Field House, Maggotts End, Manuden, CM23 1BJ

Ecological Impact Assessment

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	Name	Position	Date
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Declaration of compliance

The information we have provided is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Contents

1. Introduction

1.1 Aims of Study

Denny Ecology was commissioned to undertake a Preliminary Ecological Appraisal of the proposed development Site (from hereon referred to as 'the Site') in August 2023. This report details the methods and results of this study and assesses these results in relation to the potential ecological effects of the proposed development.

As no further ecology surveys were recommended following this PEA, this report becomes an Ecological Impact Assessment for the proposed development.

1.2 Site Location

The Site, which is the subject of this planning application, is situated in a rural location near the village of Manuden in Essex, at OS grid reference TL 47985 27705 (What3Words: ///magazines.usage.vowed). It is located 6.5km north of Bishops Stortford town centre and is within the jurisdiction of Uttlesford District Council.

1.3 Site Description

The Site extends to 0.3ha and comprises the existing two-storey house, a detached double garage and a small shed (pool building), set in a large rural garden comprising grass lawn, flower and shrub beds, scattered trees a garden pond. There is a tennis court and grass lawn immediately to the west, within the same land holding, but outside the survey area. The oldest, southeast section of the house dates from the sixteenth or seventeenth century, but most of the house comprises a late twentieth century extension.

The Site is surrounded by other large rural properties with associated small grassland fields to the east, south and west, with a large open arable field to the north.

1.4 Proposed Works

The proposals are to make some internal alterations to the house including a small extension, convert the double garage, construct a new three bay cart-shed and a new pool building. None of the roof spaces and no trees will be directly impacted. The locations of the various elements to the proposals are shown in Figure 1.

2. Methods

2.1 Desktop Survey

A web-based search was undertaken for details of protected sites and species and priority species and habitats that might be impacted by this proposal. The search was extended to a 500m radius, or within the 1-km^2 in which the Site is located (gird square TL4727). As bats use features on and in houses to roost, they were scoped into the desk study, as well as great crested newts (which could use garden pond and other habitats during their terrestrial phase), reptiles, and terrestrial mammals that use gardens such as badgers and hedgehogs. All other protected species and designated wildlife sites were scoped out of the desk study, as they were considered highly unlikely to be impacted by such a small-scale, householder proposal. Priority habitats were scoped into the search, as certain priority habitats can occur in or close to gardens.

Natural England's MAGIC website (www.magic.defra.gov.uk) was consulted along with other existing ecological data sources. Given the small scale of the proposed development, it was considered unnecessary to request records from the Essex Field Club.

In addition, the OS 1:10,000 map of the area, and an aerial photograph on Google Earth (Google Inc 2011), were examined to determine the possible habitats present on, and adjacent to the Site. In particular, we searched for ponds and other waterbodies near to the Site, within a 250m buffer, to assess potential for breeding amphibians to disperse to the Site.

2.2 Extended Phase 1 habitat and species survey

A Site survey visit was made on 26th September 2023. The weather conditions were warm and sunny, with a light breeze. The survey was undertaken by Dr Matthew Denny MCIEEM, a Suitably Qualified Ecologist who holds a PhD in amphibian ecology.

The Site was walked to assess habitats according to UKHabs classification methods (UK Habitat Classification 2021). In addition, evidence of, and potential for habitats to support protected species and other species of importance, was recorded, and general potential ecological constraints for the proposed development were assessed following preliminary ecological appraisal survey methodology (CIEEM 2017). In particular, the house and garage were assessed for potential to support roosting bats (following methods recommended by the Bat Conservation Trust (BCT 2016)) and nesting birds, and habitats were assessed for their potential to support amphibians, reptiles, and terrestrial mammals. Evidence of bat presence, such as droppings, urine and oil stains, and dead or live bats, were searched for in the roof space of the house and garage and on the outside of the buildings.

3. Results and Assessment

3.1 Desktop Survey

Statutory Designated Sites
There are no designated sites within 500m, and the Site is not located within Natural England's designated site Impact Risk Zone for this size and type of development. Therefore, we consider it very unlikely that the proposed work will impact any statutory designated sites.

