the proposed activity is unlikely to result in an offence. Note that if the proposed activity can be timed, organised and carried out to avoid committing offences, then no licence is required'.

5.65 The proposals retain the majority of the hedgerows and scrub within the application site, however the creation of a pedestrian access route will result in some habitat losses within proximity of the identified nest found along stream S1. Proposals will result in a small gap within this treeline, and to ensure connectivity is maintained this will be kept as narrow as possible to allow movement through this linear feature. The development has been designed to maximise retention of hedgerows as well providing other suitable habitats that will benefit dormice in the long term, particularly around the peripheries and within the GI.

5.66 Existing linear features will be retained and enhanced with native species offering commuting and increased foraging resources throughout the year. This will also improve the structure of the hedgerows, to minimise the risk of predation from domestic cats. Furthermore, the creation of a new native species-rich hedgerow will increase connectivity around the site and into the wider area. Where possible, 'hop-overs' will be implemented over gaps to maintain canopy connectivity.

Mitigation

5.67 Through careful timing of works, a license is not considered to be necessary as measures will be taken to remove any dormice from the small area of vegetation to be lost. This will be achieved through either a two stage removal (i.e. canopy removal in winter and rootball in summer) or removal of all vegetation (canopy and rootball) in summer under supervision and 'persuasion' methods.

5.68 To avoid accidental killing or injury from general on site construction works, all retained hedgerows will be fenced off with Heras fencing, protecting habitats from disturbance including storage of materials and machinery. Onsite workers will be made aware of the presence of dormice and told to avoid disturbing such habitats. To avoid indirect disturbance to dormice during the night, construction work will avoid such hours, and where this is necessary lighting will be focused away from habitats likely to be used by dormice, as this is the period when dormice are active.

5.69 The mitigation measures will be detailed once the final masterplan has been developed and habitat losses confirmed. A Dormouse Method Statement will be provided which will contain specific lengths of habitat losses and compensatory planting provided, this will ensure that works are undertaken at the appropriate time of the year and that no unlawful works are undertaken. All habitat removals will be supervised by a licenced ecologist.

5.70 Should the extent of vegetation loss increase, it may be necessary to apply for a mitigation license from Natural England to legitimise the removal of dormouse suitable habitat.

Impacts of Predation from Domestic Cats

5.71 There are existing residential properties to the east and west of the site, whilst it is not known what the current levels of cat ownership are, it is likely that cats may use the application site and more may be introduced.

5.72 The Dormice Conservation Handbook states:

"The hazel dormouse is a distinctive native British mammal that is infrequently seen owning to its rarely caught in traps or by predators such as cats and owls….it spends most of its active time high off the ground and passes at least a third of the year in profound hibernation"

5.73 Dormice are arboreal animals and less likely to go to ground and be predated on by domestic cats, than other smaller mammals. The best and most up to date research available on the effects of new developments and increased domestic cat populations on dormice is provided within Woods et al[30]. This shows that dormouse remains were infrequently recorded during a study of 14370 prey items collected by 986 cats. It is also known that cats will predate more significantly on other small mammals such as mice.

5.74 To ensure that there are no increases in predation from cats, the existing hedgerows will be enhanced through additional planting making them wider with a denser structure allowing for lateral movement to evade predation; thorny species will be added to limit penetration by domestic cats.

5.75 The retention and enhancement of existing hedgerows along with the creation of additional vegetation will increase the foraging, movement and shelter opportunities for dormice. This will provide a minor positive impact at local level, ensuring that the favourable conservation status of this species is maintained.

Reptiles

5.76 All common reptile species, including grass snake, are partially protected under the Wildlife and Countryside Act 1981. In summary this legislation protects the species from intentional killing, injury or sale, offering for sale, or possessing, transporting or publishing advertisements for the purposes of sale. All common reptile species are also listed as a species of principal importance under the provisions of the NERC Act 2006.

5.77 Records of slow-worms have been identified within 1km of the application site. The main body of the application site provides sub-optimal opportunities for reptiles, and the hedgerow bases, field margins and scrub offer commuting and basking opportunities. A low population of slow worms, common lizards and grass snakes, along with juveniles of each species, have been identified along field boundaries. The presence of juveniles suggests that all three species are breeding either within or close to the application site. The suitable areas for reptiles are to largely be retained, with enhancements to be incorporated within the GI. In order to avoid injury to reptiles during site clearance and construction a period of supervised passive displacement will be undertaken where small areas of suitable habitat are to be lost.

5.78 Passive displacement will be undertaken during the active period for reptiles, between late-March to early-October and during suitable weather conditions when the daytime temperature is above 10˚C. The arable and grazed pasture within the centre of the application site and the main area of construction will be managed to remain unsuitable for reptiles. The field margins vary in width from 2m to 7m, therefore the 1m edge of the field margins will be managed to encourage reptiles to remain within the existing buffers by strimming the 1m buffer directionally from the centre of the working areas in the direction of retained habitats and the application site perimeter. Any areas of habitat to be retained will be left uncut and Heras fencing will be installed around the perimeter to

[30] Woods, M., McDonald R.A., and Harris, S (2003). Predation of wildlife by domestic cats *Felis catus* in Great Britain. Mammal Review 2003., Volume 33, No. 2 pages 174-188.

prevent machinery or materials being moved within this area which may cause injury or death to reptiles.

5.79 The vegetation within the access point will be given two cuts, the first to 200mm and the second 1-2 hours later to 50mm. All arisings will be removed from the working area to prevent potential areas of refugia from being used by reptiles moving across the area. The area will be regularly strimmed during suitable weather to prevent formation of suitable habitat for use by reptiles. All potential hibernation sites present within the working area shall be removed carefully by hand. Any individual found will be immediately placed in areas of retained habitat in order to minimise stress to individuals.

5.80 The finer details of the proposed mitigation will be provided within a Mitigation Strategy, at the detailed stage of planning. The proposals will provide enhanced opportunities for reptiles to continue to utilise the site for commuting and sheltering purposes, particularly with incorporation of unmanaged hedgerow buffers and new hedgerow planting. Additional native shrub and tree planting as well as sympathetic management of the grassland will ensure the mosaic of vegetative structures provides basking and foraging opportunities. Wood/scrub piles would also be created from any vegetation to be loss such as the hedgerows and trees to provide cover and hibernation features. It is considered that the GI to be incorporated will be sufficient to support the recorded reptile population, ensuring favourable conservation status is maintained.

