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Little Acres, Longfield Avenue, Longfield, Kent

**Preliminary Ecological Appraisal and
Biodiversity Net Gain Assessment**

November 2021

Little Acres, Longfield Road, Longfield, Kent

Preliminary Ecological Appraisal and Biodiversity Net Gain Assessment

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Abbreviations

BNG	Biodiversity Net Gain
BU	Biodiversity Units
CHS	Conservation of Habitats and Species Regulations 2017 (as amended)
EclA	Ecological Impact Assessment
HPI	Habitat of Principal Importance
KMBRC	Kent and Medway Biological Records Centre
LWS	Local Wildlife Site
NERC	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Assessment
PRA	Preliminary Roost Assessment
PRF	Potential (bat) Roost Feature
PRoW	Public Rights of Way
SSSI	Site of Special Scientific Interest
TN	Target Note
WCA	Wildlife & Countryside Act 1981 (as amended)

0 Executive Summary

- 0.1.1 A Preliminary Ecological Appraisal and Biodiversity Net Gain Assessment was undertaken for the site of a proposed residential development Little Acres, Longfield Avenue, Longfield, Kent. The report was prepared to establish the site's suitability for development, inform the design process for the proposal, record the ecological baseline, identify key ecological features within and around the proposal site and assess the scheme's biodiversity impact score.
- 0.1.2 The survey area lies at the north-eastern edge of the village of New Barn in the Dartford District of Kent. The wider landscape is characterised by a patchwork of mixed farmland. This includes a network of mature hedgerows and lines of trees, connecting pockets of woodland and suburban residential areas. The site is located within 1km of three Local Wildlife Sites and falls within the Impact Risk Zone of three Sites of Specific Scientific Interest. Eight areas of Lowland Mixed Deciduous Woodland Habitat of Principal Importance were identified within the desk study search area and seven of these contain areas of Ancient Semi-natural Woodland. No ponds were identified within 500m of the site. There are records of a range of protected or notable species in the locality, including amphibians, birds, invertebrates, mammals, flowering plants and reptiles.
- 0.1.3 The proposed development would result in permanent loss of c.1.0 of hardstanding, amenity grassland, ephemeral/short perennial vegetation, buildings, bare ground, tall ruderal, improved grassland, introduced shrubs and species-poor hedgerow. These areas are of low ecological value and of negligible importance, although bordered by Ancient Woodland/Lowland Mixed Deciduous Woodland HPI of high ecological value.
- 0.1.4 The site provided a baseline of 0.93 Biodiversity Units (BU) for area habitats and development of the site will result in a loss of 0.91 BU. The site provided a baseline of 0.29 BU for linear habitats and development of the site will result in a loss of 0.09 BU. A combination of habitats will be created as part of the proposed development. This will result in an overall **net gain of 1.68 BU for area habitats, (+181.33%)** and a **net gain of +2.28 BU for linear habitats (+787.55%)**.
- 0.1.5 No further botanical or protected species surveys are required prior to submitting a planning application. Recommendations are made for the protection of important ecological features to avoid or mitigate ecological impacts, and to contribute towards net gains for biodiversity on site post-construction; these are summarised in Table 0.1. It is intended that these preliminary recommendations should be considered during future changes to the design of development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised.

Table 0.1: Summary of recommendations

#	Summary of recommendations
Precautionary measures	
R1	Removal of nesting bird habitats (including vegetation and buildings) will be undertaken outside of the bird nesting season, which runs from 1 March to 30 September. It will therefore be carried out between October and February.
Ecological protection measures	
R2	Thirty Acre Shaw ancient woodland, adjacent to the survey area to the north, will be buffered by an undeveloped zone of at least 15m from the construction footprint.
R3	Works within the 15m buffer around the Ancient Woodland (c.18m ²) will utilise shallow dig techniques and permeable paving to prevent physical damage to root systems.
R4	Hoardings / tree protection fencing will be installed to protect the adjacent Thirty Acre Shaw ancient woodland from temporary impacts.
R5	Standard site procedures to prevent impacts on hedgerows, trees or shrubs will be adhered to during construction.
R6	The use of external lighting will be avoided or minimised to prevent impacts to nocturnal species. Lighting should not be directed towards the retained hedgerows, Thirty Acre Shaw woodland to the north or any newly created bat roosting features (R15).
R7	Small access gaps will be provisioned at the base of new fence boundaries to enable continued dispersal of small mammals across the site.
R8	At the end of each working day excavations will be covered over and open pipework capped to prevent entrapment of mammals, amphibians and other fauna.
Ecological enhancement	
R9	An orchard will be created in the south-eastern corner of site will comprise a range of fruiting species (native where possible) that will be managed organically.
R10	A newly created greenspace in the north-east of site and the proposed orchard in the south-east will be sown with a native wildflower and grass seed mix (i.e. wildflower meadow) to increase botanical richness above that currently present.
R11	Hedgerow creation and/or restoration will use a range of native fruit, seed, nut and nectar-bearing shrub species.
R12	The site's landscaping plans will utilise plant species which encourage bats by providing additional food sources or roosting opportunities.
R13	Habitat piles for amphibians, invertebrates and reptiles will be created within areas of retained vegetation at the edges of the site, close to boundary hedgerows and woodland.
R14	The value of the site for birds will be enhanced by installing a range of artificial nest boxes onto new buildings and retained trees.
R15	The value of the site for bats will be enhanced by installing a range of artificial roost boxes onto retained boundary trees.

1 Introduction

1.1 Purpose of this Report

- 1.1.1 This report presents a Preliminary Ecological Appraisal (PEA) and Biodiversity Net Gain (BNG) assessment for the site of a proposed residential development at Little Acres, Longfield Avenue, Longfield, Kent (Grid Reference: 562827, 169037). The report has been prepared to establish the site's suitability for development, inform the design process for the proposal, record the ecological baseline and identify key ecological features within and around the proposal site.

1.2 Objectives and Approach of the Study

- 1.2.1 This study aims to establish the ecological baseline by identifying the key ecological features within and around the proposal site, and to inform the design process for the proposal. Specifically, the objectives of the PEA were to:

- ▶ Identify features present on the site or adjacent which are ecologically significant, and which may act as constraints or opportunities to the proposed development;
- ▶ Consider the need for further ecological surveys which may be necessary;
- ▶ Quantify the biodiversity value of the site prior to development;
- ▶ Provide a provisional biodiversity value post-development; and
- ▶ Make preliminary recommendations for the protection of important ecological features, to avoid or mitigate ecological impacts, and to enhance the ecology of the site post-construction, with the aim of contributing to an overall net gain for biodiversity.

- 1.2.2 The ecological baseline has been achieved through a desk study, an extended Phase 1 Habitat survey and a Preliminary Roost Assessment (PRA). There followed an appraisal of the potential effects of the development proposals with respect to the nature conservation value of the site. A BNG assessment has also been carried out using the proposed scheme against the baseline conditions recorded during the Phase 1 Habitat survey.

1.3 Survey Area

- 1.3.1 The survey area lies at the north-eastern edge of the village of New Barn in the Dartford District of Kent. The site comprises c.1.0ha of previously developed land, currently comprising amenity grassland, tall ruderal vegetation, hedgerows, bare ground and buildings.
- 1.3.2 The survey area is bound to the north by Thirty Acre Shaw woodland; to the east by residential gardens, a line of trees and pasture; to the south by Longfield Avenue; and to the west by further residential areas. The extent of the survey area is outlined in red on Figure 1.1.

- 1.3.3 The wider landscape is characterised by a patchwork of mixed farmland. This includes a network of mature hedgerows and lines of trees, connecting pockets of woodland and suburban residential areas.

1.4 Proposed Construction Activities

- 1.4.1 Planning consent is being sought to demolish the majority of existing buildings (with the exception of B1) and to erect c.17 static home dwellings, together with parking, access, landscaping and associated facilities. Figure 1.2 illustrates the proposed site layout.
- 1.4.2 The planning application site boundary is expected to be the same as the survey area boundary.

 Survey area

Scale: 1:5,000
Date: Jul 2021
Drawing number:
UE0460ECO-Site210720

Created by: AD
Reviewed by: NP





Figure 1.2: Proposed landscape strategy

2 Survey Methodology

2.1 Personnel

- 2.1.1 The desk study, site survey and evaluation were carried out by Jeff Turton BSc (Hons) ACIEEM, an Ecologist with six years' professional consultancy experience in ecological field survey for a wide range of sites and development projects. Jeff holds Natural England Class Licences to survey for great crested newt *Triturus cristatus* (WML-CL08) and bats (WML-CL17). The report was extensively reviewed by Nick Pincombe BA (Hons) MSc CEnv MIEMA MCIEEM, Director of Urban Edge Environmental Consulting, who has fifteen years' experience in leading survey and impact assessment teams for a wide range of ecology and environmental planning projects. Nick holds Natural England Class Licences to survey for bats (WML-CL18) and great crested newt (WML-CL08).

2.2 Desk Study

- 2.2.1 A desk-based study was undertaken to examine published information and biological records from within the search area (site centroid plus 5km for bats, and 1km for all other data). This was extended to 5km for internationally designated sites and 2km for nationally designated sites. The desk study established the presence of designated sites of nature conservation interest, or records of protected/notable habitats/species within the site and its surrounding area. This information was collected from the following sources:

- ▶ The 'MAGIC' (Multi-agency Geographic Information for the Countryside) website: www.magic.gov.uk; and
- ▶ Kent and Medway Biological Records Centre (KMBRC).

2.3 Preliminary Ecological Appraisal

- 2.3.1 The PEA (compliant to British Standard BS42020:2013) is based on a survey of the site undertaken on 8 July 2021 by an experienced ecologist. Weather conditions were sunny, warm and dry.
- 2.3.2 Within the survey area every parcel of land was classified, recorded and mapped using standard colour codes, in accordance with a list of ninety habitat types specified within the methodology for Phase 1 habitat survey (Joint Nature Conservation Council, 2010). This allows rapid visual assessment of the extent and distribution of different habitat types. Target notes (TN) were used to provide supplementary information on features which were particularly interesting or significant to specific construction proposals, or too small to map, or to provide additional details, for example relating to species composition and structure.
- 2.3.3 This basic methodology was extended to provide more detail in relation to habitats with potential to support rare or protected fauna, as described by the Chartered Institute of Ecology and

Environmental Management's *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017b). The assessment of habitat suitability for protected, rare or priority species is based on current good practice guidance such as that presented in the *Herpetofauna Workers' Manual* (Gent and Gibson, 2003) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collin (ed.), 2016). Where a species/group is not specifically evaluated, this indicates that no habitat of potential value for the species was identified during the survey.

Scope of the survey

- 2.3.4 The buffer zone for the desk study was set at 1km from the centre of the site (5km for bats and international sites / 2km for national sites) – a distance within which any notable ecological features likely to be affected by the proposed scheme would be identified.
- 2.3.5 All habitats within the survey area as indicated on Figure 1.1 were included in order to identify any ecological constraints that would be likely to apply to the scheme from within this zone. Adjacent habitats were also surveyed where appropriate in order to identify constraints falling outside of the proposed development site and to place the survey area in its ecological context.

Evaluation criteria

- 2.3.6 Important ecological features were evaluated to the extent possible under the survey methods used, and in relation to a geographical frame of reference, i.e. international/European value being most important, then national, regional, metropolitan/county/district/borough, and lastly local (based on CIEEM, 2018).
- 2.3.7 Value judgements are based on various characteristics that contribute to the importance of ecological features. These include site designations (such as SSSIs, or for undesignated features, the extent, naturalness, conservation status (local or national importance and so on), and quality of the ecological resource. Quality can refer to habitats (for instance if they are particularly diverse, are a good example of a specific habitat type, or provide for the requirements of important species or assemblages), other features (such as connectivity provided by wildlife corridors or mosaics of habitats) or the richness and abundance of species populations or assemblages.