Priority Habitats
There are no Priority Habitats within 500m of the Site. We consider that Priority Habitats beyond this distance will not be impacted by this small-scale development.

Amphibians
There are two existing records of great crested newts *Triturus cristatus* (GCNs) within the same 1-km2, both positive eDNA tests from ponds in 2018. No more precise location information is available No records for common frog and common toad within 500m were found.

Two pondsa re marked on the OS map within 250m of the Site:

- 35m to the east, which is heavily shaded by mature trees and considered unlikely to be suitable for breeding GCN
- 160m to the southwest, which is heavily shaded by mature trees and considered unlikely to be suitable for breeding GCN

Bats
We found seven records of common pipistrelle within the 1-km2, all from presumably the same activity survey undertaken on 26 August 2006. There are a number of other bat records, involving mainly common pipistreles, but also soprano pipistrelle *P. pygmaeus* and brown long-eared bat *Plecotus auritus* from within 2km of a site 200m to the east, gleaned from a planning application report (Essex Mammal Survey 2023) as follows:

TL492278	25 Jul 2008	Common pipistrelle recorded foraging
TL492278	25 Jul 2008	Common pipistrelle recorded foraging
TL488268	25 Jul 2008	Common pipistrelle recorded foraging
TL488268	15 Aug 2008	Common pipistrelle recorded foraging
TL488268	15 Aug 2008	Common pipistrelle recorded foraging
TL488268	25 Jul 2008	Common pipistrelle recorded foraging
TL495265	26 Aug 2006	Common pipistrelle recorded foraging
TL495265	26 Aug 2006	Soprano pipistrelle recorded foraging
TL495275	26 Aug 2006	Common pipistrelle recorded foraging
TL493279	15 Aug 2008	Common pipistrelle recorded foraging
TL493279	15 Aug 2008	Common pipistrelle recorded foraging
TL491265	01 Jul 2010	Common pipistrelle recorded foraging
TL490265	13 Jul 2004	Common pipistrelle droppings in outbuilding
TL490265	13 Jul 2004	Brown long-eared bat droppings in outbuilding
TL485275	26 Aug 2006	Common pipistrelle recorded foraging

Reptiles
No existing records of any reptile species within 500m of the Site were found.

Badger
No existing records of badger within 500m of the Site were found.

Hedgehogs
No existing records of hedgehog within 500m of the Site were found.

