

Blowers Wood, Hempstead (north of Maidstone Road,
Gillingham)

Ecological Appraisal

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Executive Summary

- i) **Introduction.** Aspect Ecology was commissioned by Redrow Homes Limited in March 2022 to undertake an Ecological Appraisal in respect of proposed redevelopment of land at Blowers Wood, Gillingham.
- ii) **Proposals.** The proposals are for development of the site to create a new housing development.
- iii) **Survey.** The site was surveyed in April 2022 based on standard extended Phase 1 methodology. In addition, a general appraisal of faunal species was undertaken to record the potential presence of any protected, rare or notable species, with specific surveys conducted in respect of bats and Badger. Specific surveys were carried out for reptiles, bats and dormouse during the spring/summer of 2022.
- iv) **Ecological Designations.** The site itself is not subject to any statutory or non-statutory ecological designations. The nearest statutory designation is Levan Strice Local Nature Reserve located approximately 0.7km north-east of the site, whilst a range of national and international designations exist within the wider area including the North Kent SPA/Ramsar sites. Mitigation measures are set out where necessary which will prevent any adverse effects to these designation. The nearest non-statutory designation is South Wood Local Wildlife Site located approximately 0.9km north-west of the site. All ecological designations in the surrounding area are physically well separated from the site and are therefore unlikely to be adversely affected by the proposals.
- v) **Habitats.** The site comprises a species-poor semi-improved grassland field, bisected by a fenced footpath. It is surrounded by trees, secondary woodland and by ancient woodland on the northern boundary. The ancient woodland is an important feature and will be provided with a suitable buffer zone from the housing development. An assessment has been made of potential indirect impacts to the Ancient Woodland and where necessary, appropriate mitigation measures are set out. A small section of the scrub at the south-eastern boundary will be removed to facilitate access. This will be compensated by new, native species-rich hedgerow planting. The remaining habitats within the site are not considered to form important ecological features and their loss to the proposals is of negligible significance.
- vi) **Protected Species.** The site supports a small population of reptiles (Slow Worm, Common Lizard and Grass Snake), and mitigation proposals are put forward including a reptile receptor site in the northern part of the site. Dormouse were also recorded in the vegetated boundaries of the site, which are largely unaffected, although appropriate mitigation measures are set out to ensure that there is loss of habitat quanta or connectivity.
- vii) **Enhancements.** The proposals present the opportunity to secure a number of biodiversity net gains, including additional native tree planting, wildflower meadow creation, and new roosting opportunities for bats. An area of enhanced reptile habitat in the northern part of the site will be provided with artificial refugia and hibernacula.
- viii) **Summary.** In summary, the proposals have sought to minimise impacts on biodiversity and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm.

1 Introduction

1.1 Background and Proposals

- 1.1.1 Aspect Ecology was commissioned by Redrow Homes Limited in March 2022 to undertake an Ecological Appraisal in respect of proposed development of land at Blowers Wood, Gillingham, centred at grid reference SP 4597 4300 (see Plan 1234/ECO1), hereafter referred to as 'the site'.
- 1.1.2 The proposals are for redevelopment of the site to create a new housing development.

1.2 Site Overview

- 1.2.1 The site is located to the north of Maidstone Road in Gillingham, Kent, centred at OSNGR TQ 79830 63012 (Figure 1) and is approximately 3.8 ha. It is bordered by the A278 Hoath Way to the north-east, Maidstone Road to the south-east beyond which lies the M2 motorway, with belts of woodland or tree lines along the remaining boundaries. The wider landscape to the north and east comprises residential areas associated with the villages of Hempstead and Wigmore. A park and ride carpark is located to the south, whilst to the west is an area of secondary woodland with agricultural land beyond.
- 1.2.2 The site itself comprises a semi-improved grassland field, bisected by a public footpath. There are areas of dense low-lying bramble growth scattered across the field and a number of semi-mature trees located close to the north-eastern boundary. Just beyond the north-eastern and south-eastern boundaries of the site are two dry ditches.

1.3 Purpose of the Report

- 1.3.1 This report documents the methods and findings of the baseline ecology surveys and desktop study carried out in order to establish the existing ecological interest of the site, and subsequently provides an appraisal of the likely ecological effects of the proposals. The importance of the habitats and species present is evaluated. Where necessary, avoidance, mitigation and compensation measures are proposed so as to safeguard any significant existing ecological interest within the site and where appropriate, opportunities for ecological enhancement are identified with reference to national conservation priorities and local Biodiversity Action Plans (BAPs).

2 Methodology

2.1 Desktop Study

- 2.1.1 In order to compile background information on the site and its immediate surroundings the Kent and Medway Biological Records Centre were contacted in April 2022, with data requested on the basis of a search radius of 2km:
- 2.1.2 Where information has been received from the above organisation(s) this is reproduced at Appendix 6514/3 and on Plan 6514/ECO2, where appropriate.
- 2.1.3 Information on statutory designations was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England, with an extended search radius (25km). In addition, the MAGIC database was searched to identify the known presence of any Priority Habitats within or adjacent the site. Relevant information is reproduced at Appendix 6514/3 and on Plan 6514/ECO2, where appropriate.
- 2.1.4 In addition, the Woodland Trust database was searched for any records of ancient, veteran or notable trees within or adjacent to the site.

2.2 Habitat Survey

- 2.2.1 The site was surveyed in April 2022 in order to ascertain the general ecological value of the land contained within the boundaries of the site and to identify the main habitats and ecological features present. Reference has also been made to a previous Ecological report which had been carried out by a third-party ecological consultancy in 2020.
- 2.2.2 The site was surveyed based on standard Phase 1 Habitat Survey methodology¹, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail through Phase 2 surveys. This method was extended, in line with the Guidelines for Preliminary Ecological Appraisal² to record details on the actual or potential presence of any notable or protected species or habitats.
- 2.2.3 Using the above method, the site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified. The nomenclature used for plant species is based on the Botanical Society for the British Isles (BSBI) Checklist.

2.3 Faunal Surveys

- 2.3.1 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species, and specific consideration was given to bats, Badger, Great Crested Newts, reptiles and Dormice, as described below.

¹ Joint Nature Conservation Committee (2010, as amended) 'Handbook for Phase 1 habitat survey: A technique for environmental audit.'

² Chartered Institute for Ecology and Environmental Management (CIEEM) (2013) 'Guidelines for Preliminary Ecological Appraisal.'

Bats³

Visual Inspection Surveys

2.3.2 Trees. Trees were assessed for their suitability to support roosting bats based on the presence of features such as holes, cracks, splits or loose bark. Suitability for roosting bats was rated based on relevant guidance⁴ as:

- Negligible;
- Low;
- Moderate; or
- High.

2.3.3 Any potential roost features identified were also inspected for any signs indicating possible use by bats, e.g. staining, scratch marks, bat droppings, etc.

Activity Surveys

2.3.4 Walked transect surveys were undertaken in May, July and September to ascertain the level of usage of the site by foraging or commuting bats. This survey method involves walking planned transect routes with key listening points, specifically covering habitats/features with particular potential for commuting or foraging bats. Anabat Scout handheld bat detectors were used to identify any bats observed. Each transect was walked from sunset, for 2-3 hours, with a minimum 3 minute stop at each listening point. This methodology was repeated from 2 hours prior to sunrise to complete the dawn survey.

2.3.5 This survey work was carried out during suitable weather conditions, as set out in Tables 1.1 and 1.2 below.

Table 1.1. Dusk walked transect survey details.

Date	Start & end times & time of sunset	Transect / location	Equipment used	Weather
31/05/2022	Start time: 21.03 End time: 23.03 Sunset: 21.03	See Plan 6514/ECO4	Anabat Scout	Dry, 90% cloud, BF1, 11°C
05/09/2022	Start time: 19.36 End time: 22.21 Sunset: 19.36	See Plan 6514/ECO4	Anabat Scout	Dry, 10% cloud, BF2, 17-20°C

BF0 = calm, BF12 = hurricane force

Table 1.1. Dawn walked transect survey details.

Date	Start & end times & time of sunrise	Transect / location	Equipment used	Weather
20/07/2022	Start time: 03.05 End time: 05.05 Sunrise: 05.05	See Plan 6514/ECO4	Anabat Scout	Dry, 95% cloud, BF6, 18-19°C

BF0 = calm, BF12 = hurricane force

2.3.6 Automated static detector surveys were also carried out during which a Song Meter 4 (SM4) detectors was positioned at one location within the site from the 31st May to 7th June 2022 to record any bat activity. The SM4 detector was deployed in the same location between the 20th and 27th July 2022, the 5th and 12th September, and the 19th and 26th September.

³ Surveys based on: English Nature (2004) 'Bat Mitigation Guidelines' and Collins, J. (ed.) (2016) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).' Bat Conservation Trust

⁴ Collins, J. (ed.) (2016) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).' Bat Conservation Trust

The detector was located on the south-eastern boundary of the site, adjacent to the woodland which borders the site (see Plan 6514/ECO4. The detector was set to switch on approximately 30 minutes before sunset and switch off approximately 30 minutes after sunrise. The weather conditions during the static detector surveys are provided in Table 2.1 below.

Table 2.1. Automated detector survey details (May/June Deployment)

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
31/05/2022	2-3	7°/16°C	18-89	Light rain
01/06/2022	2-3	6°/16°C	8-100	None
02/06/2022	1-3	8°/17°C	3-89	Light rain
03/06/2022	2-4	10°/18°C	22-47	None
04/06/2022	4-5	12°/17°C	21-58	None
05/06/2022	2-4	13°/16°C	92-100	Heavy rain showers
06/06/2022	2-3	10°/13°C	62-100	Light rain

BF0 = calm, BF12 = hurricane force

Table 2.2. Automated detector survey details (July Deployment)

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
20/07/2022	3-4	20°/29°C	3-51	None
21/07/2022	2-3	16-22	53-100	Light rain
22/07/2022	3-4	16-22	70-100	Light rain
23/07/2022	2-4	15-27	21-57	None
24/07/2022	3-5	16°/30°C	10-56	None
25/07/2022	3-5	17°/24°C	37-100	Light rain
26/07/2022	2-3	15°/22°C	8-94	Light rain

BF0 = calm, BF12 = hurricane force

Table 2.3. Automated detector survey details (1st September Deployment)

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
05/09/2022	2-3	17-28	8-80	Light rain
06/09/2022	2-4	16°/22°C	35-84	Heavy rain
07/09/2022	2-4	15°/22°C	28-87	Light rain
08/09/2022	2-4	14°/19°C	54-100	Light rain
09/09/2022	3-4	14°/20°C	25-100	Moderate rain
10/09/2022	3-4	13°/20°C	12-92	Light rain
11/09/2022	1-3	15°/21°C	19-96	Light rain

BF0 = calm, BF12 = hurricane force

Table 2.4. Automated detector survey details (2nd September Deployment)

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
19/09/2022	1-3	8°/18°C	0-17	None
20/09/2022	1-2	13°/17°C	29-100	None
21/09/2022	1-2	11°/20°C	23-100	None
22/09/2022	1-3	12°/20°C	7-16	None
23/09/2022	1-3	12°/19°C	10-69	None
24/09/2022	3-4	12°/14°C	73-100	Heavy rain
25/09/2022	2-4	9°/17°C	16-99	Light rain

BF0 = calm, BF12 = hurricane force

Analysis of Bat Survey Recordings

- 2.3.7 All bat calls were analysed using Anabat Insight 2.0 to verify the species recorded during the survey work. Where recordings could not be reliably attributed to species (such as for *Myotis* species) or where overlaps between otherwise distinguishable species occur (such as in Pipistrelle bat calls around 40kHz or 50kHz) calls were identified to genus level; in the case of calls which could not be distinguished between *Nyctalus* sp. and Serotine, these have been labelled as 'unidentified big bat' species.

Badger (*Meles meles*)⁵

- 2.3.8 A detailed Badger survey was carried out in April 2022. The survey comprised two main elements. The first element involved searching for evidence of Badger setts. For any setts that were encountered, each sett entrance was noted and mapped. The following information was recorded:

- Number and location of well used / active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently;
- Number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance; and
- Number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

- 2.3.9 The second element involved searching for signs of Badger activity such as well-worn paths and push-throughs, snagged hair, footprints, latrines and foraging signs, so as to build up a picture of any use of the site by Badger.

Dormouse (*Muscardinus avellanarius*)⁶

- 2.3.10 Surveys were undertaken to establish the presence/absence of Dormouse within the site between June and November 2022. Survey work followed the methodology set out within

⁵ Based on: Mammal Society (1989) 'Occasional Publication No. 9 – Surveying Badgers'

⁶ Based on: English Nature (2003) 'Surveying dormice using nest tubes: Results and experiences from the South West Dormouse Project', English Nature (2006) 'The Dormouse Conservation Handbook', 2nd Edition; English Nature Research Report No. 524; and Natural England (2011) 'Interim Natural England Advice Note – Dormouse surveys for mitigation licensing – best practice and common misconceptions', WML-537 (12/11)

best practice guidance⁶, whereby nesting tubes are attached to branches of trees and shrubs and checked on a regular basis for signs of use by Dormouse.

2.3.11 The guidance employs an indexation system to define survey effort, based on the number of tubes deployed and months over which these are in place and are checked for signs of use. Months in which use of nest tubes by Dormouse is more likely afford a higher number of points than months when there is a lower likelihood of use. The guidance recommends that determination of absence of Dormouse from a site should be based on a survey effort score of at least 20 points.

2.3.12 Accordingly, a total of 50 Dormouse nest tubes were deployed within the site, positioned within the woodland belt to the east of the site, the secondary deciduous woodland to the west of the site, and in the tree line forming the southern boundary of the site (see Plan 6514/ECO5). Survey access was not available to the area of woodland immediately north of the site. Nest tubes were checked monthly between June and November 2022, giving a total survey effort score of 20 points across the entire survey area.

Reptiles⁷

2.3.13 Given the presence of potentially suitable reptile habitat within the site, a specific survey was undertaken to establish the presence/absence of common reptile species between June and July 2022.

2.3.14 A total of eighty 50x50cm sheets of thick roofing felt were placed within suitable areas across the site to act as artificial refugia, which represents a density of 21 refugia per hectare (see plan 6514/ECO7). The refugia, or 'tins', provide shelter and heat up more quickly than their surroundings in the morning and can remain warmer than their surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature, which allows them to forage earlier and later in the day. Therefore, checking the refugia at appropriate times of the day (morning and evening) enables the presence/absence of common reptiles to be determined.

2.3.15 The refugia remained undisturbed for approximately 1-2 weeks to allow reptiles to find and start using them. Following this initial bedding-in period, refugia were checked at appropriate times of the day on seven occasions during suitable weather conditions, as set out below in Table 3.1.

Table 3.1. Reptile survey dates and weather conditions.

Survey Date	Weather Conditions			
	Wind (BF)	Temp(°C)	Cloud Cover (%)	Precipitation
07/06/2022	2	15-16	20	None
13/06/2022	2	16-17	5	None
23/06/2022	1	15	100	Light rain
28/06/2022	2	18	95	None
04/07/2022	3	17	70	None
08/07/2022	1	16-18	0	None
11/07/2022	1	23	50	None

BF0 = calm, BF12 = hurricane force

2.3.16 In addition, reptiles basking in the open or partial cover were actively searched for in suitable locations across the site through direct observation. Existing natural objects (e.g.

⁷ Surveys based on: Froglife Advice Sheet 10 (1999) 'Reptile Survey - an introduction to planning, conducting and interpreting surveys for snake and lizard conservation.'

logs and rocks) and artificial refugia (e.g. debris, tyres, etc.) were also searched, where present, for reptiles or evidence of reptiles (e.g. sloughed skin).

Great Crested Newt (*Triturus cristatus*)

Habitat Suitability Index (HSI)

2.3.17 As a first step in identifying the potential presence of Great Crested Newt at the site, a Habitat Suitability Index (HSI) study was undertaken of all relevant water bodies within 250m⁸ of the site boundary (based on a review of Ordnance Survey mapping and satellite imagery). Guidance set out within Natural England's Method Statement template, to be used when applying for a Great Crested Newt development licence, states that surveys of ponds within 500m of the site boundary are only required when '(a) data indicates that the pond(s) has potential to support a large Great Crested Newt population, (b) the footprint contains particularly favourable habitat, (c) the development would have a substantial negative effect on that habitat and (d) there is an absence of dispersal barriers.' Given that in this instance, none of the four points listed above are applicable to the site, it is considered that survey of ponds within 500m of the site boundary is not required, and that survey of ponds within 250m represents adequate survey effort, where access is available.

2.3.18 An HSI study is used to assess the potential of water bodies to support Great Crested Newt. It is undertaken by attributing a score to a number of factors that can affect the presence or absence of this species. Ten factors are utilised in an HSI assessment, as described below:

- *SI1 Location*. The location of the water body within Great Britain;
- *SI2 Pond area*. The size of the water body;
- *SI3 Permanence*. How often the water body dries out;
- *SI4 Water Quality*. The water quality, based primarily on invertebrate diversity;
- *SI5 Shade*. The percentage of the perimeter of the water body that is shaded;
- *SI6 Fowl*. The presence or absence of water fowl;
- *SI7 Fish*. The presence or absence of fish;
- *SI8 Pond Count*. The number of water bodies within 1km of the surveyed water body (not counting those on the far side of major barriers such as roads);
- *SI9 Terrestrial*. The quality of terrestrial habitat surrounding the water body; and
- *SI10 Macrophytes*. The percentage cover of the surface area of the water body covered by macrophytes (aquatic plants).

2.3.19 The overall suitability of the water body is then determined by entering these figures into an equation devised by Oldham *et al.* (2000)⁹. The suitability of water bodies is classed into one of five categories, either 'poor', 'below average', 'average', 'good' or 'excellent'.

2.3.20 This HSI study was undertaken in line with the guidelines developed by Oldham *et al.* and subsequently adapted by ARG UK (2010)¹⁰. A suitably experienced ecologist undertook the

⁸ 250m is the typical maximum migratory range of this species, see English Nature (2004) 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*'. English Nature Research Report 576

⁹ Oldham RS, Keeble J, Swan MJS & Jeffcote M (2000) 'Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*)'. Herpetological Journal 10 (4), 143-155

¹⁰ Amphibian & Reptile Groups of the UK (2010) 'ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index'

assessment in line with these guidelines, with the study also supplemented by desktop research where appropriate.

