

Ecological Appraisal

Report for:

***Hampshire County Council –
Property Services***

Field to the South of Woodcroft School

*Outline application for residential development of
up to 45 dwellings*

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SUMMARY

This report constitutes an assessment of the potential impacts arising from the proposal and site set out below and provides recommendations to ensure that this proposal can reasonably avoid or mitigate such effects identified. If the proposal differs from that set out below, then this assessment and recommendations may not be applicable. Furthermore, the assessment and recommendations are based on surveys which may only be considered valid for up to two years following the date of this report.

- Hampshire County Council proposes to seek outline planning permission for a residential development of up to 45 properties on surplus land adjacent to Woodcroft School
- A desk study, extended Phase 1 habitat survey and Phase 2 reptile survey were undertaken in August- September 2015 to inform the proposals.
- Desk top study included review of ecological reports pertaining to the adjacent Woodcroft Farm development, a residential development of 288 properties granted planning permission in 2015 and located adjacent to the school site. A consented access road associated with the Woodcroft Farm development will be constructed immediately to the west of the Woodcroft School site.
- A number of locally designated sites occur within 1km of the site, the closest of which is James' Copse & Outlier SINC which is located approximately 0.2km north and has been classified as ancient woodland (HBIC inventory). Common reptiles and bats have been recorded within 1km of the site.
- The most extensive habitat at the site is amenity grassland. The site is bound by hedgerows, scrub and scattered trees. An area of un-managed semi-improved grassland is located to the south-west of the site and a small area of broadleaved plantation woodland occurs in the central area of the site.
- Outline proposals for the site indicate the retention of the boundary habitats (excepting the consented access road detailed above). The majority of grassland habitats and some of the plantation woodland at the site would be lost to the development. The removal of shrub vegetation and a single oak tree will be required to enhance visibility at the existing access to the site.
- All trees which may require removal were assessed for their potential to support roosting bats, and all of these trees are considered to have negligible potential to support roosting bats. However, bats will almost certainly use habitats at the site to some extent for foraging and commuting, whilst mature trees surrounding the boundary of the site could support roosts.
- A population of slow worm was identified within the area of un-managed grassland through presence-likely absence survey. It is considered likely that the population is categorised as low, but a population assessment has not been carried out. .

- Shrub and wooded habitats at the site will almost certainly support breeding birds during the breeding bird season.
- It is recommended that a ecological mitigation and management plan for the site is developed as finalised proposals are the site are developed, incorporating the recommendations for mitigation made within this report, to be submitted with the reserved matters application(s).
- In order to avoid indirect impacts upon bats from lighting, recommendations made within this report should be followed.
- It will be necessary to avoid the killing or injury of reptiles during site clearance and ensure that the population is able to persist in the long term. This would ideally comprise use of habitat manipulation techniques to persuade the animals into areas of retained habitat, which should be enhanced. If this is not feasible, the animals should be translocated to a suitable receptor site. The principals of these approaches are outlined within this report.
- Necessary clearance of scrub and woody vegetation should be undertaken outside of the bird nesting season (March to the end of August). If this is not possible then nesting bird checks are required, and a buffer placed around active nests until the nest becomes unoccupied..
- The following recommendations for ecological enhancements are made:
 - Creation of a species-rich hedgerow within the planting scheme on the northern or western boundary of the site to enhance habitat connectivity across the site, species should have divergent fruiting periods and the hedgerow margin should be maintained unmown;
 - Creation of species rich grasslands to the peripheries of the site;
 - The use of native plant species within landscaping at the site; and
 - The installation of bird and/ or bat boxes and built-in bat structures on a portion of new buildings at the site.

1 INTRODUCTION

1.1 Project Description

Hampshire County Council Ecology Team (HCCET) has been commissioned to carry out an Extended Phase 1 Ecological Survey and reptile survey at a site known as 'Field to the south of Woodcroft Primary School', near Woodcroft School, Woodcroft Lane, Waterlooville, PO8 9PY.

1.2 Proposal

Hampshire County Council (HCC) proposes to seek outline planning permission for a new residential development of up to 45 properties on an area of surplus land south of Woodcroft Primary School (hereafter referred to as "the school site"), which is the site of the recently redeveloped Meadowlands School. The proposed development would be accessed via an existing access to the east of the site. Vegetation removal required to enhance visibility at the site access would entail the removal of a single tree to the north of the access and thinning of under-canopy shrub layer in this area. Figure 1 below shows an indicative layout of the proposed development.