Water Voles

5.81 The water vole receives full legal protection through inclusion in Schedule 5 of the Wildlife and Countryside Act (19810 as amended). Legal protection makes it an offence to:

- intentionally kill, injure or take a water vole;
- possess or control alive or dead water vole, or any part of a water vole;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place; and
- sell, offer for sale or advertise for live or dead water voles.

5.82 Water voles are listed as a Species of Principal Importance under Section 41 of the NERC Act (2006).

5.83 The riparian mammal surveys identified small holes and burrows within the banks of the watercourses, in addition to some patches of grazing as well as occasional mammal runs within the bankside vegetation leading to the streams. These were indicative of small mammals such as bank voles *Myodes glareolus*. There was no evidence of water vole activity or other riparian mammal such as otter within the streams and ditches on the application site or the wider area, and it is therefore considered that neither water vole or otter pose a constraint to the proposals. As a part of the mitigation and habitat enhancement measures within the site, the stream will be buffered, with the adjacent vegetation managed and enhanced to provide conditions suitable for use by potential riparian mammals. It is recommended that a wooden post and rail fence and structural shrub planting is installed along the boundary to provide protection from resident and dog encroachment/disturbance.

Other Species

West European Hedgehog

5.84 The West European Hedgehog is partially protected under Schedule 6 of the Wildlife and Countryside Act (1981) and the Wild Mammals Protection Act (1996) and is listed as a 'Species of Principal Importance' under the Natural Environment and Rural Communities Act (2006). Together taken this makes it an offence to:

- deliberately or intentionally kill a hedgehog without a licence; or
- trap a hedgehog without a licence.

5.85 During the desk study, multiple records of west European hedgehog were returned within 1km of the site and an incidental sighting of two hedgehogs occurred during a great crested newt torching survey that was undertaken to the east of the site within the wider area. This suggests that hedgehogs are active in the area and are likely to be utilising the rest of the site as there are no obstructions or barriers between the application site and neighbouring field compartments.

5.86 Hedgehogs are a generalist species and require large areas of contiguous habitat. Threats to hedgehog include loss of habitat, reduced habitat quality, and habitat fragmentation. Hedgerows can provide food, shelter from predators and can be important for nesting sites during hibernation. They are also vital corridors facilitating movement[31].

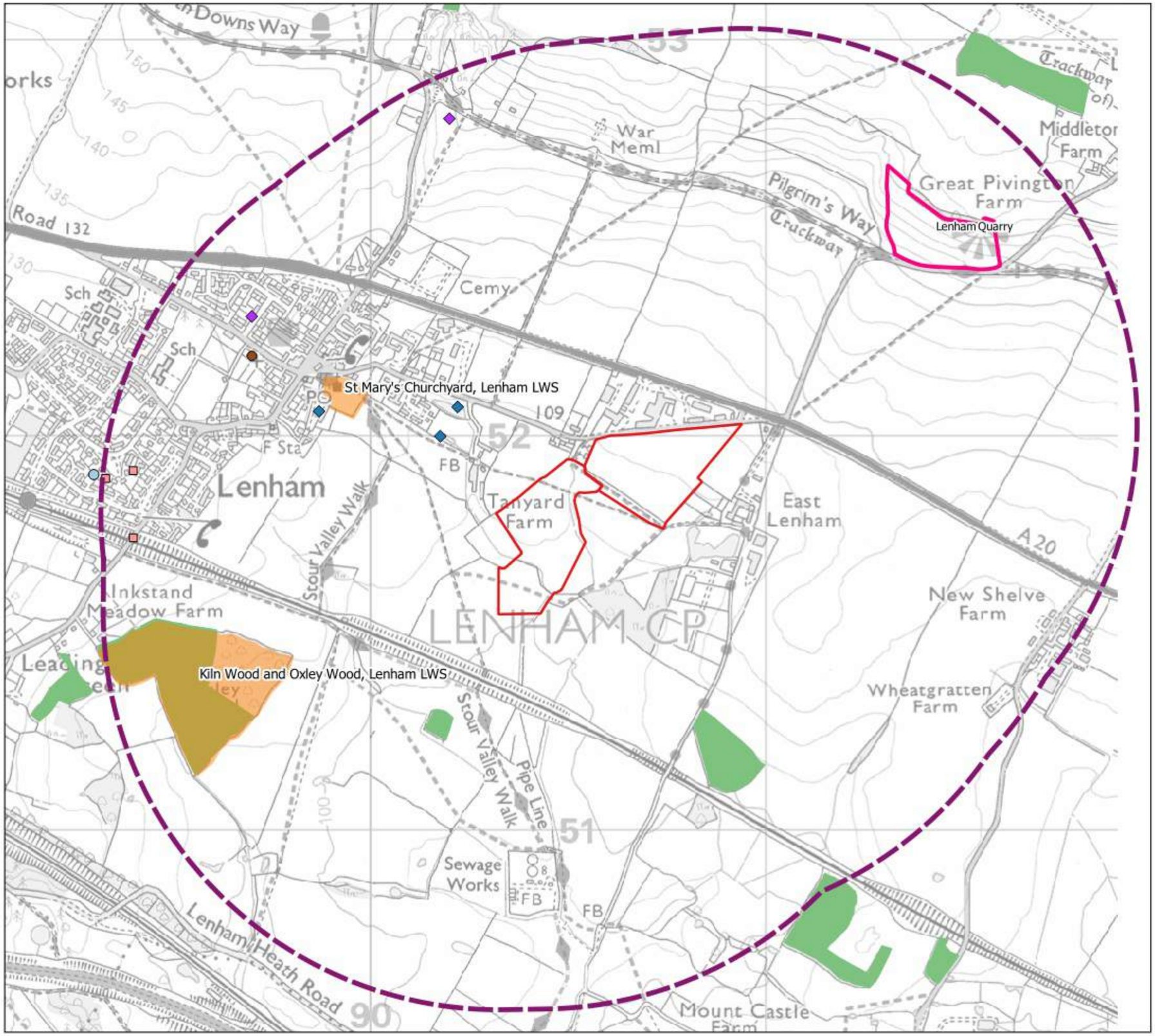
5.87 All hedgerows will be retained and buffered within the proposals, with the exception of small sections of hedgerows H5 on the northern boundary, H6 on the western boundary, H9 on the western boundary as well as H12/13 on the south-eastern boundary which are proposed to be removed for pedestrian and vehicular access. The loss of small sections of will not have a negligible impact on hedgehogs as the matrix of gardens and green spaces in towns and cities can support the highest densities of hedgehogs[32]. As previously mentioned, residential garden fences should have small holes cut at the bottom (approximately 13cm x 13cm[33]) in order to keep connectivity and enable free movement for this species. Hedgerow highway signs can be purchased from the People's Trust for Endangered Species which will advise residents why there is a hole and will help encourage them to keep it open.