Other Species

- 2.3.21 Due to the habitats present on site, certain species were unlikely to be found. No specific surveys for breeding birds, wintering birds, or invertebrates were carried out as no habitat features of particular interest that might support these species are present. Thus, no further surveys are considered necessary.

2.4 Survey Constraints and Limitations

- 2.4.1 All of the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent during different seasons. The Phase 1 habitat survey was undertaken within the optimal season therefore allowing a robust assessment of habitats and botanical interest across the site.
- 2.4.2 Attention was paid to the presence of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, the detectability of such species varies due to a number of factors, e.g. time of year, site management, etc., and hence the absence of invasive species should not be assumed even if no such species were detected during the Phase 1 survey.
- 2.4.3 A recognised limitation of the bat activity surveys is that bat detectors can only provide an index of activity rather than absolute numbers of bats. Therefore, the results of the bat activity surveys should only be considered indicative of the amount of use bats make of an area rather than the abundance of bats. In addition, some bat species, e.g. Brown Long-eared Bat, are difficult to detect due to their quiet echolocation calls.
- 2.4.4 With regards to the static detector bat surveys, a technical malfunction in the equipment led to the data collection failing to record adequately. The failed deployment occurred during the July survey. This loss of data during the summer period has been supplemented with an additional deployment during September.
- 2.4.5 Densely vegetated habitats within the site have the potential to reduce the detectability of field signs for faunal species such as Badger. A detailed survey was able to be completed and, whilst dense scrub vegetation is present within the site, it is considered that the survey results do provide an accurate baseline to assess the potential for impacts on Badger under the development proposals.
- 2.4.6 Full access was not available to the area of Ancient Woodland to the north of the site, although it could be viewed from the red line boundary, and from a footpath that crosses the woodland at the central northern boundary.
- 2.4.7 Access was also not available to all the waterbodies within 250m of the proposed development. Most notably Pond P1 which is situated approximately 220m to the west of the site.

2.5 Ecological Evaluation Methodology

- 2.5.1 The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and

Environmental Management (CIEEM, 2018)¹¹, which involves identifying ‘important ecological features’ within a defined geographical context (i.e. international, national, regional, county, district, local or site importance). For full details refer to Appendix 6514/1.

2.6 National Policy Approach to Biodiversity in the Planning System

2.6.1 The National Planning Policy Framework (NPPF)¹² describes the Government’s national policies on ‘conserving and enhancing the natural environment’ (Chapter 15). NPPF is accompanied by Planning Practice Guidance on ‘Biodiversity, ecosystems and green infrastructure’ and ODPM Circular 06/2005¹³.

2.6.2 NPPF takes forward the Government’s strategic objective to halt overall biodiversity loss¹⁴, as set out at Paragraph 174, which states that planning policies and decisions should contribute to and enhance the natural and local environment by:

‘minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures’

2.6.3 The approach to dealing with biodiversity in the context of planning applications is set out at Paragraph 180:

‘When determining planning applications, local planning authorities should apply the following principles:

- a) *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- d) *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.’*

¹¹ CIEEM (2018) ‘Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine’, ver. 1.2, Chartered Institute of Ecology and Environmental Management, Winchester

¹² Ministry of Housing, Communities & Local Government (2021) ‘National Planning Policy Framework’

¹³ ODPM (2006) ‘Circular 06/2005: Planning for Biodiversity and Geological Conservation – A Guide to Good Practice’

¹⁴ DEFRA (2011) ‘Biodiversity 2020: A strategy for England’s wildlife and ecosystem services’

2.6.4 The above approach encapsulates the ‘mitigation hierarchy’ described in British Standard BS 42020:2019¹⁵, which involves the following step-wise process:

- **Avoidance** – avoiding adverse effects through good design;
- **Mitigation** – where it is unavoidable, mitigation measures should be employed to minimise adverse effects;
- **Compensation** – where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm; and
- **Enhancement** – planning decisions often present the opportunity to deliver benefits for biodiversity, which can also be explored alongside the above measures to resolve potential adverse effects.

2.6.5 The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2019, section 5.5).

2.7 Local Policy

Medway Borough Council Local Plan 2003

2.7.1 Planning policy in Medway Council, in respect of housing development, is set out within saved policies of the Council’s Local Plan 2003. A new Local Plan is currently being drafted however this is not currently published, and is not anticipated to be adopted until 2023. As such the 2003 Local Plan remains the current local policy relating to the site.

2.7.2 A number of ‘saved policies’ within Medway’s Local Plan are of relevance to ecology and nature conservation. These are:

- **BNE6 – Landscape design.** This policy largely relates to landscape, however it references ecology in part, stating proposals should “*support wildlife by the creation or enhancement of semi-natural habitats and the use of indigenous plant material where appropriate*”.
- **BNE22 – Environmental Enhancement.** This policy states that applications which lead to the protection and improvement of the environment will be supported.
- **BNE35 – International and national conservation sites.** This policy states that international and national conservation sites will be given long term protection. Proposals that would harm the wildlife interest of such designations would not be permitted.
- **BNE36 – Strategic and Local Nature Conservation Sites.** This policy relates to Sites of Nature Conservation Interest and Local Nature Reserves, and states that proposals affecting such sites would not normally be permitted.
- **BNE37 – Wildlife Habitats.** This policy builds on the above and states that developments resulting in losses of important habitat would not be permitted unless there is an overriding need for the development, the development is designed to minimise this loss and appropriate compensation measures are provided.

¹⁵ British Standards Institution (2013) ‘Biodiversity – Code of practice for planning and development’, BS 42020:2019

- **BNE38 – Wildlife corridors and stepping stones.** This policy encourages the provision of habitats including those which form part of a wider network or wildlife corridors and stepping stones within the wider landscape.
- **BNE39 – Protected species.** Development which would harm any statutorily protected species or their habitats would not be permitted.
- **BNE42 – Hedgerow Retention.** This policy states '*important hedgerows will be retained and protected.*'
- **BNE43 – Trees on development sites.** This policy encourages developments to retain trees, hedgerows and woodland.

Strategic Access Management and Mitigation, Medway Council Interim Policy Statement (November 2015)

2.7.3 This policy statement sets out the Council's position on a strategic approach to mitigation of potential impacts on the Thames, Medway and Swale Estuary and Marshes Special Protection Areas (SPAs) and Ramsar sites. The policy statement states that a likely significant effect cannot be ruled out from residential development within 6km of the designated sites. Accordingly, any development resulting in a net increase in residential dwellings within this zone will be required to either provide sufficient evidence to allow Medway Council to undertake an Appropriate Assessment under the Habitats Regulations, or contribute to the delivery of the Council's strategic access mitigation scheme.

2.7.4 Further detail regarding international designations is set out at Appendix 6514/4.

Medway Green and Blue Infrastructure Framework Consultation Draft (October 2021)

2.7.5 The Medway Green and Blue Infrastructure Framework sets out the councils plan for green and blue infrastructure planning going forward. This approach includes the target of 20% Biodiversity Net Gain through development to ensure development is sustainable.

3 Ecological Designations

3.1 Statutory Designations

Description

- 3.1.1 The statutory designations of ecological importance that occur within the local area are shown on Plan 6514/ECO2. The nearest statutory designation is Levan Strice Local Nature Reserve located approximately 0.7km to the north-east of the site. The Local Nature Reserve is designated on the basis of being ancient woodland and containing the associated flora for this habitat type (see Appendix 6514/3 for citation). The second closest statutory designation is South Wood Local Nature Reserve, an ancient coppice woodland and grassland area supporting a dormouse population, 0.8km north-west of the site. The next nearest statutory designation is Purple Hill Site of Special Scientific Interest (SSSI) located approximately 1km to the south-east of the site. Purple Hill SSSI is a chalk downland site designated due to the herb rich grassland, scrub and woods and the presence of rare Kentish milkwort and several uncommon orchids.
- 3.1.2 The nearest European designation is Queendown Warren Special Area of Conservation (SAC), located 2.1km east of the site boundary. This site is designated due to semi-natural dry grasslands and an associated assemblage of rare and scarce orchids.
- 3.1.3 Several European designation occur further afield, including Medway Estuary and Marshes Special Protection Area (SPA), which is located 5.7km to the north of the site, Swale SPA/Ramsar which is located 11.9km to the north-east, and Thames Estuary and Marshes SPA/Ramsar which is located 12.9km to the north. These designations contain internationally important populations of birds (supported by the associated habitats) and are sensitive to increases in recreational pressure.
- 3.1.4 Natural England has developed Impact Risk Zones (IRZs) as an initial tool to help assess the risk of developments adversely affecting SSSIs, taking into account the type and scale of developments. The site sits within an IRZ in relation to Purple Hill SSSI and Queendown Warren SSSI, however the IRZ only applies to residential development of 500 units or more, and is therefore not of relevance to the current proposal.

Evaluation

- 3.1.5 The site itself is not subject to any statutory ecological designations. All statutory ecological designations in the surrounding area are well separated from the site by existing development and given the nature and scale of the proposals, these designations are unlikely to be affected.
- 3.1.6 Air quality effects are a consideration with regards to proposed development within the proximity of European Sites which contain features sensitive to such effects. These can include the effects of increased levels of pollutants and elevated levels of nitrogen deposition resulting from various sources including vehicle emissions. However, although the proposals will result in a modest increase in vehicle traffic movements (186 AADT – 2-way traffic on Hoath Way), these are also well below the screening threshold of 1000 AADT which is set out in the current DMRB guidance¹⁶. The projected baseline for air quality is

¹⁶ Highways Agency, 2007, Design Manual for Roads and Bridges, Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 HA207/07 Air Quality.

also expected to improve significantly due to ongoing improvements in vehicle emissions and the mandatory introduction of electric cars.

- 3.1.7 Specifically, Queendown SAC contains some features sensitive to air quality as qualifying features (sub-Atlantic semi-dry calcareous grassland). However, there are no main roads within 200m of the designation, and air quality effects are therefore unlikely to occur. This has resulted in them being screened out in the Local Plan Habitats Regulations Assessment¹⁷ both in terms of alone and in-combination effects.
- 3.1.8 Other European Designations are more distant to the proposals. North Downs Woodland SAC is located 3.7km to SW, whilst Medway Estuary and Marshes SPA/Ramsar is located 5.2km to the north. Whilst the Local Plan HRA concludes that it is not possible to rule out possible in-combination effects resulting of the plan resulting from air quality (this requiring further air quality monitoring before it can be confirmed), the additional number of vehicle movements is expected to be negligible in comparison to the overall increases which will result from the local plan Development Strategy as a whole.
- 3.1.9 Medway Estuary and Marshes SPA/Ramsar, Swale SPA/Ramsar and Thames Estuary and Marshes SPA/Ramsar form part of the Birdwise North Kent Mitigation Strategy¹⁸, which includes provision for developer contributions to fund mitigation measures, to be made for all new residential developments within 6km of any of the designations. The site is within the 6km Zone of Influence with respect to Medway Estuary and Marshes SPA/Ramsar, and therefore it is expected that a suitable contribution will need to be made (with details of tariffs etc. to be confirmed to the emerging Local Plan). Subject to suitable contributions being made it is not expected that there will any adverse effects from the proposed development arising from recreational disturbance to the North Kent European designations.

3.2 Non-statutory Designations

Description

- 3.2.1 The non-statutory designations of nature conservation interest that occur within the local area are shown on Plan 6514/ECO2. The nearest non-statutory designations are Capstone Road Roadside Nature Reserve and Hempstead Valley Drive Roadside Nature Reserve, located approximately 0.6km and 0.9km to the west and north-west of the site respectively. Roadside Nature Reserves are areas which have been identified as containing scarce or threatened habitats or species.

Evaluation

- 3.2.2 The site itself is not subject to any non-statutory nature conservation designations. All non-statutory designations in the surrounding area are well separated from the site by existing development and given the nature and scale of the proposals, these designations are unlikely to be affected.

¹⁷ Medway Local Plan Development Strategy Interim Consideration of the Implications of Development Strategy Scenarios on European Sites (March 2018). Medway Council

¹⁸ Bird Wise North Kent Mitigation Strategy. North Kent SAMMS Project Board. (January 2018)

3.3 Priority Habitats, Ancient Woodland and Notable Trees

Description

- 3.3.1 There are no records of any notable or veteran trees within or adjacent to the site. The site is adjacent to Blowers Wood, an area of woodland that is identified in MAGIC as the Priority Habitat 'Deciduous Woodland'. Data provided by the Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England, identifies part of this woodland, adjacent to the north-western site boundary, as being Ancient Semi-Natural Woodland (ASNW).
- 3.3.2 This forms a strip approximately 30m wide between the site and the neighbouring residential development to the north and is likely to be a remnant of a larger woodland.
- 3.3.3 The closest notable tree for which records exist is an ancient common yew 0.7km south of the site. However, during the arboricultural impact assessment of the site (Aspect Arboriculture January 2023) a single veteran tree was identified within the woodland. This is a over-mature Beech *Fagus sylvatica*, (reference T39), which is referred to as having '*a large girth for its species, combined with historical management as a pollard, significant storm damage, bark delamination, and Ganoderma fruiting bodies present; all of which are features associated with veteran trees*'.

Evaluation

- 3.3.4 With regard to planning applications and biodiversity, it is necessary to consider Paragraph 180 of the NPPF which states that:
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists;*
- 3.3.5 It is therefore necessary to consider the potential effects of the development on Ancient Woodland in terms of loss or deterioration.
- 3.3.6 In the case of Ancient Woodland Veteran Trees, the potential for likely significant effects to occur during the construction and operational phases of the Development, is assessed against the Natural England and the Forestry Commission jointly publish Standing Advice on Ancient Woodland and Veteran Trees¹⁹, which lists those types of effect which may occur. These include those effects resulting from damage or destruction of soils, pollution resulting from air quality, lighting pollution, and dust, as well as water quality and hydrological effects.
- 3.3.7 The guidance also sets out the recommendations for buffer zones, namely that a minimum 15m buffer zone should be provided to safeguard against indirect effects of the types listed above. The guidance goes on to explain that, in certain instances (in less densely wooded areas, where the woodland is close to residential development, or where the site is steeply sloped). Further guidance is provided on what type of proposals are acceptable within the 15m buffer zone.
- 3.3.8 Pre-application consultation with the LPA Arboricultural Officer has indicated that in this instance that he considers it appropriate that the a wider and more substantial buffer would

¹⁹ <https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions>, viewed on 13.05.22

be required “when taking into account pressures that already exist, and that would also be created as a result of the proposal”. The consultation response also reiterates that “Any services, infrastructure and change in landform, including play and SuDS requirements should be located outside of the landscape buffer to the ancient woodland”.

- 3.3.9 No loss of Ancient Woodland will result from the proposed development itself.
- 3.3.10 Provision of Buffer Zone. The scheme layout has also been designed to allow for a buffer zone of at least 15m from the Ancient Woodland edge and the nearest built development. The buffer zone will be fenced and will comprise entirely semi-natural habitats, including additional scrub planting which is designed to create an enhanced eco-tone edge to the existing woodland, and deter informal access. SuDS and play equipment have been excluded as requested, and there will no public access permitted to the buffer zone. The buffer zone also accommodates the Veteran Tree Buffer for the veteran Beech tree within the woodland.
- 3.3.11 Effects Resulting from Ancillary Works. The LPA Highways Department have indicated that they may at some point require the upgrade of the existing footpath which traverses the woodland, connecting the new development with Lambsfrith Grove to the north, to improve its suitability for pedestrians and cyclists. Ideally this would be avoided (as noted by the LPA Arboricultural Officer). However, if required it would involve the installation of a new surface, which has the potential to cause damage to woodland soils. However, the path is already well worn, and any residual effects could be mitigated by the use of a non-intrusive construction technique, such as the use of a wooden boardwalk, mounted using stainless steel screw piles.
- 3.3.12 Air Quality Effects. Ancient Woodland is potentially sensitive to elevated levels of air pollutants and particularly to increases in Nitrogen deposition, which may result from vehicle emissions. These have the potential to reduce the quality of woodland habitats (particularly ground flora). The critical load for a woodland of this type (Oak Woodland) is cited within literature as being 10-15 N/ha/yr, which compares to a background N deposition at the site location of 13.86 N/ha/yr (APIS figures from 2019). However, air quality is expected to increase significantly in the future baseline scenario due to improvements in vehicle efficiency, and the mandatory phasing in of electric cars. The total trips generated by the proposals are 186 AADT (Hoath Way 2-way trips), which is significantly below the 1000 AADT screening threshold recommended by the DMRB²⁰. The use of service roads within the residential development within closer proximity to the Ancient Woodland, are expected to be somewhat less. As a result, air quality effects are not considered to be significant.
- 3.3.13 Dust Effects. A separate dust assessment has been carried out to inform the proposals (WSP ref: 70104884 AQ1 – January 2023). Blowers Wood has been assessed as a ‘medium’ sensitivity receptor. The risk of impacts has been assessed as ‘medium’ for construction and earthworks and ‘low’ for trackout, and therefore appropriate mitigation has been recommended, following which, the residual effects as assessed to be ‘negligible’. Mitigation measures are included which include those relating to the control of stockpiling, use of windbreak netting/screening, damping down and road sweeping. Further details of the appropriate mitigation are provided within the relevant report.
- 3.3.14 Recreational Disturbance. The woodland to the south-west of the footpath has a permissive path (in fact two paths) throughout its length, together with a kissing gate and fence at the

²⁰ Highways Agency, 2007, Design Manual for Roads and Bridges, Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 HA207/07 Air Quality.

northern, and bin for dog faeces. There is a further path extending into the woodland to the north-east. These features are illustrated on Plan 6514/ECO3, and were observed to be lightly used at the time of the survey. Although the proposals have the potential to increase the amount of recreational use, it is expected that this will be restricted to the existing paths. An opportunity also exists to fence off access to the western part of the woodland strip preventing future access from existing and future users. Following this intervention there is unlikely to be any residual overall impact resulting from recreational disturbance.

3.3.15 Urbanisation Effects. The layout of the proposed development also takes the form of a 'facing on' arrangement, so that there are no gardens backing onto the woodland buffer. This is recognised as a way of preventing adverse effects resulting from tipping of garden waste, and the creation of informal back gate accesses.

3.3.16 Water Quality and Hydrological Effects. The woodland does not appear to contain any elements which would be sensitive to changes in water regime. There are no associated watercourses, or areas of wet woodland. The proposed drainage for the site comprises a SuDS basin the south-west boundary, which has sufficient capacity to treat all surface water flows from the development. It will also be subject to regular management to ensure that it does not overspill. In the unlikely event that the capacity of the SuDS are exceeded, overspill would be into the secondary (non-ancient) woodland to the SW of the site, which is well separated from the Ancient Woodland.