It should be noted that a new road to service the adjacent Woodcroft Farm development site (see Section 1.3.2 below) is to be constructed immediately to the west of the proposal site considered here. The previously consented road is not part of this scheme and is not considered within this report.



Figure 1: Indicative proposed site layout

1.3 Ecology Background

1.3.1 Previous studies

Two previous ecological studies have been undertaken with respect to the proposals. A phase 1 habitat survey was undertaken by HED in 2008 (HED document reference 764) which identified suitable habitat for reptiles, birds, foraging and commuting bats and trees to the peripheries of the site with potential to support roosting bats. In 2010, a Phase 1 habitat survey and reptile survey were undertaken by RPS

(document reference JSL1795/Phase 1 Habitat and Reptile Survey). A low population of slow worm within the school site (but outside of the development boundary) was recorded. Trees to the northern and western peripheries of the site were found to have potential to support roosting bats, and suitable bat foraging and commuting habitat was also recorded. Due to the amount of time that has elapsed since this survey was carried out it was recommended that Phase 1 and Reptile surveys should be carried out to update findings.

1.3.2 Woodcroft Farm Development

Planning permission was granted in May 2015 for a development of 288 residential units on the land immediately to the north of the school site (planning reference APP/13/00804, hereafter referred to as the Woodcroft Farm site). This application was supported by a broad suite of ecological surveys which are of relevance to this proposal, given the close proximity of the school site to the Woodcroft Farm site. It is noted that dormouse surveys conducted between 2011 and 2012 found no evidence of dormouse presence. Western and northern boundary habitats of the school site were included within this survey that utilised box and tube refugia. Bat activity surveys determined the Woodcroft Farm site to be overall of district importance for bats, with species recorded using the site including *Myotis* spp., serotine *Eptesicus serotinus*, and noctule *Nyctalus noctula*. The location of the access road for the Woodcroft Farm development (immediately to the west of the school site) was included in previous planning application.

1.4 Limitations to Report

Recommendations made within this report should be revisited at Reserved Matters stage to confirm their validity. However, unless there are significant alterations to the proposal, site or visibility splay boundaries, or site condition it is considered that the broad conclusions within this report should remain valid.

1.5 Site Description

The site is located to the north western edge of Waterloo and comprises land to the south and west of Woodcroft School, made up of playing fields alongside areas of hedgerow and planted woodland. Open countryside occurs to the northwest (including land to the immediate north, and a strip of land to the immediate west which is soon to be developed). An aerial image of the site and surrounding area is shown on Figure 2 below.



Figure 2: Indicative site boundary and surrounding area. A road is to be constructed immediately to the west of the site in order to join the Woodcroft Farm site, north of the school site.

2 METHODS

2.1 Desk-based Assessment

A desk-based assessment was carried out by HCCET on 14 September 2015. Geographical Information Systems (GIS) mapping was used in order to identify records of protected species and habitats. A 1km search radius was used for protected species and designated sites, extended to 5.6km for internationally designated sites.

HCCET had full access to the extensive biological database held by the Hampshire Biodiversity Information Centre (HBIC). The data is aggregated to meet the HBIC Data Users Agreement and attention is drawn to paragraph 5 of the agreement which states: *'Whilst every reasonable effort is made to validate information supplied to and by the Hampshire Biodiversity Information Centre, owing to the dynamic and judgmental nature of information relating to wildlife, HBIC disclaims any responsibility for the accuracy or comprehensiveness of the information supplied, and accepts no liability for any indirect, consequential, or incidental damages or losses arising from use of the information'*.

2.2 Field-based Assessment

An Extended Phase 1 Ecological Survey was carried out on 11 June 2014. The survey entailed a single surveyor undertaking a methodical investigation of all areas of the site in order to identify the presence of, or habitat considered suitable for supporting, legally-protected species. A brief description of the survey methods used is provided below.

2.2.1 Vegetation

All broad habitat types were identified and a list was compiled of characteristic plant species within each habitat type.

2.2.2 Badger

All areas of the site were inspected for field signs of badger activity. This includes badger setts, latrine sites, dung piles, well-used trails, prints and hairs. The boundary of the site was surveyed to a distance of 5 metres from the edge of the grassland into the boundary habitats.

2.2.3 Bats – Trees

All trees within the site likely to be impacted were subject to detailed visual inspection from ground level in order to identify features which may offer suitable roosting opportunities for bats. This included all trees on the north eastern boundary of the site which may be impacted by the construction of visibility splays, and those within the area of plantation woodland located to the centre of the site, although trees within other boundaries of the site were not inspected as impacts on these trees are not anticipated. The inspection included a search for features including dense ivy cladding; woodpecker holes; rot holes; limb stubs; cavities; flaking bark; cracks and splits. The methods used were those described within Hundt (2012).

