
Biodiversity Enhancement Layout and Lighting Design Scheme

Wolsey House Motors, Wortham

for

Wolsey House Motors

28 March 2023

Client

Wolsey House Motors

Planning authority

Mid Suffolk District Council

Time limit of reliance

Please note that the reported surveys were conducted on the date(s) stated in the report and that it represents site conditions at the time of the visit. The findings and recommended mitigation are based on these conditions. If site conditions change materially after the site survey, the original report cannot be relied upon and will need to be updated. Ecological reports and surveys can typically be relied on for 18 to 24 months from the date of survey.

Surveys supporting European Protected Species Mitigation Licence applications must be within the current or most recent survey season for bats (May to September), or within two survey seasons for great crested newts (March to June).

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Signed disclosure

The information, data, advice and opinions provided in this report which I have provided is true and has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct. I confirm that the opinions expressed are my true and professional bona fide opinions.

Nathan Duszynski, ACIEEM

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1. INTRODUCTION

- 1.1. Greenlight Environmental Consultancy Limited has been commissioned to prepare a Biodiversity Enhancement Layout and Lighting Design Scheme to discharge planning conditions 7 and 8 (Application Number: DC/20/03389, Mid Suffolk District Council, August 2020).
- 1.2. The proposed development is located at Wolsey House Motors, Millway Lane, Wortham, Suffolk, IP22 1SL (grid reference: TM 09454 78613).
- 1.3. Condition 7 states:

“Prior to development above slab level, a Biodiversity Enhancement Layout for Protected and Priority species shall be submitted to and approved in writing by the local planning authority, following the details contained within Preliminary Ecological Appraisal (Greenlight, September 2020).

The content of the Biodiversity Enhancement Layout shall include the following:

- a) Purpose and conservation objectives for the proposed enhancement measures;*
- b) detailed designs to achieve stated objectives;*
- c) locations of proposed enhancement measures by appropriate maps and plans;*
- d) persons responsible for implementing the enhancement measures;*
- e) details of initial aftercare and long-term maintenance (where relevant).*

The works shall be implemented in accordance with the approved details and shall be retained in that manner thereafter.

Reason: To enhance Protected and Priority Species/habitats and allow the LPA to discharge its duties under the s40 of the NERC Act 2006 (Priority habitats & species).”

- 1.4. Condition 8 states:

“Prior to occupation, a lighting design scheme for biodiversity shall be submitted to and approved in writing by the local planning authority. The scheme shall identify those features on site that are particularly sensitive for bats and that are likely to cause disturbance along important routes used for foraging; and show how and where external lighting will be installed so that it can be clearly demonstrated that areas to be lit will not disturb or prevent bats using their territory. All external lighting shall be installed prior to occupation in accordance with the specifications and locations set out in the scheme and maintained thereafter in accordance with the scheme. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.

Reason: To allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 (Priority habitats & species)."

2. CONDITION 7 – BIODIVERSITY ENHANCEMENT LAYOUT

- 2.1. The purpose of this report is to provide detailed information on the construction, design and location of mitigation and enhancements.
- 2.2. The conservation objectives include:
 - i. Mitigation and compensation for potential impacts on protected and priority species/habitats.
 - ii. Maintaining the favourable conservation status of protected species.
 - iii. Providing a net gain in biodiversity, as is encouraged by the National Planning Policy Framework (NPPF, 2021).

Mitigation and enhancement measures

Habitats

- 2.3. A soft landscaping scheme will be implemented including the planting of new trees and hedgerows around the site, using native species (Appendix A for location). New hedgerows will be planted with shrub species 40% blackthorn *Prunus spinosa*, 25% hawthorn *Crataegus monogyna*, 10% crab apple *Malus sylvestris*, 10% hazel *Corylus avellana* and 10% wild privet *Ligustrum vulgare*, and tree species 5% field maple *Acer campestre*.
- 2.4. All bare root stock shall be planted between late October and March inclusive. Plants shall be delivered to site in quantities which can be planted the same day. No plant roots shall be allowed to dry out.
- 2.5. Dig L or T shaped notches and insert eight plants at 25cm intervals in two staggered rows, remove weeds, large stones to 50cm x 50cm and insert whip and cane support and photo-degradable guards.
- 2.6. Construction works carried out in accordance with British Standards Institution (2012), BS 5837:2012, trees in relation to design, demolition and construction – recommendations, to protect trees which are to be retained and their root protection areas.

