The Homestead
Biddulph

Ecological Construction, Mitigation and Enhancement Plan

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Status	Date	Prepared by	Reviewed by	Approved by
V1	August 2017	Kelly MacGillivray Ecologist	Neil Lee-Gallon Principal Ecologist	Neil Lee-Gallon Principal Ecologist
V2				
Final				

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CONTENTS

1 INTRODUCTION 1
1.1 Background 1
2 ECOLOGICAL IMPACTS 2
2.1 Bats 2
2.2 Breeding Birds 2
2.3 Hedgehog 2
3 CONTROL OF IMPACTS 3
3.1 Relevant Legislation 3
3.2 Working Methods During Construction and Timings 5
3.3 Mitigation Features 6
4 IMPLEMENTATION OF ECME PLAN 10
4.1 Project Timings 10
4.2 Post Development Monitoring 10
5 REFERENCES 11
6 APPENDIX 1: FIGURES 12
7 APPENDIX 2: ECOLOGICAL PERMIT 15

1 INTRODUCTION

1.1 Background

1.1.1 NLG Ecology Ltd (NLG) was commissioned by VWB Architects in August 2016 to undertake inspections for bat roosting potential within the boundary of 'The Homestead', off John Street, Biddulph, Staffordshire, ST8 6BB. The site location is shown on Figure 1 (Appendix 1) and is centred on National Grid Reference SJ 88418 57666.

1.1.2 A subsequent suite of three emergence/re-entry surveys for bats were undertaken by NLG in August and September 2016, with two small common pipistrelle (*Pipistrellus pipistrellus*) summer day roosts identified. Any other ecological constraints were also identified across the site as a whole, in relation to proposals to demolish outbuildings and partially demolish the main residential property. The latter will then be converted, and four flats and six semi-detached houses will be constructed, as shown on Figure 2. The surroundings will be landscaped, to include tree and shrub planting, with driveways, car parking areas and a new access road to be installed also.

1.1.3 In the site's present condition, the existing buildings are surrounded by garden (dominated by amenity grassland) to the north, west and east. The site as a whole is bordered by hedgerows along the south, west and north boundaries, with shrub planting along the eastern boundary. In a wider context, 'The Homestead' is located in a predominantly urban area within the small town of Biddulph, and is immediately surrounded by residential properties to the north, south and west with a school to the east. Located approximately 35m away (at the closest point) are areas of parkland and open countryside which offer a range of habitats suitable for foraging bats and other wildlife.

1.1.4 This Ecological Construction, Mitigation and Enhancement (ECME) Plan has been written in response to Conditions 13 to 18 of the planning permission granted by Staffordshire Moorlands District Council (planning reference SMD/2016/0395). It addresses the proposals' ecological constraints, focusing on roosting bats, breeding birds and hedgehog (*Erinaceus europaeus*).

2 ECOLOGICAL IMPACTS

2.1 Bats

2.1.1 The surveys conducted in August/September 2016 confirmed the presence of two common pipistrelle summer roosts, one located on the south gable end of the 'The Homestead' main building (B1), with a peak count of three bats, and the other on a west-facing roof pitch of the adjoining outbuildings (B2), with a peak count of two bats. See Figure 3 and Photographs 1 and 2 for roost locations.

2.1.2 Both roosts will be lost as a result of the site proposals.

2.1.3 De-vegetation will be undertaken across the site to facilitate the works, with re-planting to take place adjacent to the site boundary and between buildings; each semi-detached housing plot will have an associated garden. The works will therefore temporarily remove foraging habitat immediately surrounding the identified roosts.

2.1.4 External lighting levels will increase across the site as a result of the proposals. The design will be finalised in reference to this plan and by the method statement document of the bat mitigation licence for the site. Based on the observations of foraging and commuting bats made on site during the suite of emergence/re-entry surveys in August/September 2016, the increased lighting levels have the potential to deter low numbers of common and soprano pipistrelle (*Pipistrellus pygmaeus*) bats that utilise the general site predominantly for foraging (very little commuting activity was recorded). The hedgerows in particular were noted as being well-used by foraging bats.