Each tree has been graded for its potential to support bats based on criteria within the Bat Conservation Trust's 'Bat Surveys Good Practice Guidelines 2nd Edition (Hundt, 2012) and are detailed in **Table 1**.

Table 1 Bat Roost Tree Grading Criteria

Grading Criteria	Reason
Confirmed Bat Roost	Unambiguous evidence of roost: bats seen emerging/entering, bats audible, droppings/urine-/fur-staining visible. Known roost based on desk-based assessment. Further survey required.
Category 1*	Trees with multiple, highly-suitable features capable of supporting larger roosts. Further survey required.
Category 1	Trees with definite bat potential, supporting fewer suitable features than Category 1* or with potential for use by single bats. Further survey required.
Category 2	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats. Further survey potentially required.
Category 3	Trees with no potential to support bats. No further survey required.

2.2.4 Bats – Foraging and Commuting Habitat

An assessment was made of the suitability of the site and the surrounding landscape to support foraging/commuting/flying bats. These activities cover the varied range of behaviours exhibited by bats when they are not roosting and will include feeding, travelling between sites and other social behaviours. The assessment was based on the presence of key habitat features such as woodland, scrub, hedgerows, grassland and open water which are highly attractive to bat species for those activities. Of importance is the presence of unlit semi-natural vegetation and habitat linkage between the site and the surrounding landscape.

The quality of bat foraging/commuting/flying habitat has been assessed using the criteria detailed in **Table 2**.

Table 2 Bat Foraging/Commuting/Flying Habitat Grading Criteria

Grading Criteria	Reason
Optimal Quality	Presence of optimal habitat features such as unlit woodland, scrub, hedgerows, grassland and open water with excellent linkage to similar habitats within the wider landscape. Presence of high potential buildings/trees and/or known roosts within immediate landscape. Sites are generally rural in character.
Moderate Quality	Presence of optimal habitat features such as woodland, scrub, hedgerows, grassland and open water with reasonable linkage to

	similar habitats within the wider landscape. Limiting factors may include size of site.
Low Quality	Presence of some limited habitat features such as scrub or hedgerows, with minimal linkage to suitable habitats within the wider landscape.
Poor Quality	No suitable habitat present or, if present, highly degraded/fragmented. Minimal unlit areas with no linkage to suitable habitat beyond site. Generally urban in character.

2.2.5 Hazel dormouse

An assessment was made of the suitability of habitat on site to support hazel dormice. Key habitats are woodland, scrub and hedgerows, particularly where these offer dense vegetation within which to nest/hibernate and key resources such as hazel nuts, fruiting/nectar-rich plants (e.g. hawthorn, bramble) and honeysuckle (or nesting material). Of key importance is the presence of landscape-scale habitat linkages such as hedgerows.

2.2.6 Birds

An assessment was made of the site's suitability to support breeding and wintering bird species. Nesting birds will utilise a broad range of habitats, including: built structures; trees; scrub; isolated shrubs; dense herbaceous vegetation (terrestrial and aquatic) and open grassland. All bird species observed on site were recorded.

2.2.7 Reptiles

An assessment was made of the site's suitability to support reptile populations. Key habitat features include: tussocky/patchy grassland; scrub edge; linear watercourses; ponds; compost heaps; brash piles and rubble/soil heaps. Linkage to suitable habitat within the surrounding landscape will increase the potential for reptiles to occur, although populations can occur within isolated/fragmented habitats even within urban areas.

2.2.8 Amphibians

An assessment was made of all waterbodies and terrestrial habitat within the site for their suitability to support populations of amphibians. Suitable waterbodies will generally be characterised by the presence of good quality water, diverse macrophyte cover and an absence of fish.

2.2.9 Invertebrates

The presence of important invertebrate species or assemblages is generally dependant upon distinct micro-habitats such as dead wood (standing, fallen, of all decay stages), sap runs, damp/wet soils, mixed sun/shade, bare/friable soils (e.g. exposed sand banks) and a diversity of plant species. For aquatic invertebrates, important species/assemblages will generally be associated with high-quality aquatic

habitats such as ponds, rivers, streams and ditches. Key factors will include water quality, substrate, waterbody morphology and plant diversity.

An assessment of the site's potential to support a diverse invertebrate assemblage and/or specialist species is based loosely on the presence of habitat features described in Kirby (2001). Where possible, a list of all invertebrate species encountered has been made.