2.4 Preliminary Roost Assessment

- 2.4.1 Buildings and trees within/adjacent to the site were subject to an external and, where possible, internal inspection for potential bat roost features (subject to safe access). All observable features potentially suitable for bats were noted and the overall suitability of the structure/tree for roosting bats was classified with reference to Table 2.1. The objective was to establish whether each feature was of negligible, low, moderate or high roosting bat suitability, or a confirmed roost based on the presence of bats or their droppings.
- 2.4.2 External building inspections from ground-level focused on access points and potential roosting features (PRF) such as lifted lead flashing, broken, lifted or missing roof or ridge tiles, cracks in the render or gaps between exterior cladding and weatherboards, soffits or fascias. The internal inspection included a search for live animals and other signs that give an indication of past or present occupancy. In the case of bats, typical indicators include droppings (which are

characteristic and are often indicative of species), signs of fur oil staining, urine splashing, characteristic odours, and accumulations of discarded prey remains. It also assessed the overall suitability of the structure for roosting bats.

- 2.4.3 Trees were assessed for PRFs such as woodpecker holes, cavities, cracks or splits in major limbs (e.g. hazard beams, rot holes, frost cracks, knot holes, occlusions, flush cuts, tear-outs, cankers or butt-rots), loose platey bark, aerial deadwood and dense ivy or epicormic growth. The tree inspection was carried out from ground level and utilised the same equipment as used during the building inspection.
- 2.4.4 The PRA was undertaken with the aid of the following equipment: telescopic ladders to gain safe access; Wildlife Acoustics Echo Meter Touch full spectrum bat detector to record and identify the calls of any bats present; high-powered searchlight fitted with a red filter to search dark areas for signs of bats; telescopic mirror to inspect cavities; Hawke Sport Optics 10x42 close-focusing binoculars to view areas inaccessible on foot; and digital camera with flash to record any evidence of bats or features suitable for use by bats.

Table 2.1: Potential suitability of structures/trees for roosting bats (after Collins, 2016)

Suitability	Roosting habitats
<u>Negligible</u>	Negligible habitat features on site likely to be used by roosting bats
<u>Low</u>	A structure with one or more PRFs that could be used by individual bats opportunistically, but do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats A tree of sufficient size and age to contain PRFs but with none seen from the ground / using ladders or features seen with only very limited roosting potential
<u>Moderate</u>	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (for roost type only)
<u>High</u>	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat
<u>Confirmed roost</u>	Bats or unequivocal evidence of bats found, i.e. bat droppings

2.5 Evaluation

- 2.5.1 Important ecological features were evaluated to the extent possible under the survey methods used, and in relation to a geographical frame of reference, i.e. international/European value being most important, then national, regional, metropolitan/county/district/borough, and lastly local (based on CIEEM, 2018). Where a feature is of no more than site value, this is stated.
- 2.5.2 Value judgements are based on various characteristics that contribute to the importance of ecological features. These include site designations (such as Sites of Special Scientific Interest (SSSI), or for undesignated features, the extent, naturalness, conservation status (local or national importance and so on), and quality of the ecological resource. Quality can refer to habitats (for

instance if they are particularly diverse, are a good example of a specific habitat type, or provide for the requirements of important species or assemblages), other features (such as connectivity provided by wildlife corridors or mosaics of habitats) or the richness and abundance of species populations or assemblages.

2.6 Biodiversity Net Gain Assessment

2.6.1 The BNG assessment has been carried out using The Biodiversity Metric 3.0 (Natural England, 2021a), in conjunction with the User Guide (Natural England, 2021b) and Technical Supplement (Natural England, 2021c). The Metric uses habitats as a proxy for wider biodiversity with different habitat types scored according to their relative biodiversity value. This value is then adjusted depending on the condition and location of the habitat, to calculate 'Biodiversity Units' (BU) for the specific development site. Pre-intervention BU are subtracted from the post-intervention BU to determine the change in biodiversity value attributable to the development. Information relating to the baseline condition of the habitats on site was collected during the Phase 1 Habitat survey.

2.6.2 There are four key steps to using the Metric which are illustrated in Figure 2.1 and described further in the following sections.



Figure 2.1: Key Steps to Apply the Defra Metric

Project Planning (Step 1)

- 2.6.3 The development site for which the BNG assessment has been undertaken includes the red line boundary shown on Figure 1.1. The proposed site plan for the development is shown on Figure 1.2 and includes the proposed interventions for the site.

Data Collection (Step 2)

- 2.6.4 As described in Section 2.3, UEEC deployed an experienced ecologist on 8 July 2021 to undertake an extended Phase 1 Habitat survey of the development site to establish the classification, extent and current condition of the habitats present. The BNG baseline was calculated from the results of the 2021 survey as this was considered to provide the most accurate, up to date and relevant assessment in relation to BNG.
- 2.6.5 Annotated field maps were then digitised in ArcGIS 10.7 to produce the Phase 1 Habitat plan shown at Appendix I. Each habitat polygon and linear feature was clipped to the red line planning application boundary, and its area/length then calculated in GIS and exported to MS Excel for use in BNG baseline calculations. The size of each habitat parcel was recorded and Phase 1 habitats were translated to the UK Habitat Classification System¹ with reference to the translation table provided with The Biodiversity Metric 3.0 Calculation Tool. Each habitat parcel/length was assigned a condition score of Low, Medium or High, informed by the site survey and Condition Assessment Sheets within the Technical Supplement to the Metric².

Expected effects of development

- 2.6.6 The expected effects of habitat changes and interventions on existing habitats were established based on the proposed site layout provided in Figure 1.2, together with conversations with the landscape architect and wider design team. The proposed site layout was imported into ArcGIS 10.7 and area and linear measurements were taken of each landscape or habitat typology to be created as part of the proposed development.

Calculation (Step 3)

- 2.6.7 The Metric is accompanied by a calculation tool which uses a number of input fields in order to calculate pre- and post-intervention biodiversity units, including:
- ▶ **Habitat types:** As described in the UK Habitat Classification System.
 - ▶ **Area of habitats and length of linear habitats:** In hectares (ha) and kilometres (km).
 - ▶ **Habitat condition:** Parcels of habitat will be in different ecological conditions. In addition, interventions to improve habitats will not always involve taking a habitat in poor condition and improving it to good condition. The metric therefore takes account of variants in habitat condition.

¹ UK Habitat Classification: <https://ukhab.org> (Accessed 03/11/2021)

² <http://publications.naturalengland.org.uk/publication/5850908674228224>

- ▶ **Strategic significance:** The idea of strategic significance works at a landscape scale. It gives additional unit value to habitats that are located in preferred locations for biodiversity and other environmental objectives as set out in published local plans.
- 2.6.8 Habitat type, area / length and condition were established via the site walkover described in section 2.6.4.
- 2.6.9 The development site is not located within any designated ecological sites or strategic initiatives and therefore 'Low Strategic Significance' has been applied for all habitat parcels.
- 2.6.10 The Calculation Tool also includes a number of pre-assigned fields which are automatically populated based on habitat type inputs:
- ▶ **Habitat distinctiveness:** Based on an assessment of the distinguishing features of a habitat or linear feature, including the consideration of species richness, rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats.
 - ▶ **Risk multipliers (Post-intervention only):** Three different risks are recognised in the Metric: difficulty of habitat creation and restoration; temporal risk i.e. the time it takes for a newly created habitat to reach target condition; and off-site risk which accounts for decreasing ecosystem services provided to the local community with compensation provided further from the development site.
- 2.6.11 Using the factors described above, equivalent BU were calculated for the development site pre- and post-intervention. No offsite habitat creation or enhancement is currently proposed.
- 2.6.12 The following formula was used to calculate the change in BU as a consequence of the proposed development:
- $$\text{POST-INTERVENTION BIODIVERSITY UNITS} - \text{PRE-INTERVENTION BIODIVERSITY UNITS} = \text{CHANGE IN BIODIVERSITY UNITS}$$
- 2.6.13 Where the resulting score is negative there is a net loss in biodiversity. If the score is zero there is no net loss in biodiversity. Where the resulting score is positive, there is a net gain in biodiversity.

Informing Design and Decisions (Step 4)

- 2.6.14 In this case the scheme layout had already been fixed prior to undertaking the BNG assessment, albeit with only indicative landscaping. The BNG calculations provide an overview of net gains or losses resulting from the scheme. Due to the size of the site and design of the proposals, the scheme is unlikely to be subject to significant changes.

2.7 Limitations

- 2.7.1 Biological records gathered during the desk study can provide an indication of the likely presence of a species on or adjacent to a site. However, the absence of records for protected species does

not equate to evidence of their absence from the locality. Data search accuracy is variable and records are often georeferenced to the nearest 1km grid square.

- 2.7.2 Time of year when the survey was carried out and other variations will influence the results of the survey. Botanical species vary considerably in their flowering, seeding and fruiting periods, and surveys outside of these periods can confound accurate species identification. Where this is the case plants have been identified to lowest possible taxonomic group, normally genus. The possibility nonetheless exists for other species to be present on the site which were not recorded or otherwise indicated by the survey.
- 2.7.3 The survey reported herein was carried out in mid-summer, during the flowering period for many botanical species, and the timing of the survey is not considered to be a significant limitation to meeting the objectives of the survey.
- 2.7.4 There were no difficulties in gaining access to survey the site's habitats to assess protected species suitability. However, internal access to buildings B1 and B2 was not possible at the time of the survey.
- 2.7.5 Adjacent habitats were surveyed where appropriate in order to identify constraints falling outside of the proposed development site and to place the survey area in its ecological context. However, the adjacent residential gardens to the west and east could not be surveyed for signs of species such as badger *Meles meles* due to access restrictions.
- 2.7.6 This report aims to provide general advice on the ecological constraints associated with development proposals for the site and includes recommendations for further survey where appropriate. Where impacts are likely or further ecological surveys are recommended, a more detailed Ecological Impact Assessment (EclA) of the effects of the proposed development should be carried out based on the results of recommended surveys. The EclA will include detailed advice on ecological avoidance, mitigation, enhancement and/or compensation measures. This is in line with the latest guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017a, 2017b, 2018).
- 2.7.7 The details of this report will remain valid for a period of 18 months from the date of the survey (July 2021), after which the validity of this assessment should be reviewed to determine whether further updates are necessary (CIEEM, 2019). Note that the recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the site boundary or development proposals upon which this report was based.
- 2.7.8 See Appendix X for general Legal and Technical Limitations which apply to this document.

3 Results

3.1 Desk Study

Statutory and non-statutory site designations

- 3.1.1 There are no internationally important wildlife sites within the 5km desk study search area and no nationally important wildlife sites within the 2km. There are three non-statutory sites of local importance within 1km, all of which are Local Wildlife Sites (LWS). The information provided by KMBRC regarding these sites is presented in Table 3.1, while Figure 3.1 shows their locations in relation to the survey area.
- 3.1.2 The site is within the Impact Risk Zones of three SSSIs: Shorne and Ashenbank Woods SSSI, Bakers Hole SSSI and Darenth Wood SSSI. The nearest site (Shorne and Ashenbank Woods SSSI) is located c.4km away.

Priority habitat and ponds

- 3.1.3 Priority habitats include those listed on local Biodiversity Action Plans and Habitats of Principal Importance (HPI) listed under section 41 of the Natural Environment and Rural Communities Act 2006 (NERC). Data received from KMBRC and a search of the MAGIC database on priority habitats and ancient woodland revealed that there are eight areas of Lowland Mixed Deciduous Woodland HPI within the desk study search area and seven of these contain areas of Ancient Semi Natural Woodland. None are present within the survey area, but one is directly adjacent to the northern boundary of the site: Thirty Acre Shaw.
- 3.1.4 There are no ponds within 500m of the survey area.

Table 3.1: Nature conservation sites within the desk study search area

Site name	Location*	Description
Pasture South of Istead Rise LWS	c.385m south-east	This site comprises an area of biodiverse pasture grassland.
Grassland and Scrub, Istead Rise LWS	c.0.8km east	This site includes areas of biodiverse grassland and scrub habitat.
Nurstead and Cozendon Woods, Nash Street LWS	c.1.0km east	This site consists of a woodland complex.