3.3.17 Other effects will be effectively mitigated by the proposed buffer zone. As such, it is unlikely that any Priority Habitats, Ancient Woodland or any notable or veteran trees will be significantly affected by the proposals.

3.4 Summary

3.4.1 In summary, the site itself is not subject to any statutory or non-statutory ecological designations and, subject to the implementation of appropriate mitigation measures (as described above), it is unlikely that any such designations in the surrounding area will be significantly affected by the proposals.

4 Habitats and Ecological Features

4.1 Background Records

4.1.1 Three records of a rare plant species originating from directly within the site were included within the information returned from the Records Centre. These are records of Man orchid *Orchis anthropophora* from 2003. Man orchid is a red list species. A number plant species records were returned with large 1km grid square references, some of which overlap with the site boundary meaning it is possible the record may have originated from within the site itself. These 1km grid reference records include priority species such as White Helleborine *Cephalanthera damasonium* and red list species Lady orchid *Orchis purpurea*.

4.1.2 No evidence for the presence of any of these species within the site was recorded during the survey work undertaken.

4.2 Overview

4.2.1 The habitats and ecological features present within the site are described below and evaluated in terms of whether they constitute an important ecological feature and their level of importance, taking into account the status of habitat types and the presence of rare plant communities or individual plant species of elevated interest. The likely effects of the proposals on the habitats and ecological features are then assessed. The value of habitats for the fauna they may support is considered separately in Chapter 5 below.

4.2.2 The following habitats/ecological features were identified within/adjacent to the site:

- Semi improved species-poor grassland;
- Mixed Scrub;
- Trees;
- Ditches (adjacent);
- Ancient woodland (adjacent);
- Other Deciduous woodland (adjacent); and
- Invasive Species.

4.2.3 The locations of these habitat types and features are illustrated on Plan 6514/ECO3 and described in detail below.

4.3 Priority Habitats

4.3.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats which are of principal importance for conservation in England. This list is largely derived from the 'Priority Habitats' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority habitats under the subsequent country-level biodiversity strategies.

4.3.2 Of the habitats within the site, only the hedgerow, H1, is considered to qualify as Priority Habitat and therefore constitute an important ecological feature. This is discussed further in the relevant habitat sections below.

4.4 Semi-improved Species-Poor Grassland

Description

- 4.4.1 The site is dominated by a single pastoral field which is bisected by a footpath, fenced on either side. It is described below.
- 4.4.2 The field comprises semi-improved grassland, with an uneven tussocky height of sward. The field is bound by woodland and one area of loose scrub and trees adjacent to Maidstone Road (see Sections 4.5 and 4.8 below). The grassland is species-poor (<6 species per m²). Grasses included with the sward include Cock's-foot *Dactylis glomerata*, Perennial Rye-grass *Lolium perenne*, Yorkshire Fog *Holcus lanatus*, Red Fescue *Festuca rubra*, Crested Dog's-tail *Cynosurus cristatus*, whilst there are also a small number of common herbaceous species, including Selfheal *Prunella vulgaris*, Creeping Bent *Agrostis stolonifera*, Spear Thistle *Cirsium vulgare*, Common Ragwort *Jacobaea vulgaris*, Ribwort plantain *Plantago lanceolata*, Common dog violet *Viola riviniana*. In the eastern corner of the field there is a patch of Giant Hogweed *Heracleum mantegazzianum*, which is an invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981. Scattered across the grassland are areas of dense bramble scrub (location as shown on Plan 6514/ECO3). Further details are provided in the Invasive Species section below.

Evaluation

- 4.4.3 Overall, the grassland supports a low diversity of common and widespread species and based on the type and abundance of species present it can be classified as poor semi-improved grassland²¹. A number of indicator species of higher quality grassland are present, however these are not sufficiently abundant for the grassland to qualify as a Priority Habitat. Semi-improved grassland is not uncommon in the local area and higher quality areas of grassland are present in the surrounding area. As such, the grassland does not constitute an important ecological feature. The loss of grassland to the proposals is therefore of minor ecological significance.

4.5 Mixed Scrub

Description

- 4.5.1 There is one area of scrub within site. This forms the frontage of the site, adjacent to Maidstone Road along the south-east boundary. It is mostly outside the site boundary, although a small amount scrub encroaches into the margins of the field.
- 4.5.2 The scrub area comprises loose scattered trees and scrub along a wide ditch line, and contains Hawthorn, Oak, Field Maple, Ash, Hazel, Sycamore, Horse Chestnut, Cherry and Apple. All individual trees present are within the age category young/semi-mature. The ground flora is sparse, and includes species such as Nettles, occasional Lords and Ladies, Bramble and abundant leaf litter.

Evaluation

- 4.5.3 The area of scrub is of relatively low value, given its sparse and incoherent nature.
- 4.5.4 The proposals incorporate the retention of the majority of the scrub, although a new permanent vehicular access will be created mid-way along the hedgerow (approximately 10

²¹ Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

metres wide). Retained sections of hedgerow will be protected during the construction phase of the proposals as per the recommendations included at Chapter 6 below. It is proposed that the existing access (further to the east) is replanted to compensate for the losses. Furthermore, the proposals incorporate new planting elsewhere which will link with and strengthen the existing/retained hedgerow which will aim to enhance the value of these features for biodiversity. These include supplementary planting along the SE, SW and NW boundaries.

4.6 Trees

Description

- 4.6.1 Outside of the site's boundary features, there are a small number of semi-mature Oak trees located close to the north-east boundary of the site, adjacent to the off-site secondary woodland. There are also a number of trees which form a component part of the scrubby southern boundary of the site.

Evaluation

- 4.6.2 The trees located near the north-east boundary are relatively small in size, being young to semi-mature in nature such that they are currently of limited ecological interest and are also not considered to form important ecological features.
- 4.6.3 It is understood that the vast majority of trees within the site and adjacent to its boundaries are fully retained under the proposals. Although the site entrance is proposed through the southern boundary (which contains some trees), only c.3m of the understory components within this group will be removed, whilst elsewhere a small number of immature oak and semi-mature birch will be removed from the centre of the site (adjacent to the footpath). The retained trees within the site will be protected, and will be subject to the recommended safeguards set out at Chapter 6 below, and within the Arboricultural Impact Assessment, such that they will not be impacted. New planting will also provide new opportunities for wildlife.

4.7 Ditch

Description

- 4.7.1 The ditch just outside the south-eastern boundary did not contain water at the time of survey. No aquatic or marginal vegetation was identified, suggesting the ditch seldom holds sufficient water to constitute a waterbody.

Evaluation

- 4.7.2 As the ditch is entirely dry, with no sign of having contained water in recent years this is not a consideration as an aquatic habitat and does not have significant ecological value.
- 4.7.3 Potential for the ponds to support faunal species such as amphibians is discussed below in Chapter 5.

4.8 Ancient Woodland (Adjacent to the Site)

Description

- 4.8.1 There is no woodland included within the site. A linear belt of deciduous woodland designated as Ancient Woodland is located adjacent to the northern boundary of the site.
- 4.8.2 Large parts of this belt, particularly in the east, are dominated by mature Sweet Chestnut *Castanea sativa* trees, whilst the remainder of the woodland contains a mixture of mature Oak *Quercus robur*, Hornbeam *Carpinus betulus*, and Silver Birch *Betula pendula* with occasional mature Beech *Fagus sylvatica* trees and Hazel *Corylus avellana*. An understorey of Holly *Ilex aquifolium* and Bramble *Rubus fruticosus* forms dense thickets below the trees in places. The ground flora includes a limited number of ancient woodland indicators species, such as Bluebell *Hyacinthoides non-scripta* and Wood Anemone *Anemonoides nemorosa*, forming localized continuous carpets as well as other ground flora species, such as Lords and Ladies *Arum maculatum* and Dogs Mercury *Mercurialis perennis*. The southern edge of this woodland has a margin of dense Blackthorn *Prunus spinosa*, Elder *Sambucus nigra* and Bramble scrub.

Evaluation

- 4.8.3 An evaluation of potential effects on Ancient Woodland is included at Section 3.3 above (Priority Habitats, Ancient Woodland and Notable Trees).

4.9 Other Woodland (Adjacent to the Site)

Description

- 4.9.1 Areas of deciduous woodland border the site on the north-east and south-west of the site boundary. The north-eastern woodland area consists of immature to semi mature deciduous trees on a road embankment, separating the site from Hoath Way (A278). The woodland is comprised of Sycamore *Acer pseudoplatanus* trees with occasional Silver Birch, Dogwood *Cornus sanguinea*, Dog Rose *Rosa canina*, and Broom *Cytisus scoparius* on the field boundary. Honeysuckle *Lonicera periclymenum* and occasional bramble *Rubus fruticosus* were also present. The ground flora included Common Ivy *Hedera helix* and occasional Dog's-Mercury to the north of the woodland. There was a substantial amount of bare substrate.
- 4.9.2 The deciduous woodland to the south-west is an immature to semi mature deciduous plantation woodland with evidence of tree planting shown by the structured row formatting of some of the trees, and remnants of tree protection tubes. A variety of tree species have been planted including Field Maple *Acer campestre*, Hawthorn *Crataegus monogyna*, Birch, Ash *Fraxinus excelsior*, Hazel, and Oak. The ground flora is virtually absent, being limited to groups of common species, such as occasional Lords and Ladies and Stinging Nettle *Urtica dioica*. Elsewhere the ground is covered with leaf litter.

Evaluation

- 4.9.3 The deciduous woodland on the site boundary is relatively young and has yet to develop the structure of a mature woodland. As such it represents a relatively poor examples of this habitat type. Nevertheless, the woodland is still an important ecological feature and is likely to provide habitat for nesting birds and Dormouse. It is therefore considered to be of value at the local level.

4.9.4 The woodland itself is not considered to be particularly sensitive to disturbance of potential indirect effects resulting from the proposed residential development. A landscape buffer with additional planting has been allowed within the layout along this margin, which will further protect and provide additional structure to the woodland edge. As such, these areas of woodland are unlikely to be impacted, either directly or indirectly, in any significant way by the proposed development.

4.9.5 Potential for the woodland to support faunal species such as bats and dormice is discussed below in Chapter 5.

4.10 Habitat Evaluation Summary

4.10.1 On the basis of the above, the following habitats within and adjacent to the site are considered to form important ecological features:

Table 5.1. Evaluation summary of habitats forming important ecological features.

Habitat	Level of Importance
Scrub/Trees on southern boundary	Local
Ancient Woodland (Off-site)	County
Deciduous Woodland (Off-site)	Local

4.10.2 Other habitats present within the site include semi-improved grassland, scattered trees, a dry ditch and scrub. However, these habitats do not form important ecological features.

5 Faunal Use of the Site

5.1 Overview

5.1.1 During the survey work, general observations were made of any faunal use of the site with specific attention paid to the potential presence of protected or notable species. Specific survey work was undertaken in respect of Badgers, bats, Dormouse, Water Vole, Otter, reptiles and Great Crested Newt, with the results described below.

5.1.2 A number of records of Priority Species were returned from Kent and Medway Biological Records Centre including Dormouse *Muscardinus avellanarius*, and various bat species *Chiroptera sp.*, none of which were recorded directly within the site. Directly adjacent to the site, in the woodland south of the field boundary, there are records of Common Lizard *Zootoca vivipara* and Slow Worm. There was one record of a priority species from directly with the site. This record relates to the vascular plant 'Man Orchid' *Aceras anthropophorum* being found in the north east area of the site in 2003. No evidence of this species was found during the habitat survey.

5.2 Priority Species

5.2.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places duties on public bodies to have regard to the conservation of biodiversity in the exercise of their normal functions. In particular, Section 41 of the NERC Act requires the Secretary of State to publish a list of species which are of principal importance for conservation in England. This list is largely derived from the 'Priority Species' listed under the former UK Biodiversity Action Plan (BAP), which continue to be regarded as priority species under the subsequent country-level biodiversity strategies.

5.2.2 During the survey work undertaken, the Priority Species Soprano Pipistrelle *Pipistrellus pygmaeus*, Hazel Dormouse, Slow Worm, Grass Snake *Natrix Helvetica* and Common Lizard were recorded within the site. This is discussed further below.

5.3 Bats

5.3.1 **Legislation.** All British bats are classed as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended) and are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). As such, both bats and their roosts (breeding sites and resting places) receive full protection under the legislation (see Appendix 1234/2 for detailed provisions). If proposed development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats. Given all bats are protected species, they are considered to represent important ecological features. A number of bat species are also considered S41 Priority Species.

5.3.2 **Background Records.** No specific records of bats from directly within or adjacent to the site were returned from the desktop study. One record for an unidentified bat species recorded in 1990 does overlap with the site boundary, however, this record is associated with a 1km x 1km grid reference square and no further information was available to determine the precise proximity of this record to the site. Information received from the LRC returned records of Serotine Bat *Eptesicus serotinus*, Daubentons Bat *Myotis daubentonii*, Bechsteins Bat *Myotis bechsteinii*, Brown Long-eared Bat *Plecotus auratus*, Leisler's Bat *Nyctalus leisleri*, and Pipistrelle bat species *Pipistrellus sp.* within 5km of the site.

5.3.3 Survey Results

Dusk and Dawn Surveys

Activity surveys (foraging /commuting)

5.3.4 The woodland and scrub within the site offer potential opportunities for foraging bats as they are likely to support a reasonable biomass of invertebrate prey. In addition, the woodland and hedgerow form linear corridors that could act as navigational aids for commuting bats and provide connectivity to similar off-site habitats in the surrounding area. As such, bat activity surveys were undertaken at the site in May, July and September 2022.

5.3.5 **Manual walked transect surveys.** The activity survey results are illustrated on Plan 6514/ECO4, with summary tables provided below.

Table 5.1. Results of the dusk walked transect on 31st May 2022.

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded
Common Pipistrelle	2	100
Total	2	100

Table 5.2. Results of the dawn walked transect on 25th July 2022.

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded
Common Pipistrelle	19	90
Pipistrelle species	1	5
'Big Bat' species	1	5
Total	21	100

Table 5.3. Results of the dusk walked transect on 5th September 2022.

Species	Number of Passes Recorded	Approximate % of Total Passes Recorded
Common Pipistrelle	16	100
Soprano Pipistrelle	1	0
Pipistrelle species	2	3
'Big Bat' species	1	0
Total	21	100

5.3.6 As shown by the above results, during the dusk and dawn surveys in 2022, the level of activity was generally very low. Common Pipistrelle was the most commonly recorded species, accounting for 84% of all registrations. Soprano Pipistrelle and unidentified 'Big Bat' species were recorded to a lesser extent, accounting for 2% and 4% respectively.

5.3.7 During the walked transects, the highest levels of bat activity were recorded along the south-western boundary of the site, as well as along parts of the north-west boundary and on the woodland edge to the south-west (see Plan 6514/ECO4), adjacent to the tree line. Comparatively lower levels of bat activity (often negligible) were recorded along remaining parts of the site. Limited activity was recorded within the centre of the field. The majority of activity was limited to commuting passes, suggesting that the foraging potential of the site itself is limited.

5.3.8 **Remote Detector Surveys.** The results of the automated static bat surveys are summarised in Table 5.4 below.

Table 5.4. Automated static bat survey summary.

Survey Date	Detector Location 1: South eastern boundary						
	Number of registrations by species [#]						
	Myotis	Noctule	'Big Bat'	Pip 45	Pip 55	Pip	BLE
24 th May 2022	0	0	1	115	0	1	0
25 th May 2022	0	0	22	463	23	1	0
26 th May 2022	0	0	0	592	29	0	0
27 th May 2022	0	0	0	22	0	4	0
28 th May 2022	0	0	0	2	0	0	0
29 th May 2022	0	0	0	1	0	0	0
30 th May 2022	0	0	0	610	0	2	0
5 th September 2022	0	0	2	64	2	0	0
6 th September 2022	0	0	1	117	10	1	0
7 th September 2022	0	0	1	136	0	0	0
8 th September 2022	0	0	0	173	1	0	0
9 th September 2022	0	0	2	161	0	2	0
10 th September 2022	0	0	0	88	0	0	0
11 th September 2022	0	0	1	144	5	1	0
19 th September 2022	0	0	0	155	0	0	0
20 th September 2022	0	0	0	79	0	0	0
21 st September 2022	0	0	0	15	0	0	0
22 nd September 2022	0	0	0	119	1	0	0
23 rd September 2022	0	0	0	5	0	0	0
24 th September 2022	0	0	0	0	0	0	0
25 th September 2022	0	0	0	121	0	0	0
Total registrations	0	0	30	3182	70	12	0
Approximate % of total registrations	0	0	1	96	2.5	0.5	0
Key: Myotis- <i>Myotis</i> sp. Pip 45- Common Pipistrelle Pip 55- Soprano Pipistrelle Pip- Common Pipistrelle or Soprano Pipistrelle 'Big Bat' - Noctule, Leislars or Serotine BLE - Brown Long-eared bat # - Figures shown are the total no. of registrations recorded during the dusk to the proceeding dawn period for each date shown, i.e. a recording 'night' for the 20th June will be registrations recorded from ~18.00 on the 20/06 till 07.00 on the morning of the 21/06.							

5.3.1 Summary. Overall during the three deployments, 96% of all registrations were attributed to Common Pipistrelle, with the remaining attributed to Soprano Pipistrelle (2.5%), and 'Big Bats' (1%).

5.3.2 The average number of bat passes per night (see Table 7.1) generally fell within the range averaged 151 passes per night, which is a moderate level of activity.

5.3.3 Evaluation and Assessment of Likely Effects

Roosting

There are no buildings or trees within the site which would provide suitable features for bats to roost. A number of mature trees exist within the woodland to the north of the site, although a full inspection was not possible due to the lack of access.

Foraging / Commuting

5.3.4 As noted above, the woodland, trees, scrub and the hedgerow within the site offer foraging/commuting habitat for bats and indeed foraging and commuting bats were recorded during the activity surveys, including frequent passes from one common species (Common Pipistrelle) and occasional passes from Soprano Pipistrelles, unidentified 'Big Bat' species and Pipistrelle species. This combination of habitat types occurs relatively frequently in the surrounding area and taking this into the account, together with the levels of activity and species recorded during the survey work, the site is considered to be of at least local or district level value to bats.