2.2.10 Protected Species Assessment

The surveyed site has been assessed for its potential to support the above-named protected species based upon the criteria in **Table 3**.

Table 3 Protected Species Grading Criteria

Grading Criteria	Justification
Confirmed Presence	Species confirmed on site through direct sighting, presence of field signs (e.g. scat, hair, prints, nest, eggs, habitation etc.) or through desk-based assessment.
High Potential	Presence of optimal habitat features for species. Surveyed site within known range/close to known occurrence. Excellent connectivity to optimal habitat. No justification for discounting presence of species.
Moderate Potential	Presence of some suitable habitat features for species. Surveyed site within/close to known range or known occurrence but factors such as isolation/fragmentation may reduce potential. Presence of species is more likely than not.
Low Potential	Minimal suitable habitat present or, if present, highly degraded/fragmented. Minimal linkage to suitable habitat beyond site. Presence of species unlikely.
Negligible Potential	Site is entirely unsuitable for species. Presence of species highly unlikely.

2.3 Phase 2 Reptile Survey

The survey for the presence or likely absence of reptile consisted of laying 34 bitumen roofing felt tiles of at least 50 centimetre (cm) x 50cm in areas of suitable habitat on the site. This included areas of taller grassland and woodland and hedgerow edge habitats. The mats were evenly distributed across the suitable reptile habitat.

The refugia warm more rapidly than the surrounding environment and reptiles use them to thermoregulate. Inspection of refugia is most effectively carried out in marginal weather conditions such as cold but sunny weather or hazy and somewhat overcast conditions, as this will maximise the thermal value of the refugia for basking

reptiles. Inspections are generally ineffective in cold, wet conditions or in very hot sunny weather.

The refugia were placed on site on 4 September 2015 and were inspected on seven subsequent occasions which are detailed in Table 4 below.

Table 4 Phase 2 Reptile Survey Timings and Weather Conditions

Survey Date	Temperature	Weather Conditions
11 September 2015	16°C	Dry, clear, light wind
14 September 2015	12°C	Intermittent showers, overcast, light wind
17 September 2015	16°C	Dry, 25% cloud cover, light wind
18 September 2015	16°C	Dry, 60% cloud cover, still
23 September 2015	13°C	Dry, clear, light wind
24 September 2015	14°C	Dry, 50% cloud cover, light wind
25 September 2015	12°C	Dry, clear, still

3 RESULTS

3.1 Desk-based Assessment

3.1.1 Designated Sites

No internationally designated sites occur within 5.6km of the site. No nationally designated sites occur within 1km of the site. The following locally designated sites occur within 1km of the site:

- James' Copse & Outlier Site of Importance for Nature Conservation (SINC), 0.2km north, designated due to the presence of ancient woodland habitat supporting notable plant species;
- Wecock Wood SINC, 0.3km southeast, designated due to the presence of ancient woodland habitat;
- Wecock common SINC, 0.4km southwest, supporting woodland of conservation interest;
- Longwood (Idlewood) SINC, 0.5km south, designated due to the presence of ancient woodland habitat;
- James' Copse Paddock, 0.6km northeast, designated due to the presence of unimproved grassland; and
- Yeolls Copse SINC/ Local Nature Reserve, 0.8km northeast designated due to the presence of ancient woodland habitat.

3.1.2 Protected Species

A review of the biological database held by HBIC, as well as records of protected species submitted in association with local planning applications, revealed the presence of a small number of protected and notable species within a 1km radius of the site. A summary of the records is present below:

- Invertebrates: No records overlap with the site. A number of records of notable moth species are present across the search area;
- Reptiles: Several records of slow worm, common lizard and grass snake occur within the search area, including a majority from the more urban areas to the south east of the site; and
- Bats: A pipistrelle sp. bat record (at 0.1km resolution) overlaps with the site, and is likely to be associated with the adjacent residential areas. Numerous common & soprano pipistrelle bat records are present across the search area. Other species recorded are noctule (0.4km southwest) and brown long-eared (0.3km east).

3.2 Field Survey

3.2.1 Vegetation

The following habitat types were identified on the site:

- Scattered broadleaved trees with scattered scrub
- Plantation broadleaved woodland;
- Species rich hedgerow;
- Species poor semi improved grassland (rank); and
- Amenity grassland.

These habitats are described with reference to the aerial photograph of the site (Figure 3 below).



