Adonis Ecology Ltd.

Biodiversity Enhancement Strategy including Wildlife Lighting Scheme for Site to the Rear of 241 Stowmarket Road, Great Blakenham to Address Two Planning Conditions

Project Ref: 1584

Prepared on behalf of:

Crown Gate Homes Ltd.
Westside House Westside Centre
London Road
Stanway
Colchester
Essex
CO3 8PH

By:

Adonis Ecology Ltd.
Unit 11 Lavenham Studios
Brent Eleigh Road
Lavenham, Sudbury
Suffolk, CO10 9PE
Tel: 01787 249 160
E-mail: askus@adonisecology.co.uk
www.adonisecology.co.uk

Registered in England and Wales No: 6208092
Registered Office: Crane Court, 302 London Road, Ipswich, IP2 0AJ.

Quality Assurance

The findings outlined within this report and the data we have provided are to our knowledge true, and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute for Ecology and Environmental Management (CIEEM) Code of Professional Conduct and the British Standard BS 42020:2013 which provides a code of practice for biodiversity in planning and development (BSI, 2013).

As far as the author and report checker are aware, the only differences that occur in this report from the recommended layouts are:

- to enable greater clarity and reduce repetition);
- where there are inconsistencies in the guideline documents; and
- to retain a proportionate approach in accordance with BS 42020:2013.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. Therefore, we cannot guarantee that this assessment completely defines the degree or extent of the occurrence of various species or habitats on the site, or the effectiveness of recommended actions as described in the report. In addition, as the ecological situation of a site is dynamic, this assessment pertains only to the conditions noted during the site visit. Therefore, to achieve the objectives of assessment as stated in this report, the conclusions are based on the information that was available during the time of the assessment and within the limits prescribed by our client in the agreement.

	Name	**Signature**
Report prepared by:	Marguerite Ravn BA (Hons) MPhil	
Report checked by:	Katrina Wells BSc (Hons) MSc ACIEEM	

Contents

Tables

Figure

0 SUMMARY

0.1 Adonis Ecology Ltd. was commissioned by Crown Gate Homes Ltd. to produce a Biodiversity Enhancement Strategy (BES) including a Wildlife Lighting Scheme to address Conditions 11 and 12 of the planning consent for a development on a site to the rear of 241 Stowmarket Road, Great Blakenham, Ipswich, Suffolk, IP6 0LY, Grid Reference TM 114 514. It was understood the development will be of five dwellings with associated parking and access road.

0.2 This BES includes biodiversity enhancement measures planned for the site to address the condition, as well as details of the ongoing management required to ensure effectiveness of biodiversity enhancements. This BES also includes a detailed wildlife lighting scheme.

0.3 Condition 11 reads as follows:

11. ACTION REQUIRED IN ACCORDANCE WITH A SPECIFIC TIMETABLE: BIODIVERSITY ENHANCEMENT

Prior to first occupation of any of the dwellings, a Biodiversity Enhancement Strategy for Protected and Priority species shall be submitted to and approved in writing by the local planning authority.

The content of the Biodiversity Enhancement Strategy 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).

0.4 Condition 12 reads as follows:

12. ACTION REQUIRED IN ACCORDANCE WITH A SPECIFIC TIMETABLE: WILDLIFE LIGHTING

Prior to first occupation of any of the dwellings, 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 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 conserve protected and Priority species and 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).

0.5 The biodiversity enhancements on site will consist of the planting of native hedgerows with tree standards, creation of hedgehog holes in all fencing on site, species-rich lawns, bat boxes, bird boxes and the creation of a wildflower meadow area with three habitat piles and two bee and insect next boxes. Full details of these measures are outlined within this report.

0.6 The Wildlife Lighting Scheme consists of provided locations for external lights on site, including specifications of said lights ensuring no impacts on foraging and/or commuting bats. Included is also a map with areas of high value to foraging and/or commuting bats which are not to be lit.

0.7 If this Biodiversity Enhancement Strategy is followed, it should be possible for the proposed development to ensure continuing provision of ecological features and ensure the long-term maintenance of these features on the site. The Wildlife Lighting Scheme will ensure that no existing or created habitat be rendered unsuitable for foraging and/or commuting bats.