2.2 Breeding Birds

2.2.1 The hedgerows and garden vegetation currently present on site have high potential to support nesting birds. House sparrows (*Passer domesticus*) were recorded foraging and perching on B1 during the initial site scoping survey on 24th August 2016, and whilst no active nests were identified at this time, both buildings B1 and B2 have potential for this species to nest, with numerous suitable crevices noted. During the dawn survey on 13th September 2016, birds were heard roosting within B2.

2.3 Hedgehog

2.3.1 The site has high potential to support hedgehog, with numerous vegetation piles recorded during the initial site scoping survey in August 2016. These were considered to be suitable for hibernation, foraging and shelter. During the second dusk bat survey on 1st September 2016, a hedgehog was recorded foraging across the site, and during the dawn bat survey, a hedgehog was recorded within a vegetation pile. The site also has value for amphibians, with a common frog (*Rana temporaria*) incidentally recorded during the first dusk bat survey.

3 CONTROL OF IMPACTS

3.1 Relevant Legislation

Bats

All UK wild bat species receive full protection (Schedule 5 species) under the Wildlife and Countryside Act 1981, which is further amended by the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010. Taking these Acts together, it is an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection (S9:4b).

- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat (S9:4c).

- The term 'reckless' is defined by the case of Regina v Caldwell 1982. The prosecution has to show that a person either deliberately took an unacceptable risk, or failed to notice or consider an obvious risk.

A bat roost has been interpreted to mean any structure or place which is used for shelter or protection whether or not bats are present at the time. Bat roosts may be defined (Hunt, L, 2012) as either (i) Transition Roosts, (ii) Maternity roosts, (iii) Satellite Roosts, (iv) Mating Roost, (v) Hibernation roosts, (vi) Night Roost, (vii) Day Roost, (viii) Feeding Roost or (ix) Swarming Sites.

Bats are listed under Annexes IIa and IVa of the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive'. Inclusion on Annex IVa means bats are a European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2010, thus it is an offence to:

- (a) deliberately capture, injure or kill any wild animal of an EPS,

- (b) deliberately disturb wild animals of any such species, in such a way as –

    - (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or

    - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or

    - (iii) to affect significantly the local distribution or abundance of the species to which they belong.

A licence to disturb or take bats can be issued for certain purposes under Section 16 of the Wildlife and Countryside Act 1981 and under Regulation 44 of the Conservation of Habitats and Species Regulations 2010 permitting activities that would otherwise be illegal under the legislation. Licences can take up to 30 working days to be issued by Natural England. Where impacts on bats are unavoidable, mitigation will be required to maintain and enhance the favourable conservation status of bats. Losses of bat roosts must be compensated for by the provision of new roosting sites and planting of new foraging habitat. Mitigation measures will need to be designed on a site specific basis and only in consultation with an expert. All mitigation proposals must be agreed with Natural England and put in place prior to the commencement of works.

Breeding Birds

Under the Wildlife and Countryside Act 1981 (as amended) all wild birds, their nests and eggs are protected by law and it is an offence to;

- Intentionally kill, injure or take any wild bird.
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
- Intentionally take or destroy the egg of any wild bird.

Barn owl (*Tyto alba*) is listed on Schedule 1 of the Wildlife and Countryside Act, 1981; therefore the birds, their nests, eggs and young are fully protected at all times throughout the UK. It is also an offence to intentionally or recklessly disturb barn owls at an active nest site with eggs or young or before eggs are laid, or to disturb the dependent young.

Loss of barn owl roosts to development must be compensated for by the provision of alternative roost and nest sites within 200 metres of the development – these should be made available at least 30 days prior to the start of works, though the longer the better. Timing constraints will apply to avoid the periods when barn owl are nesting and raising dependant young. The provision of permanent roost and nest sites will be required within such developments.

Hedgehog

Hedgehogs are protected in England under Schedule 6 of the Wildlife and Countryside Act (1981) and are also listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). This lists English species that were formerly identified as requiring action under the UK Biodiversity Action Plans and which continue to be regarded as conservation priorities under the current UK Post-2010 Biodiversity Framework.