Figure 3: Aerial photograph of the site from 2013

Scattered broadleaved trees with scattered scrub

Scattered broadleaved trees occur to the north eastern corner of the site alongside Woodcroft Lane and along part of the southern boundary of the site. These trees are generally relatively mature, with native oak *Quercus robur*, *Q. petraea* and ash *Fraxinus excelsior*. The most frequently occurring species amongst a generally sparse under-scrub are hawthorn *Crataegus monogyna* and holly *Ilex aquifolium*.

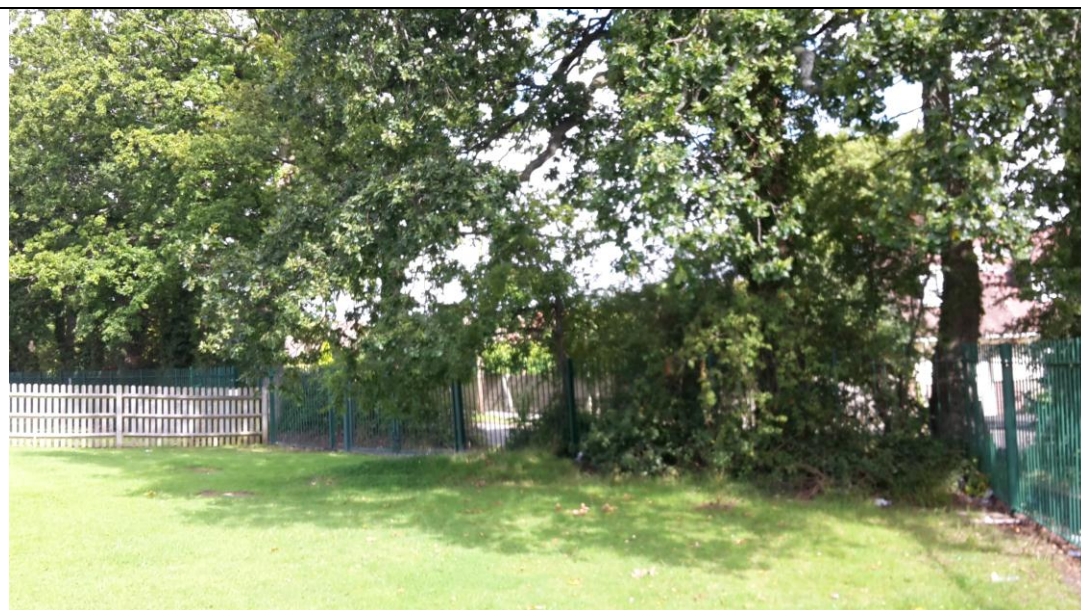


Figure 4: Broadleaved trees adjacent in the north east of the site

Plantation broadleaved woodland

An area of immature planted broadleaved woodland, extends from the southern boundary and dividing the two sections of grassland. Species include birch *Betula* spp, willow *Salix* spp, ash *Fraxinus excelsior* and hazel *Corylus avellana*. Occasional bramble *Rubus fruticosus* agg. is present within the understorey.



Figure 5: Plantation broadleaved woodland toward the centre of the site.

Species-rich hedgerow with trees

The northern boundary of the site is formed by an overgrown defunct hedgerow that includes hawthorn, blackthorn, dog rose *Rosa canina* agg. and hazel with mature native oak standards.

Species poor semi-improved grassland (rank)

The south-eastern section of the school field is formed of an area of the school field that has not been mown as regularly as the rest of the site, which has led to the development of a more coarse/ rank sward of approximately 20cm. Common bent *Agrostis capillaris* and Yorkshire fog *Holcus lanatus* are the most prevalent grass species with occasional tussocks of timothy grass *Phleum pratense*. Forbs are infrequent but include ribwort plantain *Plantago lanceolata* and creeping buttercup *Ranunculus repens*.



Figure 6: Unmanaged semi-improved grassland to the southwest of the site

Amenity grassland

Two large blocks of managed amenity grassland occur on the site, comprising the north-western and south-eastern sections of the school field, formed of typical species such as perennial rye grass *Lolium perenne* and common daisy *Bellis perennis*.



Figure 7: Amenity grassland is the most abundant habitat at the site

3.2.2 Badger

No evidence of badger activity was recorded within the surveyed areas although the habitats are suitable and it is considered reasonably likely that badger would expand into this territory in the time between assessment and construction. In addition absence of evidence cannot be regarded as evidence of absence. Badger territory and use may be influenced by factors including adjacent development or change of land use and use of the site during one visit may not capture use of the site within the landscape over time. Overall, the site is considered to offer **moderate potential** for supporting badger.