* Approximate distance and bearing from the survey area

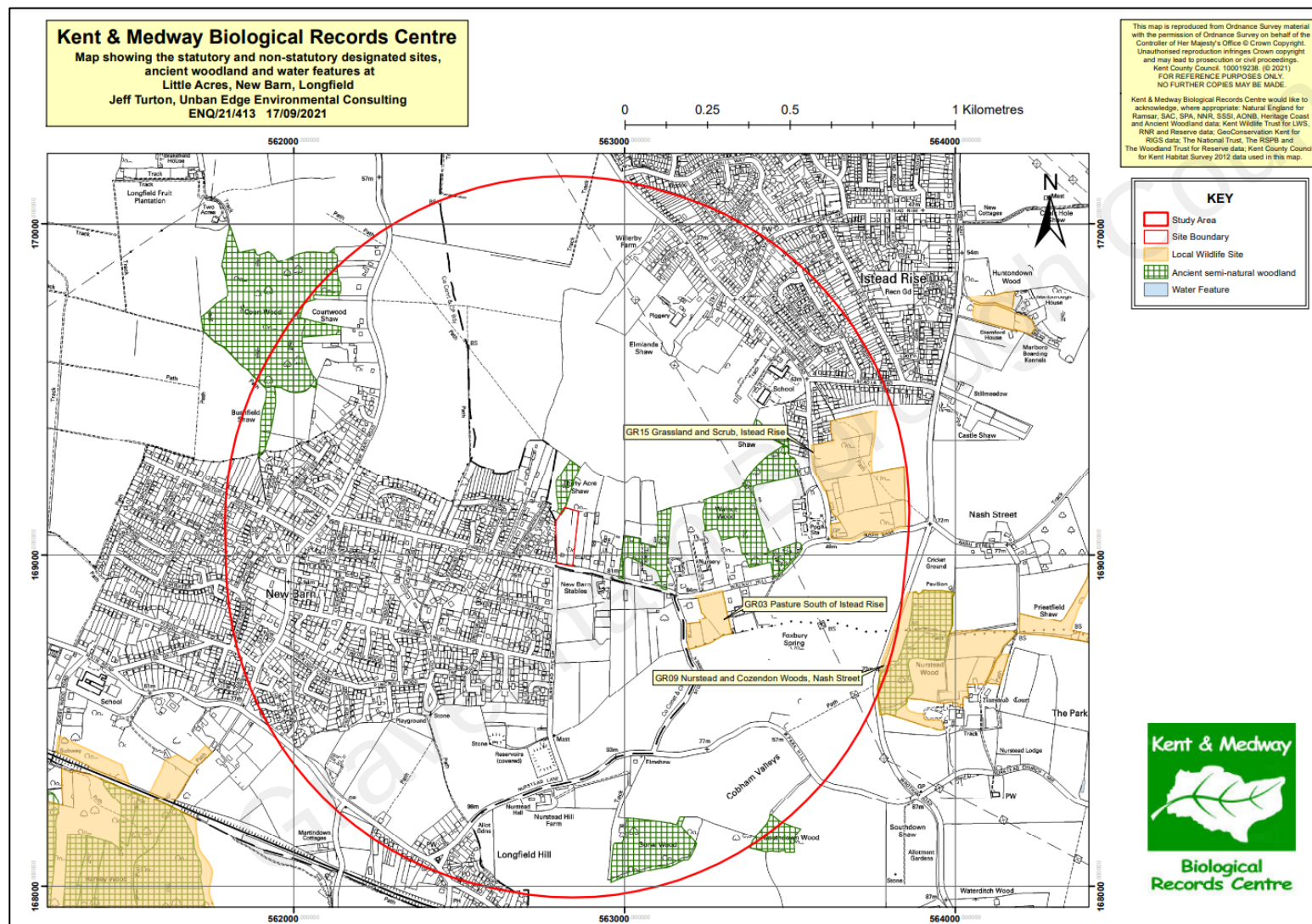


Figure 3.1: Non-statutory nature conservation sites / ancient woodland within 1km of the site

Records of protected, rare and notable species

3.1.5 Biological records were obtained from KMBRC for the desk study search area and are summarised in Table 3.2.

Table 3.2: Records of protected, rare & notable species within the desk study search area

Group	Species	Designation
Amphibians	Smooth newt <i>Lissotriton vulgaris</i> , Common frog <i>Rana temporaria</i>	WCA Sch.5 part
Birds (note: species may appear more than once)	Nightjar <i>Caprimulgus europaeus</i> , Hen harrier <i>Circus cyaneus</i> , Bar-tailed godwit <i>Limosa lapponica</i> , Red kite <i>Milvus milvus</i>	Birds Dir.1
	Goshawk <i>Accipiter gentilis</i> , Hen harrier, Quail <i>Coturnix coturnix</i> , Brambling <i>Fringilla montifringilla</i> , Hobby <i>Falco subbuteo</i> , Red kite, Redwing <i>Turdus iliacus</i> , Fieldfare <i>Turdus pilaris</i> , Barn owl <i>Tyto alba</i>	WCA Sch.1
	Skylark <i>Alauda arvensis</i> , Nightjar, Hen harrier, Cuckoo <i>Cuculus canorus</i> , Yellowhammer <i>Emberiza citrinella</i> , Reed bunting <i>Emberiza schoeniclus</i> , Lesser spotted woodpecker <i>Dendrocopos minor</i> , Dunnock <i>Prunella modularis</i> , Herring gull <i>Larus argentatus</i> , Yellow wagtail <i>Motacilla flava</i> , Spotted flycatcher <i>Muscicapa striata</i> , House sparrow <i>Passer domesticus</i> , Grey partridge <i>Perdix perdix</i> , Bullfinch <i>Pyrrhula pyrrhula</i> , European turtle dove <i>Streptopelia turtur</i> , Starling <i>Sturnus vulgaris</i> , Song thrush <i>Turdus philomelos</i> , Lapwing <i>Vanellus vanellus</i>	NERC s41
	Skylark, Hen harrier, Cuckoo, Lesser Spotted Woodpecker, Yellowhammer, Herring gull, Nightingale <i>Luscinia megarhynchos</i> , Grey wagtail <i>Motacilla cinerea</i> , Yellow wagtail, Spotted flycatcher, House sparrow, Grey partridge, European turtle dove, Starling, Redwing, Fieldfare, Mistle thrush <i>Turdus viscivorus</i> , Song thrush, Lapwing,	RL
	Greylag goose <i>Anser anser</i> , Meadow pipit <i>Anthus pratensis</i> , Swift <i>Apus apus</i> , Nightjar, Stock dove <i>Columba oenas</i> , Quail, House martin <i>Delichon urbicum</i> , Reed bunting, Kestrel <i>Falco tinnunculus</i> , Fulmar <i>Fulmarus glacialis</i> , Common gull <i>Larus canus</i> , Lesser black-backed gull <i>Larus fuscus</i> , Bar-tailed godwit, Dunnock, Bullfinch, Tawny owl <i>Strix aluco</i>	AL
Invertebrates	Stag beetle <i>Lucanus cervus</i>	Habs.Dir.2, WCA Sch.5 part, NERC s41
	Chalk hill blue <i>Polyommatus coridon</i>	WCA Sch.5 part
Mammals (terrestrial)	Soprano pipistrelle <i>Pipistrellus pygmaeus</i> , Brown long-eared <i>Plecotus auritus</i>	Habs.Dir.4, CHS Sch.2, WCA Sch.5 full, NERC s41

Group	Species	Designation
	Serotine <i>Eptesicus serotinus</i> , Daubenton's bat <i>Myotis daubentonii</i> , Brandt's bat/Whiskered <i>Myotis brandtii</i> / <i>mystacinus</i> , Natterer's bat <i>Myotis nattereri</i> , Leisler's bat <i>Nyctalus leisleri</i> , Nathusius' pipistrelle <i>Pipistrellus nathusii</i> Common pipistrelle <i>Pipistrellus pipistrellus</i>	Habs.Dir.4, CHS Sch.2, WCA Sch.5 full
	Badger	WCA Sch.6, PBA
	West European hedgehog <i>Erinaceus europaeus</i>	NERC s41
Plants	Bluebell <i>Hyacinthoides non-scripta</i>	WCA Sch.8
	White helleborine <i>Cephalanthera damasonium</i> , Man orchid <i>Orchis anthropophora</i>	NERC s41
Reptiles (terrestrial)	Slow worm <i>Anguis fragilis</i> , Grass snake <i>Natrix helvetica</i> , Common lizard <i>Zootoca vivipara</i>	WCA Sch.5 part, NERC s41

Birds.Dir.1 Wild Birds Directive 2009/147/EC Annex 1

Habs.Dir.2/4 Habitats Directive 92/43/EEC Annex 2 or 4

CHS Sch.X Conservation of Habitats & Species Regulations 2017 Schedules 2 (EPS animals) or 5 (EPS plants)

WCA s1/Sch.X Wildlife and Countryside Act 1981 Section 1 / Schedules 1, 5 (fully or partially protected), 6 or 8

PBA Protection of Badgers Act 1992

NERC s41 Natural Environment & Rural Communities Act 2006 Section 41 Species of Principal Importance

RL/AL Red/Amber Listed (IUCN or Birds of Conservation Concern 4 (Eaton et al., 2015))

3.2 Phase 1 Habitat survey

3.2.1 The following habitats were identified within or adjacent to the survey area and are shown on the Phase 1 Habitat plan at Appendix I. The habitats are described below broadly in the order of their extent.

- ▶ Hardstanding
- ▶ Amenity grassland
- ▶ Ephemeral/short perennial
- ▶ Buildings
- ▶ Bare ground
- ▶ Tall ruderal
- ▶ Improved grassland
- ▶ Introduced shrubs
- ▶ Species-poor hedgerow
- ▶ Scattered trees

Hardstanding

- 3.2.2 The majority of the site consisted of tarmacked access roads and car parking. This habitat was devoid of any species or ecological features of note.

Amenity grassland

- 3.2.3 The amenity grassland on site consisted of intensively managed lawn, which was shortly mown at the time of survey. Perennial rye-grass *Lolium perenne* and white clover *Trifolium repens* were abundant, creeping buttercup *Ranunculus repens* and common daisy *Bellis perennis* were frequent. Ground-ivy *Glechoma hederacea*, ribwort plantain *Plantago lanceolata* and dandelion *Taraxacum* sp. were occasional, while thistles *Cirsium* sp. and black medick *Medicago lupulina* were rarely occurring.

Ephemera/short perennial

- 3.2.4 A dog training area at the centre of the site comprised entirely of ephemeral/short perennial vegetation. The only plant species recorded in this area was knotgrass *Polygonum aviculare*.

Buildings

- 3.2.5 Nine buildings (B1-B9) were identified within the site comprising a range of sizes and construction materials. A description of each building / building group is located within section 3.3.

Bare ground

- 3.2.6 An area of bare ground was located at the north of the site, which comprised of sand at the time of the survey and no plants were seen to be growing there. This area was in use as a dog training area.

Improved grassland

- 3.2.7 There was a small section of improved grassland located in the north-western corner of the site, dominated by perennial rye-grass. Creeping buttercup, white clover, broad-leaved dock *Rumex obtusifolius* and common nettle *Urtica dioica* were frequent, with creeping cinquefoil *Potentilla reptans* recorded occasionally.

Tall ruderal

- 3.2.8 There was a small patch of tall ruderal vegetation at the centre of site, along the western boundary. Species present included cudweed *Filago* sp. which was abundant, and mayweed *Tripleurospermum* sp. and shepherd's purse *Capsella bursa-pastoris* were frequent. A Hawk's-beard *Crepis* sp., curled dock *Rumex crispus*, cock's-foot *Dactylis glomerata* and common nettle were all occasional.

Species poor hedge

- 3.2.9 H1 was located in the south-western corner of the site, spanning c.25m long and c.3-4m tall. The hedgerow was intact and species poor. It was heavily encroached with climbing bramble *Rubus*

fruticosus and honeysuckle *Lonicera periclymenum*, which were abundant, and frequent common ivy *Hedera helix*. Other species recorded include abundant firethorn *Pyracantha* sp., occasional sycamore *Acer pseudoplatanus* and field maple *Acer campestre*, and rarely occurring ash *Fraxinus excelsior*.