Bats

- 2.7. A soft roof strip of the north facing clay pantile roof will be undertaken with special care. If any bats are found, work will cease immediately and a licenced bat worker contacted to remove any bats to safety and advise on the appropriate mitigation.
- 2.8. As bats may forage and commute across the site, any external lighting will follow guidance from the Bat Conservation Trust and CIE 150:2003. Warm-white (long wavelength) lights with UV filters will be fitted as close to the ground as possible. Lighting units will be angled below 70° and equipped with movement sensors, baffles, hoods, louvres and horizontal cut off units at 90. Please refer to lighting design scheme detailed within section 3.
- 2.9. As enhancements for bats, the following will be installed:
 - i. Installation of two lifted roof tiles on the south aspect (Appendix A for examples, Appendix D for locations).
- 2.10. Building Regulations state that the energy efficiency of buildings must be improved where possible and that contractors must assess the condensation risk within the roof space and make appropriate provisions in line with BS 5250:2011. This British Standard states that both High Resistance (bitumen type 1F) and Low Resistance (non-bitumen coated roofing membranes (NBCRM)) underlays are acceptable as long as appropriate ventilation is provided. As NBCRM are proven to entangle bats through regular contact, which also compromises the integrity of the membrane, the Bat Conservation Trust recommend only NBCRM that have passed the snagging propensity test (must be supplied/installed with the necessary certification) or traditional type 1F bitumen are used.

Birds

- 2.11. Any works affecting bird nesting habitat such as management of trees would ideally need to be conducted outside the main nesting season, which lasts from March to August. If work is planned during the bird nesting season, then a precautionary check of all habitats, should be conducted by a qualified ecologist immediately prior to starting any work. If any nesting birds are found, an appropriate protection zone from the nest will be required and should be maintained until the young have fledged.
- 2.12. As enhancements, the following will be implemented:
 - i. Two small bird boxes on site (Schwegler 1B or 2H Nest Box – Appendix A for example, Appendix E for location).

Herpetofauna (Great Crested Newts and Reptiles)

- 2.13. As a precautionary measure, the following mitigation will be implemented to avoid impacts on amphibians and reptiles from the proposed works:
- i. Vegetation on site will be cut and maintained short (maximum height of 10cm) until the start of works, to discourage animals from using these areas.
 - ii. Construction materials will be stored off the ground on pallets and waste materials in skips, to prevent providing shelter for animals and subsequent harm when materials are moved.
 - iii. Any excavations will have a rough sawn plank placed inside to act as a ramp to allow any animals that have fallen in to escape. The excavations will be checked each morning works are scheduled for, to remove any animals trapped.

Other animals

- 2.14. General mitigation to protect wildlife during the construction period are as follows:
- i. Lighting of the construction site at night will be minimised as far as practicable, to reduce the risk of possible disruption to nocturnal animals such as bats and badgers.
 - ii. To maintain potential hedgehog routes within the site and between the site and further habitats, any fencing installed will be porous and provides access openings for hedgehogs (see Appendix C for examples).

Responsible persons

- 2.15. The client is the developer and landowner of the site and it will be their responsibility to ensure the safeguarding of the mitigation, enhancements and any post-development management, maintenance and monitoring.

Aftercare and long-term maintenance

- 2.16. The model of bat and bird boxes have been selected for their design and material, which will ensure the boxes will be protected from weather and attacks from other animals.
- 2.17. If the bat and bird boxes experience any damage, they will need to be repaired or replaced.
- 2.18. Bird boxes will need to be cleaned at the end of each bird nesting season; the main nesting seasons lasts from March to August, so it is recommended boxes are cleaned in October to ensure all nests are unoccupied.
- 2.19. Hedgerows and tree may need to be maintained. Management would ideally be undertaken outside the main nesting season, which lasts from March to August, and if work is planned during the bird nesting season, a precautionary check of all habitats will be conducted by a

qualified ecologist immediately prior to starting any work. If any nesting birds are found, an appropriate protection zone from the nest will be required and will be maintained until the young have fledged.

3. CONDITION 8 – LIGHTING DESIGN SCHEME

- 3.1. Lighting schemes will follow guidance from the Bat Conservation Trust and CIE 150:2003. Warm-white (long wavelength) lights with UV filters will be fitted as close to the ground as possible. Lighting units will be angled below 70° and equipped with movement sensors, baffles, hoods, louvres and horizontal cut off units at 90°.
- 3.2. Appendix D demonstrates the proposed lighting scheme using a total of two half lanterns (Table 1). Although the lights will not feature horizontal cut-offs, they will be kept on short timers (<1 minute) with built-in PIR sensors and use warm white LED lights.
- 3.3. Any external lighting will be situated away from the periphery, to prevent light spill and maintain bat foraging and commuting routes.
- 3.4. Although two external lights will be positioned on the north and south aspect walls, the lights will not have any impact on potential roosting locations, as they will be located ≥3m away from the closest box entrance and consist of half lanterns with motion sensors and short timers.