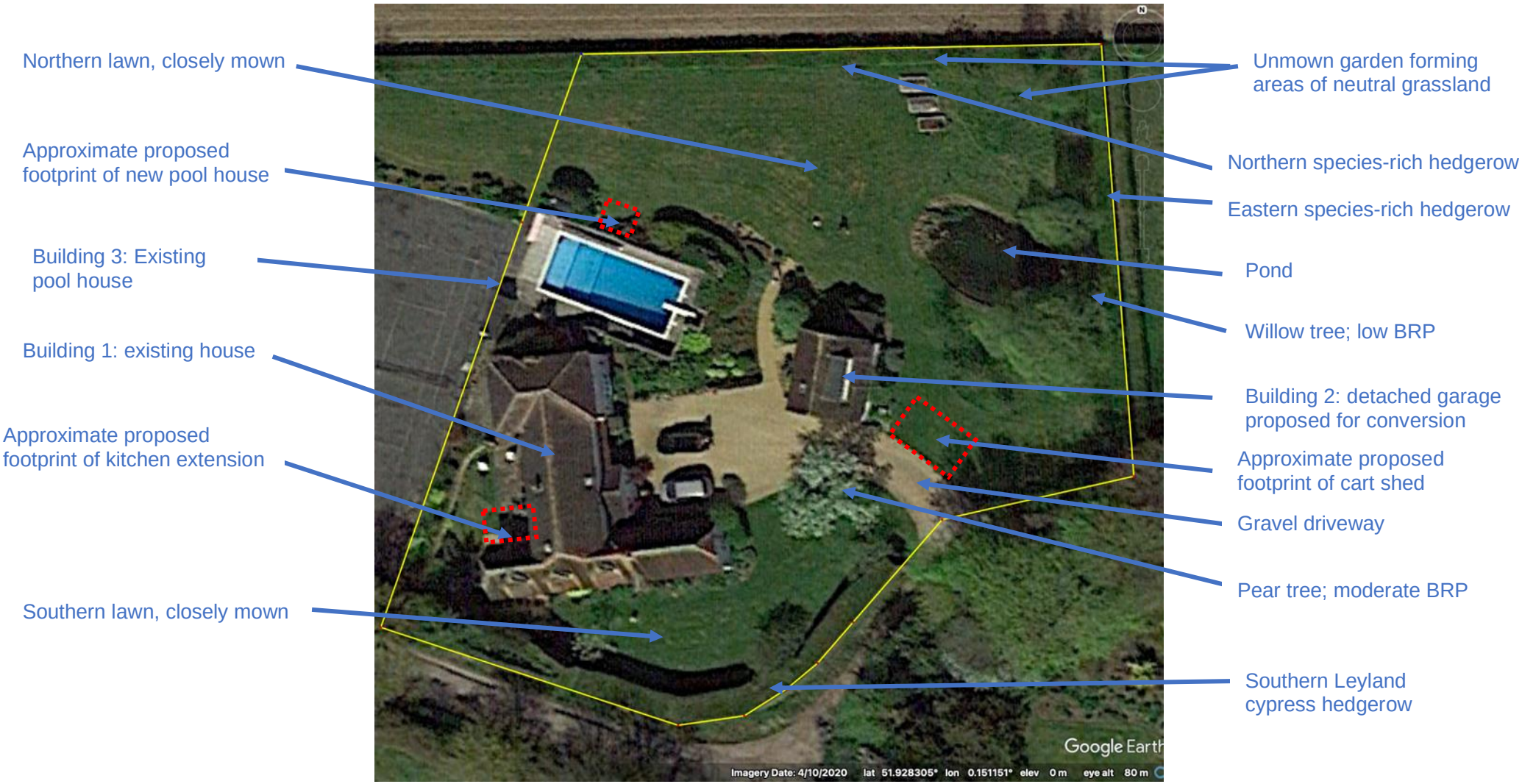
3.2 Extended Phase 1 Habitat Survey

Please refer to the habitat map in Figure 1 while reading these results. In addition, photographs of habitats and notable ecological features within the Site, are presented in Appendix 1.

The Site comprises the house, garage and swimming pool building and the following four other habitats typical of a rural garden:

- Sealed surfaces in the form of the main house (Building 1), the garage (Building 2), and the swimming pool building (Building 3), and paved areas to the rear (west) of the house. The buildings were inspected for bat roosting potential, the results of which are detailed below.
- Unsealed surfaces in the form of a gravel driveway and amenity areas to the rear (west) of the house.
- Garden habitats comprising mown species-poor amenity grass lawn and patches of mainly non-native ornamental shrub planting. The regularly mown grassland sward to the south of he house comprised mainly comprised perennial rye grass *Lolium perenne,* yarrow *Achillea millefolium,* daisy *Bellis perennis*, white clover *Trifolium repens*, common mallow *Malva sylvestris* and creeping bent *Agrostis stolonifera*. The lawn to the north of the house was slightly more species-rich, with the following additional species: selfheal *Prunella vulgaris*, tormentil *Potentilla erecta,* common mouse-ear chickweed *Cerastium fontanum*, and dandelion *Taraxacum officinale*.
- Areas of uncut grassland around the north garden margin and in the northwest corner, support a more diverse species assemblage, and was classed as neutral grassland. Species noted were hedge bedstraw *Gallium molugo,* black knapweed *Centaurea nigra,* wild carrot *Daucus carota,* crested dogstail *Cynosurus cristatus,* great horsetail *Equisetum telmateia,* salad burnet *Sanguisorba minor,* bird's-foot trefoil *Lotus corniculatus,* cocks-foot *Dactylis glomerata*, teasel *Dipsacus fullonum* and spear thistle *Cirsium vulgare.*
- The pond towards the northeast of the Site, was considered to be about 20 yeaars old by the owner. It is circular, with a natural clay lining, abundant yellow flag marginal vegetation and some emergent ornamental water lily. It apparently holds water throughout the year, and supports no fish.
- Several trees were present, all in the eastern section of the garden. East of the pond, close to the Site boundary are two willow *Salix sp.* Trees, the southern specimen having peeling bark presenting low bat roost potential. South of the pond are a young alder and three young fruit (probably *Malus)* trees. There is a mature pear tree immediately south of the drive, with several potential bat roost features.
- The southern Site boundary comprises a mature ornamental hedgerow of Leyland cypress *Cypressus leylandii*. The north and east Site boundaries are mature species-rich native hedgerows, planted approximately 20 years ago according to the owner. It comprises hazel, spindle, wild privet, guelder rose, blackthorn, dogwood, dog rose *Rosa canina,* and sycamore *Acer pseudoplantanus.* With seven native species, and one archeophyte (sycamore), the hedgerow could be classed as a Priority hedgerow, protected under the 1997 Hedgerow. However, such hedgerows should be at least 30 years old, so I cannot be classed as Priority. But it is an important hedgerow that should be retained.