- 3.2.10 H2 located along the southern boundary of the site between the access gates. It was c.13m long and c.4-5m tall. The hedgerow was dominated by cherry laurel *Prunus laurocerasus*.
- 3.2.11 H3 was located at the south-eastern boundary of the site. The hedgerow began at the entrance gates, before continuing behind B4 and ending to the south of B5. It was c.77m long and between c.4-10m tall, as it had merged with the tree canopies of adjacent off-site trees. The field layer was mostly bare. The whole hedgerow was dominated by cherry laurel, with field maple and sycamore were found rarely.
- 3.2.12 H4 was a small, planted hedgerow to the west of the southern section of H3, dominated by cherry laurel. It was c.15m long and c.3-4m tall.
- 3.2.13 H5 was situated at the eastern boundary of the site and ran from the north of B5 up to the north-eastern corner of the site. It was dominated by cherry laurel, spanning c.100m long and c.4-5m tall.
- 3.2.14 H6 was located in the northern extent of site, between two areas of hardstanding. It was c.30m long, 4-5m tall and dominated by cherry laurel.
- 3.2.15 H7 was situated on the western boundary of the site, spanning c.32m long and c.3-4m tall. It was dominated with Leyland cypress *Cupressus x leylandii*, with occasional elder *Sambucus nigra*. The hedgerow was intact for c.30-40m before becoming defunct along the remaining length. Above this hedgerow was the overhanging canopies of mature ash and pedunculate oak *Quercus robur* trees, which are located adjacent to the western boundary.
- 3.2.16 None of the hedgerows qualified as Hedgerows HPI, as they all comprised of less than 80% cover of at least one woody UK native species (Maddock, 2008).

Scattered trees

- 3.2.17 The majority of scattered trees on site consisted of silver birch *Betula pendula* and cherry *Prunus* sp.. There was one planted coniferous tree between the entrance gates, opposite H2. All scattered trees were young to semi-mature.



The majority of the site consisted of hardstanding



Ephemeral/short perennial vegetation



Improved grassland at the north of the site



Hedgerow H1



Cherry laurel dominated hedgerow H5



Small patch of tall ruderal vegetation

3.3 Preliminary Roost Assessment: Buildings

Quality of landscape for bats

- 3.3.1 The site is located within an area of moderate to high suitability habitat for foraging bats, positioned in a peri-urban context. It is close to linear features such as hedgerows and tree lines, which provide connectivity between mixed farmland and pockets of ancient woodland in the wider area. There are also nearby residential areas with gardens which can provide foraging habitat. However, the housing and the roads in the nearby area around the site are likely to generate high levels of artificial lighting. There are also no areas of significant standing water that bat species may use for foraging.

Building inspections

- 3.3.2 B1 consisted of a modern bungalow that appeared to be of relatively new construction. The roof was pitched, gable-ended and clad with clay tiles. There was a small brick chimney at the eastern end of the pitch that was in good condition. There were no gaps at the eaves. The rest of the building was constructed of brick, and there were no gaps in the mortar. The windows and doors were new and tightly fitted. In general, the features on the building were all tightly sealed with no bat roosting potential. No bats or evidence of bats were noted on the exterior. Due to the new construction of the building, the lack of features, the building's position away from suitable foraging habitat, and surrounding sources of artificial light, this building was given negligible suitability for roosting bats.
- 3.3.3 B2 was also a modern bungalow that appeared to be of relatively new construction. It largely matched the description for B1. No bats or evidence of bats were noted on the exterior. This building was also given negligible suitability for roosting bats for the same reasons as B1.
- 3.3.4 B3 comprised of a large shed, with timber panel walls and a roof formed of corrugated material. It was considered to be of negligible roosting suitability for bats due to a lack of roosting features, frequent disturbance and light levels.
- 3.3.5 B4 was a small chalet-style home, which was under construction at the time of the survey. It was of timber construction, with artificial lightweight roof tiles that did not expose any suitable gaps. B4 was assessed as providing negligible suitability.
- 3.3.6 Buildings B5, B6, B7 and B8 were all assessed as providing negligible suitability for roosting bats as they largely matched the description of B3. i.e. large sheds which were used for storage or as additions to business premises.



Building B1



Building B2



Building B3



Building B4



Building B5



Building B8

4 Evaluation

4.1 Introduction

- 4.1.1 This section evaluates the survey area in terms of the habitats and species present or potentially present on site or its immediate vicinity, in the context of relevant legislation and planning policy. See Appendix IX for a review of the legislation and planning context.

4.2 Designated Sites

- 4.2.1 There are three non-statutory sites of local importance within 1km of the survey area. These sites are vulnerable to negative effects from the proposed development, such as fly-tipping, spread of invasive species and increased public access. However, given the minimum distance of c.385m to the nearest LWS and the absence of direct access into any of the LWS from the site via public rights of way (PRoW), the LWSs are considered unlikely to be significantly affected by the proposed development.
- 4.2.2 The site falls within the impact risk zones for Shorne and Ashenbank Woods SSSI, Bakers Hole SSSI and Darenth Wood SSSI. Within these IRZ, Natural England must be consulted when proposals fall into certain categories. These categories are:
- ▶ Airports, helipads and other aviation proposals;
 - ▶ Certain large agricultural developments;
 - ▶ Combustion and waste facilities, and;
 - ▶ Any proposals that will cause any discharge of water or liquid waste of more than 20m³ a day to ground or to surface water, such as a beck or stream.
- 4.2.3 The proposals for the site do not come under any of the above categories, so consultation with Natural England is not required.

4.3 Habitats

Evaluation

- 4.3.1 All the habitats on site were common and widespread, with limited ecological value. Accordingly they are assessed as being of negligible importance, with reference to the criteria defined at section 2.5.1.

Priority habitats

Ancient Woodland and Lowland Mixed Deciduous Woodland

- 4.3.2 Thirty Acre Shaw woodland is located adjacent to the northern boundary of the survey area and is both irreplaceable and of high intrinsic ecological value. It provides habitats suitable for a range of protected species, including nesting birds, badger (foraging and sett creation) and foraging, commuting and roosting bats. Dead wood within these habitats also provides valuable habitat for fungi and saproxylic invertebrates (e.g. stag beetle) and refuge/hibernation habitats for widespread amphibians, great crested newt and reptile species.
- 4.3.3 Thirty Acre Shaw is vulnerable to negative effects from the proposed development, such as noise, light and dust pollution, hydrological changes, impacts to tree root systems, fly-tipping, invasive species and increased public access. Given the current land use and surrounding housing, it is highly likely that Thirty Acre Shaw is already subject to at least some of these negative impacts. This feature will be buffered by at least 15m of native vegetation where no buildings or residential curtilages (including gardens) will be created, in line with guidance (Forestry Commission and Natural England, 2018). Current proposals for the site include a small encroachment into the buffer of c.18m², which will be used as a car turning head. This junction will be constructed using shallow dig techniques and permeable paving to prevent physical damage to root systems, and indirect effects will be prevented by ecological protection measures during and after construction (see section 5.3). The encroachment will not result in the loss of Lowland Mixed Deciduous Woodland HPI or Ancient Woodland. Given the size and scale of the proposals, these measures are likely to be effective in maintaining and improving the condition of the woodland.

Other habitats

- 4.3.4 The proposed development would result in permanent loss of c.1.0 of hardstanding, amenity grassland, ephemeral/short perennial vegetation, buildings, bare ground, tall ruderal, improved grassland, introduced shrubs and species-poor hedgerow. These areas are of low ecological value and of negligible importance.

4.4 Biodiversity Net Gain Assessment

Pre-Intervention Biodiversity Units

- 4.4.1 Table 4.1 and Table 4.2 provide a preliminary baseline of BUs on site. No irreplaceable habitats³ were identified within the development site.

Table 4.1: Baseline Area Habitat Data Collection Table

Baseline area habitat		Area (ha)	Condition
Phase 1 classification	UK Habitat Classification		
Hardstanding & Buildings	Urban – Developed land; sealed surface	0.58	N/A – Other

³ Habitats that cannot be recreated within a specified time frame (typically, the timescale of the project) e.g. ancient woodland.

Baseline area habitat		Area (ha)	Condition
Phase 1 classification	UK Habitat Classification		
Amenity grassland & Improved grassland	Grassland – Modified grassland	0.25	Poor
Ephemeral/short perennial & Tall ruderal	Sparsely vegetated land – Ruderal/Ephemeral	0.14	Poor
Bare ground	Urban – Vacant/derelict land/ bareground	0.06	Poor
Introduced shrub	Urban – Introduced shrub	0.00 (0.0045)	Poor
Scattered trees	Urban – Urban tree	0.00 (0.0023)	Moderate

Table 4.2: Baseline Linear Habitat Data Collection Table

Baseline linear habitat		Length (km)	Condition
Phase 1 classification	UK Habitat Classification		
Species poor hedge	Hedgerows and lines of trees – Hedge Ornamental Non Native	0.29	Poor

- 4.4.2 Using the Metric Calculation tool, it has been established that the area habitats within the site prior to development are equivalent to **0.93 BU**. The linear habitats within the site prior to development are equivalent to **0.29 BU**.

Post-Intervention Biodiversity Units

- 4.4.3 Proposed landscape types have been translated to the UK Habitat Classification (along with their expected condition) by the ecologist using professional judgement. Area and length measurements are based on the Landscape Strategy with Biodiversity Enhancements plan provided in Appendix II and discussions with the client team. All habitats created as part of the proposed development are set out within Table 4.3. Post intervention the area habitats within the site are equivalent to **2.59 BU**.

- 4.4.4 Table 4.3 and Table 4.4 together with their target condition.

Area Habitats

- 4.4.5 All area habitats are assumed to be lost during site clearance, with the exception of the Urban – Urban trees on site.
- 4.4.6 Created area habitats on site post development are detailed in Table 4.3. Post intervention the area habitats within the site are equivalent to **2.59 BU**.

Table 4.3: Area habitats created as part of the proposed development

Habitat created		Area created (ha)	Target condition
Landscape habitats	UK Habitat Classification		
Private gardens and road verges	Urban – Vegetated garden	0.35	Poor
Buildings, roads and parking	Urban – Developed land; sealed surface	0.33	N/A – Other
Allotments	Urban – Allotments	0.11	Moderate
Wildflower meadow	Grassland – Other neutral grassland	0.07	Good
Lawn surrounding allotments	Grassland – Modified grassland	0.07	Moderate
Tree and shrub planting (north-west)	Heathland and shrub – Mixed scrub	0.05	Moderate
Orchard	Grassland – Traditional orchards	0.05	Moderate
Planted trees	Urban – Urban tree	0.01	Moderate

Linear Habitats

- 4.4.7 The existing Hedgerows and lines of trees – Hedge Ornamental Non Native along the eastern and western boundaries at the application site (0.20km) will be retained. The remaining sections (0.09km) will be removed to facilitate the development.
- 4.4.8 Created linear habitats on site post development are detailed in Table 4.4. Post-intervention linear habitats within the site will therefore be equivalent to **2.37 BU**.

Table 4.4: Linear habitats created as part of the proposed development

Habitat created		Length created (km)	Target condition
Landscape habitats	UK Habitat Classification		
Boundary and internal hedgerow planting	Native Species Rich Hedgerow	0.59	Poor*
Hedgerow planting along the southern boundary	Native Hedgerow	0.05	Moderate

*The target condition of this habitat is set to poor as it will be positioned along residential boundaries, where long-term condition cannot be secured

Biodiversity Impact Assessment Score

- 4.4.9 **Area habitats** – all area habitats will be removed during site clearance, with the exception of retained trees. A combination of urban habitats will be created as part of the proposed development. This will result in an overall **net gain of 1.68 BU for area habitats, equivalent to 181.33%.**
- 4.4.10 **Linear habitats** – Taking account of the hedgerows currently present, the majority of which are to be retained, and the proposed hedgerow planting under the development proposals, there is a calculated **net gain of +2.28 BU for linear habitats, equivalent to +787.55%.**

- 4.4.11 The headline results from the Metric Calculation Tool are provided in Appendix III and the data used to inform the condition assessments for the habitats pre- and post-development are provided in Appendix IV to Appendix VII.

4.5 Species

Amphibians (excluding great crested newt)

- 4.5.1 The shortly mown amenity grassland on site is of low ecological value for common and widespread amphibian species due to their uniform structure and short sward height. The areas of tall ruderal, longer improved grassland, boundary vegetation and adjacent woodland habitats provide potentially suitable terrestrial habitats for common amphibian species. However, habitats of similar suitability are widely available in the surrounding area and retained boundary vegetation will continue to provide refuge for these species. Common amphibians are not considered to present a constraint to the development proposals.