1 INTRODUCTION

1.1.1 Adonis Ecology Ltd. was commissioned by Crown Gate Homes Ltd. to produce a Biodiversity Enhancement Strategy (BES) including a Wildlife Lighting Scheme to address Conditions 11 and 12 of the planning consent for a development on a site to the rear of 241 Stowmarket Road, Great Blakenham, Ipswich, Suffolk, IP6 0LY, Grid Reference TM 114 514.

1.1.2 The development consists of the building of five dwellings with associated parking and access roads.

1.1.3 Condition 11 reads as follows:

11. ACTION REQUIRED IN ACCORDANCE WITH A SPECIFIC TIMETABLE: BIODIVERSITY ENHANCEMENT

Prior to first occupation of any of the dwellings, a Biodiversity Enhancement Strategy for Protected and Priority species shall be submitted to and approved in writing by the local planning authority.

The content of the Biodiversity Enhancement Strategy 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).

1.1.4 Condition 12 reads as follows:

12. ACTION REQUIRED IN ACCORDANCE WITH A SPECIFIC TIMETABLE: WILDLIFE LIGHTING

Prior to first occupation of any of the dwellings, 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 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 conserve protected and Priority species and 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).

1.1.5 This strategy outlines all ecological enhancement measures and external lighting for the site to meet the above conditions, as well as all measures necessary for the maintenance of the ecological features on the developed site.

1.1.6 Crown Gate Homes Ltd. will be responsible for implementing the enhancement measures on the site during the construction works. The management and future maintenance of the enhancement features will be undertaken by a management company, secured under a Section 106 agreement.

2 ECOLOGICAL METHOD STATEMENT

2.1.1 The purpose of this BES is to ensure that the proposed development provides ecological enhancements suitable for species which may occur in the local area.

2.1.2 The conservation objectives are as follows:

- to provide native and/or wildlife attracting plant species on site to improve botanical species diversity in order to benefit local wildlife, particularly invertebrate species:
- to provide increased potential for wildlife to shelter on site, through provision of wildlife boxes and habitat features which may be suitable for many small animals, particularly small mammals, reptiles and amphibians.

2.1.3 The species targeted were chosen based upon:

- conservation status;
- likely occurrence in the local area;
- suitability of habitats on and immediately surrounding the site.

2.1.4 Included in this BES is a lighting scheme with the aim of ensuring that wildlife in general, with a specific focus on bats, are not disturbed or prevented from using the site and its surroundings.

2.1.5 The lighting scheme is based upon relevant ecological features both on site and within its sphere of influence.

3 ENHANCEMENT FEATURES

3.1 Native Planting and Hedgerows

3.1.1 Planting native vegetation will increase nectar and other foraging resources on site for native wildlife, in particular for invertebrates. As practical, native trees, shrubs and climbing plants will be planted in appropriate areas on site, increasing the

structural diversity of the site, which should attract a greater number of flying insects upon which bats, birds and other wildlife feed.

3.1.2 Species rich native hedgerows will be planted to mark the site boundary as well as between the new dwellings and their gardens (see Figure 1 in the Appendix). In places where there are existing hedgerows, these will be strengthened and filled out with new planting of native hedgerow species. To plant the hedgerows, the earth will first be prepared with all stones removed and the soil loosened. The hedgerow plants will be planted between October to April, 30-35cm apart in two rows 40 cm apart in a zig-zag pattern. In order to protect the new plants from damage caused by rabbits, deer and other wildlife, spiral guards which expands with the plants will be put on every plant. These guards will be removed after 2-5years depending on how the plants are faring.

3.1.3 A minimum of six different species will be planted per 30m of hedgerow to create a species-rich hedgerow of high value to wildlife, with flowering, nectar-producing, and fruit and nut bearing species providing food and habitat sources all through the year, see Table 1 below for species composition. Approximately 70% of the hedgerow will be made up of hawthorn, blackthorn, field maple, hazel and holly. The remaining 30% will be made up of a variety of species to ensure the hedgerows will be species rich and benefit wildlife to the fullest.