3.2 Working Methods During Construction and Timings

Bats

3.2.1 The partial demolition of B1 and the demolition of B2 will destroy two summer day roosts for three and two bats respectively. Sensitive working practices and mitigation features have been incorporated into the bat mitigation licence application for the site to ensure that the risk of harm to roosting bats during works is negligible and that the favourable conservation status of common pipistrelles is maintained in the local area. The working methods are summarised as follows:

- On receipt of the bat mitigation licence and immediately prior to the commencement of works, all roofing contractors will be briefed during a toolbox talk on the presence of roosting bats on site, the potential impacts of the works and the legal obligation to adhere to the mitigation licence and the instruction of the supervising ecologist during the works, including what to do in the event that bats are unexpectedly discovered when the ecologist is not present;

- A bat licensed ecologist will supervise the careful removal of roof tiles and features around the identified roost areas following inspection with a torch and endoscope, along with any further areas deemed particularly suitable for bat use across the roofs. Access for the tile removal will be facilitated by a mobile elevated working platform (MEWP);

- The remaining roof tiles on site will be removed by the contractors by hand as a precautionary measure to remove any further opportunities for roosting bats across the roofs of the buildings – works will cease and the named ecologist will be contacted in the event that a bat is unexpectedly found during the unsupervised works;

- Roof removal and demolition works will only be carried out during the winter months (October to March inclusive) when bats are least likely to be present and in light of the buildings' negligible potential for roosting bats; and

- If any bats are discovered during the supervised removal of roof features in the vicinity of the two identified roosts, these will be carefully removed by the ecologist (wearing appropriate gloves) and placed into a cloth bag for transport to a bat box already installed on site (see E3.3, below). The box entrance will be temporarily stuffed with a cloth to allow the bat to acclimatise to the box. The cloth will then be carefully removed.

3.2.2 It is considered extremely unlikely that torpid bats would be found during any works over the winter months and the buildings were assessed to have very limited hibernation potential. The soft demolition by hand of roost features will be carried out when temperatures are consistently over 8°C (for 4 continuous days). However, should individual bats be discovered unexpectedly during periods of adverse weather, or by contractors during unsupervised works (considered unlikely), then the following steps will be taken:

- Works will cease and the named ecologist will be contacted in the event that a bat is unexpectedly found during supervised works;

- If an injured bat is encountered, the bat would be taken into care as per below;

- Any underweight or injured bats will be taken into temporary care by an experienced bat carer and looked after until such time that the bat can be transferred to a suitable replacement roost at the same site, or weather conditions are suitable for release at the same site. The licensed ecologist will re-assess the building and determine whether works can continue under this licence, or whether a modification to the licence is required before works re-commence. A written record will be kept of this decision, which can be made available to Natural England or any police officer on request. Any such incident will be reported on the licence return form; and

- If any bats that are not common pipistrelle are unexpectedly discovered during the works, a licence amendment may be required from Natural England before works can lawfully proceed.

Breeding Birds

3.2.3 Where possible, works will be conducted outside of the main breeding bird season of March to August inclusive. If works need to be carried out during the main bird breeding season, a suitably qualified ecologist will inspect the building/vegetation no more than 24 hours prior to the commencement of works to ensure that no active nests are present. If any nests are identified, a work exclusion zone of at least 5m will be installed around the nest and work within this area must not commence until the young have fledged. The nest(s) will be confirmed as completed by an ecologist.

3.2.4 Following any nesting bird checks where no active nests have been identified, written confirmation will be provided by the ecologist to the site contractors (see Appendix 2), stating an absence of breeding birds in the areas checked. This will act as a permit valid for 72 hours so that de-vegetation works can be completed in this time without the need for a re-check.

Hedgehog

3.2.5 During the site's clearance, including of the outbuildings, care will be taken to avoid harming any hedgehogs either sheltering inside the building or beneath piles of accumulated vegetation across the garden area (i.e. materials carefully lifted). If a hedgehog is found, it will be removed and placed carefully under a hedgerow away from the working area and allowed to disperse of its own accord.

3.2.6 If any hibernating hedgehogs are uncovered during the works, they must be recovered and works must temporarily cease in that area. Site contractors will contact an ecologist, who will visit site to ensure that suitable replacement refugia (e.g. leaf litter pile or accumulation of material most resembling what the hedgehog has been found in) can be constructed in an undisturbed part of the site that will remain unaffected for the rest of the winter, likely beneath one of the hedgerows. The ecologist, wearing suitable thick gloves, will then carefully translocate the hedgehog to the hibernacula. If there is any doubt over translocating the hedgehog to a different part of the site, or if the hedgehog appears to be harmed or underweight, the ecologist will take the hedgehog into care and will contact the local wildlife hospital (likely the RSPCA's Stapeley Grange Wildlife Centre) for advice.