5.3.5 The vast majority of the woodland, trees and scrub surrounding the site will be retained under the proposals (with only a small amount of removal required to accommodate the new access) whilst new tree, hedgerow and shrub planting will improve connectivity through the site and increase the foraging potential of the site.

5.3.6 Accordingly, subject to the implementation of the recommendations outlined at Chapter 6 below, along with other ecological enhancements, it is considered that the conservation status of local bat populations will be fully safeguarded under the scheme.

5.4 Badger

5.4.1 **Legislation.** Badger receive legislative protection under the Protection of Badgers Act 1992 (see Appendix 6514/2 for detailed provisions), and as such should be assessed as an important ecological feature. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It is the duty of planning authorities to consider the conservation and welfare impacts of development upon Badger and issue permissions accordingly.

5.4.2 Licences can be obtained from Natural England for development activities that would otherwise be unlawful under the legislation. Guidance on the types of activity that should be licensed is laid out in the relevant best practice guidance.^{22, 23}

5.4.3 **Survey Results and Evaluation.** No sets were found on site. During the Phase 1 survey a small number of mammal tracks were observed in the southeast corner of the site, which may be attributable to Badger. An off-site badger set was also found during the Phase 1 survey, consisting of 6 or more holes 200m southwest of the site boundary.

5.5 Dormouse

5.5.1 **Legislation:** Dormouse is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and

²² English Nature (2002) 'Badgers and Development'

²³ Natural England (2011) 'Badgers and Development: A Guide to Best Practice and Licensing', Interim Guidance Document

Species Regulations 2017 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 6514/2 for detailed provisions). Dormouse is also a S41 Priority Species. On this basis, Dormouse is considered to form an important ecological feature.

- 5.5.2 **Background Records:** No specific records of Dormouse were returned from the desktop study from within or immediately adjacent to the study area. Data returned from KMBRC includes over 120 records of Dormouse, with the closest record located 1.2km to the south of the study area and dated from 2019.
- 5.5.3 **Survey Results:** The study area provides good opportunities for Dormouse, particularly in the form of areas of woodland, hedgerows and, to a lesser extent, scrub throughout the study area. The majority of the study area however is dominated by open grassland fields which are unsuitable for Dormouse.
- 5.5.4 Given the presence of potential Dormouse habitat within the study area and local records of dormice, specific Dormouse survey work was undertaken at the site. The results of this survey are shown at Plan 6174/ECO5.
- 5.5.5 Nest tube surveys undertaken at the study area in 2022 confirmed the presence of Dormouse, with evidence in the form of nests and individual Dormice found. Dormouse were found in two locations during the August survey. During the October dormouse were found in four nest tubes with dormice, plus an additional sighting which was likely to have been a dormouse. Nests were found in a number of instances.
- 5.5.6 **Evaluation:** Dormouse were recorded in vegetation to the northeast, southeast and southwest of the site, and are expected to occur in woodland to the north-west (although this was not surveyed due to access restrictions). Given the presence of a well-connected woodland and hedgerow network surrounding the site, these areas are expected to form the main area of habitat for Dormouse within the study area, although there. However, there is no suitable habitat within the fields forming the bulk of the site (only a small group of sparse trees is situated in the central part of the site, adjacent to the footpath, where no dormouse were recorded).
- 5.5.7 Kent is located within the core distribution area for Dormouse, and the species is relatively widespread across the county²⁴. As such, the population supported by the site is considered to be of importance at the local level.
- 5.5.8 Due to a requirement to remove a section of hedgerow from the south-eastern boundary to facilitate access to the site, there will be a partial loss of Dormouse habitat under the proposals (approximately 0.013ha). Based on typical population densities supported by hedgerow (1.3 adults per hectare along hedgerows, as set out in the Dormouse Conservation Handbook), this would result in loss of habitats supporting less than 1 adult Dormouse.
- 5.5.9 Connectivity for this species around the site is a consideration, but will be maintained through retention of the woodland surrounding the site to the south west, north west and north east. There is a well-established network of hedgerows, treelines and wooded areas in the wider landscape, thus the small amount of habitat loss is likely to be of negligible significance for the local population.

²⁴ Mammal Watch South East (2015) *South East Mammal Atlas: covering Hampshire, Surrey, Sussex, Kent and the Isle of Wight*

- 5.5.10 To compensate for habitat losses associated with the access road, substantial areas of new mixed scrub and woodland planting are proposed at the margins of the development under the scheme, totalling 0.27ha. These habitats will strengthen and enhance the existing hedgerow and woodland boundaries. Furthermore, given the legal protection afforded to Dormice, consideration will be given to licensing and implementation of appropriate safeguarding measures during vegetation clearance. Further discussion of this is set out at Section 6.

5.6 Water Vole

- 5.6.1 **Legislation.** Water Vole is fully protected under the Wildlife and Countryside Act 1981 (as amended). Water Vole is also a S41 Priority Species. As such, this species is considered to represent an important ecological feature. The legislation affords protection to individuals of the species and their breeding sites and places of shelter (see Appendix 1234/2 for detailed provisions). There is no provision under the Act for licensing what would otherwise be offences for the purpose of development. Such activities must be covered by the defence in the Act that permits otherwise illegal actions if they are the incidental result of a lawful operation and could not reasonably be avoided.
- 5.6.2 If, despite all reasonable efforts, properly authorised development will adversely affect Water Vole and there are no alternative habitats nearby, Natural England may issue a licence to trap and translocate Water Vole for the purpose of conservation. To issue such a licence, Natural England would need to be assured there is no reasonable alternative to the development and that there are no other practical solutions that would allow Water Vole to be retained at the same location. NE would also require assurance that the actions would make a positive contribution to Water Vole conservation.
- 5.6.3 **Background Records.** No specific records of Water Vole within or adjacent to the site were returned from the desktop study.
- 5.6.4 **Survey Results and Evaluation.** The habitats within the site itself are generally unsuitable for Water Vole, comprising entirely grassland. The ditches adjacent to the site (forming the southern boundary and those on the other side of the road) were inspected during the survey but found to be dry and unsuitable to support Water Vole. No specific Water Vole survey work has been undertaken and this species is unlikely to be affected by the proposals. As such, the site is not considered to be of importance for this species.

5.7 Otter

- 5.7.1 **Legislation.** Otter is fully protected under the Wildlife and Countryside Act 1981 (as amended) and is a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). Such legislation affords protection to individuals of the species and their breeding sites and places of rest (see Appendix 1234/2 for detailed provisions). Otter is also a S41 Priority Species. On this basis, Otter is considered to represent an important ecological feature.
- 5.7.2 **Background Records.** No specific records of Otter within or adjacent to the site were returned from the desktop study.
- 5.7.3 **Survey Results and Evaluation.** The habitats within the site are generally unsuitable for Otters, comprising entirely grassland. The ditches adjacent to the site (forming the southern boundary and those on the other side of the road) have been inspected during the survey and found to be dry and unsuitable to support Otter. No further Otter survey work has

been undertaken and this species is unlikely to be affected by the proposals. As such, the site is not considered to be of importance for this species.

5.8 Other Mammals

5.8.1 Legislation. A number of other UK mammal species do not receive direct legislative protection relevant to development activities but may receive protection against acts of cruelty (e.g. under the Wild Mammals (Protection) Act 1996). In addition, a number of these mammal species are S41 Priority Species and should be assessed as important ecological features.

5.8.2 Background Records. No specific records of other mammals from directly within or adjacent to the site were returned from the desktop study. A number of records of Hedgehog *Erinaceus europaeus* (Priority Species) were returned from within the search area around the site, including within the 1km x 1km OS grid square containing the southern part of the site, albeit more specific information was not available that would allow the precise location of these records to be determined in relation to the site.

5.8.3 Survey Results and Evaluation. No evidence of any other protected, rare or notable mammal species was recorded within the site. Other mammal species likely to utilise the site, such as Fox *Vulpes vulpes*, remain common in both a local and national context, and as mentioned above do not receive specific legislative protection in a development context. As such, these species are not a material planning consideration and the loss of potential opportunities for these species to the proposals is of negligible significance.

5.8.4 The desktop study returned background records of Hedgehog within the surrounding area. Hedgehog is a Priority Species, albeit this species remains common and widespread in England. The site offers potential opportunities for this species, particularly in the form of areas of denser scrub, rank grassland tall herbs and Bramble across the site, although habitats are unlikely to be of importance in a local context, and Hedgehog is considered to be of importance at a site level only. There are abundant similar opportunities present within the local area and there is no evidence to suggest the proposals will significantly affect local populations of this species. However, it is recommended that precautionary safeguards are put in place to minimise the risk of harm to Hedgehog in the event this species is present, as detailed in Chapter 6 below.

5.9 Amphibians

5.9.1 Legislation. All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). Great Crested Newt is protected under the Act and is also classed as a European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended). As such, both Great Crested Newt and habitats utilised by this species are afforded protection (see Appendix 6514/2 for detailed provisions). Great Crested Newt is also a S41 Priority Species, as are Common Toad *Bufo bufo*, Natterjack Toad *Epidalea calamita*, and Pool Frog *Pelophylax lessonae*. As such, these species should be assessed as important ecological features.

5.9.2 Background Records. No specific records of Great Crested Newt from within or adjacent to the site were returned from the desktop study. No records of Great Crested Newt were returned from the search area surrounding the site, though a number of records of Common Frog *Rana temporaria*, Common Toad, Smooth Newt *Lissotriton vulgaris*, and Palmate Newt *Lissotriton helveticus* were returned from the KMBRC.

- 5.9.3 **Survey Results.** A number of waterbodies have been identified within 250m of the site, which is the range considered to be the zone of influence for great crested newts. Two ditches exist on the site boundaries, labelled as WB1 and WB2 on Plan 6514/ECO3. A further ditch exists on the opposite side of the Maidstone Road, southeast of the site boundary, labelled WB3 on Plan 6514/ECO3. All three ditches were surveyed during the Phase 1 survey and found to be dry and containing no aquatic or marginal vegetation, suggesting these ditches rarely hold water and are unsuitable as GCN breeding areas.
- 5.9.4 One pond (P1) located approximately 220m to the west of the site, as identified from the OS background mapping. However, no access was available to this land at the time of the survey.
- 5.9.5 **Evaluation and Assessment of Likely Effects.** In summary, all ditches within the proximity of the site were found to be dry and unsuitable for great crested newts. Whilst potentially suitable terrestrial habitat for the species exists within the site, the loss of habitat will be very minor, at the furthest extent of the possible range for GCN using Pond P1.
- 5.9.6 A Rapid Risk Assessment carried out using the method provided in Natural England's GCN mitigation licencing Method Statement²⁵ was carried out which indicated that the extent of loss of terrestrial habitat within 250m (725m²) is very unlikely to result in an offence. This is an indicative risk assessment – however together with consideration of the intervening habitats (which include some arable land, together with areas of woodland), the risk of GCN being present within the site is considered to be minimal, and as such GCN are not considered to present a constraint to the development. As such, no detailed surveys have been carried out.

5.10 Reptiles

- 5.10.1 **Legislation.** All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which protects individuals against intentional killing or injury. Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* receive additional protection under the Conservation of Habitats and Species Regulations 2017 (as amended); refer to Appendix 1234/2 for detailed provisions. All six reptile species are also S41 Priority Species. As such, all reptile species should be assessed as important ecological features.
- 5.10.2 **Background Records.** Information returned from the KMBRC returned records for Grass Snake, Slow Worm, Common Lizard, and Adder *Vipera berus*. The closest records relate to records of Slow Worm and Common Lizard from 2011 and 2010 respectively, directly adjacent to the site boundary.
- 5.10.3 **Survey Results.** Specific survey work for reptiles was undertaken at the site, the results of which are summarised in Table 5.5 below and illustrated on Plan 6154/ECO7.

²⁵https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879595/gcn-method-statement.xlsm

Table 5.5. Reptile survey results summary.

Visit	Date	Common Lizard		Slow Worm		Grass Snake		Other Species
		Adult	Juv.	Adult	Juv.	Adult	Juv.	
1	07/06/2022	0	0	1	0	0	0	0
2	13/06/2022	0	0	1	0	0	0	0
3	23/06/2022	0	0	0	0	1	0	0
4	28/06/2022	2	0	5	1	0	0	0
5	04/07/2022	0	0	0	1	0	0	0
6	08/07/2022	0	0	1	0	0	0	0
7	11/07/2022	0	0	0	0	0	0	0
Peak Count		2		6		1		

5.10.4 Evaluation and Assessment of Likely Effects. A peak count of six Slow-worm, two Common lizards and one Grass snake was recorded during the survey work at the site and individuals were recorded across across the site through the grassland, with slightly higher numbers found in the north east of the site. The area of suitable reptile habitat at the site measures c.3ha and therefore the peak count equates to a population of two Slow-worm per hectare, which would be classified as a low population under the standard guidance²⁶. As such, it is considered that the population of reptiles supported by the study area is of importance at the local level only.

5.10.5 It will not be possible to retain all areas of suitable reptile habitat under the proposals thus it will be necessary to carry out a reptile translocation at this site. The reptiles will be translocated to the Ancient Woodland buffer zone to the north of the site, where an area of reptile habitat will be created (retained and enhanced). Overall, nearly 1ha of suitable reptile habitat will be retained on site. With these measures in place it is considered likely that the local conservation status of reptiles will be maintained post-development.

5.11 Birds

5.11.1 Legislation. All wild birds and their nests receive protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) in respect of killing and injury, and their nests, whilst being built or in use, cannot be taken, damaged or destroyed. Species included on Schedule 1 of the Act receive greater protection and are subject to special penalties (see Appendix 6514/2 for detailed provisions).

5.11.2 Conservation Status. The conservation importance of British bird species is categorised based on a number of criteria including the level of threat to a species' population status²⁷. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (>50% over the past 25 years). A number of birds are also S41 Priority Species. Red and Amber listed species and priority species should be assessed as important ecological features.

5.11.3 Background Records. Information from the data search included records for several bird species in the vicinity of the site, including a number of Red Listed species, *such as* Yellowhammer *Emberiza citrinella*, Grey Partridge *Perdix perdix* and Lapwing *Vanellus vanellus*. None of the records directly originate from within the site itself, however there

²⁶ Herpetofauna Groups of Britain and Ireland (1998) 'Evaluating local mitigation/translocation programmes: Maintaining Best Practice and lawful standards'

²⁷ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) 'Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man' British Birds 108, pp.708-746

are records which relate to 10km grid reference squares which overlap with the site boundary. Due to this large resolution it would not be possible to know where in relation to the site the records originate.

5.11.4 Survey Results. Several species of bird were observed within the site during the Phase 1 survey including: Wood Pigeon *Columba palumbus*, Chaffinch *Fringilla coelebs*, Blackbird *Turdus merula*, House Sparrow, Pheasant *Phasianus colchicus* and Great Tit *Parus major*.

5.11.5 Evaluation. Most of the birds recorded at the site are not listed as having any special conservation status. Whilst there are records of various red-list ed and priority bird species in the vicinity of the site, the habitats present are common in the surrounding area and there is no evidence to suggest the site is of elevated value at a local level for this species, which in any case, is common in Great Britain²⁸. The proposals will result in the loss of several sections of hedgerow to facilitate site access and this could potentially affect any nesting birds that may be present at the time of works. Accordingly, a number of safeguards in respect of nesting birds are proposed, as detailed in Chapter 6 below. In the long-term, new nesting opportunities will be available for birds as described in Chapter 6 below.

5.12 Invertebrates

5.12.1 Legislation. A number of invertebrate species are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). In addition, Large Blue Butterfly *Maculinea arion*, Fisher's Estuarine Moth *Gortyna borelii lunata* and Lesser Whirlpool Ram's-horn Snail *Anisus vorticulus* receive protection under the Conservation of Habitats and Species Regulations 2017 (as amended); refer to Appendix 1234/2 for detailed provisions. A number of invertebrates are also S41 Priority Species. Where such species are present, they should be assessed as important ecological features.

5.12.2 Background Records. No specific records of invertebrates were returned from directly within the site. Adjacent to the site there is one record of *Acletoxenus formosus* from 2014, which is not a Priority Species. A number of records of invertebrates which are classed as Priority Species such as Stag Beetle and Small Blue were returned within information received from KMBRC.

5.12.3 Survey Results and Evaluation. No evidence for the presence of any protected, rare or notable invertebrate species was recorded within the site. The site is dominated by poor semi-improved grassland and scrub, which are likely to support only a limited diversity of invertebrates. The site contains relatively few micro-habitats that would typically indicate elevated potential for invertebrates²⁹, such as a variable topography with areas of vertical exposed soil, areas of species-rich semi-natural vegetation; variable vegetation structure with frequent patches of tussocks combined with short turf; free-draining light soils; walls with friable mortar or fibrous dung. Accordingly, given the habitat composition of the site and lack of adjacent sites designated for significant invertebrate interest, it is considered unlikely that the proposals will result in significant harm to any protected, rare or notable invertebrate populations, and the site is not considered to support an important invertebrate assemblage.

5.13 Summary

5.13.1 On the basis of the above, a summary of the evaluation of fauna is provided below:

²⁸ Population estimates of birds in Great Britain and the United Kingdom. Musgrove *et al.*, British Birds, 2013

²⁹ Natural England (2010) 'Higher Level Stewardship – Farm Environment Plan (FEP) Manual', 3rd Edition

Table 5.6. Evaluation summary of fauna forming important ecological features.

Species / Group	Supported by or associated with the site	Level of Importance
Bats – Foraging / Commuting	Confirmed presence on site	Local to District
Dormouse	Confirmed presence on site	Local
Reptiles	Confirmed presence on site	Local
Birds	Confirmed presence on site	Local

- 5.13.2 Other fauna supported by the site include non-priority species of mammals, amphibians and invertebrates. However, these species do not form important ecological features.

6 Mitigation Measures and Biodiversity Net Gains

6.1 Mitigation

- 6.1.1 Based on the habitats, ecological features and associated fauna identified within / adjacent to the site, it is proposed that the following mitigation measures (**MM1 – 13**) are implemented under the proposals. Further, detailed mitigation strategies or method statements can be secured via suitably-worded planning conditions, as recommended by relevant best practice guidance (BS 42020:2019).