Great crested newt

- 4.5.2 There were no records of great crested newt from within the desk-study data received from KMBRC.
- 4.5.3 The survey area contains predominantly sub-optimal terrestrial habitat for great crested newt, largely consisting of buildings, hardstanding, sparse vegetative growth (ephemeral/short perennial vegetation and tall ruderal) and shortly mown amenity grassland. The improved grassland to the north of the site, adjacent to the off-site ancient woodland provided a more suitable sward structure. Grasslands of this nature are occasionally used by foraging or dispersing great crested newt, but contain few shelter habitats and are unlikely to support high numbers. Furthermore, there are no ponds within the survey area, and analysis of Ordnance Survey maps and aerial photography indicated that no ponds are present within 500m of the site.
- 4.5.4 In conclusion, small patches of terrestrial habitat suitable for great crested newt are present towards the edges of the survey area, although these are limited in extent, with the majority of habitat being sub-optimal. Combined with the lack of potentially suitable breeding ponds connected to the site, the scope for potential impacts to great crested newt is negligible. Great crested newt is not considered to present a constraint to the development proposals and no further surveys for this species are required.

Birds (nesting)

- 4.5.5 KMBRC returned records of 92 notable bird species from within the desk-study search zone between 1965 and 2018. No active bird nests were identified but the survey area's boundary hedgerows and trees are suitable for a range of nesting birds, while the buildings provide some limited suitability for species such as house sparrow (BoCC4 Red-listed). The improved grassland is unlikely to support ground-nesting species such as skylark (BoCC4 Red-listed) under its currently intensive management regime due to its small size, short sward height and poor structural form. Precautionary measures for nesting birds are recommended at section 5.2.

Invertebrates

- 4.5.6 KMBRC returned one record each for chalk hill blue and stag beetle.
- 4.5.7 The buildings, hardstanding and amenity grassland which dominate the survey area are largely unsuitable for invertebrates and are unlikely to support a diverse or abundant invertebrate fauna in general. The smaller patches of improved grassland, tall ruderal, and ephemeral/short perennial vegetation provide some limited opportunities for a range of common and widespread invertebrates. These habitats are abundant within the wider landscape, and thus the limited losses within the site resulting from redevelopment proposals are not considered likely to significantly affect invertebrate communities.
- 4.5.8 The adjacent woodland habitat to the north is likely to provide moderate to high value for a common and widespread range of invertebrates. Any deadwood within the woodland on site also provides potential habitat for saproxylic species such as stag beetle. However, the woodland will be retained and protected during the works. Invertebrates are not considered to present a constraint to the development proposals and no further surveys for this group are required.

Mammals (terrestrial)

Badger

- 4.5.9 KMBRC returned 21 records of badger from within the desk-study search zone, between 1982 and 2016. The closest record was located c.100m west of site.
- 4.5.10 The survey area provides some suitable foraging habitat for badger, but limited sett creation potential due to the high proportion of sealed surfaces (hardstanding and buildings) and frequent disturbance. A search for badger setts and signs of their presence was undertaken within a 30m radius of the site boundary where possible but did not include adjacent private property. Sett building habitat was restricted to the woodland adjacent to the north, but no setts were found. There was no other observable evidence of badger activity within or around the survey area, such as badger paths, footprints, latrines, dung pits, or badger hairs caught at fence lines or evidence of foraging (snuffle holes). Badger is not considered to present a constraint to the development proposals and no further surveys for this species are required. General ecological protection measures for badgers and other mammals are advised in section 5.3.

Bats

- 4.5.11 KMBRC returned 352 records of ten species of bat from within 5km of the survey area, during a date range of 1984 to 2020. Species included serotine, Daubenton's bat, whiskered, Natterer's bat, Leisler's bat, noctule, common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and brown long-eared. Approximately half of the records related to confirmed roosts (173), the closest comprising a hibernation roost for Leisler's bat located c.230m north-west in 2001.
- 4.5.12 All of the buildings within the survey area were considered to have negligible suitability to support roosting bats, based on external and internal inspections (other than B1 and B2 which could not be accessed internally). Of the trees within the survey area, none were considered to have any

potential for roosting bats. Roosting bats are not considered to present a constraint the development proposals and no further surveys are required.

- 4.5.13 The boundary hedgerows may serve as a navigation route or foraging feature for bats, but it is anticipated that the majority of these will be retained and protected during the works. They are assessed as providing low suitability due to the dominance of cherry laurel, which does not provide many resources for prey invertebrates. All other habitats on site were considered to provide limited foraging and commuting opportunities for bats. Given the scale of development proposed, the small area of habitat to be affected, significant impacts to foraging/commuting bats are unlikely. Further bat activity surveys are not required, but recommendations in relation to lighting during the construction and operational phase of the development should be considered, as recommended at section 5.3.

Hazel dormouse

- 4.5.14 No records of hazel dormouse *Muscardinus avellanarius* from within the desk-study data received from KMBRC.
- 4.5.15 The woodland adjacent to the northern boundary is potentially suitable for dormice, with structural diversity and connectivity with further areas of woodland via hedgerows. However, these features will remain unaffected under the proposals for the site. Food plants such as ash, oak and hazel *Corylus avellana* are likely to be present within the woodland, but a full of the assessment of the woodland in relation to dormouse was not carried out.
- 4.5.16 The hedgerows within the survey area are considered to be largely sub-optimal as they are species poor and unlikely to provide sufficient year-round food availability. In any case, the majority of hedgerows are to be retained under the proposals for the site. Hazel dormouse is not considered to present a constraint to the development proposals and no further surveys for this species are required.

Water vole and otter

- 4.5.17 There were no records of European water vole *Arvicola amphibius* or otter *Lutra lutra* from within the desk-study data received from KMBRC.
- 4.5.18 There are no riparian habitats running through or adjacent to the site, nor in the wider landscape, making it unlikely that either species would be present. Neither species is considered to present a constraint to development proposals and further surveys are not required.

Plants, native

- 4.5.19 KMBRC returned 18 records of two protected botanical species from within the desk-study search zone during a date range of 1985 to 2019.
- 4.5.20 No rare or protected species of flora were recorded within the survey area and, based on the habitat types present and current management regimes, it is considered unlikely that any are present. Botanical species are not considered to present a constraint to the development proposals and no further surveys for this group are required.

Plants – invasive non-native species and injurious weeds

- 4.5.21 No invasive plant species (i.e. species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)) were located during this survey. No significant stands of injurious weed species were noted (ragwort *Senecio jacobea*, spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock and broad-leaved dock). Invasive plant species and injurious weeds are not considered to present a constraint to the development proposals and no further action for this group is required.

Reptiles (terrestrial)

- 4.5.22 KMBRC returned seven records of terrestrial reptile species from within the desk-study search area between 1967 and 2019. Three of the four widespread species have been recorded in the vicinity; slow worm, grass snake and common lizard. The closest record to the site was a grass snake located c.800m north-east in 2019.
- 4.5.23 The survey area contains predominantly sub-optimal habitat for reptiles, dominated by buildings, hardstanding and shortly mown amenity grassland, with a short sward height and little structural variation. Grasslands of this nature contain few shelter habitats and are unlikely to support high numbers. The improved grassland to the north of the site, adjacent to the offsite ancient woodland provided a more suitable sward structure. Grasslands of this nature are occasionally used by common reptiles, but contain few shelter habitats and are unlikely to support high numbers. Accordingly, reptiles are not considered to present a constraint to development proposals and no further surveys for this group are required.

Other protected, rare or notable species

- 4.5.24 KMBRC returned 13 records of hedgehog from within the desk-study search zone between 1980 and 2000. The closest to the site was located c.150m east in 1980. The survey area contains suitable foraging habitats suitable for this species, including grasslands and hedgerow. Hedgehog is listed as a species of principal importance under NERC and is undergoing a significant population decline. Measures should be taken to continue accommodating this species on the site post-development (see section 5.3).

5 Recommendations

5.1 Introduction

- 5.1.1 With regard to the objectives of this PEA, recommendations are made below for the protection of important ecological features, and/or to avoid or mitigate ecological impacts, and to enhance the ecology of the site post-construction with the aim of contributing to an overall net gain for biodiversity. It is intended that these recommendations should be considered during future changes to the design of development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised.

5.2 Precautionary Measures

- 5.2.1 The following species/groups (Table 5.1) require specific precautionary measures to be adhered to prior to and during construction to ensure that an offence under the relevant legislation is avoided.

Table 5.1: Recommended precautionary measures

#	Recommended precautionary measures
R1	Removal of nesting bird habitats will be undertaken outside of the bird nesting season, which runs from 1 March to 30 September. It will therefore be carried out between October and February. Any construction works undertaken within the bird breeding season where suitable bird breeding habitat exists will require a site check for nesting birds by a suitably qualified ecologist. This will take place no more than two days prior to works commencing. This is to ensure that no disturbance to active bird nests occurs. If a nest is found it must be cordoned off and works adjacent to the nest must be delayed until such time that the chicks have fledged from the nest. This will be supervised by a suitably qualified ecologist.

5.3 Ecological Protection Measures

- 5.3.1 The following protection measures (Table 5.2) will be carried out as part of the proposed scheme.

Table 5.2: Recommended ecological protection measures

#	Recommended ecological protection measures
R2	Thirty Acre Shaw is of high intrinsic ecological value (and in the case of ancient woodland is irreplaceable). This woodland will be buffered by an undeveloped zone of at least 15m from the construction footprint (including gardens and residential curtilages) to protect them from noise, light and dust pollution, hydrological changes, impacts to tree root systems, fly-tipping, invasive species and increased public access. This requirement has generally been incorporated into the proposed layout, but a minor encroachment will be necessary to enable the creation of a turning head.
R3	Works within the 15m buffer around the Ancient Woodland will be limited to the small location (c.18m ²) to facilitate the creation of a turning head. In this location construction will utilise shallow dig techniques and permeable paving to prevent physical damage to root systems.
R4	During the construction phase, hoardings / tree protection fencing will be installed at the construction zone perimeter for the duration of the works to further protect the ancient woodland from temporary impacts including noise, light and dust pollution. The exact location of hoarding will be led by the root protection zones of surrounding trees, to be confirmed by the arboricultural report for the site.
R5	British Standard BS 5837:2012 and/or National Joint Utilities Group Guidelines (NJUG, 1995) will be followed at all times during construction when working in close proximity to hedgerows, trees or shrubs which are to be retained. According to NJUG Guidelines the root protection zone or precautionary area is 4x the circumference of the trunk (circumference is measured around the trunk at a height of 1.5m above ground level). The distance is measured from the centre of the trunk to the nearest part of any excavation or other work. If a separate tree survey is carried out for the proposed development, works will be undertaken in accordance with the recommendations therein.
R6	The use of external lighting will be avoided or reduced to the minimum required for its intended purpose, during both construction and operation. This will be of benefit to nocturnal species e.g. bats. Where external lighting is to be provided, it will be low-level, directional lighting with minimal spill and glare, and consideration will be given to reduced hours of operation and/or a movement responsive system of control. Narrow-spectrum bulbs and light sources that emit minimal UV light will be used, avoiding white and blue wavelengths of the spectrum. Glass lantern covers will be used instead of plastic to filter UV light. Lighting will not be directed towards the retained hedgerows, Thirty Acre Shaw woodland to the north or any newly created bat roosting features (R15).
R7	To enable continued dispersal of hedgehogs (which require large territory sizes) and other small mammals across the site and within the local area following development, small access gaps to measure c.13x13cm are recommended to be provisioned at the base of all new fence boundaries. These will allow easy passage for small mammals to continue foraging in the area while still being small enough to contain pets.
R8	All excavations left overnight will either be covered over, or provided with a ramp to enable easy escape of badgers, hedgehogs, small mammals, amphibians and other fauna, and inspected each morning prior to recommencement. Open pipework greater than 150mm outside diameter will be blanked off at the end of each working day.

5.4 Recommendations for Ecological Enhancement

- 5.4.1 The following ecological enhancements (Table 5.3) should be considered for the site to contribute towards net gains for biodiversity in line with the requirements of local and national policy and guidance.