Figure 1. Habitat map of site



The habitats of greatest ecological significance are the native species-rich hedgerows, the pond, the neutral grassland, and the pear and willow trees. These are all to be retained.

Habitats to impacted by the proposed work include the following:

- c.10m2 of paving and gravel to the west of the house, where a kitchen extension is proposed
- An area of vegetated garden comprising the northern lawn and introduced shrubs, likely to extend to c.10m2, where a new pool house is proposed.
- Demolition of the existing pool house (shed)
- Conversion of the garage
- An area of c.50m2 of vegetated garden comprising lawn – footprint of a new cartshed style triple carport to the east of the existing garage

All the impacted habitats are of negligible intrinsic ecological value, although they have potential to provide roosting, nesting, and foraging habitat for animals, as described in more detail below. All these habitats can be retained, replaced or enhanced during the redevelopment of the Site.

Buildings inspection for roosting bats

Building 1 - house

This is a two storey, rendered house. The original southeast section is 16th or 17th century, whist the remaining structure was built in the second half of the twentieth century. There is a single long loft space over the main north-south axis of the more modern section, which is 1.25m high and 4m wide. Timbers are modern machine cut timber truss style. The void is small and cluttered by the framework. The roof lining is felt in very good condition. The floor has mineral wall insulation and is wooden boarded. Mouse and rat droppings were present, but no evidence of bats was found despite a thorough search of the whole void. No external holes that could allow bat access were apparent. There was no evidence of nesting birds.

The outside of the building was generally in very good condition. The only potential bat roosting features were on the south side of the house where the soffit boards have come away from the wall in places, resulting in narrow (1-2cm) gaps which could allow access into the soffits. However, this part of the house will not be impacted by the proposed works, and the only area that will be, (the north aspect of the southwest kitchen area) has a new roof with tight fitting tiles and no bat roost potential. No evidence of bats, such as droppings on external walls, were found, despite a walls being pale pink and therefore such evidence should be easily located.

Building 2 – double garage

This is a detached outbuilding, with a double garage door to the front, open ground floor area for vehicles and storage, and a staircase leading to a home office in the roof with two dormer windows. There is no roof void. The exterior of the building was pale pink and white rendered walls. The roof was standard clay tiles in a good state of repair with no gaps evident. Overall the building had negligible bat roosting potential.

Building 3 – pool room

This is a small wooden shed, constructed from shiplap wooden boarding and flat felt roof with a modern metal chimney vent. It was in a good state of repair, with no potential bat roosting features evident.

Tree inspection for roosting bats

Willow tree
The southernmost of the two willow trees was found to have a significant amount of flaking bark, which can be used by crevice-dwelling bats for roosting. This tree was therefore assessed as having low bat roost potential but is due to be retained, so no further measures are recommended.

Pear tree
The pear tree to the south of the drive is mature with a number of rot holes forming potential roost features. This tree was therefore assessed as having moderate bat roost potential but is due to be retained, so no further measures are recommended.

