Brockhall Farm, Old Langho, BB6 8BB

ECOLOGICAL SURVEY AND ASSESSMENT

including a Licensed Bat and Bird Survey

Updated February 2021

[ERAP (Consultant Ecologists) Ltd ref: 2019-196]

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CONTENTS

List of Tables

List of Figures

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Phase 1 Habitat Survey and daylight licensed bat survey	Victoria Burrows B.Sc. (Hons) M.Sc. CEnv MCIEEM Principal Ecologist	23rd July 2019
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[1] *Licence reference numbers*
Bats
Victoria Burrows Natural England Class Survey Licence (bats, Level 2) Registration Number 2015-10390-CLS-CLS
Barn owl
Victoria Burrows Natural England Class Survey Licence Registration Number CL29/00061

SUMMARY

Introduction and Scope

i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of Brockhall Farm, Old Langho. The assessment was requested in connection with proposals to redevelop the site to residential properties.

ii. This report presents the results of a desktop study and data search, an extended Phase 1 Habitat Survey and a licensed bat and barn owl survey and assessment carried out between July and September 2019.

iii. The site and survey area comprises six farm buildings in various condition. The buildings are bordered by concrete and stone cobble hand-standing.

Results of Survey and Assessment

iv. Owing to the small scale nature of the proposals, the distance between the site and any statutory designated sites and the absence of any direct habitat or hydrological connectivity, direct and indirect adverse effects on statutory designated sites for nature conservation as a result of the proposal are reasonably discounted.

v. There will be a minor encroachment into the area designated as Brockhall Wood BHS to the north-east of the site; this is not considered to be significant nor will it impact the integrity of the wider BHS. Given the proximity of the site to Brockhall Wood the need for demarcation and protective measures, particularly during the construction phase, is identified and appropriate measures are described in **Section 5.2**.

vi. None of the habitats at the site / to be affected by the proposals are representative of semi-natural habitat. The site contains only common and widespread plant species. Indian Balsam and Japanese Knotweed, invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), are present at the site. The proposals present an opportunity for the control of these species as part of the proposed development, refer to **Section 5.3**.

vii. The detection of five roost positions (day / feeding roosts) used by four bat species (common pipistrelle, Brandt's bat, soprano pipistrelle and brown long-eared bat) at Buildings 1 and 6 is a significant consideration in connection with the conversion proposals.

viii. In the absence of mitigation, the conversion of the Building 1 to a residential dwelling and Building 6 to a garage will result in the disturbance and loss of the day roosts; this is a low scale of impact. There is also a risk of adverse effects on foraging and commuting bats.

ix. A bat mitigation strategy is presented at **Section 5.4** to demonstrate how the proposals can be achieved whilst protecting roosting bats, ensuring there is no net loss of roost opportunity at the site in the long-term and to detail how any post-development interference impacts will be avoided. The works at Buildings 1 and 6 may only be carried out under a Natural England European Protected Species Mitigation (EPSM) licence issued under Regulation 55 of The *Conservation of Habitats and Species Regulations 2017*.

x. Nesting barn owl was detected at Building 1. In the absence of mitigation, the conversion of Building 1 will result in the permanent loss of a barn owl nest site. Mitigation and compensatory measures are necessary and feasible in connection with the proposals, and are described further at **Section 5.5** and **Figure 4**.

xi. Adverse effects on badger setts are avoided by the proposals, however, owing to the known presence of badger activity in the habitats bordering the site, the implementation of the best practice measures described at **Section 5.6** are recommended.

xii. Appropriate survey effort and / or assessment in accordance with standard guidance has been carried out to discount adverse effects on other relevant protected species namely great crested newt and reptile species. No further survey is necessary to inform a planning application and decision.

Recommendations and Conclusion

xiii. The recommendations in **Section 5.0** identify all the mandatory measures and ecological recommendations to be applied to ensure compliance with relevant wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.

xiv. The bat and barn owl mitigation strategies outlined at **Sections 5.4** and **5.5** and **Figure 4** must be implemented to achieve compliance with wildlife legislation, relevant planning policy, best practice and Natural England requirements. Works at Buildings 1 and 6 may only be carried out under a Natural England European Protected Species Mitigation (EPSM) licence issued under Regulation 55 of *The Conservation of Habitats and Species Regulations 2017.*

xv. Measures to achieve a net gain for biodiversity to achieve compliance with the NPPF are feasible and outlined in **Section 5.0**.