Table 5.3: Preliminary recommendations for ecological enhancement

#	Preliminary recommendations for ecological enhancement
R9	An orchard will be created in the south-eastern corner of site. It will comprise a range of fruiting species (native where possible) that will be managed organically. Plant stock will be sourced from a local supplier and ensure it is of local provenance. The trees, in combination with the meadow grassland beneath (see R10), will provide a foraging resource for a range of wildlife including amphibians, invertebrates, birds, bats and reptiles.
R10	A newly created greenspace in the north-east of site and the proposed orchard in the south-east will be sown with a native wildflower and grass seed mix (i.e. wildflower meadow) to increase botanical richness above that currently present. The wildflower meadow treatment will include tussock-forming grass species such as cock's-foot, Yorkshire-fog <i>Holcus lanatus</i> , tufted hair-grass <i>Deschampsia cespitosa</i> and false oat-grass <i>Arrhenatherum elatius</i> to provide shelter and ecological connectivity for reptiles, amphibians and small mammals, and provide foraging opportunities for invertebrates.
R11	Landscaping for the site will include hedgerow creation, comprising a range of native shrub species. Fruit, seed, nut and nectar-bearing species will be used preferentially when selecting species for landscape planting, so that food sources are available throughout the year (e.g. hazel, hawthorn, blackthorn, rowan <i>Sorbus aucuparia</i> and honeysuckle).
R12	The site's landscaping plans will utilise plant species which encourage bats. The table at Appendix VIII lists species of plants that can provide benefit for bats either by providing a food source for insects on which bats feed, or providing additional roosting opportunities (Gunnell <i>et al.</i> , 2012). The plant species are predominantly native to Britain, but not all species will be suitable in all situations. The aim is to encourage a diverse range of invertebrate food sources and increased bat roost potential.
R13	Habitat piles will be created within areas of retained vegetation at the edges of the site, close to boundary hedgerows and woodland. These will provide additional hibernation and shelter resources for amphibians, invertebrates, reptiles, and a range of other wildlife, and egg-laying substrate for grass snake. Hibernacula can be created by partially burying logs and stones in sheltered areas away from flood risk, and covering over with earth or turf. Breeding habitats can be created by collecting grass clippings and other prunings arising from landscape management of the site, and composting them in a secluded corner of the site. Deadwood piles can be created using arisings from site clearance to provide shelter and breeding opportunities for invertebrates, particularly saproxylic species which are dependent on deadwood.
R14	The value of the site for birds will be enhanced by installing a range of artificial nest boxes. These will be placed on retained mature trees within the development or at the site boundaries or incorporated within building facades. For instance: New buildings: nest boxes can be installed under the eaves for birds that utilise buildings for nesting, e.g. house martin, house sparrow, swallow <i>Hirundo rustica</i> and swift.

#	Preliminary recommendations for ecological enhancement
	Trees: nest boxes with entrance holes suitable for tit species, woodpeckers and nuthatches, and open-fronted boxes suitable for spotted flycatcher or song thrush, and treecreeper <i>Certhia familiaris</i> boxes.
R15	The value of the site for bats will be enhanced by installing a range of artificial roost boxes. These will be placed on retained mature trees at the site boundaries or incorporated within building facades. Boxes suitable for a range of species should be used, for instance: - New buildings: integral bat tubes can be installed within buildings which face vegetated areas, particularly towards the south and west. Bat tubes can be incorporated into the design of the building so that only the access holes are visible from the exterior of the building. The Schwegler 1FR or 2FR Bat Tube, or other manufacturer's equivalent, is designed to meet the characteristic requirements of the types of bats that inhabit buildings such as pipistrelles <i>Pipistrellus spp.</i> or serotine. It is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface. - Pipistrelles: bat boxes suitable to install on mature trees at the edges of the development include the Schwegler 1FF Flat Bat Box, or other manufacturer's equivalent. - Noctules <i>Nyctalus spp.</i> and brown long-eared bats: bat boxes suitable to install on mature trees at the edges of the development include the Schwegler 2F General Purpose Bat Box or the 2FN Woodland Bat Box, or other manufacturer's equivalent.

6 Conclusions

- 6.1.1 The majority of land proposed for development is of low ecological value, although bordered by Ancient Woodland/Lowland Mixed Deciduous Woodland HPI of high ecological value. Precautionary and ecological protection measures are recommended to enable offences under the relevant legislation to be avoided, along with recommendations for ecological enhancement. No further surveys are required prior to submitting a planning application.
- 6.1.2 The site provided a baseline of 0.93 BU for area habitats and development of the site will result in a loss of 0.91 BU. The site provided a baseline of 0.29 BU for linear habitats and development of the site will result in a loss of 0.09 BU. A combination of habitats will be created as part of the proposed development. This will result in an overall **net gain of 1.68 BU for area habitats, (+181.33%)** and a **net gain of +2.28 BU for linear habitats (+787.55%)**.
- 6.1.3 Each of the habitats retained or created as part of the proposed development have been assigned a 'condition' score informed by the Condition Assessment Sheets within the Technical Supplement to the Metric. In order to ensure that the habitats are maintained in this condition for the lifetime of the development, an ecological management plan should be produced separately to accompany the finalised BNG calculation.

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Appendix I: Phase 1 Habitats Plan

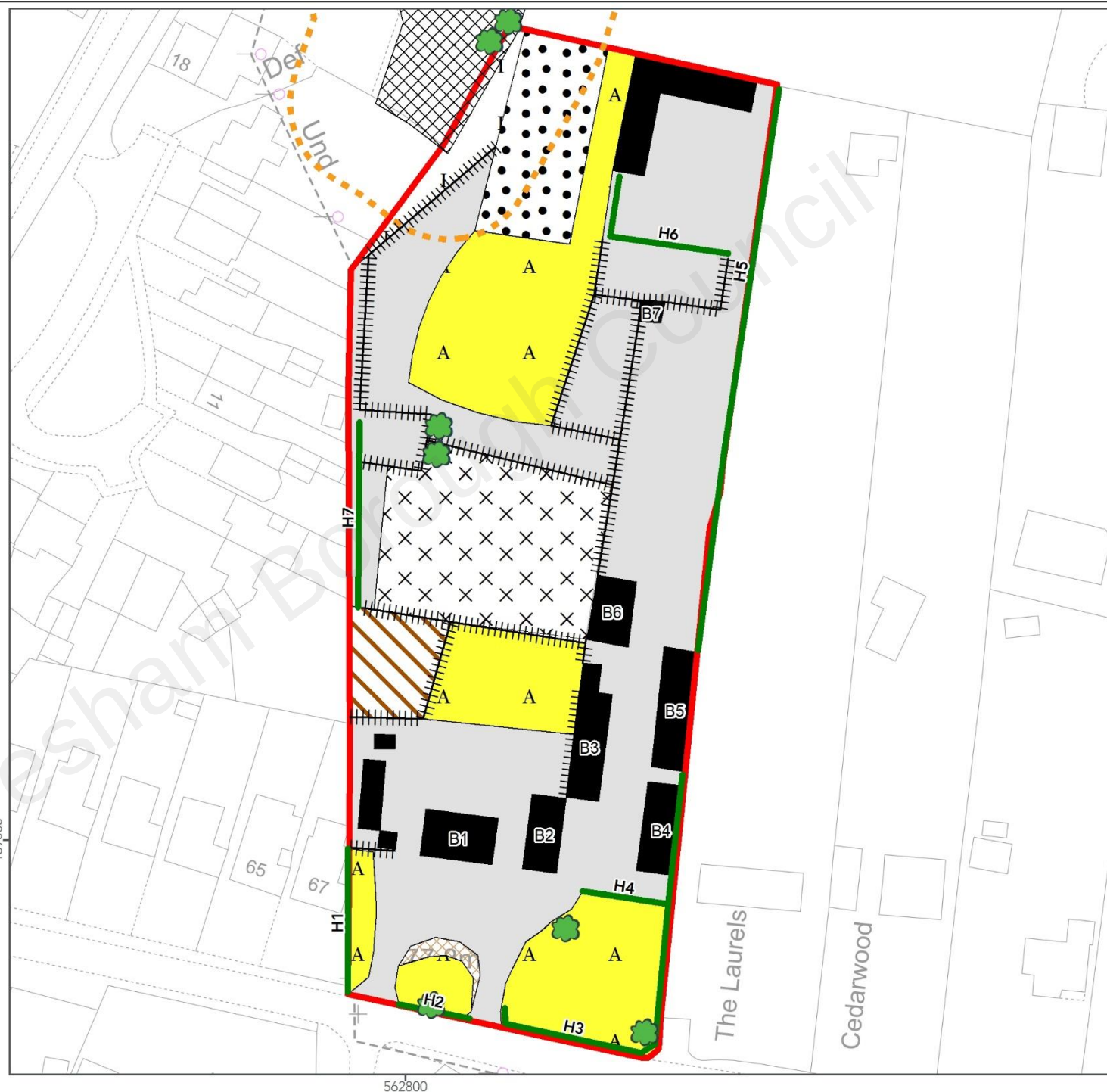
Little Acres Longfield Avenue Longfield

-  Survey area
-  Hardstanding
-  Improved grassland
-  Tall ruderal
-  Amenity grassland
-  Ephemeral / short perennial
-  Introduced shrub
-  Building
-  Bare ground
-  Intact species poor hedge
-  Fence
-  Scattered tree
-  Ancient woodland
-  15m Ancient Woodland buffer



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Ordnance Survey 0100031673

Scale: 1:1,000 Created by: AD
Date: Nov 2021 Reviewed by: NP
Drawing number:
UE0460ECO-Phase1_210720



Appendix II: Landscape Strategy with Biodiversity Enhancements



Appendix III: Defra Metric Headline Results

Extract from The Biodiversity Metric 3.0 - Calculation Tool:

On-site baseline	Habitat units	0.93
	Hedgerow units	0.29
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	2.61
	Hedgerow units	2.57
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	Habitat units	181.33%
	Hedgerow units	787.55%
	River units	0.00%
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	1.68
	Hedgerow units	2.28
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	181.33%
	Hedgerow units	787.55%
	River units	0.00%
Trading rules Satisfied?	Yes	

Appendix IV: Pre-development Habitat Condition Sheets (Area baseline)

UKHab Habitat Type
Urban – Developed land; sealed surface. No assessment required - condition N/A

UKHab Habitat Type(s)		
Grassland - Modified grassland		
Condition Assessment Criteria		Pass / Fail
1	There must be 6-8 species per m ² . Note - if a grassland has 9 or more species per m ² it should be classified as a moderate distinctiveness grassland habitat type. NB - this criterion is non-negotiable for achieving good condition.	Fail
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Pass
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Fail
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Fail
6	Cover of bracken less than 20%.	Pass
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species ¹ make up less than 5% of ground cover.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7		Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-negotiable criterion 7		Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria		Poor (1)

UKHab Habitat Type		
Sparsely vegetated land – Ruderal/Ephemeral		
Condition Assessment Criteria		Pass / Fail
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Fail
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife).	Fail

3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Condition Assessment Result		Condition Assessment Score
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3		Good (3)
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3		Moderate (2)
• Passes 0 or 1 of 3 core criteria		Poor (1)

UKHab Habitat Type		
Urban - Vacant/derelict land/ bare ground		
Condition Assessment Criteria		Pass / Fail
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Fail
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife).	Fail
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Condition Assessment Result		Condition Assessment Score
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3		Good (3)
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3		Moderate (2)
• Passes 0 or 1 of 3 core criteria		Poor (1)

UKHab Habitat Type	
Urban – Introduced shrub. No assessment required - condition fixed at poor	

UKHab Habitat Type(s)		
Urban - Urban tree		
Condition Assessment Criteria		Pass / Fail
1	More than 70% of trees are native species.	Pass
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Fail

3	More than 50% of trees are mature ² or veteran ³ .	Fail
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	Pass
5	Management regime has encouraged micro habitat sites for birds, mammals and insects e.g. presence of deadwood, cavities or loose bark etc.	Fail
6	Trees are immediately adjacent to other vegetation, and tree canopies are oversailing vegetation beneath.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 5 or 6 of 6 criteria		Good (3)
Passes 3 or 4 of 6 criteria		Moderate (2)
Passes 0, 1 or 2 of 6 criteria		Poor (1)

Appendix V: Pre-development Habitat Condition Sheets (Linear baseline)

UKHab Habitat Type
Hedgerows and lines of trees - Hedge ornamental non-native. No assessment required - condition fixed at poor

Appendix VI: Post-development Habitat Condition Sheets (Area creation)

UKHab Habitat Type
Urban – Introduced shrub. No assessment required - condition fixed at poor

UKHab Habitat Type
Urban – Developed land; sealed surface. No assessment required - condition N/A