3.3 Mitigation Features

3.3.1 See Figure 2 (Appendix 1) for ecological mitigation measures relating to bats, breeding birds and hedgehog.

Bats

3.3.2 The following roosting bat mitigation measures will be incorporated into the new development:

- A Beaumaris woodstone bat box (http://www.nhbs.com/title/211949/beaumaris-woodstone-bat-box) will be installed on site prior to the start of works at an accessible height of 3m from ground level on the western elevation of B1, to provide a safe location into which any bats uncovered during the works can be placed by the supervising licensed ecologist;

- Eight ridge and hip tile access points will be incorporated into the development, with five installed on the new properties and three installed onto what will remain of the current main building (B1) on site. The access points will be designed in accordance with 'Option B' on the English Nature Ridge Tile Access 4a design document, leaving a horizontal, un-mortared gap of 20mm in width by 50mm in length along one side, beneath each of the designated ridge and hip tiles. This will allow bat access to the cavities beneath the tiles. On B1, two tile access points will be installed to the south-west and south-east roof hips, with a further access point beneath a central ridge tile. On the new buildings, individual access tiles will be created at the centre of the ridge on the semi-detached houses in Plots 6, 7, 8, 9 and 10;

- If breathable membrane is to be used across the new roofs, including B1, 1m x 1m 'edged' panels of bitumen felt will be used beneath each of the eight designated ridge and hip tiles, to prevent bat entanglement in the event of prolonged use by bats. Wooden dowelling, slim battens or similar can be used to 'edge' the bitumen panels, to prevent bats from crawling onto the surrounding membrane;

- Four lifted tiles will also be installed onto the south and east-facing roof pitches of B1 once re-developed, close to where one of the existing roosts is located. These will present like-for-like features to those already utilised by roosting bats at the site and will be either Morris bat slates (http://www.vwt.org.uk/wpcontent/uploads/2015/04/fitting-a-morris-batslate.pdf) created using a minimum of code 6 lead, or roof tiles elevated slightly using small wooden wedges to create a gap of 150-200mm in width, extending and narrowing towards the 'base' of the tile. Again, if breathable membrane is to be used across the roofs, a panel of 'edged' bitumen felt will be positioned beneath each of the four tiles, as described above;

- Two Schwegler 1FQ bat boxes will be installed, one on the southern end of B1, and one beneath the eaves on the western elevation of Plot 8 – these are similar locations and orientations to the existing roosts that will be lost; and

- A post-works inspection will be carried out soon after installation of the mitigating roost features to ensure that they are fit for purpose.

3.3.3 To mitigate towards the increased lighting levels expected across the site following completion of the development, the following measures will be implemented:

- External lighting across the site will be kept to a minimum;

- The eight ridge and hip tile access points, the lifted roof tiles and the bat boxes will remain unlit (either directly or by light spill);

- Movement sensors, or a variable lighting scheme involving dimming or switching off lights for some of the night, will be employed;

- Blue-white short wavelength lights will be avoided and warm-white (long wavelength) lights will be used instead;

- Lights with a high UV content (e.g. metal halide or mercury light sources) will be avoided or alternatively, the UV content of the light will be reduced/completely removed using UV filters or glass housings on lamps;

- Light spill will be minimised by ensuring a low beam angle of the lights at less than 70 degrees;

- Upward lights (e.g. ground recessed lights or ground mounted floodlights up-lighting trees, buildings and vegetation) will be avoided; and

- Any security lighting deemed necessary will use 'variable aim' luminaries, which allow you to change the beam angle by moving the lamp.

Breeding Birds

3.3.4 As compensation to the nesting opportunities lost to the development proposals, and to enhance the number of new and range of opportunities for nesting birds, the following will be installed on site on completion of the buildings:

- Two double house martin (*Delichon urbica*) nest cups (http://www.nhbs.com/title/195378) to be installed at least 2m above ground;

- Three Schwegler 1SP house sparrow (*Passer domesticus*) terraces (http://www.nhbs.com/title/174850/1sp-schwegler-sparrow-terrace) to be installed at least 3m above ground; and

- Two No.16 Schwegler swift (Apus apus) boxes (http://www.nhbs.com/title/173237/no-16-schwegler-swift-box) to be installed 6 – 7m above ground.