5.88 The remaining hedgerows within the application site will be enhanced and buffered providing high quality habitat for hedgehogs to utilise. The area of GI around the peripheries of the site will contain suitable hibernaculum for this species, including log piles and patches of brush, which will allow hedgehogs to safely hibernate over winter as well as providing important habitat for insects during the warmer months which hedgehogs can feed on.

[31] Henry Johnson, (2015*)* Conservation Strategy for West-European Hedgehog (Erinaceus europaeus) in the United Kingdom (2015-2025) People's Trust for Endangered Species (PTES)

[32] Hubert, P., Julliard, R., Biagianti, S. & Marie-Lazarine, P. (2011) Ecological factors driving the higher hedgehog *(Erinaceus europaeus)* density in an urban area compared to the adjacent rural area. Landscape and Urban Planning, 103, 34-43

[33] Hedgehog Street [ONLINE] Available at http://www.hedgehogstreet.org/pages/link-your-garden.html



Key

- Site Boundary
- 1km Boundary
- Site of Special Scientific Interest (SSSI)

Designated Sites

- Local Wildlife Sites
- Ancient Woodland Inventory Sites

Protected Species Records

- Great Crested Newt
- Slow-worm
- West European Hedgehog
- Pipistrelle Species
- Location of Bird Records (See table below for species)

Bird Species Recorded

Common Name
Mute Swan
Greylag Goose
Mallard
Red Kite
Kestrel
Hobby
Lapwing
Black-headed Gull
Lesser Black-backed Gull
Herring Gull
Barn Owl
Stock Dove
Swift
Lesser Spotted Woodpecker
Skylark
House Martin
Dunnock
Fieldfare
Song Thrush
Redwing
Mistle Thrush
Willow Warbler
Spotted Flycatcher
Starling
House Sparrow
Linnet
Bullfinch
Yellowhammer

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CONSULTATION PLAN

1:10000 JV / KAB 5/6/2019

Figure 1 7968-E-01

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Key

- Residential Boundary
- Sports Park Boundary
- Bare ground
- Ruderal vegetation
- A — Arable
- SI — Poor semi-improved grassland
- Standing water
- Running water
- Dry ditch
- Fence
- Path
- Broadleaved trees
- Intact hedge - species-poor
- XXX Scrub - scattered line
- Tree with bat potential
- Target note
- Broadleaved tree
- Static Detector Locations

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Old Ashford Road,
Lenham

PHASE 1 HABITAT PLAN

scale 1:2202 | drawn RCD / KAB | issue 5/6/2019

drawing / figure number **Figure 2** | rev **7968-E-01**

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B:\GIS Projects\7968 Lenham\QGIS 2.14\Plans\Phase 1 Plan\7968-E-02 Phase 1 Habitat Plan.qgs

Key

- Site Boundary
- 250m Buffer
- Waterbody
- Waterbody with no access
- Ditch
- Dry Ditch
- Stream

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B:\GIS Projects\7968 Lenham\QGIS 2.14\Plans\Waterbody Plan

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WATERBODY LOCATIONS PLAN

scale 1:4500 | drawn RCD / | issue 13/5/2019

drawing / figure number **Figure 3** | rev **7968-E-03**

Key:

- Site Boundary
- Transect Route
- Start point
- Finish point
- Point Count (with ref.)
- Flight Arrow

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Plecotus Species

Plan Reference	Time	Species	Passes	Behaviour
Start	20:41			
PCA	20:46-20:51	NO BATS		
PCB	20:54-20:59	NO BATS		
PCC	21:01-21:06	NO BATS		
PCD	21:07-21:12	NO BATS		
1	21:17	Common Pipistrelle	2	Pass
PCE	21:20-21:25	NO BATS		
2	21:31	Common Pipistrelle	3	Pass
PCF	21:34-21:39	NO BATS		
PCG	21:46-21:51	NO BATS		
PCH	21:53-21:58	Ref 3		
3	21:54	Common Pipistrelle	1	Pass
PCI	22:03-22:08	NO BATS		
PCJ	22:11-22:16	NO BATS		
4	22:18	Soprano Pipistrelle	2	Pass
5	22:20	Soprano Pipistrelle	3	Pass
6	22:21	Common Pipistrelle	1	Pass
7	22:22	Myotis species	1	Pass
8	22:23	Soprano Pipistrelle	3	Pass
PCK	22:23-22:28	Ref 9-11		
9	22:24	Plecotus species	1	Pass
10	22:25	Common Pipistrelle	1	Pass
11	22:26	Soprano Pipistrelle	3	Pass
PCL	22:29-22:34	NO BATS		
PCM	22:36-22:41	Ref 12-13		
12	22:37	Common Pipistrelle	Continuous	Foraging
13	22:38	Soprano Pipistrelle	Continuous	Foraging
Finish	22:49			

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0 25 50 75 100 m

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Land South of Old Ashford Road, Lenham

BAT TRANSECT PLAN (15/05/18)

1:2,350 JV 5/12/2018

Figure 4 7968-E-01

P:\XXXX\XXXX\QGIS\Plans\Bat Transects & Emergence\XXXX-E-XX Bat Transect Plan.qgis

Key:

- Site Boundary
- Transect Route
- Start point
- Finish point
- Point Count (with ref.)
- Flight Arrow