Table 1: Native Hedgerow Species Composition

Common Name	Scientific Name	Percentage of Hedgerow	Characteristics
Planted throughout the hedgerow			
Hawthorn	*Crataegus monogyna*	20%	Provides food for birds and mammals and help reduce cat predation
Blackthorn	*Prunus spinosa*	20%	Provides food for birds and mammals and help reduce cat predation
Field maple	*Acer campestre*	10%	Seeds are eaten by small mammals
Hazel	*Corylus avellana*	10%	Provides autumn food for small mammals
Holly	*Ilex aquifolium*	10%	Provides screening and refuge habitat all year round as well as berries
Planted randomly in the hedgerow making up the remaining 30%			
Bird cherry	*Prunus padus*	5%	Provides food for birds and mammals
Dogwood	*Cornus sanguinea*	5%	Provides berries which are eaten by wildlife
Guelder rose	*Viburnum opulus*	2.5%	Provides berries which are eaten by wildlife
Dog rose	*Rosa canina*	5%	Provides nectar for insects and hips for small mammals
Spindle	*Euonymus europaeus*	5%	The seeds are eaten by wildlife
Wild privet	*Ligustrum vulgare*	2.5%	Provides berries which are eaten by wildlife
Honeysuckle	*Lonicera periclymenum*	2.5%	Provides nectar sources for pollinator species and habitat for small mammals
Traveller's joy (wild clematis)	*Clematis vitalba*	2.5%	Provides nectar sources for pollinator species and habitat for small mammals

3.1.4 In addition to the hedgerow planting described above and included within the hedgerows will be standard trees planted every six meters. These will consist of an

equal mix of oak *Quercus robur*, rowan *Sorbus aucuparia*, hornbeam *Carpinus betulus,* crab apple *Malus sylvestris* and wild cherry *Prunus avium*. As well as enhancing ecological connectivity around the site, planting hedgerows with standards on site, rather than closed fences, will also provide foraging and refuge opportunities for birds, small mammals and other wildlife.

3.1.5 If possible, trees and plants of local provenance will be sourced, as these have a better chance of thriving. For bio-security purposes, only UK-grown species will be planted.

3.1.6 Management of the hedges within communal areas, once established, will include rotational cutting, with half of the hedgerows being cut in alternating years. The cut will be undertaken between October and the end of February to avoid risk of impact to nesting birds. The rotational cut will ensure a continuous resource of flowers and berries. Management of the hedges within the individual gardens will be the responsibility of the future tenants who will be encouraged to adopt similar rotational cutting to ensure continuous resources for wildlife.

3.2 Hedgehog Holes

3.2.1 Where fencing is required, either on the site boundary or between properties, they will have access provided in the form of 13cm diameter, semi-circular holes at 10m intervals in the base of the fence allowing hedgehogs and other small animals free access. In order to reduce the likelihood of these holes being closed up by future residents, small signs will be put above holes, at least one in each garden, to inform people of why these holes are there. Recommended signs are: https://shop.britishhedgehogs.org.uk/product/hedgehog-highway-sign.

3.3 Wildflower Meadow

3.3.1 A band along the southern border of the site will be seeded as a wildflower area (see Figure 1 in the Appendix). The area will be seeded with the species-rich mix EM2 Standard General Purpose Meadow Mixture by Emorsgate. This mix will create a rough grassland with wildflowers supporting a variety of invertebrates which in turn will benefit other wildlife such as bats, birds, small mammals and herpetofauna. The mix contains four grass species and 13 flowering herbaceous species as follows:

Table 2: Species in EM2 - Standard General Purpose Meadow Mixture

Common Name	Scientific Name	Percentage of Mix
Grasses		
Browntop Bent	*Agrostis capillaris*	8.5%
Crested Dogstail	*Cynosurus cristatus*	34.0%
Smooth-stalked Meadow Grass	*Poa pratensis*	17.0%
Red Fescue	*Festuca rubra*	25.5%
Herbaceous Species		
Betony	*Betonica officinalis*	1.0%
Meadowsweet	*Filipendula ulmaria*	1.0%
Lady's bedstraw	*Galium verum*	0.3%