UKHab Habitat Type		
Urban – Allotments		
Condition Assessment Criteria		Pass / Fail
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Pass
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife).	Pass
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Condition Assessment Result		Condition Assessment Score
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3		Good (3)
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3		Moderate (2)
• Passes 0 or 1 of 3 core criteria		Poor (1)

UKHab Habitat Type(s)		
Grassland - Other neutral grassland		
Condition Assessment Criteria		
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward.	Pass
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Pass

3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Pass
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Pass
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species ¹ and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 5 of 5 criteria		Good (3)
Passes 3 or 4 of 5 criteria		Moderate (2)
Passes 0, 1 or 2 of 5 criteria		Poor (1)

UKHab Habitat Type(s)		
Grassland - Modified grassland		
Condition Assessment Criteria		Pass / Fail
1	There must be 6-8 species per m ² . Note - if a grassland has 9 or more species per m ² it should be classified as a moderate distinctiveness grassland habitat type. NB - this criterion is non-negotiable for achieving good condition.	Pass
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Pass
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Fail
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Fail
6	Cover of bracken less than 20%.	Pass
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species ¹ make up less than 5% of ground cover.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7		Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-negotiable criterion 7		Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria		Poor (1)

UKHab Habitat Type		
Heathland and shrub - Mixed scrub		
Condition Assessment Criteria		
1	Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	Pass

2	There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	Fail
3	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species ¹ make up less than 5% of ground cover.	Pass
4	The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).	Pass
5	There are clearings, glades or rides present within the scrub, providing sheltered edges.	Fail
Condition Assessment Result		Condition Assessment Score
Passes 5 of 5 criteria		Good (3)
Passes 3 or 4 of 5 criteria		Moderate (2)
Passes 0, 1 or 2 of 5 criteria		Poor (1)

UKHab Habitat Type		
Grassland - Traditional orchard		
Condition Assessment Criteria		Pass / Fail
1	Presence of ancient ¹ and / or veteran ² trees. NB - this criterion is non-negotiable for achieving good condition.	Fail
2	Less than 5% of fruit trees are smothered by scrub. Small patches of dense scrub and/or scattered scrub growing between trees can be beneficial to biodiversity, however these should occupy less than 10% of ground cover.	Pass
3	There is evidence of formative and/or restorative pruning to maintain longevity of trees.	Pass
4	Presence of standing and/or fallen dead wood: all mature trees have standing or fallen branches, stems and stumps greater than 10 cm diameter associated with them.	Fail
5	At least 95% of the trees are free from damage caused by humans or animals e.g. browsing, bark stripping or rubbing on non-adjusted ties.	Pass
6	Sward height is varied (between 5 cm and 30 cm) and small patches of bare ground are present creating structural diversity. Up to 10% cover of patches of tall herb vegetation may be present.	Pass
7	Species richness of the grassland is equivalent to a medium, high, or very high distinctiveness grassland.	Pass
8	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species ³ make up less than 10% of ground cover.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 6, 7 or 8 of 8 criteria, including non-negotiable criterion 1		Good (3)
Passes 4 or 5 of 8 criteria; OR Passes 6 or 7 of 8 criteria, excluding non-negotiable criterion 1		Moderate (2)
Passes 0, 1, 2 or 3 of 8 criteria		Poor (1)

UKHab Habitat Type(s)		
Urban - Urban tree		
Condition Assessment Criteria		Pass / Fail
1	More than 70% of trees are native species.	Pass

2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Fail
3	More than 50% of trees are mature ² or veteran ³ .	Fail
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	Pass
5	Management regime has encouraged micro habitat sites for birds, mammals and insects e.g. presence of deadwood, cavities or loose bark etc.	Pass
6	Trees are immediately adjacent to other vegetation, and tree canopies are oversailing vegetation beneath.	Pass
Condition Assessment Result		Condition Assessment Score
Passes 5 or 6 of 6 criteria		Good (3)
Passes 3 or 4 of 6 criteria		Moderate (2)
Passes 0, 1 or 2 of 6 criteria		Poor (1)

Appendix VII: Post-development Habitat Condition Sheets (Linear creation)

UKHab Habitat Type				
Native species rich hedgerow				
Condition Assessment Criteria				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition'	Description	Pass / Fail	
Core groups - applicable to all hedgerow types				
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).	Pass
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice⁴).	Fail
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	Pass
B2.	Gap - hedge canopy continuity	- Gaps make up <10% of total length and - No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall	Pass

			gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · measured from outer edge of hedgerow, and · is present on one side of the hedge (at least)	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Fail
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	Pass
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.	Pass
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).	Fail

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 in any functional group.	3
Moderate	No more than 4 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2

Poor	Fails a total of more than 4 attributes; OR Fails <u>both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
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UKHab Habitat Type				
Native hedgerow				
Condition Assessment Criteria				
Attributes and functional groupings (A, B, C, D & E)	Criteria (the minimum requirements for 'favourable condition'	Description	Pass / Fail	
Core groups - applicable to all hedgerow types				
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).	Pass
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice ⁴).	Fail
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	Pass
B2.	Gap - hedge canopy continuity	· Gaps make up <10% of total length and · No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Pass

C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · measured from outer edge of hedgerow, and · is present on one side of the hedge (at least)	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Fail
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (<i>Urtica</i> spp.), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex</i> spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	Pass
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.	Pass
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).	Fail

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 in any functional group.	3
Moderate	No more than 4 failures in total; AND <u>Does not fail both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1

Appendix VIII: Plant Species which encourage Bats

Please see following pages which are drawn from Gunnell *et al.* (2012).

Plant Species	Common name	Native	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain Gardens	Hedges/trees	Beds/borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun / shade				Y	
<i>Acer platanoides</i>	Norway maple		T	S	Well drained / alkaline	Sun / shade				Y	
<i>Acer saccharum</i>	Sugar maple		T	S	Any	Sun / shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun	Y				
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun / shade	Y				
<i>Anthyllis vulneraria</i>	Kidney vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubrieta		H	F	Well drained	Sun / shade		Y			
<i>Betula pendula</i>	Silver birch	N	T	C	Sandy / Acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo-flower	N	HP	F	Moist	Sun / shade					Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common knapweed	N	HP	C,F	Dry, not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained / alkaline	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's beard	N	C	F	Well drained / alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun / shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun / shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus spp.</i>	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade / partial shade				Y	Y
<i>Erica cineria</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Erysimum cheiri</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			
<i>Eupatorium cannabinum</i>	Hemp agrimony	N	H	F	Moist	Sun / shade					Y
<i>Fagus sylvatica</i>	Beech	N	T	C,R	Well drained / alkaline	Sun / shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y
<i>Fraxinus excelsior</i>	Common ash	N	T	C,R	Any	Sun / shade				Y	
<i>Hebe spp.</i>	Hebe species		S	F	Well drained	Sun / shade				Y	Y
<i>Hedera helix</i>	Ivy	N	C	F,C	Any	Sun / shade		Y		Y	Y
<i>Hesperis matronalis</i>	Sweet rocket		H	F	Well drained / dry	Sun / shade					Y
<i>Hyacinoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade / partial shade		Y		Y	Y
<i>Ilex aquifolium</i>	Holly	N	T	C	Any	Sun / shade				Y	
<i>Jasminum officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula spp.</i>	Lavender species		S	F	Well drained / sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained / alkaline	Sun	Y				Y
<i>Lonicera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained / dry	Sun	Y				Y
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun / partial shade	Y				
<i>Malus spp.</i>	Apple		T	C	Any	Sun				Y	
<i>Matthiola longipetala</i>	Night-scented stock		A	F	Well drained/ moist	Sun			Y		
<i>Myosotis spp.</i>	forget-me-not	N	A	F	Any	Sun	Y	Y			
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained/ moist	Sun / partial shade			Y		
<i>Oenothera spp.</i>	Evening primrose species		Bi	F	Well drained/ dry	Sun	Y				
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained/ dry	Sun	Y	Y			
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained/moist	Sun / partial shade	Y				
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	

Plant Species	Common name	Native	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain Gardens	Hedges/trees	Beds/borders
<i>Prunus domestica</i>	Plum		T	C	Well drained/ moist	Sun				Y	
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun / partial shade				Y	
<i>Quercus petraea</i>	Sessile oak	N	T	C,R	Sandy loam	Sun / shade				Y	
<i>Quercus robur</i>	Common oak	N	T	C,R	Clay loam	Sun / shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	
<i>Salix</i> spp.	Willow species	N	S	S,C	Moist	Sun / shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					
<i>Saxifraga oppositifolia</i>	Saxifrage	N	HP	C	Well drained	Sun	Y	Y			
<i>Scabiosa columbaria</i>	Small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained/ dry	Sun	Y				
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade / partial shade		Y	Y	Y	
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	
<i>Stachys lanata</i>	Lamb's ears		HP	F	Well drained/dry	Sun	Y				
<i>Symphotrichum</i> spp.	Michaelmas daisies		HP	F	Any	Sun					
<i>Tegetes patula</i>	French marigold		A	F	Well drained/moist	Sun					
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained/dry	Sun	Y	Y			
<i>Tilia x europaea</i>	Common lime		Type	C	Any	Sun / shade				Y	
<i>Trifolium</i> spp.	Clover species	N	HP	F	Any	Sun	Y				
<i>Valeriana</i> spp.	Valerian species	N	HP	F	Moist	Sun / partial shade			Y		
<i>Verbascum</i> spp.	Mulleins	N	Bi,HP	C	Well drained	Sun	Y				
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained/moist	Sun					
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun / shade				Y	
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun / shade			Y	Y	
<i>Viola tricolor</i>	Pansy	N	A	F	Well drained/moist		Y	Y			

The table above is derived from the BCT publication Landscape and Urban Design for Bats and Biodiversity (Gunnell et al., 2012) and lists suggested plant species that can provide benefit for bats either by providing a food source for insects or roost potential. The plants listed are predominately native to Britain. The small group of non-native plants is included for their documented value for wildlife. This list has been checked against Natural England's list of invasive non-native plants.

HP: Herbaceous perennial	T: Tree	A: Annual	Benefit:				
Bi: Biennial	S: Shrub	B: Bulb	C: Moth caterpillar food plant	F: Flowers attract adult moths			
BiP: Biennial perennial	H: Herb	C: Creeper/climber	S: Sap sucking insects (e.g. whiteflies)	R: Good roost potential			

Appendix IX: Legislation and Planning Context

Legislation

General

The main legislative instruments for ecological protection in England and Wales are the Wildlife and Countryside Act 1981 (WCA; as amended), Countryside and Rights of Way Act 2000 (CROW; as amended), Natural Environment and Rural Communities Act 2006 (NERC) and the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations; as amended). The Environment Bill (reintroduced to parliament in 2020) is expected to make significant changes to the legislative provisions when enacted.

WCA 1981 consolidated and amended pre-existing national wildlife legislation in order to implement the Bern Convention and the European Union Wild Birds Directive (Council Directive 2009/147/EC). It complements the Habitats Regulations, offering protection to a wider range of species than the latter. The Act also provided for the designation and protection of nationally important conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSI). Schedules of the act list protected species of flora and fauna, as well as invasive species, and detail the possible offences that apply to these species.

The CROW Act 2000 amended and strengthened existing wildlife legislation detailed in the WCA. It placed a duty on government departments & the National Assembly for Wales to have regard for biodiversity, provided increased powers for the protection and maintenance of SSSI, and created a right of access to parts of the countryside. The Act contained lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The NERC Act 2006 consolidated and replaced aspects of earlier legislation. Section 40 of the Act places a duty upon all local authorities and public bodies in England and Wales to have regard to the purpose of conserving biodiversity in exercising all of their functions, including by restoring or enhancing habitats and species populations. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity (otherwise known as priority habitats/species as listed in the now superseded UK Biodiversity Action Plan). These lists supersede Section 74 of the CROW Act 2000. These species and habitats are a material consideration in the planning process.

The Habitats Regulations 2017 are the principal means by the European Union Habitats Directive (Council Directive 92/43/EEC) was transposed into English and Welsh law, and place a duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria in Europe are designated as Sites of Community Importance by the European Commission, and subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. Since the UK's departure from the European Union the European Commission no longer has a role in designating SACs in the UK. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 establish a single stage designation process, where the appropriate authority is the decision maker. The selection and designation of SACs is based on the criteria set out in Annex III of the Habitats Directive insofar as it applies to the UK, and having regard to the advice of the appropriate nature conservation body.