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Nyctalus Species

Plan Reference	Time	Species	Passes	Behaviour
Start	20:55			
PCA	20:55-21:00	NO BATS		
PCB	21:03-21:08	NO BATS		
PCC	21:15-21:20	NO BATS		
PCD	21:28-21:33	NO BATS		
PCE	21:35-21:40	NO BATS		
PCF	21:44-21:49	NO BATS		
PCG	21:54-21:59	NO BATS		
1	22:00	Common Pipistrelle	1	Pass
PCH	22:05-22:10	NO BATS		
PCI	22:13-22:18	NO BATS		
2	22:18	Common Pipistrelle	1	Pass
3	22:20	Common Pipistrelle	2	Pass
4	22:21	Soprano Pipistrelle	1	Pass
PCJ	22:24-22:29	Ref 5-8		
5	22:23	Soprano Pipistrelle	Continuous	Foraging
6	22:24	Common Pipistrelle	1	Pass
7	22:26	Myotis species	1	Pass
8	22:28	Common Pipistrelle	2	Pass
9	22:33	Common Pipistrelle	1	Pass
10	22:40	Common Pipistrelle	1	Pass
PCK	22:40-22:45	Ref 11		
11	22:41	Common Pipistrelle	Continuous	Foraging
PCL	22:47-22:52	Ref 12		
12	22:51	Nyctalus species	1	Pass
PCM	22:53-22:58	Ref 13		
13	22:55	Nyctalus species	1	Pass
Finish	23:00			

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Land South of Old Ashford Road, Lenham

BAT TRANSECT PLAN (25/07/18)

1:2,350 JV 23/11/2018

Figure 5 7968-E-01

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0 25 50 75 100 m

Key:

- Site Boundary
- Transect Route
- Start point
- Finish point
- Point Count (with ref.)
- Flight Arrow

Bat Contacts

- Common Pipistrelle
- Common / Soprano Pipistrelle
- Soprano Pipistrelle
- Pipistrelle Species
- Nyctalus Species
- Noctule
- Plecotus Species

Plan Reference	Time	Species	Passes	Behaviour
Start	19:20			
PCA	19:28-19:33	NO BATS		
1	19:37	Soprano Pipistrelle	1	Pass
PCB	19:39-19:44	Ref 2-3		
2	19:40	Soprano Pipistrelle	1	Pass
3	19:44	Soprano Pipistrelle	1	Commuting
PCC	19:53-19:58	NO BATS		
4	20:00	Common Pipistrelle	2	Foraging
5	20:01	Noctule	1	Pass
PCD	20:02-20:07	Ref 6-8		
6	20:02	Common Pipistrelle	1	Pass
7	20:06	Noctule	1	Pass
8	20:06	Plecotus species	1	Pass
9	20:10	Common Pipistrelle	Continuous	Pass
10	20:13	Common Pipistrelle	2	Pass
11	20:16	Common Pipistrelle	3	Pass
12	20:19	Common Pipistrelle	3	Pass
PCE	20:21-20:26	Ref 13-14		
13	20:22	Common Pipistrelle	1	Pass
14	20:24	Common Pipistrelle	2	Pass
15	20:27	Common Pipistrelle	2	Pass
PCF	20:29-20:34	NO BATS		
16	20:35	Common Pipistrelle	1	Pass
PCG	20:36-20:41	Ref 17-18		
17	20:40	Nyctalus species	1	Pass
18	20:40	Noctule	1	Pass
19	20:42	Nyctalus species	2	Pass
PCH	20:43-20:48	Ref 20-23		
20	20:43	Common Pipistrelle	1	Pass
21	20:44	Nyctalus species	2	Pass
22	20:46	Common Pipistrelle	1	Pass
23	20:47	Noctule	1	Pass
PCI	20:52-20:57	Ref 24		
24	20:52	Nyctalus species	1	Pass
25	20:59	Common Pipistrelle	3	Pass
26	21:00	Noctule	1	Pass
PCJ	21:02-21:05	NO BATS		
27	21:06	Soprano Pipistrelle	1	Pass
28	21:07	Common Pipistrelle	2	Pass
PCK	21:09-21:12	NO BATS		
PCL	21:13-21:16	Ref 29		
29	21:13	Pipistrelle species	1	Pass
PCM	21:19-21:22	NO BATS		
Finish	21:22			

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BAT TRANSECT PLAN (11/09/18)

1:2,350 JV 5/12/2018

Figure 6 7968-E-01

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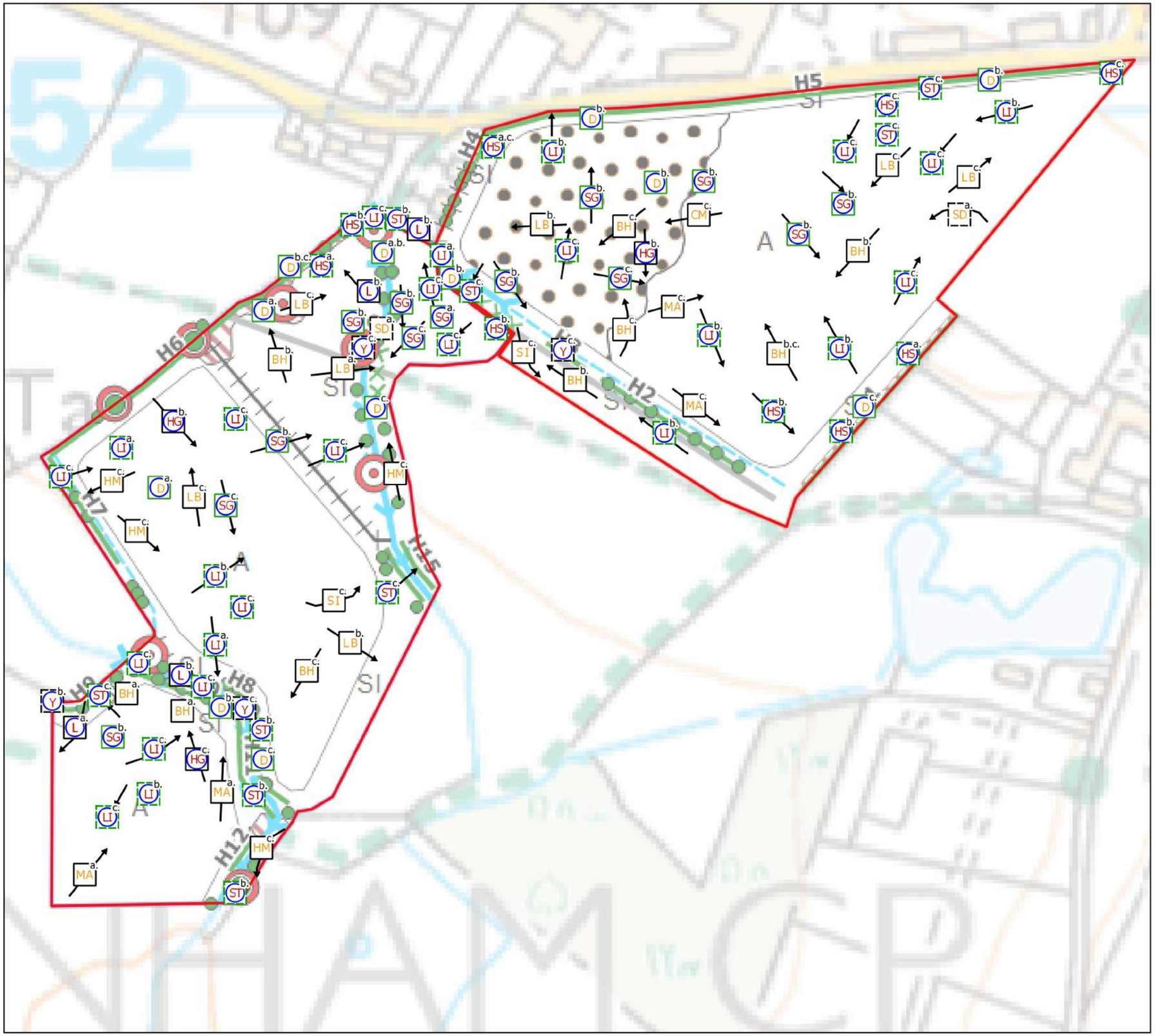