Common Knapweed	*Centaurea nigra*	3.5%
Meadow Buttercup	*Ranunculus acris*	1.0%
Oxeye Daisy	*Leucanthemum vulgare*	0.5%
Birdsfoot trefoil	*Lotus corniculatus*	0.9%
Musk mallow	*Malva moschata*	1.0%
Ribwort plantain	*Plantago lanceolata*	2.0%
Cowslip	*Primula veris*	0.1%
Selfheal	*Prunella vulgaris*	0.1%
Tufted Vetch	*Vicia cracca*	3.5%
Wild Carrot	*Daucus carota*	0.1%

3.3.2 The wildflower area will be prepared with the turf removed, soil being loosened and all stones removed. Then the area will be seeded following suppliers guidelines in fine, friable seed beds, in spring or autumn when the conditions in terms of warmth and moisture are ideal for germination. As wildflowers and grass species are perennial, they will be slow to germinate and will usually not flower in the first year.

3.3.3 The newly sown wildflower area will be left to get established until late summer, then it will be cut regularly to a height of 40-60mm with all cuttings removed to control annual weeds and help balance the area between the faster growing grasses and slower growing wild flowers.

3.3.4 After the first year, the wildflower area will be cut twice annually, once in spring and once in late summer, ensuring the wildflowers have time to reach flowering stage in the summertime. After flowering, the area will be cut in August to a height of 40-60mm and the 'hay' will be left to dry and shed seeds for 7 days, then it will be removed from site. Removing all cuttings will prevent annual weeds from crowding out the wild flowers. Any particularly strong growing weeds should be pulled out by hand prior to each cut.

3.4 Species Rich Lawn

3.4.1 All gardens and other areas to be laid to lawn will be seeded with WFG20 Eco Species Rich Lawn Mixture (not marked on the map of enhancements in Appendix 1). This mixture contains slow growing grasses with a selection of wild flowers that respond well to regular short mowing, it is designed to create a species rich lawn that can be kept trimmed or left longer to flower. This will provide a valuable resource for bees and other insects, which in turn provide food for other wildlife such as bats and nesting birds. The mix contains eight grass species and 18 flowering herbaceous species as follows:

Table 3: Species in WFG20 - Eco Species Rich Lawn Mixture

Common Name	**Scientific Name**	**Percentage of Mix**
Grasses		
Sheeps fescue	*Festuca Ovina*	20%
Strong creeping red fescue	*Festuca rubra rubra*	15%
Slender creeping red fescue	*Festuca rubra litoralis*	12.5%

Chewings fescue	*Festuca rubra commutata*	12.5%
Smooth stalked meadow grass	*Poa pratensis*	10%
Browntop bent	*Agrostis capillaris*	5%
Creeping bent	*Agrostis stolonifera*	2.5%
Perennial ryegrass	*Lolium perenne*	2.5%
Herbaceous Species		
Wild carrot	*Daucus carota*	2%
Common knapweed	*Centaurea nigra*	0.5%
Selfheal	*Prunella vulgaris*	0.4%
Red clover	*Trifolium pratense*	2%
White clover	*Trifolium repens*	2%
Ribwort plantain	*Plantago lanceolata*	1%
Dandelion	*Taraxacum officinale*	2%
Birdsfoot trefoil	*Lotus cornuiculatus*	1%
Black medick	*Medicago lupulina*	1%
Flax	*Linum usitatissimum*	1.8%
Common mouse-ear	*Cerastium fontanum*	0.1%
Cowslip	*Primula veris*	0.1%
Burnett saxifrage	*Pimpinella saxifrage*	0.2%
Lady's bedstraw	*Galium verum*	1%
Yellow rattle	*Rhinanthus minor*	1%
Yarrow	*Achillea millefolium*	1.8%
Wild pansy	*Viola tricolor*	0.1%
Common sorrel	*Rumex acetosa*	2%

3.4.2 The soil will be prepared into fine friable seedbeds down to 150mm in depth, and the lawn mixture will be seeded ensuring good contact with the soil. The areas will be seeded in spring or autumn when the conditions in terms of warmth and moisture are ideal for germination. As many of the wildflowers and grass species are perennial, they will be slow to germinate and will usually not flower in the first year.