3.3.5 The cups/boxes will be located beneath the eaves of the semi-detached houses on north/east facing walls (i.e. away from strong sunlight and prevailing winds) – see Figure 2.

3.3.6 The planting scheme for the site will provide bird nesting opportunities in the longer term once vegetation is more established, and the shrubs and trees to be planted (comprising a mixture of native and non-native species and including eight crab apple *Malus sylvestris* trees) will provide a food source to birds and insects. The existing hedgerows will continue to provide bird nesting and sheltering opportunities.

Hedgehog

3.3.7 As the site's redevelopment will result in the loss of shelter opportunities for this species, and as the new properties and gardens will fragment the site, inhibiting easy mammal dispersal, it is recommended that in accordance with the Hedgehog Street Scheme (http://www.hedgehogstreet.org), the new fence lines are constructed containing a small hole within the base (five in total across the site) to allow continued movement. The gap needs to be 13x13cm or 5 inches square and so will be too small for most pets.

3.3.8 Alternatively, a pre-made hedgehog friendly gravel board can be installed at the base of the fences (http://www.jarrettfencing.co.uk/product/hedgehog-gravel-board/).

3.3.9 Locations of the gaps are shown on Figure 2 (Appendix 1); in accordance with site plans, no fencing will be used around the north, west or south boundaries due to the existing hedgerows being retained. These will continue to provide a commuting corridor around the site for wildlife, with the dedicated hedgehog gaps providing further opportunities to aid movement through the gardens and communal areas of the development. A mix of 20% wildflowers and 80% grasses will be used across the communal grass areas, whilst planted shrub beds (a mix of native and non-native) will provide shelter opportunities.

4 IMPLEMENTATION OF ECME PLAN

4.1 Project Timings

4.1.1 The ECME Plan will be implemented throughout the development's construction process, from de-vegetation and site clearance works and then demolition to installing the new mitigation features. Staff from NLG Ecology will be able to advise on any issues that may arise during unsupervised works, and will be on call throughout the project to make additional site visits if needed. Key personnel are as follows:

- Neil Lee-Gallon, Principal Ecologist (01625 560 789); and
- Kelly MacGillivray, Ecologist (01625 560 789)

4.1.2 Once any planning conditions are discharged, de-vegetation and demolition works will be undertaken from October 2017 to March 2018 inclusive. During this time, ecological supervision of the buildings' demolition will take place under the bat mitigation licence for the site (once granted). The construction phase will then commence, with ecological supervision ceasing until the installation of bat, breeding bird and hedgehog mitigation features can take place.

4.1.3 The project is anticipated to be completed by March 2019; on the project's completion, a final site visit will be made by a suitably qualified ecologist to ensure that all ecological mitigation features are fit for purpose.

4.2 Post Development Monitoring

4.2.1 Once the mitigation features for roosting bats, breeding birds and hedgehog have been checked by a suitably qualified ecologist and signed off as 'fit for purpose', the new site occupants will be responsible for the upkeep of the features; for the bat mitigation features, this will require leaving the boxes and access hip and ridge tiles undisturbed, unlit and unobstructed.

4.2.2 The hedgehog gaps must remain unobstructed.

4.2.3 The bird nest boxes must remain in-situ, undisturbed, unobstructed and preferably unlit. It will become the responsibility of individual tenants to maintain the boxes where necessary.

5 REFERENCES

Collins, J, (ed.) (2016). *Bat Survey for Professional Ecologists: Good Practice Guidelines (3rd Edition)*, Bat Conservation Trust, London.