Key

Site Boundary

Notable Birds

BoCC Red Listed Species

- HG Herring Gull
- HS House Sparrow
- L Lapwing
- LI Linnet
- ST Song Thrush
- SG Starling
- Y Yellowhammer

BoCC Amber Listed Species

- BH Black-headed Gull
- CM Common Gull
- D Dunnock
- HM House Martin
- LB Lesser Black-backed Gull
- MA Mallard
- SD Stock Dove
- SI Swift

Fly Over Only
NERC Species of Principle Importance
Schedule 1 Species
Confirmed Breeder
Probable Breeder
Possible Breeder
Non-breeder

BBS Survey Dates Birds were encountered:
a) 15/05/2018
b) 05/06/2018
c) 27/06/2018

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Old Ashford Road,
Lenham

BREEDING BIRD SURVEY RESULTS 2018 - LOCATIONS OF NOTABLE SPECIES

scale 1:2,250 | drawn PJP | issue 23/11/2018

drawing / figure number **Figure ?** | rev **7968-E-01**

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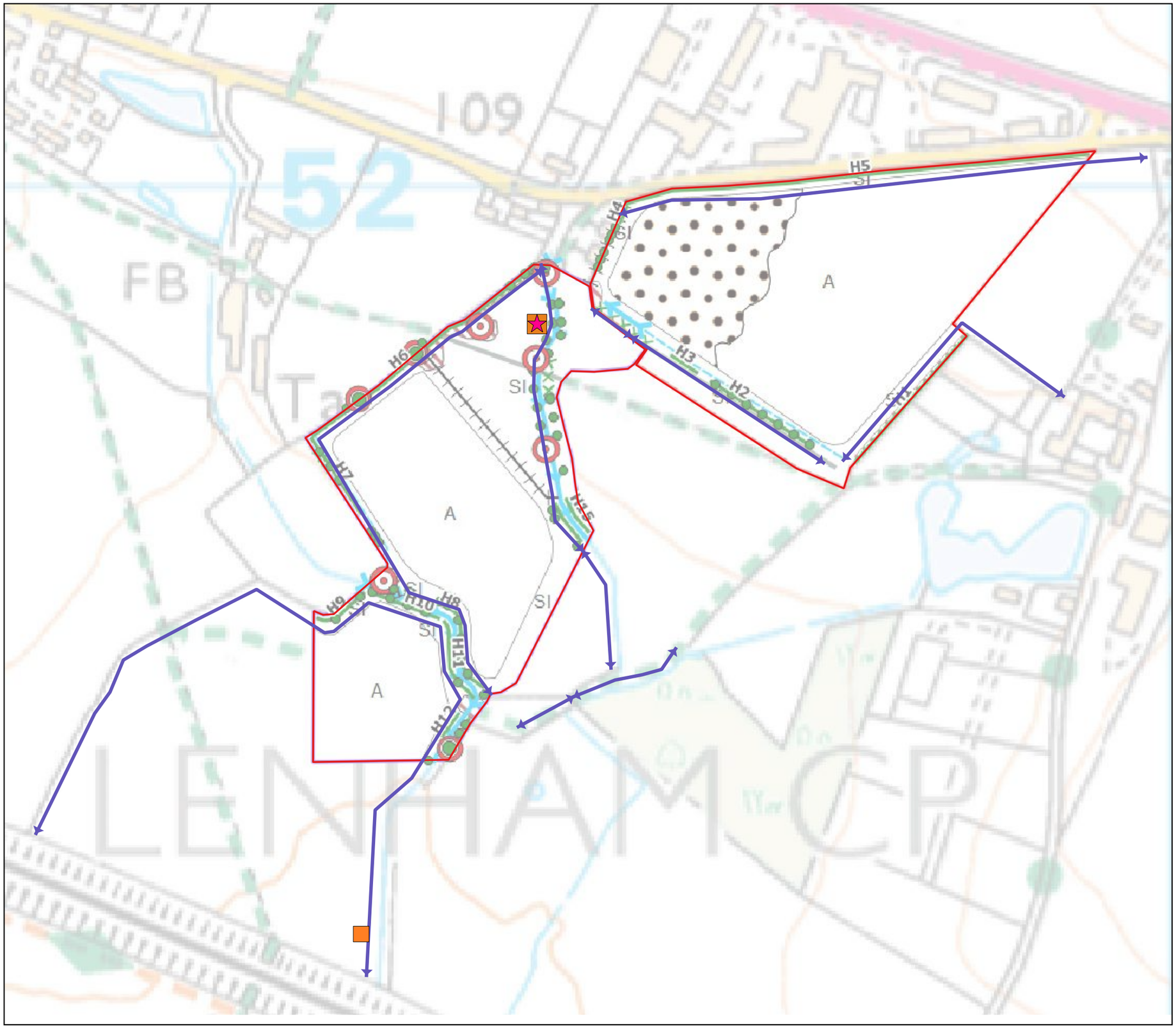
J:/XXXX/XXXX/QGIS/Plans/Bird Figures/BBS/Survey Two/XXXX-E-01 Breeding Bird Survey Two Results.qgs