Protected and priority species

Given the habitats on the Site and the existing species records from the areas, the only protected and priority species likely to be present on the Site are great created newts, nesting birds and bats.

Great crested newt
Ten characteristics of the garden pond were measured and inputted to the Habitat Suitability Index calculator tool (Windrush Ecology website: https://hsicalculator.wordpress.com/4-2/) after Oldham et al. 2000. The pond has an HSI score of 0.73, conferring a 'good' suitability. We can therefore assume it could well support the species. However, there are unlikely to be significant impacts from the proposed works: the garage work will be internal; the house extension is on paving on the far side of the house; the new cart shed will be built on closely mown lawn unsuitable for anything other than transitory newt movements, and the pool house will be on similar mown lawn, with just a few shrubs removed. We therefore conclude that none of the work will pose any more than a very low risk to the species. We recommend that works proceed using precautionary methods, with careful finger-tip searching by an ecologist prior to work commencing.

Nesting birds
The only potential nesting bird habitat to be impacted are the few shrub removed to make way for the pool house. Clearance of these shrubs should be done in the period September-February, outside the bird nesting season. If that is not possible, an ecologist should survey these shrubs for nesting birds immediately prior to removal.

Bats
The potential for roosting bats on the Site is detailed above. The hedgerows around the Site have potential to support foraging and commuting bats. However, as these habitats will not be directly impacted by the proposed work, he only potential for impacts are through inappropriate lighting design allowing light to spill onto these habitats. Appropriate mitigation is therefore recommended below.

4 Enhancements, Mitigation and Conclusions

4.1 Enhancement and Mitigation

The works are all minor, with negligible ecological impacts. In line with the NPPF (2023) and the Environment Act (2021), we recommend the following ecological enhancements.

Formal planting beds
We assume there will be some form of soft landscaping required for the works. Formal garden planting can play an important role in attracting pollinating and other invertebrates, which in turn attract birds, bats, and other insectivorous species. The formal planting beds proposed, will be planted with species specially selected for this role. The following list is a suggestion of plant varieties that can be used:

- Purple toadflax *Linaria purpurea*
- *Verbena bonariensis*
- Marjoram *Origanum vulgare*
- Lavender *Lavandula* spp. incl. *angustifolia*, *hidcote*
- Hyssop *Hyssopus officinalis*
- Honesty *Lunaria annua*
- Eryngium sp.
- Hebe sp.
- Tobacco plant (*Nicotiana tabacum*)
- Honeysuckle, to be trained up walls/fences

Nesting birds

There is an opportunity for the new development to provide enhancement specifically for birds. We recommend the provision of at least two bird-nesting boxes or features installed on existing trees or integrated in the new building.

Bats

No bat roosts will be impacted by the proposed development. However, the Site comprises some mature trees with potential bat roost features and hedgerows, which may be used by foraging and commuting bats. To ensure the development does not negatively impact use of the Site by bats, we recommend that external lighting in the proposed development design is minimized and should not shed light on retained and newly planted woody vegetation, and particularly not across potential roosting features.

The following design principles should be employed in the lighting design scheme:

- space lights as widely as possible;
- keep height of lighting columns as low as possible – low level bollard lights are best;
- keep light spread below the horizontal, using cowls or other shielding devices as well as directional beams;
- white light from LEDs is usually produced by emitting a combination of different wavelength colours - if possible, use narrow spectrum lamps emitting a peak higher than 550nm;
- keep brightness as low as possible and below 3 lux (1 lux preferable) at ground level;
- Keep lights from illuminating identified potential bat features, namely the boundary hedgerows, trees and proposed bat roost features.