3.2.3 Bats – Trees

All trees requiring removal, including those within the area of plantation woodland and adjacent to the proposed site entrance were assessed as Category 3 and consequentially are considered to have **negligible** potential to support roosting bats. Mature trees on the northern and southern boundaries of the site may have the potential to support roosting bats. However as these trees are proposed to be retained within proposals for the site, no formal inspection of the trees was undertaken.

3.2.4 Bats – Foraging and Commuting

Habitats across the site, in particular the hedgerows and other areas of woody vegetation are likely to be of some value to foraging and commuting bats. Surveys at the Woodcroft Farm site revealed reasonable levels and diversity of bats using the

habitats to the north of the site. Overall, it is considered the habitats at the site are of **moderate quality** for foraging and commuting bats.

3.2.5 Hazel Dormouse

The woody boundary habitats to the site are considered to be suitable for dormice. However, as noted in Section 1.3.2, surveys for dormice were undertaken in 2011-12 to inform the Woodcroft Farm development (WSP, 2012), which included the northern and western boundaries of the school site. These surveys found dormice likely to be absent. Although these surveys are now three years old, it is considered very unlikely that dormice could have colonised the habitats in the intervening period and it is considered that dormice are likely to be absent from these habitats.

3.2.6 Birds

The woody vegetation on site provides opportunities for nesting birds and it is inevitable that some will occur and possibly nest within habitats at the site. Overall, the site is considered to exhibit **high potential** for supporting small numbers of common and widespread breeding birds.

3.2.7 Reptiles

The boundary habitats at the school site are considered to represent suitable reptile habitat. In addition, the area of rank species poor semi-improved grassland is suitable reptile habitat. It is noted that previous ecological studies of the site (HED, 2008 & RPS, 2010) recorded this area as managed amenity grassland, indicating the cessation or reduction of management during the period since 2010.

Presence likely-absence Phase 2 reptile survey has been undertaken at the site, as outlined within Section 3.3.

3.2.8 Amphibians

The boundary habitats, woodland and rank grassland represent suitable terrestrial amphibian habitat. Analysis of aerial photography and ordinance survey mapping indicates that potentially suitable waterbodies occur within 500m of the site, all of which occur to the north west of the site, within, or adjacent to the Woodcroft Farm site. Assessments undertaken in support of that application (WSP, 2012) found these waterbodies to be dry for the majority of the year (except one small garden pond) and unsuitable for the strictly protected great crested newt. It is concluded that this assessment is robust and is also valid for the school site, which is considered to have **negligible potential** for supporting great crested newt. It is acknowledged that common amphibians, such as common toad, which have less constrained habitat requirements could occur on site.

3.3.10 Invertebrates

The grassland habitats at the site are highly modified with little diversity and are considered to have negligible potential to support notable or scarce invertebrates. The boundary habitats, particularly where dead wood occurs, are considered to have **low potential** for supporting scarce or notable invertebrate species.

3.3 Phase 2 Reptile Survey

A population of slow worm was recorded within the area of rough grassland to the south west of the site from presence likely-absence survey using a density of mats in excess of 10 per hectare. Reptiles were not recorded in other parts of the site. The results are summarised on Figure 8 and Table 5 below.

Table 5 Reptile Survey Results

Survey Date	Reptiles Recorded
11 September 2015	None
14 September 2015	1 x Adult female slow worm at north western corner of plantation woodland 1x Adult male slow worm centre of rank grassland area
17 September 2015	1 x Adult female slow worm to centre of rank grassland
18 September 2015	None
23 September 2015	1x juvenile slow worm in rank grassland field
24 September 2015	None
25 September 2015	None



Figure 8 Indicative Locations of artificial refugia (yellow) under which reptiles were recorded (blue)

4 IMPACTS

4.1 Introduction

This section is supported by the results of the Extended Phase 1 Ecological Survey and Phase 2 reptile survey and presents the likely impacts, in the absence of any mitigating actions, on protected and notable habitats and species associated with the proposed development. Only those features confirmed as present on site or considered to have from low to high potential occurrence on site have been taken forward for further assessment. In addition, all designated sites located within 500m of the site have been taken forward for further assessment.

4.2 Impacts

4.2.1 Designated Sites

James' Copse & Outlier SINC is located approximately 200m to the north. It is not considered that there is any potential for direct impacts upon the designated site arising from the construction phase. However, it is considered that this woodland site may receive an increased number of recreational visitors owing to the development, which could have negative impacts on the designated site.

Review of the Woodcroft Farm planning application documents reveal that access management measures including bridleway improvements and interpretation boards are proposed to mitigate for impacts associated with this much larger development upon this designated site, which is located closer to the Woodcroft Farm site than the school site. It is considered that these measures should be sufficient to offset additional recreational pressure associated with the development at the school site.