Hedgerows and Trees

- 6.1.2 **MM1 – Hedgerow and Tree Protection.** All hedgerows and trees to be retained within the proposed development shall be protected during construction in line with standard arboriculturalist best practice (BS5837:2012) or as otherwise directed by a suitably competent arboriculturalist. This will involve the use of protective fencing or other methods appropriate to safeguard the root protection areas of retained trees / hedgerows.

Watercourses

- 6.1.3 **MM2 – Pollution Prevention.** In order to safeguard the stream adjacent the eastern site boundary against any potential run-off or pollution events during construction, the following safeguards will be implemented:

- Storage areas for chemicals, fuels, etc. will be sited well away from the watercourse (minimum 10m), and stored on an impervious base within an oil-tight bund with no drainage outlet. Spill kits with sand, earth or commercial products approved for the stored materials shall be kept close to storage areas for use in case of spillages;
- Where possible, and with prior agreement of the sewage undertaker, silty water should be disposed of to the foul sewer or via another suitable form of disposal, e.g. tanker off-site;
- Water washing of vehicles, particularly those carrying fresh concrete and cement, mixing plant, etc. will be carried out in a contained area as far from the watercourse as practicable (minimum 10m), to avoid contamination; and
- Refuelling of plant will take place in a designated area, on an impermeable surface, away from the watercourse (minimum 10m).

- 6.1.4 Post-development, the drainage system for the development will ensure the watercourse is not subject to adverse changes in surface water run-off or quality. On the contrary, the removal of uncontrolled run-off from the land will likely be beneficial in terms of water quality.

Bats

- 6.1.5 **MM3 – Update Survey.** Should any considerable time (e.g. >2 years) elapse between the survey work detailed above and any development works, a further survey of the buildings with potential to support roosting bats should be undertaken prior to the commencement of works to confirm the continued absence of bats.

- 6.1.6 **MM5 – Sensitive Lighting.** Light-spill onto retained and newly created habitat, in particular the retained hedgerows, tree lines and scrub (especially along the south- western boundary

with Ancient Woodland), will be minimised in accordance with good practice guidance³⁰ to reduce potential impacts on light-sensitive bats (and other nocturnal fauna). This may be achieved through the implementation of a sensitively designed lighting strategy, with consideration given to the following key factors:

- **Light exclusion zones** – ideally no lighting should be used in areas likely to be used by bats. Light exclusion zones or ‘dark buffers’ may be used to provide interconnected areas free of artificial illumination to allow bats to move around the site;
- **Appropriate luminaire specifications** – consideration should be given to the type of luminaires used, in particular luminaries should lack UV elements and metal halide and fluorescent sources should be avoided in preference for LED luminaries. A warm white spectrum (ideally <2,700K) should be adopted to reduce the blue light component;
- **Light barriers / screening** – new planting (e.g. hedgerows and trees) or fences, walls and buildings can be strategically positioned to reduce light spill;
- **Spacing and height of lighting units** – increasing spacing between lighting units will minimise the area illuminated and allow bats to fly in the dark refuges between lights. Reducing the height of lighting will also help decrease the volume of illuminated space and give bats a chance to fly over lighting units (providing the light does not spill above the vertical plane). Low level lighting options should be considered for any parking areas and pedestrian / cycle routes, e.g. bollard lighting, handrail lighting or LED footpath lighting;
- **Light intensity** – light intensity (i.e. lux levels) should be kept as low as possible to reduce the overall amount and spread of illumination;
- **Directionality** – to avoid light spill lighting should be directed only to where it is needed. Particular attention should be paid to avoid the upward spread of light so as to minimise trespass and sky glow;
- **Dimming and part-night lighting** – lighting control management systems can be used, which involves switching off/dimming lights for periods during the night, for example when human activity is generally low (e.g. 12.30 – 5.30am). The use of such control systems may be particularly beneficial during the active bat season (April to October). Motion sensors can also be used to limit the time lighting is operational.

Badger

6.1.7 **MM6 – Badger Construction Safeguards.** No evidence of Badger was found during the survey work. However, Badgers are highly mobile, and as such, there is a possibility of them foraging within the site. In order to safeguard Badger should they enter the site during construction works, the following measures will be implemented:

- Any trenches or excavations within the site that are to be left open overnight will be provided with a means of escape should a Badger enter. This could simply be in the form of a gently graded ramp or roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;

³⁰ Bat Conservation Trust and Institute of Lighting Professionals (2018) ‘Guidance Note 08/18: Bats and artificial lighting in the UK’; Stone, E.L. (2013) ‘Bats and lighting: Overview of current evidence and mitigation guidance.’; ILP (2011) ‘Guidance notes for the reduction of obtrusive light’ Institution of Lighting Professionals, GN01:2011.

- Any temporarily exposed open pipes (>150mm outside diameter) should be blanked off at the end of each working day so as to prevent Badgers gaining access as may happen when contractors are off-site;
- Any trenches/pits will be inspected each morning to ensure no Badgers have become trapped overnight. Should a Badger become trapped in a trench it will likely attempt to dig itself into the side of the trench, forming a temporary sett. Should a trapped Badger be encountered a suitably qualified ecologist will be contacted immediately for further advice;
- The storage of topsoil or other 'soft' building materials in the site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and any essential mounds subject to daily inspections with consideration given to temporarily fencing any such mounds to exclude Badgers;
- The storage of any chemicals at the site will be contained in such a way that they cannot be accessed or knocked over by any roaming Badgers;
- Fires will only be lit in secure compounds away from areas of Badger activity and not allowed to remain lit during the night; and
- Unsecured food and litter will not be left within the working area overnight.

6.1.8 MM6a – Badger Update Survey. Given that no evidence of Badgers has been recorded within or adjacent to the site it is considered that Badgers do not currently pose a constraint to development. Nonetheless, Badgers are dynamic animals and levels of Badger activity can rapidly change at a site, with new setts being created at any time. It is therefore recommended that an update survey is carried out prior to commencement of site works in order to confirm the current status of Badgers at the site.

Dormouse

6.1.9 MM7 – Dormouse Licensing. Due to a requirement to create an access on the south-east boundary of the site, there will be a partial loss of Dormouse habitat under the proposals (approximately 0.013ha of sparse scrub and trees), which are likely to support 1 or 2 adult Dormice. To avoid an offence under the relevant legislation, it will be necessary for the vegetation clearance to be carried out under a European Protected Species (EPS) development licence, obtained from Natural England. When determining whether to grant a licence, Natural England will need to give consideration to the three derogation tests under Article 16 of the Habitats Directive (1992), namely whether the development is for imperative reasons of overriding public interest, no satisfactory alternative, and maintenance of favourable conservation status.

6.1.10 The need for the development is set out by the planning documents associated with the application. In summary, the scheme will meet a local need for new housing and commercial development, whilst improving the environment by redeveloping an imposing, unused site, and providing improvements in highway safety and local amenity. To enable the scheme, and for engineering reasons, it is necessary to remodel the existing bunds at the southern and eastern boundaries of the site, and therefore the vegetation loss could not be avoided.

6.1.11 In terms of maintenance of favourable conservation status, this would be achieved through implementation of safeguarding measures and provision of replacement habitat opportunities within the proposed development. Defensive species (such as Blackthorn) have also been included in the planting mix to act as a deterrent to household pets.

- 6.1.12 On this basis, it is therefore considered that, subject to full planning permission being granted and confirmation of the detailed mitigation measures in line with those set out below, there is no reason to suggest that any associated licence would be unlikely to be granted by Natural England.
- 6.1.13 **MM8 – Safeguarding measures during vegetation clearance.** In order to minimise the risk to Dormice during vegetation clearance works, a number of safeguarding measures will need to be implemented. This will include sensitive timing of works, involving clearance outside of the peak hibernation or breeding periods, or ideally as a two-stage process (removal of above ground vegetation during the winter months, followed by removal of stumps and ground works the following late spring once Dormice have emerged from hibernation). Works will also be carried out under ecological supervision, with progressive clearance of vegetation by hand, and will be preceded by check surveys of habitats for nests. These measures will be detailed in the method statement accompanying the EPS licence application.
- 6.1.14 **MM9 – Replacement habitat provision.** To compensate for losses of habitat under the proposals, new tree and shrub planting will be provided at the margins of the site. Approximately 0.27ha of new planting is proposed under the scheme, exceeding the area of vegetation to be lost (approximately 0.013ha). Nest boxes will also be provided in retained habitat areas to increase breeding opportunities for this species. Further detail is provided in the habitat creation and ecological enhancement section below.

Hedgehogs

- 6.1.15 **MM10 – Hedgehog Safeguards.** In order to safeguard Hedgehogs and other small mammals should they enter the site during construction works, the following measures will be implemented:
- A watching brief should be maintained for Hedgehog and other small mammals throughout any clearance works;
 - Any piles of material already present on site, particularly vegetation/leaves, etc. and any areas of dense scrub or hedgerows, shall be dismantled/removed by hand and checked for Hedgehog prior to the use of any machinery/disposal;
 - Any material to be disposed of by burning, particularly waste from vegetation clearance and tree works, should not be left piled on site for more than 24 hours in order to minimise the risk of Hedgehogs occupying the pile. If this cannot be avoided, material should be stored within a container such as a skip to prevent animals from gaining access. Any material which has been stored on the ground overnight should be moved prior to burning to allow a thorough check for any animals which may have been occupying the pile;
 - In the event that an injured Hedgehog is found, the animal should be wrapped carefully in a towel, the British Hedgehog Preservation Society (BHPS) phoned (01584 890 801) and the Hedgehog taken to a local vet immediately;
 - To maintain connectivity throughout the site for Hedgehog and to allow access to suitable foraging habitat contained within residential gardens, small holes (13cmx13cm) should be created within garden fences or under gates.

Reptiles

- 6.1.16 **MM11 – Translocation of Reptiles and Destructive Search.** As a precautionary measure to minimise the risk of harm to reptiles, a translocation of reptiles from the construction zone to a suitable receptor site is proposed. This will occur prior to site preparation and commencement of works to avoid risk of killing/injury to reptiles. The translocation will be implemented in accordance with a Method Statement which is likely to include enhancing the receptor site to the north of the site, erecting reptile exclusion fencing around the construction zone, habitat manipulation and following completion of the translocation, a destructive search of all potential habitat.

Nesting Birds

- 6.1.17 **MM12 – Timing of Works.** To avoid a potential offence under the relevant legislation, no clearance of suitable vegetation should be undertaken during the bird-nesting season (1st March to 31st August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified would then need to be cordoned off (minimum 5m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would need to be carried out no more than three days in advance of vegetation clearance.

Invasive Species

- 6.1.18 **MM13 – Invasive Species Safeguards.** Giant Hogweed is listed on Schedule 9 Part II of the Wildlife and Countryside Act 1981, and was recorded within the site. It is an offence to cause to grow in the wild, any plant listed on the schedule. As such, all relevant precautions should be taken when carrying out actions that could potentially spread these plants. The government has set out guidance on what can be considered ‘causing to grow in the wild’ within a response to the Schedule 9 review which states:

“We would expect that where plants listed in Schedule 9 are grown in private gardens, amenity areas etc., reasonable measures will be taken to confine them to the cultivated area so as to prevent their spreading to the wider environment and beyond the landowner’s control. It is our view that any failure to do so, which in turn results in the plant spreading to the wild, could be considered as ‘causing to grow in the wild’ and as such would constitute an offence...Additionally, negligent or reckless behaviour such as inappropriate disposal of garden waste, where this results in Schedule 9 species becoming established in the wild would also constitute an offence.”

- 6.1.19 As such, it is recommended that appropriate safeguards be put in place to prevent the spread of the Schedule 9 species during the proposed development works. Such measures would likely involve herbicide application and/or excavation and removal of any material within the site itself (which should then be disposed of appropriately to prevent colonisation of off-site areas). Due to the health and safety implications of the plant (it is toxic and an irritant), all staff working on the site should be made aware of its presence, and suitable precautions put in place so that personnel do not come into contact with it. An advice leaflet is provided at Appendix 6514/4.

6.2 Biodiversity Net Gains

- 6.2.1 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. The proposals present the opportunity to deliver ecological enhancements at the

site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of national conservation priorities and the local Biodiversity Action Plan (BAP) and the Medway Green and Blue Infrastructure Framework. The recommendations and enhancements summarised below are considered appropriate given the context of the site and the scale and nature of the proposals. Through implementation of the following ecological enhancements (**EE1 – EE8**), the opportunity exists for the proposals to deliver a number of biodiversity net gains at the site.

Habitat Creation

- 6.2.2 **EE1 – New Planting.** Wherever practicable, new planting within the site will be comprised of native species of local provenance, including trees and shrubs appropriate to the local area. Planting includes native trees such as Oak, Silver Birch, Hornbeam and Field Maple, whilst native shrub species of particular benefit include fruit and nut bearing species which would provide additional food for wildlife, such as Blackthorn, Hawthorn, Crab Apple *Malus sylvestris*, Hazel and Elder. Where non-native species are proposed, these should include species of value to wildlife, such as varieties listed on the RHS' 'Plants for Pollinators' database, providing a nectar source for bees and other pollinating insects.
- 6.2.3 **EE2 – Wildflower Grassland.** Areas of wildflower grassland are proposed within the site such that, in combination with new native landscape planting, opportunities for biodiversity will be maximised under the proposals. Consideration should be given to retention and enhancement of existing grassland, which is likely to provide a rapid way of achieving species-rich grassland.
- 6.2.4 **EE3 – Wetland Features.** New wetland habitats will be created as part of the proposed development in the form of the proposed SuDS basin. This will provide a range of opportunities for wildlife while also helping to attenuate surface water run-off.

Bats

- 6.2.5 **EE4 - Bat Boxes.** A number of bat boxes will be incorporated within the proposed development. The provision of bat boxes will provide new roosting opportunities for bats in the area, such as Soprano Pipistrelle, a national Priority Species. So as to maximise their potential use, the bat boxes should ideally be situated on suitable retained trees, erected as high up as possible and sited in sheltered wind-free areas that are exposed to the sun for part of the day, facing a south-east, south or south-westerly direction. In addition, where architectural design allows, a number of integrated bat boxes / roost features should be incorporated into a proportion of the new build. The precise number and locations of boxes / roost features should be determined by a competent ecologist, post-planning once the relevant final development design details have been approved.

Hedgehog

- 6.2.6 **EE5 – Hedgehog Nest Domes.** It is recommended that Hedgehog nest domes be installed within sheltered areas, such as the existing or newly created hedgerows to provide suitable nesting and hibernation sites for this species. The Hedgehog nest domes should be positioned out of direct sunlight, in areas of dense vegetation.

Birds

- 6.2.7 **EE6 - Bird Boxes.** A number of bird nesting boxes are to be incorporated within the proposed development, thereby increasing nesting opportunities for birds at the site. Ideally, the bird boxes will have greater potential for use if sited on suitable, retained trees, situated as high

up as possible. The precise number and locations of boxes should be determined by a competent ecologist, post-planning once the relevant final development design details have been approved.

Invertebrates

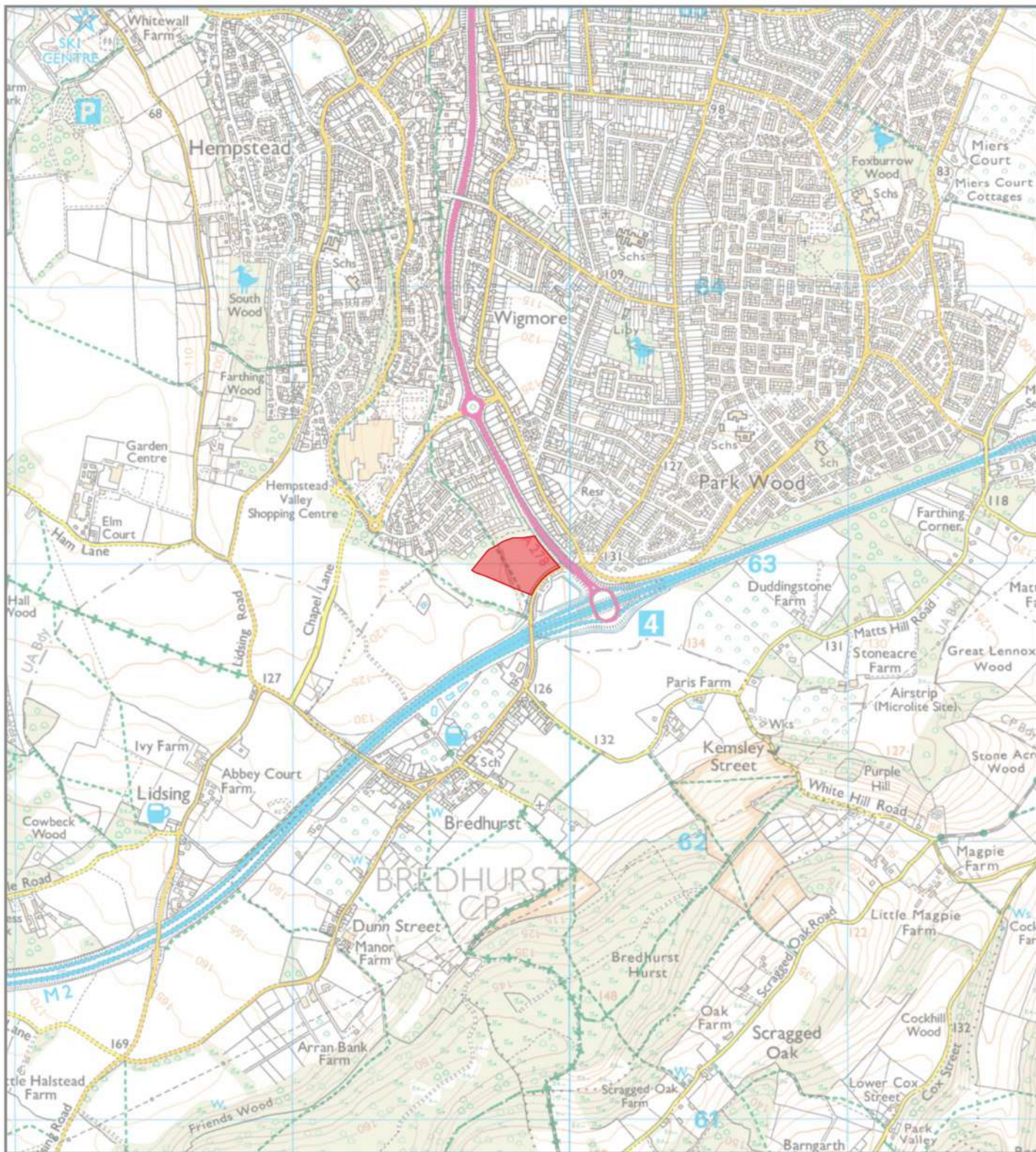
- 6.2.8 **EE7 – Habitat Piles.** A proportion of any deadwood arising from vegetation clearance works should be retained within the site in a number of wood piles located within areas of new planting, new wetland habitats or areas of wildflower grassland in order to provide potential habitat opportunities for invertebrate species, which in turn could provide a prey source for a range of other wildlife. In addition, the provision and management of new native landscape planting will likely provide additional opportunities for invertebrates at the site in the long term.
- 6.2.9 **EE8 – Bee Bricks.** It is recommended that a number of bee bricks be incorporated within the proposed development thereby increasing nesting opportunities for declining populations of non-swarming solitary bee populations. Ideally, bee bricks should be located within suitable south-facing walls (where architectural design allows), located at least 1m off the ground. The bricks should be unobstructed by vegetation, though within close vicinity of nectar and pollen sources.