3.4.3 The first cut of the lawn areas will be in the early autumn where the lawns will be cut to a height of 70-100mm and all cuttings will be removed.

3.4.4 After the first year, the lawns will be mown regularly to a height of about 40-60mm to control annual weeds and help balance the grassland area between the faster growing grasses and slower growing wildflowers. If desired, the mowing can be paused from late June for 1-2 months to enable flowering. Cuttings should be removed from site.

3.5 Habitat Piles

3.5.1 Three habitat piles will be created within the wildflower meadow, see approximate location on the map of enhancements in Appendix 1. The habitat piles will comprise old vegetation from the site, including smaller branches and larger logs piled to a

minimum height of 50cm, each covering an area of at least 1m^2. On top will be added a thin layer of soil, leaving a gap around the base for animals to get in, and seeded with the wildflower mix so they are less obtrusive. These will provide potential hibernation sites for a variety of wildlife, including reptiles and hedgehogs *Erinaceous europaeus*. Logs and branches from site maintenance activities will continue to be added to these piles or used to create new piles. Allowing log piles to naturally decay and break down will also create potential habitat for saproxylic invertebrates, and in turn, food for birds and bats.

3.5.2 As log piles are created in communal areas of a residential development, appropriate signage will be installed to prevent well-meaning residents from 'tidying' them away.

3.6 Bee Box/Insect Nesting Aid

3.6.1 Two Schwegler Clay and Reed Insect Nests will be provided to benefit native bees. The nesting boxes will be installed firmly (not allowed to swing) in a sheltered and sunny position on trees (above 2m) within the strip of wildflower meadow. These nests are designed to attract only harmless insects, including solitary bees which are harmless to humans and pets and are useful pollinators. See Figure 1 in Appendix 1 for approximate location.

3.7 Bat Boxes

3.7.1 The installation of three bat boxes will provide some potential roosting opportunities for bats on the site. The boxes to be installed will be the integrated Schwegler 1FE Bat Box (see specifications in Appendix 2) and these will be installed into the walls of the new buildings, at least 4m above ground level and in locations where the entrance and surroundings of the bat box are not illuminated. They will not be positioned above windows or doors to minimise impact/nuisance to the house occupants from falling droppings, and will be located where there is a clear flight path to the box. The approximate locations for the installation of the bat boxes are provided on the map of enhancements in Appendix 1. Bat droppings in the UK are not known to transmit disease.

3.8 Bird Boxes

3.8.1 The site will be enhanced for birds by the addition of bird boxes provided on the new buildings or on retained mature trees on site. Four types of boxes will be installed, increasing the potential of the site to support a wider range of species of nesting birds, in particular by providing nesting opportunities for species which do not currently have suitable nesting habitat on site. The following boxes will be installed, see Figure 1 in Appendix 1 for approximate locations, and Appendix 2 for specifications:

- 6 x 'S' Brick boxes from Action for Swifts suitable for swifts *Apus apus* and Section 41 species house sparrow *Passer domesticus*. Nests should be incorporated into the walls of buildings/structures immediately under soffits or eaves at least 5m above the ground (gables area ideal, otherwise high up

under the eaves), not above doorways or windows. These can be designed to match the specification of any building by using a custom brick facing;

- 2 x 1SP Schwegler Sparrow Terraces, which can be designed to match the specification of any build by using a custom brick facing. These are specifically designed for the Section 41 species house sparrow, best located under eaves, not south facing;

- 2 x 2H Schwegler Robin Box, suitable for robins *Erithacus rubecula*, wrens *Troglodytes troglodytes*, spotted flycatchers *Muscicapa striata*, pied wagtails *Motacilla alba*, grey wagtails *Motacilla cinerea*, song thrushes *Turdus philomelos* and blackbirds *Turdus merula*. The boxes will be installed at a height of 1.5-2m, within vegetation, not south facing, and not in direct sunlight, to avoid nestlings overheating and dying;

- 2 x 2GR Schwegler Nest Box with an oval entrance. These are suitable for blue tits *Cyanistes caeruleus*, great tits *Parus major*, coal tits *Periparus ater*, house sparrows and tree sparrows *Passer montanus*. The boxes will be installed above 3m, out of the reach of predatory cats, not south facing, and not in direct sunlight, to avoid nestlings overheating and dying.