1.0 INTRODUCTION

1.1 Background and Rationale

1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned to carry out an ecological survey and assessment of the barns and outbuildings and curtilage at Brockhall Farm, Old Langho, hereafter referred to as the 'site'. The Ordnance Survey (OS) grid reference at the centre of the site is SD 70304 37116. An aerial image of the site and its surrounding habitats is appended at **Figure 1**.

1.1.2 The survey and assessment was requested in connection with proposals and a planning application to convert the main barn (Building 1) to residential properties, convert Buildings 4 and 6 to garages, and demolish Buildings 2 and 5.

1.2 Scope of Works

1.2.1 The scope of ecological works comprised:

a. A desktop study and data search for known ecological information at the site and the local area;

b. An Extended Phase 1 Habitat Survey and assessment of the main barn and outbuildings, their curtilage and the access track;

c. Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);

d. Survey and assessment of all habitats for relevant statutory protected species and other wildlife including badger (*Meles meles*), great crested newt (*Triturus cristatus*), bird species and reptiles;

e. A licensed bat and barn owl survey and assessment of the buildings;

f. Identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and

g. The identification of any further surveys or precautionary actions that may be required prior to the commencement of site clearance and construction activities.

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

2.1.1 The following sources of information and ecological records were consulted:

a. MAGiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;

b. MARIO map;

c. Lancashire Environment Record Network (LERN); and

d. Lancashire Biodiversity Action Plan (BAP).

2.2 Vegetation and Habitats

2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Victoria Burrows on 23rd July 2019. The weather was dry and sunny with a light breeze (Beaufort scale 2) and an air temperature of 26°C. The conditions and time of year were suitable for the scope of ecological survey carried out.

2.2.2 A Phase 1 habitat and vegetation map was prepared for the site and the immediate surrounding area (refer to **Figure 2**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.

2.2.3 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.

2.2.4 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.

2.2.5 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).

2.2.6 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Bat Survey

Habitat Assessment for Commuting / Foraging Bats

2.3.1 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn),* (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented below.

Table 2.1: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.

Suitability	Commuting Habitat	Foraging Habitat
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Daylight Survey

Survey Personnel and Guidance

2.3.2 The daylight licensed bat survey was carried out by Victoria Burrows (Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number 2015-10390-CLS-CLS) on 23rd July 2019. The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013). Updated inspections of the exterior and interior of the buildings were carried out on the subsequent site visits to carry out the bat activity surveys.

2.3.3 The surveys were carried out in accordance with standard methodology described in the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), the *Bat Workers' Manual* 3rd Edition (Mitchell-Jones & Mcleish, 2004) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn) (Collins, J. (ed), 2016).

Buildings

2.3.4 An inspection of the external surfaces, walls and roofs of the buildings was carried out to find potential bat roosting habitat or accesses into internal areas where roosts may be present.

2.3.5 The internal areas, including the roof voids, were accessed and searches for bats and evidence of bat presence such as droppings, urine stains, feeding signs, grease marks and other evidence were carried out.

2.3.6 The suitability of each of the buildings has been assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn),* (Collins, J. (ed), 2016), taking into account the presence (or absence) of features suitable for use by roosting bats within the buildings (including crevice dwelling and species which can roost in the open in roof voids), and the suitability of the surrounding habitats for use by foraging and commuting bats.

Trees

2.3.7 Trees bordering the site were assessed from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of potential roost features such as woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (*Hedera helix*) with stem diameters in excess of 50mm and bat and bird boxes.

2.3.8 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd* Edition (Andrews, H (ed), 2013). The suitability of each tree has been assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn),* (Collins, J. (ed), 2016).

2.3.9 The requirement for further presence / absence surveys at each tree was then considered.

Equipment

2.3.10 A list of equipment used is detailed below:

Table 2.2: Survey Equipment Used / Available for Use During Daylight Bat Survey

Ladders
LED Lenser P14 torch
Canon Ixus digital camera
8x20 binoculars
Ridgid Micro Inspection Camera Endoscope CA-300

Bat Activity Surveys

2.3.11 One dusk emergence and two dawn re-entry surveys were carried out with the objectives of determining the presence of roosting bats (or otherwise) at the buildings and characterising any detected roosts.