7 Conclusions

- 7.1 Aspect Ecology has carried out an Ecological Appraisal of the proposed development, based on the results of a desktop study, Phase 1 habitat survey and a number of detailed protected species surveys.
- 7.2 The available information confirms that no statutory or non-statutory nature conservation designations are present within the site. Of those statutory designation present within the wider area, the Medway Estuary and Marshes SPA/Ramsar is located approximately 5.7km to the north. The designation is sensitive to increased recreational disturbance. As such it may be necessary to make a suitable contribution to the Birdwise North Kent Mitigation Strategy. Following this, there are not expected to be any adverse effects resulting to any of any nature conservation designations.
- 7.3 The Phase 1 habitat survey has established that the site is dominated by habitats not considered to be of ecological importance, whilst the proposals have sought to retain those features identified to be of value. Where it has not been practicable to avoid loss of habitats, new habitat creation has been proposed to offset losses, in conjunction with the landscape proposals.
- 7.4 An area of Ancient Woodland is situated to the north-west of the site, and consideration has been given to the potential for effects relating to loss and deterioration. However, a suitable buffer zone (of at least 15m) has been allowed, which will be fenced. Habitat within this zone will be retained and enhanced through the provision of supplementary native scrub and woodland planting. This is considered to adequately protect the woodland from indirect effects, while mitigation is also proposed for the delivery of footpath upgrades which may be required in the future, to ensure that they do not cause adverse effects. A sensitive lighting strategy will be put in place (which could be secured through a suitably worded condition) to ensure that there are no adverse effects of light-spill to the woodland and associated wildlife.
- 7.5 The habitats within the site support several protected species, including species protected under both national and European legislation (reptiles and dormouse). Accordingly, a number of mitigation measures have been proposed to minimise the risk of harm to protected species, with compensatory measures proposed, where appropriate, in order to maintain the conservation status of local populations.
- 7.6 In conclusion, the proposals have sought to minimise impacts and subject to the implementation of appropriate avoidance, mitigation and compensation measures, it is considered unlikely that the proposals will result in significant harm to biodiversity. On the contrary, the opportunity exists to secure a significant biodiversity net gains as part of the proposals. A Biodiversity Net Gain Assessment (BNGA) is submitted separately with the planning application, which demonstrates that the proposals will achieve a net gain in excess of 20% which is the target for Medway.

Plan 6514/ECO1:

Site Location



Key:

Site Location

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Blowers Wood, Hempstead

Site Location

6514/ECO1

A/AM

April 2022

PROJECT

TITLE

DRAWING NO.

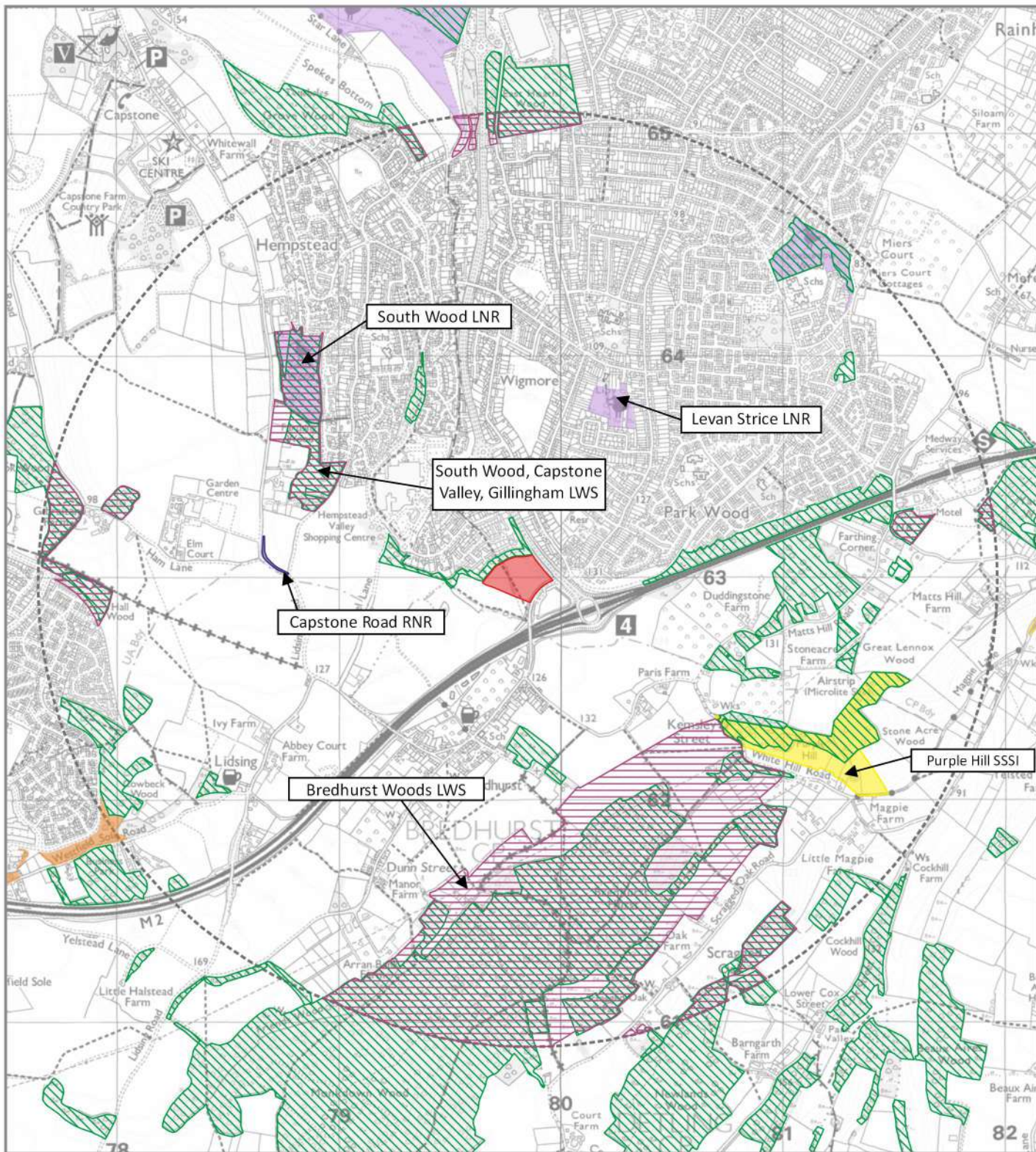
REV

DATE



Plan 6514/ECO2:

Ecological Designations



Key:

- Site Location
- Site of Special Scientific Interest (SSSI)
- Ancient Semi-natural Woodland (ASW)
- Ancient Replanted Woodland (ARW)
- Local Nature Reserves (LNR)
- Roadside Nature Reserves (RNR)
- Local Wildlife Site (LWS)
- Local Records Centre 2km Search Area

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Ecological Designations

6514/ECO2

A/AM

May 2022

PROJECT

TITLE

DRAWING NO.

REV

DATE



Plan 6514/ECO3:

Habitats and Ecological Features



- Key:
- Site Boundary
 - Semi-improved Grassland
 - Bramble
 - Ancient Semi-natural Woodland
 - Deciduous Woodland
 - Fence
 - Mammal Trail
 - Dry Dich
 - Hedgerow
 - Tree
 - Giant Hogweed
 - Off-site Badger Sett



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Habitats and Ecological Features TITLE

6514/ECO3 DRAWING NO.

A/AM REV

July 2022 DATE



Plan 6514/ECO4:

Bat Activity Survey Results



Key:

Site Boundary

Static Location
(Site Approximately Proportional to Total Call Registrations)

◆ Statics

Bat Activity (Transect Survey)
Between Listening Points:

█ High

█ Moderate

█ Low

- - - Negligible

At Listening Points:

● High

● Moderate

● Low

● Negligible

Bat Activity Level Key:

High: >1 Passes per minute

Moderate: 0.51-1.0 Passes per minute

Low: 0.01-0.5 Passes per minute

Negligible: 0 Passes per minute

Note: Number of passes per minute based on the number of sound files/passes determined by bat detector.



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Blowers Wood, Hempstead	PROJECT
Bat Activity Results (activity)	TITLE
6514/ECO4	DRAWING NO.
A/AM	REV
January 2023	DATE



Plan 6514/ECO5:

Dormouse Survey Results



- Key:
- Site Boundary
 - Dormouse Transect
 - A-13 tubes (tubes 1-13)
 - B-7 tubes (tubes 14-20)
 - C-6 tubes (tubes 21-26)
 - D-11 tubes (tubes 27-37)
 - E-3 tubes (tubes 38-40)
 - F-4 tubes (tubes 41-44)
 - G-6 tubes (tubes 45-50) on transect running alternate to 7-13
 - Dormouse Recorded



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Dormouse Survey Results

6514/EC05

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Plan 6514/ECO6:

Waterbodies within 250m of the Site



Key:

- Site Boundary
- 250m Buffer
- Ponds
- Dry Ditches

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Waterbodies within 250m

6514/ECO6

A/AM

January 2023



Plan 6514/ECO7:

Reptile Survey Results



Key:

- Site Boundary
- Reptile Transect
- Common Lizard
- Grass Snake
- Slow Worm

Peak Count of Reptiles
Slow Worm: 6
Common Lizard: 2
Grass Snake: 1

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Blowers Wood, Hempstead

Reptile Survey Results

6514/EC07

A/AM

January 2023



Appendix 6050/1:

Evaluation Methodology

Evaluation Methodology

1. The evaluation of ecological features and resources is based on professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described by the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018)¹.

Importance of Ecological Features

2. Ecological features within the site/study area have been evaluated in terms of whether they qualify as 'important ecological features'. In this regard, CIEEM guidance states that *"it is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable"*.
3. Various characteristics contribute to the importance of ecological features, including:
 - Naturalness;
 - Animal or plant species, sub-species or varieties that are rare or uncommon, either internationally, nationally or more locally, including those that may be seasonally transient;
 - Ecosystems and their component parts, which provide the habitats required by important species, populations and/or assemblages;
 - Endemic species or locally distinct sub-populations of a species;
 - Habitat diversity;
 - Habitat connectivity and/or synergistic associations;
 - Habitats and species in decline;
 - Rich assemblages of plants and animals;
 - Large populations of species or concentrations of species considered uncommon or threatened in a wider context;
 - Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities; and
 - Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.
4. As an objective starting point for identifying important ecological features, European, national and local governments have identified sites, habitats and species which form a key focus for biodiversity conservation in the UK, supported by policy and legislation. These are summarised by CIEEM guidance as follows:

Designated Sites

- Statutory sites designated or classified under international conventions or European legislation, for example World Heritage Sites, Biosphere Reserves, Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA);

¹ CIEEM (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine', Chartered Institute of Ecology and Environmental Management, Winchester

- Statutory sites designated under national legislation, for example Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR);
- Locally designated wildlife sites, e.g. Local Wildlife Sites (LWS).

Biodiversity Lists

- Habitats and species of principal importance for the conservation of biodiversity in England and Wales (largely drawn from UK BAP priority habitats and priority species), often referred to simply as Priority Habitats / Species;
- Local BAP priority species and habitats.

Red Listed, Rare, Legally Protected Species

- Species of conservation concern, Red Data Book (RDB) species;
- Birds of Conservation Concern;
- Nationally rare and nationally scarce species;
- Legally protected species.

5. In addition to this list, other features may be considered to be of importance on the basis of local rarity, where they enable effective conservation of other important features, or play a key functional role in the landscape.

Assigning Level of Importance

6. The importance of an ecological feature should then be considered within a defined geographical context. Based on CIEEM guidance, the following frame of reference is used:
 - International (European);
 - National;
 - Regional;
 - County;
 - District;
 - Local (e.g. Parish or Neighbourhood);
 - Site (not of importance beyond the immediate context of the site).
7. Features of 'local' importance are those considered to be below a district level of importance, but are considered to appreciably enrich the nature conservation resource or are of elevated importance beyond the context of the site.
8. Where features are identified as 'important' based on the list of key sites, habitats and species set out above, but are very limited in extent or quality (in terms of habitat resource or species population) and do not appreciably contribute to the biodiversity interest beyond the context of the site, they are considered to be of 'site' importance.
9. In terms of assigning the level of importance, the following considerations are relevant:

Designated Sites

10. For designated sites, importance should reflect the geographical context of the designation (e.g. SAC/SPA/Ramsar sites are designated at the international level whereas SSSIs are designated at the national level). Consideration should be given to multiple designations as appropriate (where an area is subject to differing levels of nature conservation designations).

Habitats

11. In certain cases, the value of a habitat can be measured against known selection criteria, e.g. SAC selection criteria, 'Guidelines for the selection of biological SSSIs' and the Hedgerows Regulations 1997. However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based on relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). The ability to restore or re-create the habitat is also an important consideration, for example in the case of ancient woodland.
12. Whether habitats are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Habitats of Principal Importance' or 'Priority Habitats', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular habitat under a BAP does not in itself imply any specific level of importance.
13. Habitat inventories (such as habitat mapping on the MAGIC database) or information relating to the status of particular habitats within a district, county or region can also assist in determining the appropriate scale at which a habitat is of importance.

Species

14. Deciding the importance of species populations should make use of existing criteria where available. For example, there are established criteria for defining nationally and internationally important populations of waterfowl. The scale within which importance is determined could also relate to a particular population, e.g. the breeding population of common toads within a suite of ponds or an otter population within a catchment.
15. When determining the importance of a species population, contextual information about distribution and abundance is fundamental, including trends based on historical records. For example, a species could be considered particularly important if it is rare and its population is in decline. With respect to rarity, this can apply across the geographic frame of reference and particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species.
16. Whether species are listed as priorities for conservation at a national level in accordance with Sections 41 and 42 of the Natural Environment and Rural Communities Act (NERC) 2006, so called 'Species of Principal Importance' or 'Priority Species', or within regional or local Biodiversity Action Plans (BAPs) is also relevant, albeit the listing of a particular species under a BAP does not in itself imply any specific level of importance.
17. Species populations should also be considered in terms of the potential zone of influence of the proposals, i.e. if the entire species population within the site and surrounding area were to be affected by the proposed development, would this be of significance at a local, district, county or wider scale? This should also consider the foraging and territory ranges of individual species (e.g. bats roosting some distance from site may forage within site whereas other species such as invertebrates may be more sedentary).

Appendix 6050/2:

Legislation Summary

LEGISLATION SUMMARY

1. In England and Wales primary legislation is made by the UK Parliament, and in Scotland by the Scottish Parliament, in the form of Acts. The main piece of legislation relating to nature conservation in the UK is the Wildlife and Countryside Act 1981 (as amended).
2. Acts of Parliament confer powers on Ministers to make more detailed orders, rules or regulations by means of secondary legislation in the form of statutory instruments. Statutory instruments are used to provide the necessary detail that would be too complex to include in an Act itself¹. The provisions of an Act of Parliament can also be enforced, amended or updated by secondary legislation.
3. In summary, the key pieces of legislation relating to nature conservation in the UK are:
 - Wildlife and Countryside Act 1981 (as amended)
 - Protection of Badgers Act 1992
 - Hedgerows Regulations 1997
 - Countryside and Rights of Way (CROW) Act for England and Wales 2000
 - Natural Environment and Rural Communities Act 2006
 - Conservation of Habitats and Species Regulations 2017
4. A brief summary of the relevant legislation is provided below. The original Acts and instruments should be referred to for the full and most up to date text of the legislation.
5. **Wildlife and Countryside Act 1981 (as amended)**. The WCA Act provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs) identified for their flora, fauna, geological or physiographical features. The Act contains strict measures for the protection and management of SSSIs.
6. The Act also refers to the treatment of UK wildlife including protected species listed under Schedules 1 (birds), 5 (mammals, herpetofauna, fish, invertebrates) and 8 (plants).
7. Under Section 1(1) of the Act, all wild birds are protected such that it is an offence to intentionally:
 - Kill, injure or take any wild bird;
 - Take, damage or destroy the nest of any wild bird whilst in use* or being built;
 - Take or destroy an egg of any wild bird.

* The nests of birds that re-use their nests as listed under Schedule ZA1, e.g. Golden Eagle, are protected against taking, damage or destruction irrespective of whether they are in use or not.
8. Offences in respect of Schedule 1 birds are subject to special, i.e. higher, penalties. Schedule 1 birds also receive greater protection such that it is an offence to intentionally or recklessly:
 - Disturb any wild bird included in Schedule 1 while it is building a nest or while it is in, on or near a nest containing eggs or young;
 - Disturb dependent young of such a bird.