	<p>Product: Half Lantern Wall Light with PIR Sensor</p> <p>Bulb: ES E27 warm white (2,700K) LED</p>
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Table 1, proposed light units and bulbs.


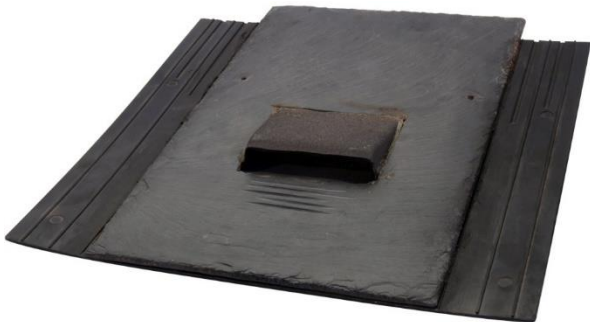
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Appendix A

Examples of bat and bird boxes

(images sourced from www.nhbs.com, www.habibat.co.uk and www.manthorpe.co.uk)

<p style="text-align: center;">Roof access</p> <p style="text-align: center;">Clay bat access tile set</p> <p style="text-align: center;">(only line with type 1F bitumen underfelt or a membrane that has passed the snagging propensity test – no other membranes are permitted)</p> 	<p style="text-align: center;">Roof access</p> <p style="text-align: center;">Habibat slate bat access tile set</p> <p style="text-align: center;">(only line with type 1F bitumen underfelt or a membrane that has passed the snagging propensity test – no other membranes are permitted)</p> 
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Recommendations for installing bat boxes:

(Sourced from Bat Conservation Trust www.bct.org)

Ideally, several boxes should be put up facing in different directions to provide a range of conditions.

Locate boxes:

- Where bats are known to feed close to hedges and treelines (some bats use a treeline or hedgerow for navigation, putting boxes near these features may help the bats find the box).
- On trees: boxes should be placed on the trunk of a mature tree, where there is a clear flight line/accessible entrance.
- On buildings: boxes should be placed as close to the eaves as possible.
- As high as possible (ideally, at least 3 to 4m above the ground, where safe installation is possible).
- In sunny places, sheltered from strong winds (usually between south-west and south-east).

Make sure the boxes are secured.

Boxes can be installed on trees using adjustable ties to avoid damaging the trees. Otherwise, timber screw bolts or nails can be used. Aluminium alloy nails are less likely to damage saws and chipping machinery.

Bats need time to find and explore new homes, and it may be several months or even years before boxes have residents. Once bats find a place they want to live they can return over and over again. Droppings on the landing area, urine stains around the lower parts of the box and chattering noises from inside on warm afternoons and evenings are signs of occupation.

<p>Small bird nesting box 1B Schwegler Nest Box</p> 	<p>Small bird nesting box 2H Schwegler Robin Box</p> 
<p>Integrated swift box Swift Block</p> 	<p>Integrated swift box Manthorpe Swift Brick</p> 
<p>Integrated sparrow terrace 1SP Schwegler Sparrow Terrace</p> 	<p>Integrated sparrow terrace Terraced Sparrow Box</p> 

Recommendations for installing bird boxes:

(Sourced from British Trust for Ornithology www.bto.org and Manthorpe www.manthorpe.co.uk)

The highest priority when siting a nest box must be to provide a safe and comfortable environment in which birds can nest successfully.

Tips for putting up a nest box:

- Boxes should be sited 1-3m from the ground, ideally on tree trunks but can be placed on the side of a shed or wall. Avoid areas where foliage obscures the entrance hole.
- Don't place boxes too close to another nest box of the same type, as this may promote aggressive behaviour between neighbours.
- Shelter your nest box from prevailing wind, rain and strong sunlight. The box should face between north and east, and angled vertically or slightly downwards to prevent rain entering.
- Make sure cats cannot get into the box.
- Keep nest box away from bird feeders.
- Use galvanized or stainless steel screws or nails. If fixing boxes to trees, galvanised wire can be used to tie the box to the trunk or hang it from a branch. Make sure to regularly inspect these fittings (every two or three years) to ensure the box remains securely attached.

Tips for putting up house sparrow terraces and swift bricks/boxes:

- Locate ≥ 5 m high on the gable wall of the property and above the level of the insulation zone.
- Where possible, install in locations that are unlikely to receive large amounts of direct sunlight during the hottest times of the day, ideal places include below the overhang of the verge and barge board.

Appendix B

Native species suitable for planting and sowing

Plants should be obtained from specialist nurseries and preferably be of local genetic stock.