3.8.2 Alternative boxes could be used but these must be confirmed for suitability by an ecologist.

4 MANAGEMENT PLAN FOR ENHANCEMENTS

4.1.1 Table 4 below provides a summary of enhancements as well as management prescriptions that will be undertaken on site, with planned timescales and any subsequent requirements:

Table 4: Summary and Timings of Ecological Enhancements and Management Procedures for Site to the rear of 241 Stowmarket Road, Great Blakenham

Month	Years	Task	Notes
Enhancement			
Any	1	Installation of bat boxes	To be installed following manufacturer's instructions, during construction of the buildings. Locations as in Figure 1.
Any	1	Installation of bird boxes	To be installed following manufacturer's instructions during construction. Locations as in Figure 1.
Any	1	Installation of bee and insect boxes.	To be installed following manufacturer's instructions during construction. Location as in Figure 1.
Any	1	Creation of habitat piles with signage put up	Construct habitat piles using materials from site clearance where possible. Locations as in Figure 1.
Any	1	Installation of hedgehog holes in fences with signage put up	To be installed during construction of the fences.
October to April	1	Prepare the soil and plant hedgerows, trees and climbers	New plants to be planted, protected and supported following industry best practice.
Spring or	1	Seed wildflower area	Sow in fine, friable seed bed following supplier

Month	Years	Task	Notes
autumn			guidelines, prior to occupation of buildings.
Spring or autumn	1	Seed lawn areas	Sow in fine, friable seed bed following supplier guidelines, prior to occupation of buildings.
Habitat Management			
August to October	1	Mow wildflower areas monthly	Maintain at a height of approximately 4-6cm. Remove cuttings from site.
Early Autumn	1	First cut of lawn areas	Cut to a height of approximately 7-10cm. Remove cuttings.
May to September	1-2	Water new plants and trees	Plants to be watered each week in dry weather, every 2-4 weeks in wetter weather.
April - September	2-5	Check habitat piles are still present annually.	Add tree prunings or logs to piles to maintain initial size where possible.
April	2-5	Single cut of wildflower area	Mow to a height of approximately 4-6cm. Remove cuttings from site.
August	2-5	Single cut of wildflower area	Mow to a height of approximately 4-6cm. The 'hay' will be left to dry for 7 days and then removed from site.
October to February	2-5	Rotational cut of half of hedgerows	Cut hedgerows on a rotation basis to ensure an annual resource of flowers and berries, with each half being cut in alternate years.
October to March	2-5	Plants and trees to be checked. Protection of plants to be removed once the plants are sufficiently established	Dead or unhealthy plants to be replaced before end of subsequent April. Mulch and replace supports and protective measures if required.
Throughout	2-5	Regular cut of lawn areas	Mow to a height of approximately 4-6cm. Remove cuttings from site. To enable flowering, the mowing can be paused from late June to August.
Any	2-5	Check that hedgehog holes are still accessible and signage still present	Enable access and replace signage if lost.
October to February	2-5	Check bird and bee/insect boxes externally.	Replace lost or damaged boxes.

5 WILDLIFE LIGHTING SCHEME

5.1.1 In order to reduce the risk of indirect disturbance to bats that may on occasion forage and/or commute through the site, sensitive lighting of the site will be used. See Appendix 3 for specifications of the external lights to be installed.

5.1.2 All areas surrounding the boundary hedgerows and treelines, as well as around the internal hedgerows and newly installed bat boxes, will not be lit ensuring that foraging and/or commuting bats are not prevented from using their territory (see area not to be lit on map 2 in the Appendix).

5.1.3 External lighting will be minimised as far as possible. The only external lighting on site will be one light within the porch of each house and a couple of small lights in

the garden patio areas. See locations of external lighting to be installed on Figure 2 in the Appendix. There will be no street lighting.