¹ <http://www.parliament.uk/business/bills-and-legislation/secondary-legislation/statutory-instruments/>

9. Under Section 9(1) of the Act, it is an offence to:
 - Intentionally kill, injure or take any wild animal included in Schedule 5.
10. In addition, under Section 9(4) it is an offence to intentionally or recklessly:
 - Obstruct access to, any structure or place which any wild animal included in Schedule 5 uses for shelter or protection; or
 - Disturb any wild animal included in Schedule 5 while occupying a structure or place which it uses for that purpose.
11. Under Section 13(1) it is an offence:
 - To intentionally pick, uproot or destroy any wild plant listed in Schedule 8; or
 - Unless the authorised person, to intentionally uproot any wild plant not included in Schedule 8.
12. The Act also contains measures (S.14) for preventing the establishment of non-native species that may be detrimental to native wildlife, prohibiting the introduction into the wild of animals (releases or allows to escape) and plants (plants or causes to grow) listed under Schedule 9.
13. **Protection of Badgers Act 1992.** The Act aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It should be noted that the legislation is not intended to prevent properly authorised development. Under the Act it is an offence to:
 - Wilfully kill, injure, take, possess or cruelly ill-treat* a Badger, or attempt to do so;
 - To intentionally or recklessly interfere with a sett# (this includes disturbing Badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

* the intentional elimination of sufficient foraging area to support a known social group of Badgers may, in certain circumstances, be construed as an offence

A sett is defined as “any structure or place which displays signs indicating current use by a Badger”. Natural England advice (June 2009) is that a sett is protected so long as such signs remain present, which in practice could potentially be for some time after the last actual occupation by Badger. Interference with a sett includes blocking tunnels or damaging the sett in any way
14. Licences can be obtained from the Statutory Nature Conservation Organisation (SNCO) for development activities that would otherwise be unlawful under the legislation, provided there is suitable justification. The SNCO for England is Natural England.
15. **Hedgerows Regulations 1997.** ‘Important’ hedgerows (as defined by the Regulations) are protected from removal (up-rooting or otherwise destroying). Various criteria specified in the Regulations are employed to identify ‘important’ hedgerows for wildlife, landscape or historical reasons.
16. **Countryside and Rights of Way (CROW) Act for England and Wales 2000.** The CROW Act provides increased measures for the management and protection of SSSIs and strengthens wildlife enforcement legislation. Schedule 12 of the Act amends the species provisions of the WCA 1981, strengthening the legal protection for threatened species. The Act also introduced a duty on Government to have regard to the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

17. **Natural Environment and Rural Communities Act 2006.** Section 41 of the NERC Act requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as local planning authorities, in implementing their duty under Section 40 of the Act, to have regard to the conservation of biodiversity in England, when exercising their normal functions. 56 habitats and 943 species of principal importance are included on the S41 list. These are all the habitats and species in England that were identified as requiring action in the UK Biodiversity Action Plan (BAP).
18. **Conservation of Habitats and Species Regulations 2017 (as amended).** The Regulations enact the European Union's Habitats Directive (92/43/EEC) in the UK. The Habitats Directive was designed to contribute to the maintenance of biodiversity within member states through the conservation of sites, known in the UK as Special Areas of Conservation (SACs), containing habitats and species selected as being of EC importance (as listed in Annexes I and II of the Habitats Directive respectively). Member states are required to take measures to maintain or restore these natural and semi-natural habitats and wild species at a favourable conservation status.
19. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs)² classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites constitute the Natura 2000 network. The Regulations impose restrictions on planning decisions likely to significantly affect SPAs or SACs.
20. The Regulations also provide protection to European Protected Species of animals that largely overlaps with the WCA 1981, albeit the provisions are generally stricter. Under Regulation 43 it is an offence, *inter alia*, to:
 - Deliberately capture, injure or kill any wild animal of a European Protected Species;
 - Deliberately disturb any wild animals of any such species, including in particular any disturbance likely to impair their ability to survive, to breed or reproduce, to rear or nurture their young, to hibernate or migrate, or which is likely to affect significantly their local distribution or abundance;
 - Deliberately take or destroy the eggs of such an animal;
 - Damage or destroy a breeding site or resting place of such an animal.
21. Similar protection is afforded to European Protected Species of plants, as detailed under Regulation 47.
22. The Regulations do provide a licensing system that permits otherwise illegal activities in relation to European Protected Species, subject to certain tests being fulfilled.

² Special Protection Areas (SPAs) are protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC) (aka the Birds Directive), which came into force in April 1979. SPAs are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.

Appendix 6050/3:

Desktop Study Data

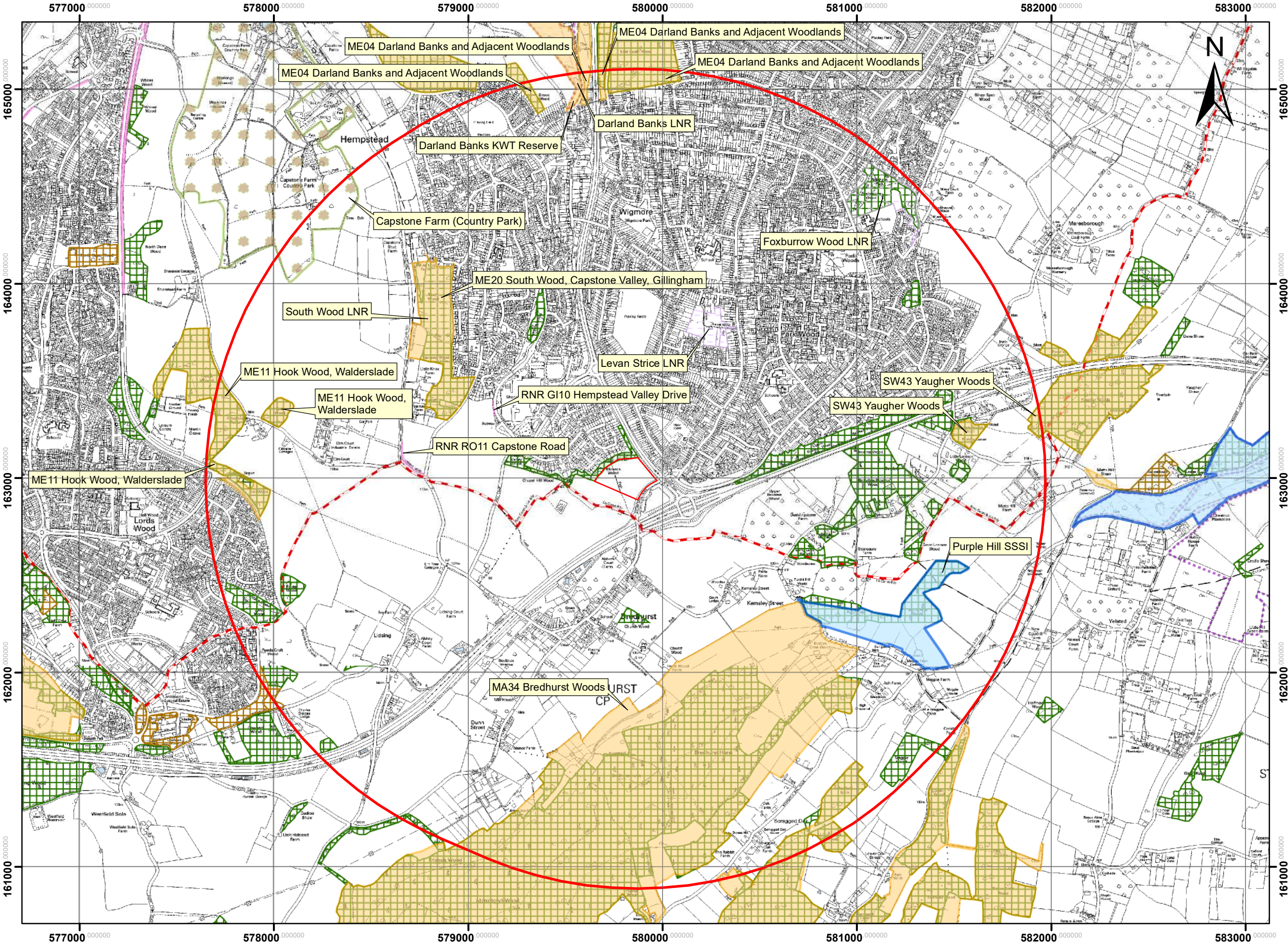
Kent & Medway Biological Records Centre

Map showing the statutory and non-statutory designated sites,
ancient woodland and water features at
Blowers Wood, Hempstead
Alice Orpin, Aspect Ecology Ltd
ENQ/22/138 08/04/2022

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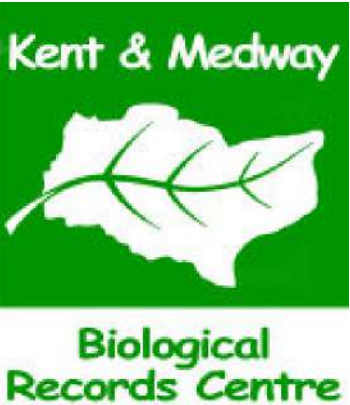
Kent & Medway Biological Records Centre would like to acknowledge, where appropriate: Natural England for Ramsar, SAC, SPA, NNR, SSSI, AONB, Heritage Coast and Ancient Woodland data; Kent Wildlife Trust for LWS, RNR and Reserve data; GeoConservation Kent for RIGS data; The National Trust, The RSPB and The Woodland Trust for Reserve data; Kent County Council for Kent Habitat Survey 2012 data used in this map.

0 0.5 1 2 Kilometres



KEY

- Study Area
- Site Boundary
- Sites of Special Scientific Interest
- Local Wildlife Site
- Local Nature Reserves
- Kent Wildlife Trust Reserve
- Roadside Nature Reserve
- Country Parks
- Ancient semi-natural woodland
- Plantation on ancient woodland site
- Water Feature
- County Boundary

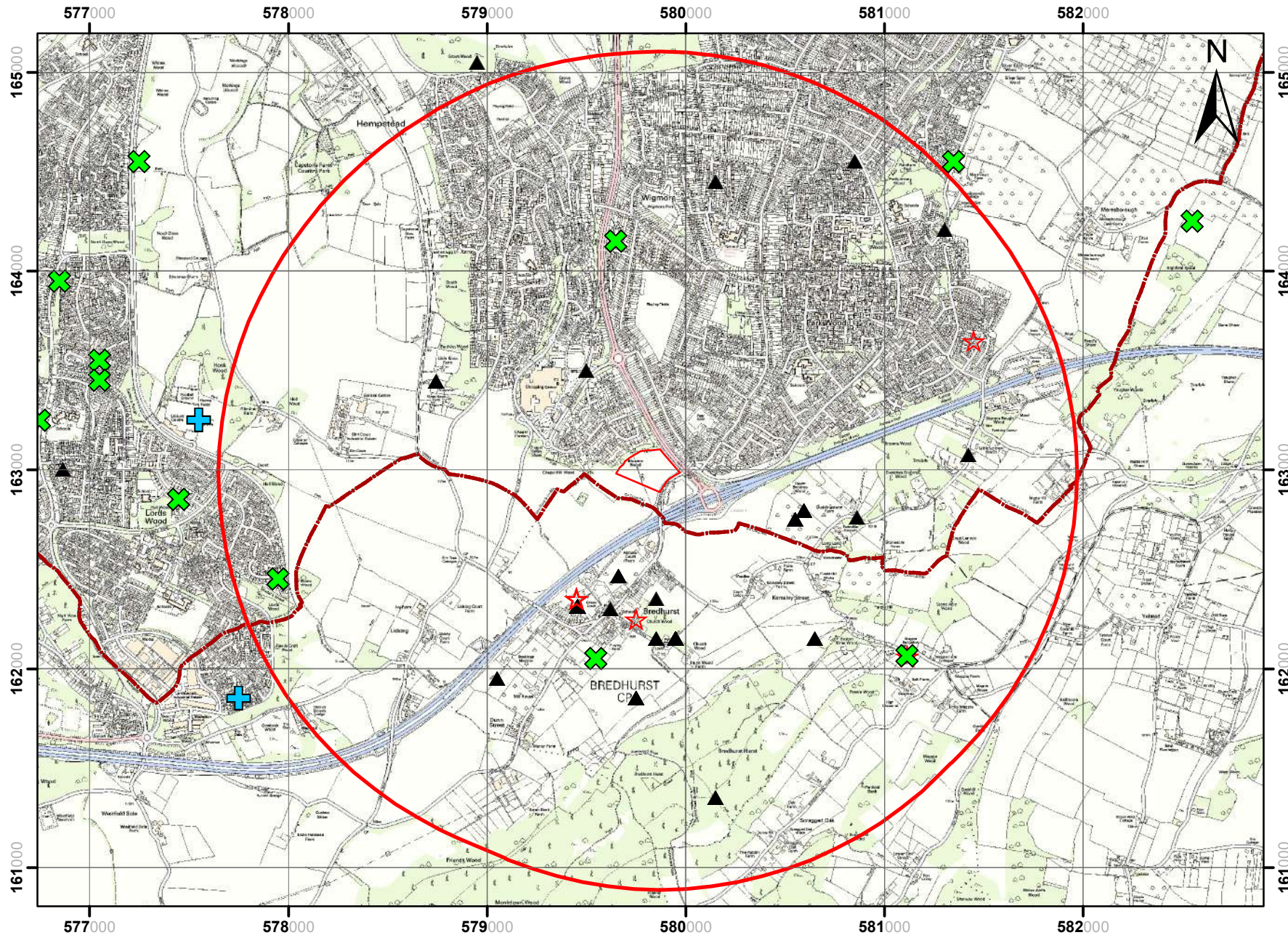


Kent & Medway Biological Records Centre

Known Bat Roost Locations at
Blowers Wood, Hempstead
Alice Orpin, Aspect Ecology Ltd
ENQ/22/138 08/04/2022

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0 0.5 1 2 Kilometres



KEY

- Study Area
- Site Boundary

Roost Type

- ★ Maternity Roost
- + Hibernating Bat
- ✕ Roost (unknown type)
- ▲ Flying Bat

This map should be used in conjunction with the accompanying bat records report.

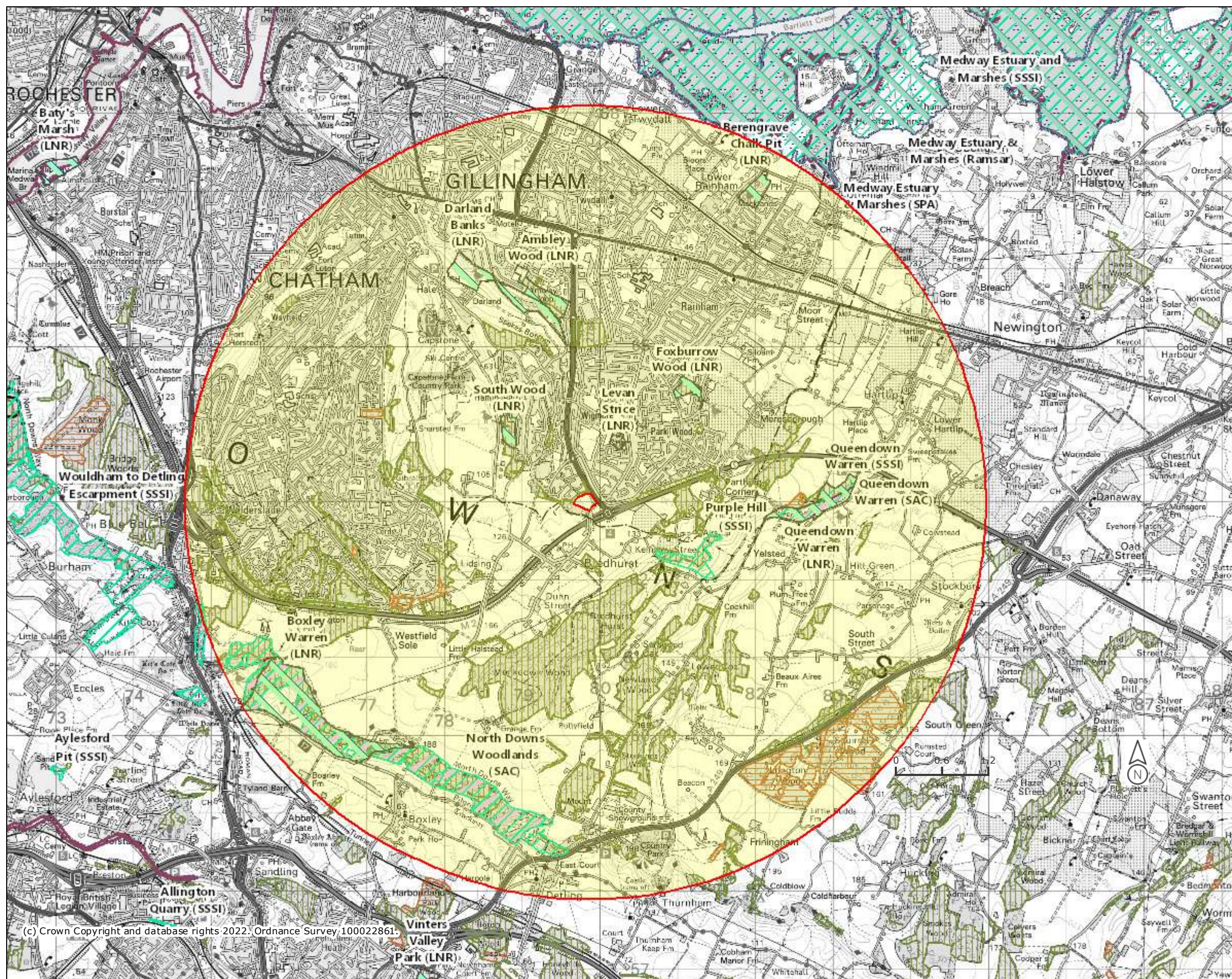
To convert from the eastings and northings grid shown to a standard OS grid reference, use the first digit from the easting to determine the 10km square: a 5 corresponds to TQ and a 6 to TR. The second and third digits from the easting and northing give the rest of the grid reference for the 1km square.

For example, coordinates (602000,158000) tell you the grid square is TR0258.