It is considered that the other designated sites identified within the desk study are sufficiently distant from the site to ensure that there should not be any negative impacts.

4.2.2 Habitats/Vegetation

The development will result in the loss of species poor semi improved and amenity grasslands and some of the plantation woodland. These habitats are considered to be of limited intrinsic ecological value, comprising common and widespread species and habitat types and structures that are both easily replaceable and widespread in the local area. It is likely that similar habitats will be recreated within the landscaping proposals for the development.

4.2.3 Badgers

It is considered likely that badgers may currently use the site and use adjacent habitats on an occasional basis for foraging. However, sufficient time may elapse between assessment and pre-construction that increased use of the site is made. This may be a particular risk if adjacent habitat undergoes change of land use.

Where the status of use of the site is unchanged, there will be some potential for individual badgers to enter the works area and, for instance, become trapped within

any deep excavations. It is considered that there is **low potential for impacts to badgers**.

4.2.4 Bats – Trees

None of the trees requiring removal are considered to have the potential to support roosting bats. However, roosts could occur within retained trees within the northern and southern boundary habitats. In order to avoid potential impacts associated with lighting, recommendations are made within Section 5 for the sensitive use of lighting within the proposed development.

4.2.5 Bats – Foraging and Commuting

Bats will almost certainly use the site to some extent for foraging and commuting. The grassland habitats which form the main part of the habitat loss are likely to be of least value for bats, whilst the boundary habitats are likely to be of greatest value and will be retained. In order to minimise potential impacts, recommendations are made within sensitive use of lighting within the proposed development are made within Section 5 of this report.

4.2.6 Birds

Areas of dense woody vegetation such as the boundary vegetation and the plantation woodland are likely to support breeding birds, all species of which are legally protected from killing or injury. Whilst the majority of this habitat is to be retained, vegetation clearance is likely to be required and as such it is considered that there is **moderate potential for impacts to nesting birds**. Avoidance and mitigation measures are outlined within Section 5 of this report.

4.2.7 Reptiles

The site supports a low population of slow worm. This species is legally protected from killing an injury. As some of the habitat where slow worm was recorded is proposed for removal, it is considered that there is **high potential for impacts to slow worm**. Potential mitigation measures are outlined within Section 5 of this report.

5 MITIGATION AND ENHANCEMENT

5.1 Introduction

This section provides details of recommendations considered necessary in order to ensure that potential ecological constraints are considered fully. This includes recommendations for additional survey works and for mitigation, compensation or enhancement measures to avoid, lessen or offset the identified impacts to ecological features arising from the proposed works.

5.2 Mitigation

5.2.1 *Ecological Mitigation and Management Strategy*

It is recommended that recommendations made within this section are incorporated and developed within a ecological mitigation and management plan to be developed as finalised proposals for the site are emerge.

5.2.2 *Badgers*

Although impacts are considered unlikely, it is recommended that a pre-works check for badger setts should be undertaken allowing sufficient time that in the event that a licence for badger exclusion is required, this can be obtained without delay to programme. Badger exclusion is not permitted between December and July and the process of monitoring and exclusion, further to licence application and approval, can take a number of weeks or months.

Where the status of site is unchanged on re-assessment it is advised that any deep excavations (0.5m depth or greater) are either covered entirely during non-working hours or are each fitted with a ramp (such as scaffold board) so as to prevent animals becoming trapped. If any evidence of badger activity becomes evident further professional advice must be sought.

5.2.1 *Bats*

It is assumed that no trees at the northern or southern boundary will be impacted by removal or pruning of significant limbs. In order to avoid potential impacts to foraging and commuting bats, or bats that could be roosting in trees internal to the boundary of the site, it is recommended that a sensitive lighting strategy is devised for the site. The following measures are recommended:

- Lux levels at the woody boundary habitats of the site have potential to disrupt commuting by woodland bat species typical of the edge habitat present. In order to avoid impacts a dark corridor with no external lighting should be maintained to the boundaries of the site. Design should aim to consider future house-hold requirements for lit garages, outhouses, as well as access ways. If a light toward the edge of habitat is required, a hard barrier may be installed to shield light spill from the woodland edge at that juncture. Installation of hard barrier should not be extensive.
- External lighting within the development should be kept to a minimum; in aspect, lux level, and height. Pathways (particularly toward woodland edge)

may be lit by sensor activated downlights, and access way lighting may be downlit and illuminating a restricted area, below knee height or head height as required.