There is an opportunity for the new development to provide enhancement specifically for bats. We recommend the installation of at least three bat roosting features/boxes on existing trees or the new buildings, installed at least 2.4m above ground level with south, southeast or southwest aspects. These could be integrated 'bat bricks' or externally/tree mounted boxes, available from specialist supplier ((e.g. https://www.nhbs.com).
For example:

- Eco Kent Bat box: https://www.nhbs.com/eco-kent-bat-box
- Eco Vincent Pro Bat Box: https://www.nhbs.com/vincent-pro-bat-box
- Schwegler 2F: https://www.nhbs.com/2f-schwegler-bat-box-general-purpose

Hedgehogs, insects and other animals

The native hedgerows, trees, planting beds and wildflower-rich lawns recommended above, will provide ideal foraging habitat for hedgehogs, insects and other animals. To provide further features to enhance the site we recommend installing the following:

- A hedgehog nesting feature – we recommend a HH7 Hogilo Hedgehog or a Mammal House (https://www.nhbs.com/search?q=hedgehog+box&qtview=182807) or a Wooden Hedgehog Nest Box (https://www.nhbs.com/search?q=hedgehog+box&qtview=162120)

- A large solitary bee nesting-box (https://www.nhbs.com/solitary-bee-hotel) installed in a sunny position.

- A log habitat pile in a sunny position, preferably comprising a pile of stacked small-medium sized logs, up to 75cm high and measuring at least 1m x 1m, which can be capped and sown with wildflower turf as shown in Figure 2 below. This will complement the existing log pile, which should remain *in-situ*.

To ensure the site remains fully accessible following development, any fencing should be fitted with hedgehog access holes at their base. These need to be a minimum of 13cm in diameter (which is too small for most pets to pass through) and located every 10m. These can simply be a hole of the appropriate size cut into the base of the fence and kept open. Signs and/or hedgehog-shaped hole fixtures are available if required. See following links to Hedgehog Street campaigns:

https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/
https://www.hedgehoghighway.co.uk/shop/?gclid=Cj0KCQiAip-PBhDVARIsAPP2xc3OGrUvRMt5DHpwY4Tp2TasjV7hgoYY1ZrgsJ6EkC1xnqI7z4dZxE8aAv2XE ALw_wcB

Any trenches or pits left overnight should be covered, or a ramp put in, to avoid animals becoming trapped overnight. All vegetation to be retained should be appropriately fenced with tree protection fencing.

Figure 2. Log habitat pile capped with wildflower turf

4.3 Conclusions

The areas of the existing Site to be impacted comprise habitats of negligible ecological value, except potential nesting habitat for common garden birds in the few shrubs due to be removed.

The new cart shed will encroach within c.10m of the existing pond, which has potential to support great crested newts. But the new building footprint will only impact closely mown lawn, unsuitable for the species, and will not impede potential newt movement, as it will be detached, and animals will still be able to disperse around it in a southerly direction from the pond.

In line with the NPPF (2023) the new development should aim to enhance the ecological value of the site through implementation of the enhancement measures suggested within this report.

5. References

Bat Conservation Trust (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition)

CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal,* Institute of Ecology and Environmental Management. www.cieem.net

Department for Communities and Local Government (2023). *National Planning Policy Framework*

Essex Mammal Survey (2023). *Ecological Survey and Assessment for White House Coffee Roastery, Manuden.* Unpublished report for Planning Application ref. UTT/23/2200/OP, Uttlesford planning portal

UKHab Ltd (2023). *UK Habitat Classification Version 2.0 (at https://www.ukhab.org)*

6. Appendix 1 - Photographs

Photo 1. Southern aspect of the house, showing original older section o the right and southern lawn. This area will not be impacted by the proposals

Photo 2. Rear of house (southwest section) showing area to be extended (wall with French doors and roof above). Note the relatively new roof tiles in immaculate condition

Photo 3. Northwest section of the house, not impacted by proposals

Photo 4. Roof space to house

Photo 5. Detached garage to be converted to living space

Photo 6. Rear and east elevations of garage showing roof tiles and soffits in good condition

	
Photo 7. Interior of garage roof space	Photo 8. Pool house (shed)
	
Photo 9. Pond with thick marginal stand of vegetation and emergent water lily	Photo 10. Area of lawn to north of the house
	
Photo 10. Mown lawn area with shrubs to north of swimming pool forming the proposed footprint to the new pool building	Photo 11. Area of mown lawn forming the proposed footprint to the new cart shed

	
Photo 12. Flaking bark of the southernmost willow tree east of the pond – forming potential bat roosting feature	Photo 13. Mature pear tree south of the drive with moderate bat roost potential