Hedgehog Street (https://www.hedgehogstreet.org/)

Jarrett Fencing (http://www.jarrettfencing.co.uk/product/hedgehog-gravel-board/)

Mitchell-Jones, A.J, (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

NHBS (https://www.nhbs.com/browse/subject/900/bat-boxes)

The 'Morris' batslate. Online PDF. http://www.vwt.org.uk/wp-content/uploads/2015/04/fitting-a-morris-batslate.pdf

6 APPENDIX 1: FIGURES

Figure 1 – Site Location
Figure 2 – Ecological Mitigation Measures
Figure 3 – Bat Roost Locations

Figure 1 – Site Location

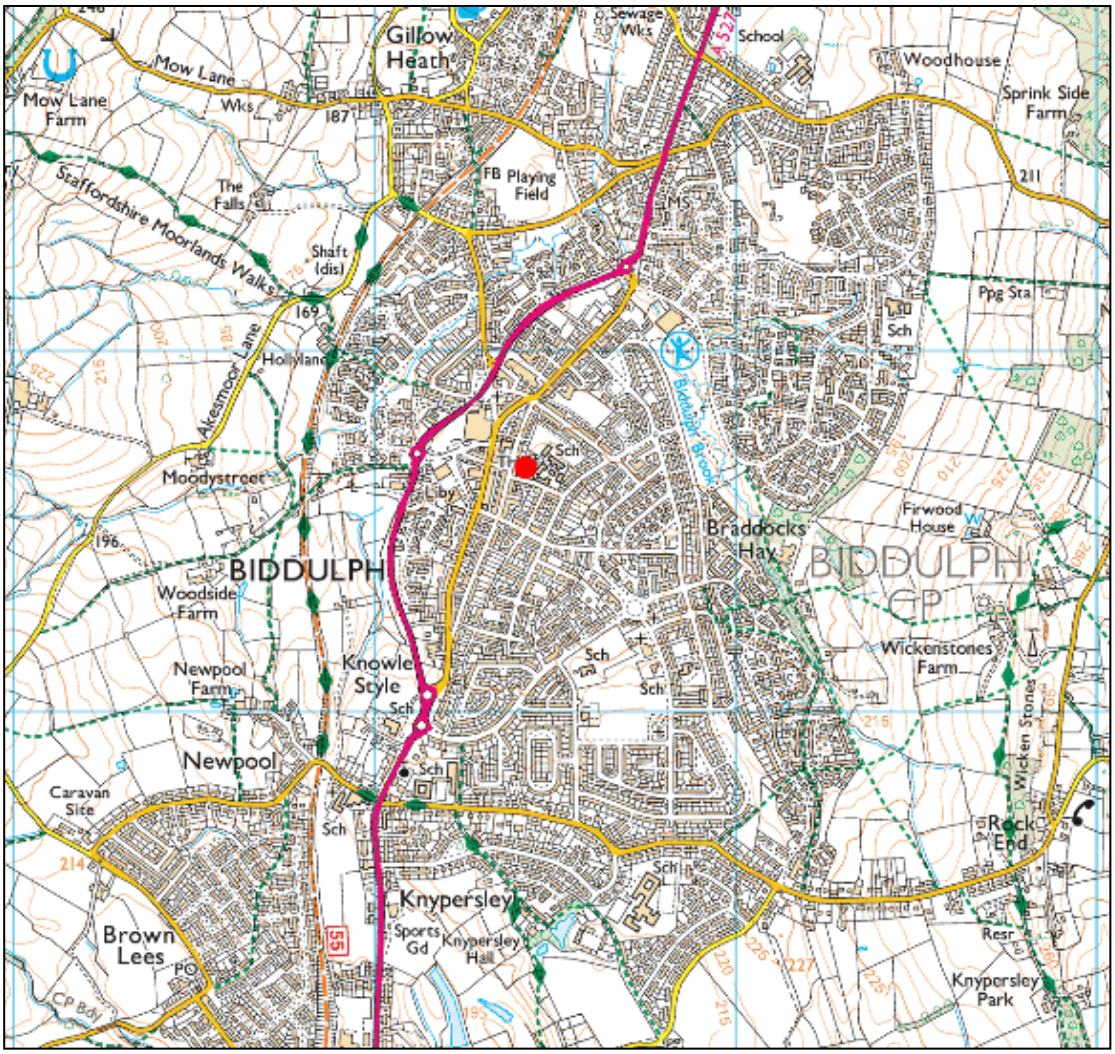

Figure 2 — 'The Homestead', Biddulph (Planning ref. SMD/2016/0395) - Ecological Construction, Mitigation and Enhancement Plan