- Requisite external lighting within the development, such as street lighting, should be downward-directional to avoid unwanted light-spill; and
- Lighting should be selected that emits minimal ultra violet light and avoids white and blue wavelengths of the light spectrum.

5.2.2 Birds

It is advisable to undertake necessary clearance of potential bird nesting habitat (such as any dense woody vegetation or adjacent scrub) outside the bird nesting season, (that extends from March to the end of August, although nests are frequently found in the weeks to either side of this period. If clearance must commence during the nesting period (and advanced clearance has not been possible) then a thorough, careful and quiet examination of the affected area must be carried out before clearance starts by a suitably qualified ecologist. If occupied nests are present then work must stop in that area, a suitable (approximately 5-10m) stand-off maintained, and depending on species, disturbance-abatement implemented (in the immediate area). Clearance can only recommence once the young have fledged (nest becomes unoccupied). This may be confirmed by an ecologist.

5.2.3 Reptiles

It will be necessary to devise a reptile mitigation strategy at the earliest possible opportunity to avoid the killing or injury of reptiles during the construction activities and ensure that the population is able to persist in the long-term. The exact nature of such a strategy will depend upon the finalised proposals for the site and management of the site prior to development. It is also noted that the (consented) construction of a road immediately to the west of the development site would impact upon the same reptile population, and therefore the finalised approach to reptile mitigation for both schemes should be best served by a collaborative approach.

Ideally, reptile mitigation would involve retaining and enhancing sufficient habitat within the peripheries of the site to allow the population to persist in the long term. In this case, the following broad principals should be adhered to avoid construction phase impacts:

- A grassy margin to the south of the site must be maintained, with other grassland and tall herb habitats cleared in a directional manner to persuade individuals into this area;
- It is considered that the area of rough grassland does not provide reptiles with hibernation opportunities. It should therefore be possible to clear this area during the hibernation season - indicatively November- February (but weather dependent) without impacts to reptiles;

- If it is required to clear grassland areas during the reptile active season, a two stage clearance should be followed, under ecological supervision. Areas of habitat should be checked by hand for the presence of reptiles, potentially using artificial refugia, before being systematically and directionally cut down to approximately 10cm in order to displace reptiles to adjacent areas of retained habitat, with a second cut down ground level after at least 5 days.
- The area of plantation woodland (see Figure 8 below) could provide reptiles with hibernation opportunities. Clearance of this habitat should therefore be avoided during the hibernation season (indicatively November- February), as reptiles are vulnerable to killing and injury during this period. The habitat should then be cleared in a phased and directional manner under ecological supervision, to make the habitat progressively more unsuitable for reptiles and encourage movement to retained habitats. Arisings should be immediately removed (but may be stored in zones to be retained for reptile throughout if these will be undisturbed).



Figure 9 Location of Plantation Woodland Area

If the above is not practicable in the assessment of a suitably qualified ecologist because for example, final design does not retain sufficient suitable rough grassland, the population could be translocated. This would involve:

- Further characterisation of the population of reptiles at the donor and receptor sites
- The identification of a suitable receptor site;
- Enhancement of the identified receptor site to carry a greater population of reptiles

- Erection of reptile exclusion fencing around the perimeter of the reptile habitat being lost;
- Deployment of artificial refugia; and
- Trapping and translocation of individuals over an appropriate time period during the active reptile season.

Once proposals for the site are finalised a reptile mitigation strategy should be produced for the site and submitted to the Local Planning Authority.

5.3 Enhancements

In line with local and national planning policies, it is recommended that consideration is given to the incorporation of enhancements into proposals for the site. The following recommendations are made:

- Design and implementation of an ecological landscaping plan that uses native and locally sourced plants as these have a far higher ecological value than non-native species;
- Loss of grassland and rank grassland should be compensated by the incorporation of a dedicated wildlife planting scheme at the edge of the development. This should incorporate blocks or wide strips of native flower-rich-grassland interfacing in areas to invertebrate supportive nettle-bed, decaying deciduous wood-piles, and variable topography and soils. An ecological prescription including management plan should be designed at an early stage. Management of this habitat should not require unsustainable effort but will require periodic and knowledge-led upkeep to maintain botanical and invertebrate wildlife value;
- Creation of a new species-rich hedgerow to enhance connectivity across the site, such as along the northern boundary and/ or western boundaries of the site. This should include as much grassland margin as possible; and
- Installation of artificial habitat features on new buildings at the site such as internal and external bat roosting habitat such as bat access roof tiles or specialised soffit access boxes and specialised sparrow nesting boxes.

6 REFERENCES

Technical References

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