Key:

- Site Boundary
- Tube Locations

Evidence

- Nest - Confirmed
- Live Dormouse

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DORMOUSE SURVEY PLAN

1:3094 RCD/PJP 4/6/2019

Figure 8 **7968-E-01**

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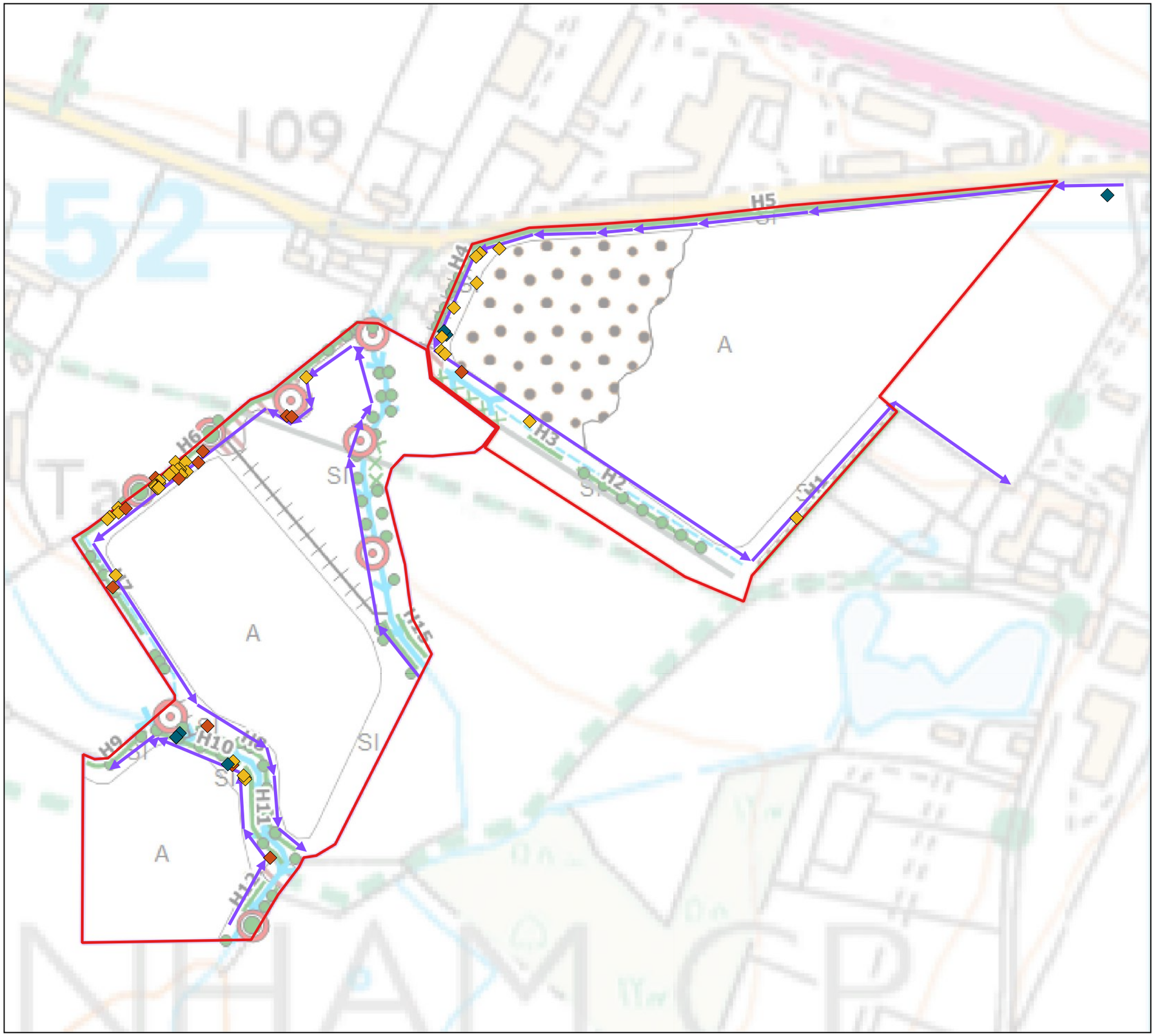
B:\GIS Projects\7968 Lenham\QGIS 2.14\Plans\Dormouse Survey Plan\7968-E-XX Dormouse Plan 1 (XX.XX.XX).qgs