**Kent
Bat
Group**





Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Ancient Woodland (England)**
 - Ancient and Semi-Natural Woodland
 - Ancient Replanted Woodland

Projection = OSGB36

xmin = 567700

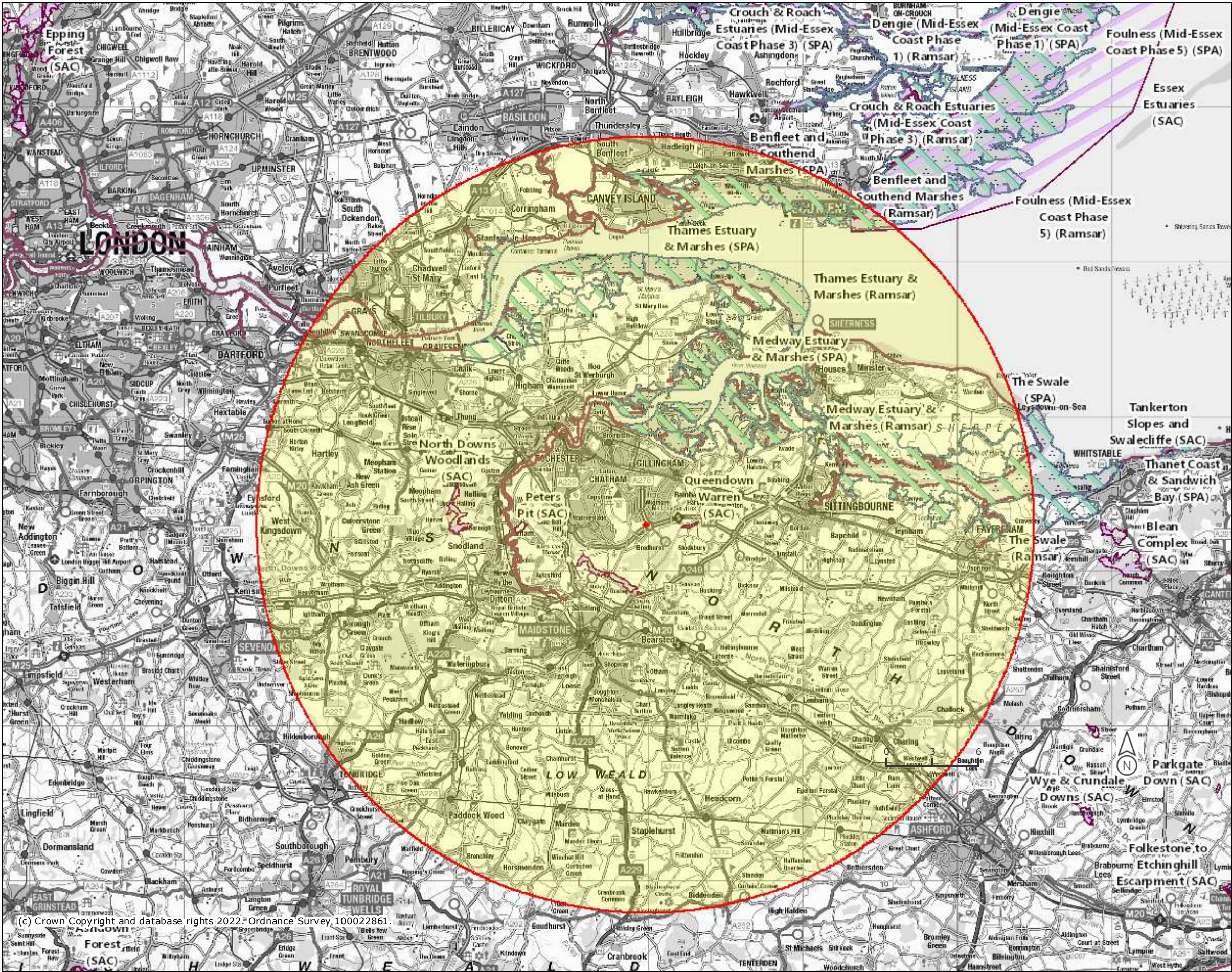
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ymax = 169500

Map produced by MAGIC on 31 March, 2022.

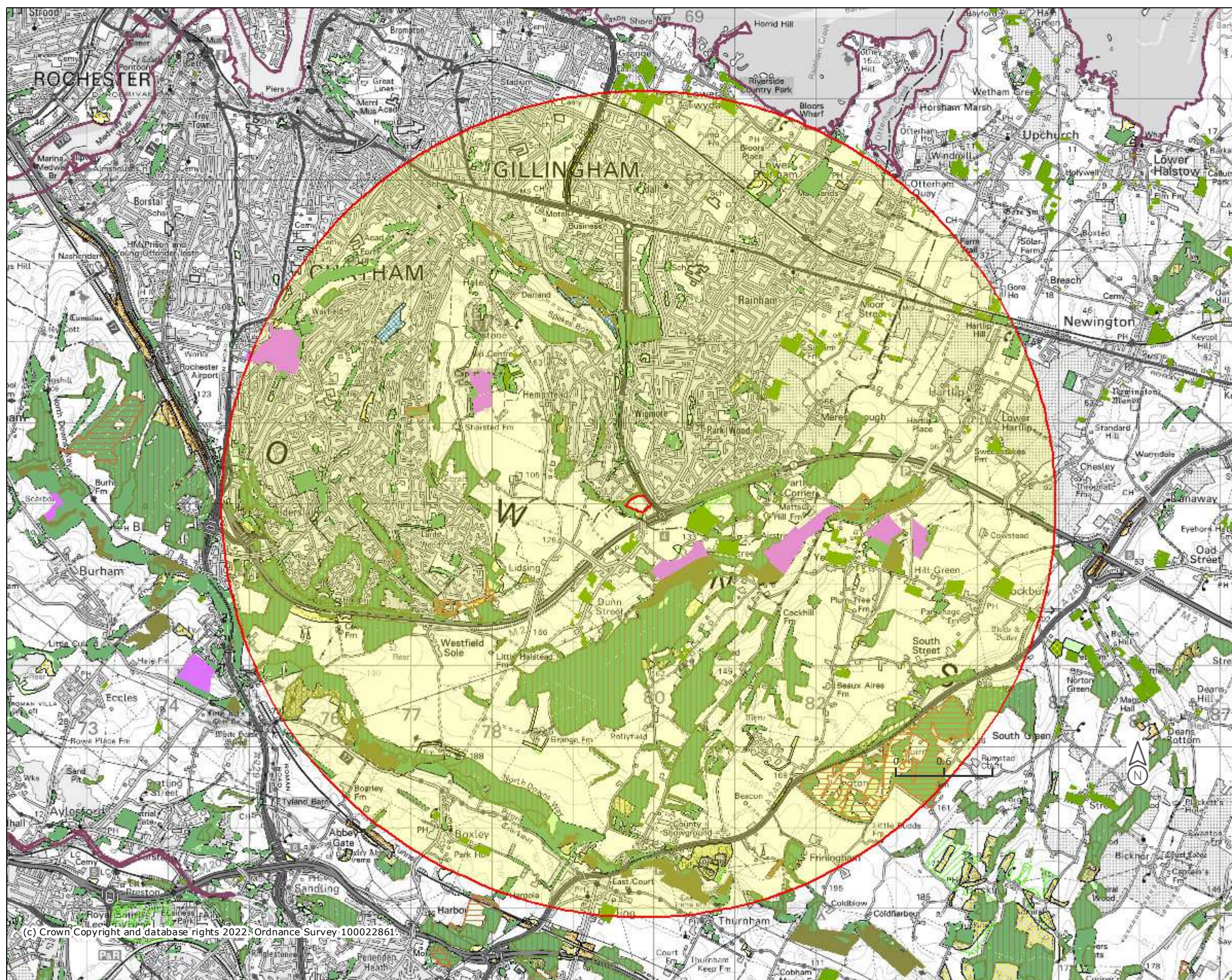
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Legend

- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)

Projection = OSGB36
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ymax = 195600
Map produced by MAGIC on 31 March, 2022.
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Legend

Priority Habitat Inventory - Good quality semi-improved grassland (Non Priority) (England)

Priority Habitat Inventory - Lowland Calcareous Grassland (England)

Ancient Woodland (England)

Ancient and Semi-Natural Woodland

Ancient Replanted Woodland

Priority Habitat Inventory - Deciduous Woodland (England)

National Forest Inventory (GB)

Assumed woodland

Broadleaved

Cloud \ shadow

Conifer

Coppice

Coppice with standards

Failed

Felled

Ground prep

Low density

Mixed mainly broadleaved

Mixed mainly conifer

Shrub

Uncertain

Windthrow

Young trees

Priority Habitat Inventory - Traditional Orchards (England)

Woodpasture and Parkland BAP Priority Habitat (England)

Projection = OSGB36

xmin = 567600

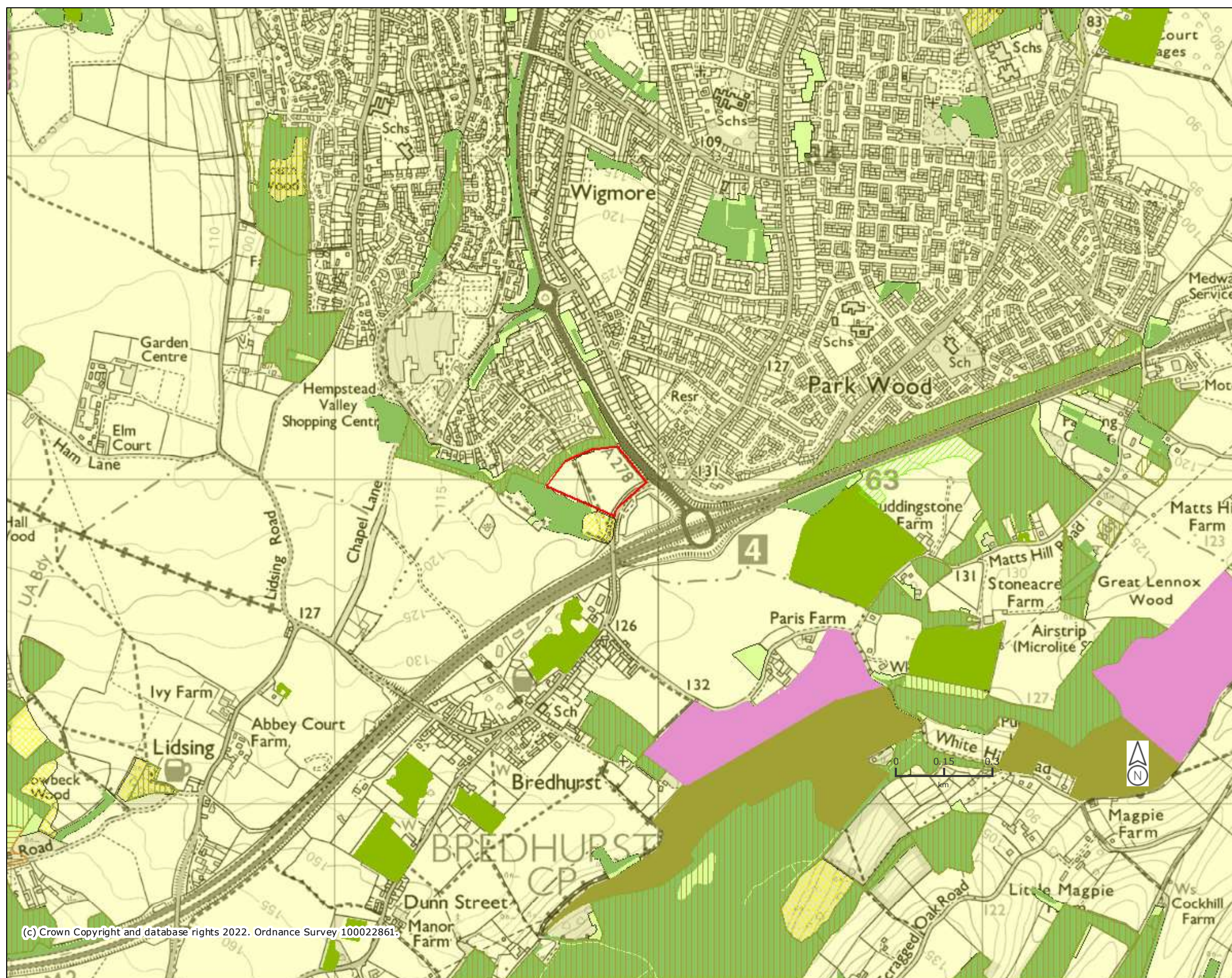
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Legend

Priority Habitat Inventory - Good quality semi-improved grassland (Non Priority) (England)

Priority Habitat Inventory - Lowland Calcareous Grassland (England)

Ancient Woodland (England)

Ancient and Semi-Natural Woodland

Ancient Replanted Woodland

Priority Habitat Inventory - Deciduous Woodland (England)

National Forest Inventory (GB)

Assumed woodland

Broadleaved

Cloud \ shadow

Conifer

Coppice

Coppice with standards

Failed

Felled

Ground prep

Low density

Mixed mainly broadleaved

Mixed mainly conifer

Shrub

Uncertain

Windthrow

Young trees

Priority Habitat Inventory - Traditional Orchards (England)

Woodpasture and Parkland BAP Priority Habitat (England)

Projection = OSGB36

xmin = 576900

ymin = 161500

xmax = 582900

ymax = 164400

Map produced by MAGIC on 31 March, 2022.

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Appendix 6050/4:

Giant Hogweed Advice Sheet



Information Sheet 4: Giant Hogweed

Giant Hogweed, *Heracleum mantegazzianum* Sommier & Levier, was introduced into Britain in the 1893 as an ornamental plant. It escaped from domestication and is now colonising many areas of waste land and river banks. It can grow to 5m high and has a large umbel of white flowers from which it produces 30 to 50,000 viable seeds per year. When these seeds fall into water they are dispersed downstream and washed up along the bank, often on scoured bare sediment, allowing the plant to spread rapidly along watercourses. In a natural state, the plant is biennial, growing from seed in the first year and flowering in the second season. However, if the plant is cut down before it produces seed, it will survive into a third or subsequent season, attempting to flower each year. It can form dense colonies which suppress the growth of native plants and grasses and leave the banks bare of vegetation in the winter. These are then liable to erosion or to recolonisation by seeds of Giant Hogweed washed downstream onto the bare ground.



MECHANICAL CONTROL

Hand cutting should never be undertaken unless the operator is wearing full protective clothing to prevent skin contamination by the sap. Machine operators should take similar precautions because the sap can be spread onto machinery and subsequently come into contact with skin. Cutting before flowering will, at best, produce only temporary control and ensures

that the plant regrows in the following season. Cutting after flowering has no benefit once the seeds have been formed, except to clear away the dying vegetation. Small infestations can be controlled by digging out the whole plant. It is possible that large infestations may be controlled by deep cultivation (ploughing) although this has not been tested and is generally impractical on river banks. Cutting through the stem must be done below ground level to ensure damage to the rootstock and to prevent regrowth from the base.

WARNING

The sap of giant hogweed contains a toxic chemical which sensitises the skin and leads to severe blistering when exposed to sunlight.

THIS REACTION CAN RECUR FOR MANY YEARS.

CHEMICAL CONTROL

The only herbicide which is known to control Giant Hogweed and which is approved for use in or near water, is glyphosate. The plants can be sprayed with glyphosate at a rate of 61 per ha when the plants are growing actively but still less than about 1 m high. This is usually in April and May. Long-lance sprayers may assist in accurate application of glyphosate to plants growing in inaccessible sites along river banks. Glyphosate can be applied as a spot treatment to individual plants, using hand-held equipment, or as an overall spray using machine-mounted spray booms. In the latter instance, total weed control of all vegetation will occur and it may be necessary to reseed the treated area with grass and other native plants. Establishing a good sward of grasses soon after treatment of the weed will help to reduce the rate of recolonisation of the area by seeds of Giant Hogweed.



BIOLOGICAL CONTROL

None known. Constituents of the toxic sap are thought to act as feeding deterrents for many insects, although there are some specialist Lepidopteran feeders (Butterflies), whose caterpillars may offer some degree of control

ENVIRONMENTAL CONTROL

None known, although maintaining a dense grass sward may help to reduce germination of seedlings.

ADDITIONAL NOTES

The seeds of this plant are thought to remain viable for up to 7 years, and possibly up to 15. Once a plant has produced seed, it should be assumed that the seeds will be present in the surrounding area for at least this length of time. Control measures will only affect those plants which have already germinated and viable seed may continue to germinate each year until the seed bank is exhausted. Therefore, eradication, as opposed to temporary control for one season only, requires regular annual checks to ensure that any germinating plants are controlled before they can seed.



On river banks, seeds may be washed downstream from colonies along the river bank. Any attempt to eradicate this plant is unlikely to succeed unless control is exercised along the **whole river system**. Good examples of catchment wide control are from the Ribble Valley (EA North West) and the River Medway Project

BEST OPTION

Spray individual plants or whole colonies with glyphosate in April or May. Reseed the area once the plants have died off. Spot treat new plants as they appear.

SUMMARY OF TOXICITY

The toxic components (psoralens or linear furanocoumarins) of Giant Hogweed are stored as biologically active aglycones, mainly in the oil channels or ducts in the leaves, stems, roots, flowers and seeds. Therefore all sap bearing parts of the plant can produce phyto-photodermatitis (sensitive reaction to light) on contact with exposed human skin.

There are several points to note in consideration of this severe skin reaction:

- ? Contact with the cut material in sunlight produces a reaction in almost everyone. The degree of symptoms will vary between individuals, but children are known to be particularly sensitive.
- ? The cut material remains active for several hours after cutting
- ? Blistering symptoms occur after 24-48 hours post exposure, and dense post-inflammatory hyper-pigmentation is visible after 3-5 days and may persist for at least 6 years.
- ? The threshold concentration of furanocoumarins ($10\text{-}100\text{ }\mu\text{g ml}^{-1}$) for a phytophotodermatitic reaction is far exceeded during the growing season. The highest concentration is in the leaves, the lowest in the stems (often the cause of mouth blisters in young children) and petioles, and the root intermediate.
- ? The mode of action in the photosensitive reaction causes damage to DNA, thus inducing cellular damage, especially in melanocytic cells. The mechanism is thought to be due to photoinduced gene suppression leading to increased melanocyte production. These mechanisms are also involved in sunlight induced skin cancer, or melanoma, but evidence suggests that furanocoumarins are unlikely to be a genetic or carcinogenic hazard to humans.
- ? High light and nitrate habitats (e.g. streamsides, roadsides and waste ground) tend to produce higher quantities of furanocoumarins
- ? The furanocoumarins are produced by the plant as a defence against insect herbivory. There may be loss of insect biodiversity in dense stands of this species, due to the presence of only specialist herbivore insects.
- ? Furanocoumarins are known to be antifungal, possibly explaining their presence in the roots. This may lead to suppression of soil fungi, essential for soil fertility.
- ? There are reports of long-term damage to ducklings that had trampled on Giant Hogweed tissue. The beaks were deformed and feet darkly pigmented three weeks after a brief exposure.

REFERENCES

- Cooper, MR and Johnson, AW (1998), *Poisonous Plants and Fungi in Britain*, 2nd edition, HMSO, London,
- Tiley, GED, Dodd, FS, and Wade, PM (1996) Biological Flora of the British Isles. *Heracleum mantegazzianum* Sommier & Levier, *Journal of Ecology*, **84**: 297-319

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The logo for Aspect Ecology Ltd features the word "aspect" in a white, lowercase, sans-serif font. A thin, white, diagonal line is positioned above the "t", extending from the top of the letter to the right.

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