Key: (f) – fruit and berry species; € – evergreen species; (se) semi-evergreen species; (d) – deciduous species

Trees	
Alder (d)	<i>Alnus glutinosa</i>
Apples (f; d)	<i>Malus spp.</i> (local varieties)
Ash (d)	<i>Fraxinus excelsior</i>
Beech (d)	<i>Fagus sylvatica</i>
Bird cherry (f; d)	<i>Prunus padus</i>
Elder (f; d)	<i>Sambucus nigra</i>
Elm (d)	<i>Ulmus procera</i>
Field maple (d)	<i>Acer campestre</i>
Pedunculate oak (d)	<i>Quercus robur</i>
Rowan (f; d)	<i>Sorbus aucuparia</i>
Pears (f; d)	<i>Pyrus spp.</i>
Silver birch (d)	<i>Betula pendula</i>
Small-leaved lime (d)	<i>Tilia cordata</i>
White willow (d)	<i>Salix alba</i>
Wild cherry (f; d)	<i>Prunus avium</i>
Walnut (d)	<i>Juglans regia</i>

Shrubs	
Blackthorn (f; d)	<i>Prunus spinosa</i>
Buckthorn (f; d)	<i>Rhamnus catharticus</i>
Crab apple (f; d)	<i>Malus sylvestris</i>
Dog rose (f; d)	<i>Rosa canina</i>
Dogwood (f; d)	<i>Cornus sanguinea</i>
Field maple (d)	<i>Acer campestre</i>
Guelder-rose (f; d)	<i>Viburnum opulus</i>
Hawthorn (f; d)	<i>Crataegus monogyna</i>
Hazel (d)	<i>Corylus avellana</i>
Hol€(e)	<i>Ilex aquifolium</i>
Honeysuckle (f; d)	<i>Lonicera periclymenum</i>
Spindle (f; d)	<i>Euonymus europaeus</i>
Wild privet (f; se)	<i>Ligustrum vulgare</i>
Yew (f; e)	<i>Taxus baccata</i>



Flowering plants	
B'rd's-foot trefoil	<i>Lotus corniculatus</i>
Black knapweed	<i>Centaurea nigra</i>
Common 'at's-ear	<i>Hypochaeris radicata</i>
Common sorrel	<i>Rumex acetosa</i>
Common vetch	<i>Vicia sativa</i>
Cowslip	<i>Primula veris</i>
Field scabious	<i>Knautia arvensis</i>
Foxglove	<i>Digitalis purpurea</i>
L'dy's bedstraw	<i>Galium verum</i>
Meadow buttercup	<i>Ranunculus acris</i>
Meadow vetchling	<i>Lathyrus pratensis</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Primrose	<i>Primula vulgaris</i>
Red clover	<i>Trifolium pratense</i>
Selfheal	<i>Prunella vulgaris</i>
Sweet violet	<i>Viola odorata</i>
Wild daffodil	<i>Narcissus pseudonarcissus</i>
Yarrow	<i>Achillea millefolium</i>

Grasses	
Common bent	<i>Agrostis capillaris</i>
Crested 'og's-tail	<i>Cynosurus cristatus</i>
Meadow fescue	<i>Festuca pratensis</i>
Red fescue	<i>Festuca rubra</i>
Rough meadow-grass	<i>Poa trivialis</i>
Small timothy	<i>Phleum bertolonii</i>
Smooth meadow-grass	<i>Poa pratensis</i>
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Yellow oat-grass	<i>Trisetum flavescens</i>

Appendix C

Examples of hedgehog friendly fencing

(images sourced from www.quercusfencing.com and www.jackson-fencing.co.uk)

<p style="text-align: center;">Quercus Fencing</p> <p style="text-align: center;">Hedgehog friendly oak woven fencing panels</p> 	<p style="text-align: center;">Jacksons-Fencing</p> <p style="text-align: center;">Hedgehog friendly gravel board for use with slotted posts</p> 
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Recommendations for installing hedgehog friendly fencing:

(Sourced from Hedgehog Street www.hedgehogstreet.org)





A hedgehog friendly fence should have a gap measuring at least 13cm by 13cm in the gravel board. These gaps allow any hedgehog to pass through but are too small for nearly all pets.

At least one hedgehog friendly fence panel should be located on each side of your garden, to provide unimpeded access.

Almost all fencing materials can be made hedgehog friendly, but may require DIY adaptations. Please note that some concrete gravel boards contain metal rods running along the length of the boards to provide strength and rigidity, and cannot be cut. To overcome this, a gap can be left between the gravel board and post to provide the required gap.

Appendix D

Location of enhancement measures and lights

-  Indicates location of bat access tiles
-  Indicates location of small bird boxes
-  Indicates location of wall lights
-  Indicates location of hedgerow