Key

- Site Boundary
- Refugia Locations
- Slow worm
- Common lizard
- Grass snake

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REPTLE SURVEY PLAN

1:2500 RCD 4/6/2019

Figure 9 **7968-E-01**

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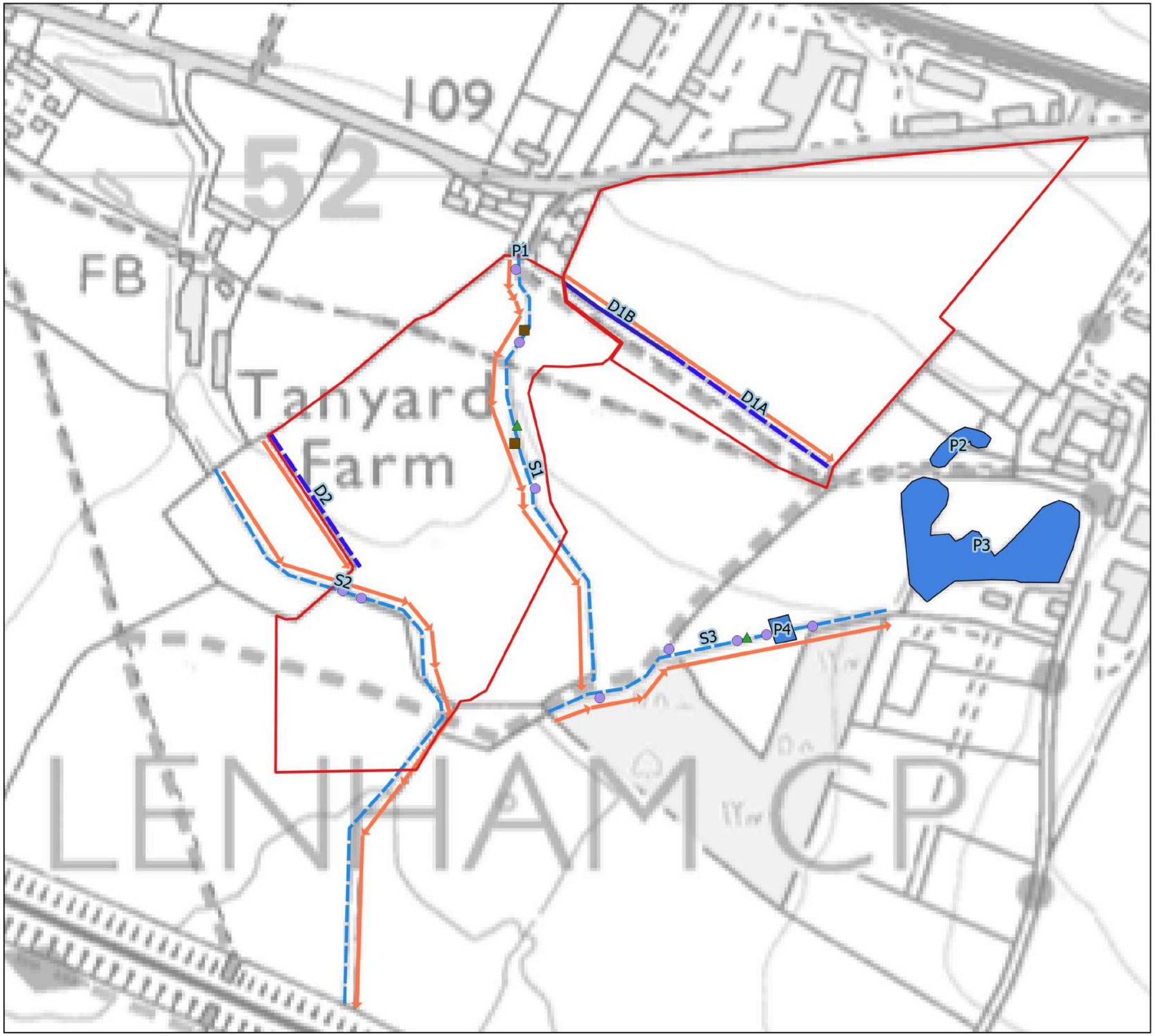
Key

- Site Boundary
- Stream
- Dry Ditch
- Wet Ditch
- Pond
- Area Surveyed
- Small Mammal Burrow
- Feeding Remains
- Mammal Run



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Riparian Mammal Survey Plan

scale 1:3.000 | drawn RCD | issue 24/1/2019

drawing / figure number **Figure 10** | rev **7968-E-10**

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B:\GIS Projects\7968 Lenham\QGIS 2.14\Plans\Riparian Mammals

Appendix A: Botanical Species List

Common Name	Scientific Name	F1	A	F2	TN2	F3	TN4	Abundance (DAFOR)
Annual meadowgrass	*Poa annua*	✓						F
Bentgrass sp.	*Agrostis* sp.	✓		✓			✓	F/A/F
Bird's-foot trefoil	*Lotus corniculatus*			✓		✓		O
Broad-leaved dock	*Rumex obtusifolius*	✓						O
Bristly ox-tongue	*Helminthotheca echioides*	✓						R
Cleavers	*Galium aparine*	✓		✓			✓	F/O/A
Cocksfoot	*Dactylis gomerata*	✓		✓	✓		✓	O/A/A/F
Common mouse-ear	*Cerastium fontanum*	✓						O
Common nettle	*Urtica diocica*	✓	✓	✓	✓		✓	A/F/A
Common ragwort	*Jacobaea vulgaris*	✓				✓		R
Cow parsley	*Anthriscus sylvestris*	✓						O
Creeping buttercup	*Ranunculus repens*	✓				✓		O
Creeping cinquefoil	*Potentilla reptans*					✓		O
Creeping thistle	*Cirsium arvense*	✓		✓		✓		O
Cuckooflower	*Cardamine pratensis*						✓	O
Dandelion	*Taraxacum officinale* agg.	✓		✓				O
Dove's-foot cranesbill	*Geranium molle*							
False oat-grass	*Arrhenatherum elatius*	✓						O
Field speedwell	*Veronica persica*	✓						R
Garlic mustard	*Alliaria petiolate*	✓						O
Greater plantain	*Plantago major*	✓						O
Green alkanet	*Pentaglottis sempervirens*	✓						R
Ground ivy	*Glechoma hederacea*	✓		✓				O
Hairy sedge	*Carex hirta*			✓	✓	✓		F
Hard rush	*Juncus inflexus*			✓	✓		✓	R/A/F
Hemlock	*Conium maculatum*	✓						O
Hogweed	*Heracleum sphondylium*	✓					✓	O
Lesser burdock	*Arctium minus*	✓						O
Lesser celandine	*Ranunculus ficaria*	✓		✓	✓			O/R/F
Lords and Ladies	*Arum maculatum*	✓			✓	✓		R/O/O
Mayflower	*Epigaea repens*		✓					-
Meadowgrass sp.	*Poa* sp.	✓		✓			✓	F/A/F
Perennial ryegrass	*Lolium perenne*	✓		✓				O
Red dead-nettle	*Lamium purpureum*	✓						O
Red Fescue	*Festuca rubra*			✓		✓		O/F
Silverweed	*Argentina anserine*					✓		O
Smooth sow-thistle	*Sonchus oleraceus*	✓						O
Spear thistle	*Cirsium vulgare*	✓	✓	✓				O

White clover	*Trifolium repens*	✓		✓				F/O
White dead-nettle	*Lamium album*		✓					-
Willowherb sp.	*Epilobium* sp.		✓					-
Yorkshire fog	*Holcus lanatus*	✓		✓	✓	✓		F/O/O/F
Yarrow	*Achillea millefolium*	✓						R