5.1.4 All external lights to be installed will be hooded and directed downwards, with no light escaping upwards, and will be kept at as low a height level as possible. All external lights will be on motion sensors on a short timer, ensuring no light is on when no people are outside to use it. All vegetation in front of the motion sensors will be kept short ensuring that no waving branches will cause the lights to turn on unnecessarily.

5.1.5 Warm spectrum LED lights (ideally less than 2700K) will be used, as LED bulbs produce the least amount of UV light possible. Lighting will feature peak wavelengths higher than 550nm to avoid the light components that are most disturbing to bats. The brightness of the lamps will be kept as low as feasibly possible, with significant impacts shown on bats at 3.6 lux, with bats shown to peak in foraging levels at 0.45 lux (ILP, 2018).

6 CONCLUSION

6.1 If this Biodiversity Enhancement Strategy including Wildlife Lighting Scheme is followed, appropriate enhancement measures for a variety of wildlife will have been provided on the site and the future management should maintain the features into the future. In addition, no existing or created habitat be rendered unsuitable for foraging and/or commuting bats.

7 REFERENCES

British Standards Institute (2013). *BS 42020:2013 Biodiversity – Code of Practice for Planning and Development*. British Standards Institute, London.

ILP (2018). *Bats and Artificial Lighting in the UK*. Institution of Lighting Professionals, Rugby.

8 APPENDIX

8.1 Appendix 1: Maps

Figure 1: Locations of Enhancements at Site to the rear of 241 Stowmarket Road, Great Blakenham

Background image taken from "Proposed Site Layout" produced by Steve Norman Building, Design and Planning Consultant, drawing no. 2112/1, dated April 2021.

Figure 2: Lighting Scheme for Site to the rear of 241 Stowmarket Road, Great Blakenham

Background image taken from "Proposed Site Layout" produced by Steve Norman Building, Design and Planning Consultant, drawing no. 2112/1, dated April 2021.

8.2 Appendix 2: Bat and Bird Box Specifications

The following descriptions, images and specifications for the chosen bat and bird boxes have been taken from the NHBS website https://www.nhbs.com and the website for Action for Swifts https://www.actionforswifts.com.

Schwegler 1FE Bat Box

On its own, the 1FE Access Panel provides access for bats to existing roost sites. With a specially shaped entrance hole and open back, bats can crawl through the entire panel. This is particularly useful when renovation or conservation work is being undertaken in buildings already containing bat roosts. With an overall depth of just 8 cm, it is easily integrated within masonry or insulation. If necessary, it can also be attached to the underlying structure using two screws. The light grey material can be over-painted as required using air-permeable exterior wall paint. The design includes a silhouette of a bat which is both decorative and informative. Alternatively, the 1FE can be set into masonry and rendered so that only the entrance is visible. With the addition of an Optional Back Plate, the 1FE can be used to create new roosts for bats.

The 1FE Bat Access Panel is made from Schwegler wood-concrete; an exceedingly durable, rot-proof and breathable natural material designed to mimic the properties of natural nest sites. The design is maintenance-free with a sloping shelf to allow droppings to fall out. The 1FE can also be fixed to the underlying structure using two screws (not included).

1FE Panel without optional back plate:

- External dimensions: 30 x 30 x 8cm.
- Weight: 5.1 kg.

The ‘S’ Brick from Action for Swifts

The S Brick balances the needs of the birds with the constraints of the building. With its thin-walled nest chamber it takes a small amount of space in the wall while providing more than sufficient space for the birds. Wholly made of durable materials, the S Brick will last the lifetime of the building.

Standard S Bricks come in two materials, two sizes and a choice of facings. Bespoke configurations can also be supplied. Internally the nest-chamber is furnished with a 3mm cement-fibreboard rough, absorbent floor. A plywood nest-form is attached to the floor.

Inside an S Brick

1SP Schwegler Sparrow Terraces

The Sparrow Terrace has been designed to help redress the balance of falling house sparrow numbers. The current UK population of 6 million pairs is half what it was in 1980 and this is thought to be due to habitat destruction and lack of suitable nesting spaces. Sparrows are social birds and like to nest in company. This terrace provides ideal nesting opportunities for three families. Made of Schwegler's revolutionary wood-concrete mix, this terrace is durable, breathable and will last many decades. It may also occasionally attract tits, redstarts and spotted flycatchers.