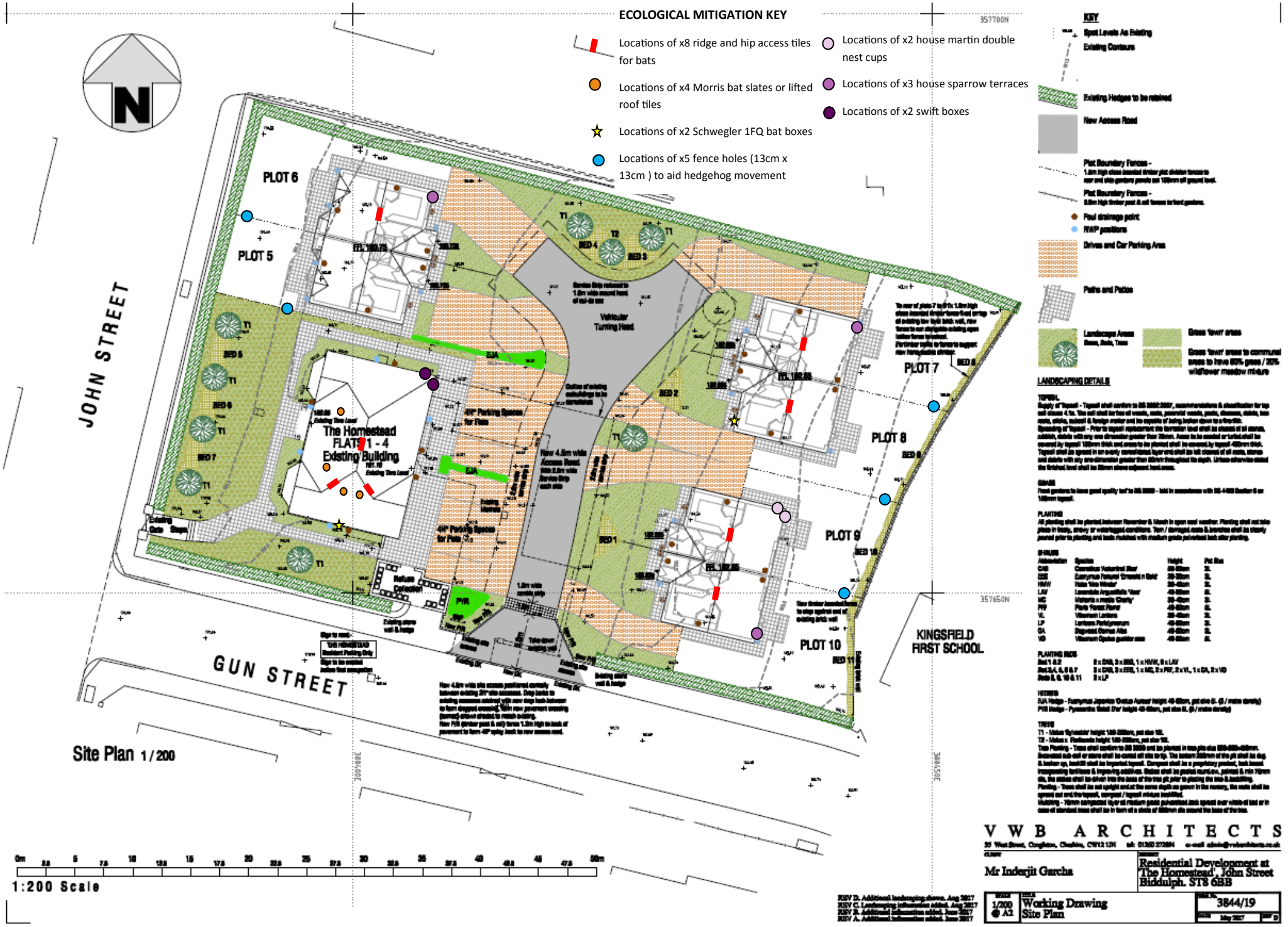

Figure 3 – Bat Roost Locations (indicated by the green circles)

Photographs of Roost Locations

Photograph 1 - B1 (x3 common pipistrelle)

Photograph 2 - B2 (x2 common pipistrelle)

7 APPENDIX 2: ECOLOGICAL PERMIT

Permit Number:	**Date:**
Area:	
Work Activity:	
Ecological Observations and Considerations:	
Measures to Mitigate for the Above:	
Contractor to sign acknowledgement of methods: Ecologist to sign:	
Works completed - contractor to sign: Date: Ecologist to sign – works completed satisfactorily: Date:	