Appendix B: Static Bat Detector Data

Survey Dates	Total Avg/ hour	Total Regs	Common Pipistrelle			Noctule			Soprano Pipistrelle			Nyctalus Species			Myotis Species			Serotine			Pipistrelle Species			Nathusius' pipistrelle			Long Eared Species		
			Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total
Spring 15th – 20th May 2018	0.70	34	0.46	12	22	0.15	5	7	0.02	1	1	0.06	3	3	0.02	1	1	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0
Summer 25th – 30th July	7.16	352	5.61	105	276	0.06	2	3	0.94	14	46	0.33	6	16	0.04	1	2	0.10	3	5	0.06	1	3	0.02	1	1	0.00	0	0
Autumn 11th – 16th of September	5.80	385	1.55	27	103	3.77	132	250	0.08	3	5	0.27	10	18	0.06	3	4	0.02	1	1	0.02	1	1	0.03	2	2	0.02	1	1

Appendix C: Lenham - 2018 Breeding Bird Survey Results & EOAC Criteria for Categorisation of Breeding Status

Survey	Surveyor	Date	Cloud (%)	Rain	Wind	Visibility
1	MJF	15.05.18	10	None	Gentle breeze	Excellent
2	LC	05.06.18	100	Light drizzle at start of survey	Gentle breeze	Good
3	LC	27.06.18	100	None	Gentle breeze	Good

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection	Breeding status[1]
Mallard	*Anas platyrhynchos*	2	-	4	Amber list	Non-breeder – F
Buzzard	*Buteo buteo*	2	-	-	Green list	Non-breeder – F
Lapwing	*Vanellus vanellus*	5	4	-	Red list NERC S.41	Non-breeder – F
Black-headed gull	*Chroicocephalus ridibundus*	3	7	15	Amber list	Non-breeder – F
Common gull	*Larus canus*	-	-	1	Amber list	Non-breeder – F
Lesser black-backed gull	*Larus fuscus*	1	2	4	Amber list	Non-breeder – F
Herring gull	*Larus argentatus*	-	3	1	Red list NERC S.41	Non-breeder – F
Stock dove	*Columba oenas*	2	-	-	Amber list	Possible – H
Wood pigeon	*Columba palumbus*	25	43	37	Green list	Possible – S/H
Collared dove	*Streptopelia decaocto*	1	2	-	Green list	Possible – H
Swift	*Apus apus*	-	-	6	Amber list	Non-breeder – F
Green woodpecker	*Picus viridis*	-	1	-	Green list	Possible – H
Great spotted woodpecker	*Dendrocopos major*	-	1	-	Green list	Possible – H
Magpie	*Pica pica*	5	6	7	Green list	Possible – H
Jackdaw	*Corvus monedula*	-	-	1	Green list	Non-breeder – F

[1]European Ornithological Atlas Committee, 1979. *Categories of Breeding Bird Evidence*. European Ornithological Atlas Committee.

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection	Breeding status[1]
Carrion crow	*Corvus corone*	1	7	3	Green list	Non-breeder – F
Blue tit	*Cyanistes caeruleus*	6	2 + 2 families	6 + 3 juveniles	Green list	Confirmed - FL
Great tit	*Parus major*	3	2	1 + 1 family	Green list	Confirmed - FL
Swallow	*Hirundo rustica*	-	-	3	Green list	Non-breeder – F
House martin	*Delichon urbica*	-	-	4	Amber list	Non-breeder – F
Chiffchaff	*Phylloscopus collybita*	-	-	1	Green list	Possible – S/H
Blackcap	*Sylvia atricapilla*	1	4	-	Green list	Possible – S/H
Whitethroat	*Sylvia communis*	3	4	2	Green list	Possible – S/H
Treecreeper	*Certhia familiaris*	-	-	2 juveniles	Green list	Confirmed - FL
Wren	*Troglodytes troglodytes*	3	6	5	Green list	Possible – S/H
Starling	*Sturnus vulgaris*	3	34	16	Red list NERC S.41	Confirmed – FF
Blackbird	*Turdus merula*	4	19	19	Green list	Confirmed – FF
Song thrush	*Turdus philomelos*	-	4	5	Red list NERC S.41	Probable – P
Robin	*Erithacus rubecula*	2	3	4	Green list	Possible – S/H
Dunnock	*Prunella modularis*	3	7 + 1 family	4	Amber list NERC S.41	Confirmed - FL
House sparrow	*Passer domesticus*	3 + 1 colony	2 + 2 colonies	3 + 2 colonies	Red list NERC S.41	Probable – P
Pied wagtail	*Motacilla alba*	1	1	-	Green list	Possible – S/H
Chaffinch	*Fringilla coelebs*	4	9	12 + 1 family	Green list	Probable – P
Greenfinch	*Carduelis chloris*	1	1 + 1 family	2	Green list	Confirmed - FL
Linnet	*Carduelis cannabina*	3	35	37	Red list NERC S.41	Probable – P
Goldfinch	*Carduelis carduelis*	3	25	17 + 1 family	Green list	Confirmed - FL
Yellowhammer	*Emberiza citronella*	-	1	3	Red list NERC S.41	Possible – S/H

Species: British Common Name	Species: Latin name	Survey 1	Survey 2	Survey 3	Conservation Status & Protection	Breeding status[1]
Total No. Species		**25**	**26**	**29**		

Breeding Status evidence can be broken down into four sections, each with their own codes, as defined by the European Ornithological Atlas Committee:

Confirmed breeder

DD – distraction display or injury feigning

UN – used nest or eggshells found from this season

FL – recently fledged young or downy young

ON – adults entering or leaving nest-site in circumstances indicating occupied nest

FF – adult carrying faecal sac or food for young

NE – nest containing eggs

NY – nest with young seen or heard

Probable breeder - Evidence accumulated during the survey indicates that the bird species is breeding on site.

P – pair in suitable nesting habitat

T – permanent territory (defended over at least 2 survey occasions)

D – courtship and display

N – visiting probable nest site

A – agitated behaviour

I – brood patch of incubating bird (from bird in hand)

B – nest building or excavating nest-hole

Possible breeder - Evidence accumulated during the survey indicates that the bird species could be breeding on site, but the evidence is less conclusive than that obtained for probable breeders.

H – observed in suitable nesting habitat

S – singing male

Non-breeder

F – flying over

M – migrant

U – summering non-breeder

UH – observed in unsuitable nesting habitat