The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is suitable for all types of houses in built-up areas, and on industrial and agricultural buildings such as barns, sheds and factories. Due to its weight (15kg), it is not suitable for fences or garden sheds. Ideally place the terrace two metres or more above the ground. Either install on the surface of the wall using the plugs and screws provided, or install directly into the wall. Cleaning is advisable but not necessary. The front panel can be removed by turning the screw hook.

The Sparrow Terrace is available in either Stone or Brown.

Brood chamber dimensions:
* Height: 16cm
* Width: 10.5cm
* Depth: 15cm

External dimensions:
* Height: 24.5cm
* Width: 43cm
* Depth: 20cm

* Weight: 15kg

2H Schwegler Robin Box

This traditional design has proved to be highly effective in attracting robins, as well as other small species such as black redstart, spotted flycatcher and wren. It is designed to be installed on the walls of houses, barns, garden sheds or other buildings and should be hung so that the entrance is to one side (at an angle of 90° to the wall). The front panel can be easily removed for cleaning.

Please do not hang this type of box on a conspicuous tree or bush because small predators can enter through the unprotected opening. By hanging on a wall, predators won't be able to reach the box. Alternatively hide the box in ivy, honeysuckle or other climbing plants.

The box is made from Schwegler wood-concrete; an exceedingly durable, rot-proof and breathable natural material designed to mimic the properties of natural nest sites and last 20 - 25 years. Supplied with galvanised hanger and aluminium nail.

* Material: Woodcrete
* Height: 20cm
* Width: 15cm
* Depth: 20cm
* Interior diameter: 12cm
* Weight: 2.5kg

2GR Schwegler Nest Box

The 2GR nest box was designed with the assistance of senior forest rangers to provide nesting birds with extra protection from predatory species and mammals. The uniquely protected entrance panel on this box will protect resident birds from cats, magpies, jays and martens. With the oval entrance, the nesting chamber is well lit despite its size. This means that birds will construct their nest very low down at the rear of the box, away from the reach of predators. The front panel, with its integrated protection, can be easily removed for inspection and monitoring, providing an unobstructed view of the nest.

The single oval entrance hole (30mm x 45mm) suits coal-, marsh-, blue-, great- and crested tits, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrow and bats.
An additional recess suitable for bats has been created inside the roof space of the 2GR.

These Woodcrete nest boxes are famous for their durability - lasting for at least 20-25 years. Woodcrete is a blend of wood, concrete and clay which will not rot, leak, crack or warp. They are backed by leading ornithologists, nature conservation organisations, government agencies and forestry experts. Schwegler boxes have the highest occupation rates of all nest boxes and are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting.

* Material: Woodcrete
* External dimensions: 31 x 20 x 27cm (height x width x depth)
* Internal dimensions: 14 x 19cm (width x depth)
* Entrance hole: 30 x 45mm (oval)
* Weight: 6.7kg

8.3 Appendix 3: Lighting Specifications

The following specifications of the proposed lights has been provided by the client, Crown Gate Homes Ltd.

Table 5: Specifications of the proposed external lights

MLA PART CODE	**WALL1LBK**
DESCRIPTION	230V IP65 35W GU10 Fixed Wall Light
FINISH	Black
NET WEIGHT (KG)	0.41
DIMENSIONS (MM)	Diameter – 64 Height – 112 Projection – 94 Base Diameter – 78
MAX WATTAGE (W)	35
LAMP TYPE	Halogen / LED Compatible
LAMP BASE	GU10
INPUT VOLTAGE	Mains 230V 50Hz
CONSTRUCTION	Die-cast Aluminium
CLASS	Class I
IP RATING	IP65
DIMMABLE	Dependent on lamp
WARRANTY	1 Year
ORIGIN OF MANUFACTURE	China
DECLARATION OF CONFORMITY (HELD ON FILE)	Yes
MANUFACTURED IN ACCORDANCE WITH	BS EN 60598
EAN	5055559130352