The 2019 Amendment Regulations have created a new national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs, existing Special Protection Areas (SPA) originally designated as a result of Council Directive 2009/147/EC on the Conservation of Wild Birds, and any new SACs and SPAs designated under the 2019 Regulations. SACs and SPAs in the UK therefore no longer form part of the EU's Natura 2000 ecological network.

The Habitats Regulations also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively (European Protected Species (EPS)). Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade in these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations. Under the Habitats Regulations disturbance includes any activity which is likely to: impair the ability of a EPS to survive, breed, reproduce, or rear/nurture its young; impair the ability of a EPS to migrate or hibernate; or significantly affect the local distribution or abundance of the species.

When enacted, the Environment Bill is expected, among other things, to: establish an Office for Environmental Protection; require all new development requiring planning permission to achieve a net gain for biodiversity (expected to be at least 10%); amend the NERC Act duty to conserve biodiversity by explicitly adding a duty to enhance; and require local authorities to produce local nature recovery strategies.

Badgers (*Meles meles*)

Badgers are listed under Schedule 6 of the Wildlife and Countryside Act which grants them partial protection. This protection is extended by the Protection of Badgers Act 1992 (Badger Act) which makes it an offence to take, injure or kill a badger, interfere with a sett, sell or possess a live badger, or mark or ring a badger without a licence. Under the Act disturbance is illegal without a licence. Natural England has published guidelines to be adopted when determining whether an activity is 'disturbing' i.e. a licence is required when, for example, using heavy machinery (generally tracked vehicles) within 30m of any entrance to an active sett. Licences are not normally issued during the badger breeding season (December – June inclusive).

Bats (*Chiroptera*)

Bats and their roosts are fully protected by protected by the WCA and the Habitats Regulations, and seven species of bats are species of principal importance. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a bat.
- ▶ Possess or control a live or dead bat, any part of a bat, or anything derived from a bat.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection. This is taken to mean all bat roosts whether bats are present or not.
- ▶ Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- ▶ Make a false statement in order to obtain a licence for bat work.

Birds

Birds are protected by the Wildlife and Countryside Act, 1981 (as amended). This legislation makes it an offence to intentionally kill, injure or take away any wild bird. It is also an offence to take, damage or destroy the nest of any wild bird while it is in use or being built or to take or destroy the egg of any wild bird. In addition, certain species are listed

on Schedule 1 of the WCA (such as kingfisher *Alcedo atthis*). This makes it an additional offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young. Such species are considered to be in greater need of legal protection or of high nature conservation priority.

Birds of Conservation Concern ("BoCC4) are included on Red and Amber lists (Eaton *et al.*, 2015). Birds on the Red list are those of highest conservation priority due significant and sustained population decreases and/or range contractions (e.g. house sparrow *Passer domesticus* and starling *Sturnus vulgaris*). Birds on the Amber list are the next most critical group and include species whose population/range have shown moderate declines, or which have recovered to some extent from historical decline, such as dunnock *Prunella modularis*.

Dormouse (*Muscardinus avellanarius*)

Dormouse is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*:

- ▶ Intentionally kill, injure or take a dormouse.
- ▶ Possess or control a live or dead dormouse, any part of, or anything derived from a dormouse.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a dormouse uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a dormouse while it is occupying a structure or place that it uses for shelter or protection.

Great crested newt (*Triturus cristatus*; GCN) (and natterjack toad *Bufo calamita*)

GCN is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a GCN (including its eggs).
- ▶ Possess or control a live or dead GCN, any part of, or anything derived from a GCN.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a GCN uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a GCN while it is occupying a structure or place that it uses for shelter or protection.

Otter (*Lutra lutra*)

Otter is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take an otter.
- ▶ Possess or control a live or dead otter, any part of, or anything derived from an otter.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that an otter uses for shelter or protection.
- ▶ Intentionally or recklessly disturb an otter while it is occupying a structure or place that it uses for shelter or protection.

Reptiles

The four common species (slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara*, adder *Vipera berus* and grass snake *Natrix helvetica*) are partially protected under the WCA. They are protected, *inter alia*, against intentional killing and injuring. The handling and translocation of these reptiles does not require a licence.

Smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* are fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a smooth snake or sand lizard.
- ▶ Possess or control a live or dead smooth snake or sand lizard, any part of, or anything derived from a smooth snake or sand lizard.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a smooth snake or sand lizard uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a smooth snake or sand lizard while it is occupying a structure or place that it uses for shelter or protection.

Water vole (*Arvicola amphibious*)

Water vole is fully protected by the WCA. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a water vole.
- ▶ Possess or control a live or dead water vole, any part of, or anything derived from a water vole.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a water vole uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a water vole while it is occupying a structure or place that it uses for shelter or protection.

Weeds Act 1959 / Ragwort Control Act 2003

This legislation provides for orders to be made for control where notifiable weed species such as ragwort are said to be a problem. The act does not make it illegal to have ragwort (or other weed species) on your land, make it illegal to allow ragwort to spread, or force landowners automatically to control it. However, if DEFRA is satisfied that there are injurious weeds to which this Act applies growing upon any land it may serve upon the occupier of the land a notice in writing requiring them, within the time specified in the notice, to take such action as may be necessary to prevent the weeds from spreading.

Planning context

National Planning Policy Framework (Section 15: Conserving and enhancing the natural environment)

The National Planning Policy Framework (NPPF), published in July 2021, outlines the Government's commitment to the conservation of wildlife and natural features. It is concerned with:

- ▶ Protecting and enhancing valued landscapes, sites of biodiversity or geological conservation value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

- ▶ Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- ▶ Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- ▶ Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current & future pressures;
- ▶ Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- ▶ Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

The NPPF requires that local plans should “distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries”.

To protect and enhance biodiversity and geodiversity, the NPPF states that planning policies should:

- ▶ Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- ▶ Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should aim to protect and enhance biodiversity by applying the following principles:

- ▶ 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;
- ▶ 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;
- ▶ 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
- ▶ 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.

The following wildlife sites should be given the same protection as habitats sites:

- ▶ potential Special Protection Areas and possible Special Areas of Conservation;
- ▶ listed or proposed Ramsar sites; and
- ▶ sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site. The policies within the NPPF (and additional guidance contained within Circular 06/2005) are a material planning consideration.

UK/Local Biodiversity Action Plan Designations and Birds of Conservation Concern and Red Data Book Listings

Note that BAP designations and status as RSPB Birds of Conservation Concern or Red Data Book species does not offer any further legal protection, but planning authorities are required to prevent these species from being adversely affected by development in accordance with National Planning Policy and the CROW and NERC Acts. The United Kingdom Biodiversity Action Plan (UKBAP), first published in 1994 and updated in 2007, was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UKBAP contained a list of priority habitats and species of conservation concern in the UK, and outlined biodiversity initiatives designed to enhance their conservation status.

However, as a result of devolution, and new country-level and international drivers and requirements, much of the work previously carried out by the UK BAP is now focussed at a country-level rather than a UK-level, and the UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK lists of priority habitats and species nonetheless remain an important reference source and were used to draw up statutory lists of priority habitats and species in England, Northern Ireland, Scotland and Wales. The priority habitats and species correlate with those listed on Section 41 and 42 of the NERC Act.

The UKBAP required that conservation of biodiversity be addressed at a County level through the production of Local BAPs. These are targeted towards species of conservation concern characteristic of each area. In addition, a number of local authorities and large organisations have produced their own BAPs. Where they exist, Local BAP targets with regard to species and habitats are a material consideration in the planning process.

Local Planning Policy

The following policies relating to wildlife and biodiversity are contained within the adopted Dartford Core Strategy (Dartford Borough Council, 2011) and the Dartford Development Policies Plan Strategy (Dartford Borough Council, 2017):

CS 14: Green Space

The Council will work with its partners to implement a multi-functional, high quality, varied and well-managed Green Grid129 . It will deliver this by:

a) Facilitating the creation of approximately 300 hectares of new or improved green spaces as part of new developments by 2026.

b) Requiring new development to make a contribution to the Green Grid network as follows:

- Sites of 20 ha and over: at least 30% of the site area
- Sites of between 20ha and 2ha: at least 20% of the site area
- Sites of less than 2ha will be considered on a site by site basis

c) Where on-site open space is not appropriate or feasible, contributions may be sought for off-site improvements of open space in the vicinity of the site. Provision of specific types of green space and water bodies to cater for diverse community needs, including older children and teenagers; natural habitats and biodiversity corridors, and for mitigation of flood risk, will be provided within the overall allocation...

DP25: Nature Conservation and Enhancement

1. Development on the hierarchy of designated sites, featuring nationally recognised and locally protected sites, shown on the Policies Map will not be permitted. Development located within close proximity to designated sites, or with likely effects on them, should demonstrate that the proposal will not adversely impact on the features of the site that define its value or ecological pathways to the site.

2. Proposals should seek to avoid any significant adverse impact on existing biodiversity features. Any potential loss or adverse impact must be mitigated, including with reference to the following guidance points:

a) Where mitigation measures require relocation of protected species this will only be acceptable when accompanied by clear evidence that the proposed method is appropriate and will provide for successful translocation.

b) Proposals should include provision for protection during construction, and mechanisms for on-going management and monitoring.

3. Developments will be expected to preserve and, wherever possible, enhance existing habitats and ecological quality, including those of water bodies, particularly where located in Biodiversity Opportunity Areas. Particular regard should be had to points a) and b) below. Development proposals where the primary purpose is to enhance biodiversity will normally be permitted where:

a) New biodiversity areas make use of native and local species as set out in the Kent Biodiversity Strategy and consider ecological links and adaptability to the effects of climate change

b) Biodiversity features strengthen existing green and ecological corridors; and contribute to the creation and enhancement of the Green Grid...

Trees

5. In all development proposals existing trees should be retained wherever possible. If retention is demonstrated not to be feasible, replacement provision should be of an appropriate tree species and maturity and/ or canopy cover taking into account the tree that is being replaced and the location.

Appendix X: Legal and Technical Limitations

- This report has been prepared by Urban Edge Environmental Consulting Ltd (UEEC Ltd) with all reasonable skill, care and diligence within the terms of the contract made with the Client to undertake this work, and taking into account the information made available by the Client. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by us.
- UEEC Ltd disclaims any responsibility to the Client and others in respect of any matters outside the scope of this contract. This report is confidential to the Client and is not to be disclosed to third parties. If disclosed to third parties, UEEC Ltd accepts no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any third party relies upon the contents of this report at their own risk and the report is not to be relied upon by any party, other than the Client without the prior and express written agreement of UEEC Ltd.
- The advice provided in this report does not constitute legal advice. As such, the services of lawyers may also be considered to be warranted.
- Unless otherwise stated in this report, the assessments made assume that the sites and facilities that have been considered in this report will continue to be used for their current planned purpose without significant change.
- All work carried out in preparing this report has utilised and is based upon UEEC Ltd's current professional knowledge and understanding of current relevant UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and may cause any conclusions to become inappropriate or incorrect. UEEC Ltd does not accept responsibility for advising the Client or other interested parties of the facts or implications of any such changes;
- Where this report presents or relies upon the findings of ecological field surveys (including habitat, botanical or protected/notable species surveys), its conclusions should not be relied upon for longer than a maximum period of two years from the date of the original field surveys. Ecological change (e.g. colonisation of a site by a protected species) can occur rapidly and this limitation is not intended to imply that a likely absence of, for instance, a protected species will persist for any period of time;
- This report has been prepared using factual information contained in maps and documents prepared by others. No responsibility can be accepted by UEEC Ltd for the accuracy of such information;
- Every effort has been made to accurately represent the location of mapped features, however, the precise locations of features should not be relied upon;
- Populations of animals and plants are often transient in nature and a single survey visit can only provide a general indication of species present on site. Time of year when the survey was carried out, weather conditions and other variables will influence the results of an ecological survey (e.g. it is possible that some flowering plant species which flower at other times of the year were not observed). Every effort has been made to accurately note indicators of presence of protected, rare and notable species within and adjacent to the site but the possibility nonetheless exists for other species to be present which were not recorded or otherwise indicated by the survey;
- Any works undertaken as a consequence of the recommendations provided within this report should be subjected to the necessary health & safety checks and full risk assessments.

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