2.3.12 Between 6 and 7 surveyors, experienced in conducting bat surveys, were positioned at suitable locations to maximise the coverage of the buildings (including the interior, as appropriate) to determine any entry into or exit from the buildings.

2.3.13 Heterodyne detectors were used to determine any bat detected to species or group (*Myotis* species often cannot be reliably separated to species via their echolocation calls, for example). Recording bat detectors units[1] were also used to record and analyse echolocation calls after the survey using AnalookW call analysis software. Surveyor / detector locations are annotated on **Figure 3**, appended.

2.3.14 The dawn re-entry survey commenced between 1.5 and 2 hours before sunrise and ended 15 minutes after sunrise, provided all bat activity had ceased by this point. The dusk emergence survey commenced 15 minutes prior to sunset and continued for 1.5 hours. Any bat emergence or re-entry activity was recorded. All surveys were conducted under suitable conditions. The dates of the surveys, surveyors and equipment used and weather conditions present are presented below.

[1] i.e. Anabat SD2, Anabat Express and Anabat Walkabout

Table 2.3: Dusk Emergence and Dawn Re-entry Survey Dates, Weather Conditions and Surveyors

Date	29th July 2019	20th August 2019	10th September 2019
Sunset / rise	21:14	05:54	06:33
Start time	20:59	04:00	04:45
End time	22:45	06:10	06:48
Wind	Beaufort scale 0 (calm)	Beaufort scale 1 (light air)	Beaufort scale 1 (light air)
Precipitation	Dry	Dry	Dry
Air temperatures	19°C at 21:30 falling to 17°C at 22:45	14°C throughout	9°C throughout
Survey Position	**Surveyor and Detector**	**Surveyor and Detector**	**Surveyor and Detector**
1	Victoria Burrows Batbox Duet	Victoria Burrows Batbox Duet and Anabat Express	Victoria Burrows Batbox Duet and Anabat Express
2	Molly Meadows Batbox Duet and Anabat Scout	Marie Pickering Batbox III and Anabat SD2	Sue Lonsdale Batbox Duet and Anabat Express
3	John Harrison-Bryant Anabat Walkabout	Stuart Laverick Batbox Duet and Anabat Express	Stuart Laverick Batbox Duet and Anabat Scout
4	Charlotte Walsh Anabat Walkabout	Aidan Pickering Batbox Duet and Anabat Express	Leah Hart Batbox Duet and Anabat SD2
5	Chris Swindells Pettersson D100	Leah Hart Batbox Duet and Anabat Express	Molly Meadows Batbox Duet and Anabat Express
6	Leah Hart Anabat SD2	-	-
7	Amy Sharples Batbox III	Chris Swindells Pettersson D100 and Anabat Express	Richard Lowe Pettersson D100 and Anabat Express
8 (detector only)	-	-	Anabat SD2

2.3.15 Based on the results of the daylight surveys and the bat survey activity recorded during the dusk emergence survey and the two dawn re-entry surveys it is considered that appropriate and proportionate survey effort has been carried out to inform the feasibility of the proposals and to characterise the likely roosts present.

DNA Analysis of Droppings

2.3.16 To provide additional evidence to confirm the species of bats present, droppings collected from the interior of Building 6 (Roost 2) were sent to the University of Warwick for DNA analysis to confirm species.

2.4 Other Animal Life

Badger

2.4.1 A search for badger activity was carried out. The survey area covered the site (as annotated on **Figure 2**) and extended to accessible land within a radius of 30 metres from the site boundary.

2.4.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: surveys and mitigation for development projects* (Natural England, 2015).

2.4.3 The following signs of badger activity were searched for:

a. Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
b. Large spoil heaps outside sett entrances;
c. Bedding outside sett entrances;
d. Badger footprints;
e. Badger paths;
f. Latrines;
g. Badger hairs on fences or bushes;
h. Scratching posts; and
i. Signs of digging for food.

2.4.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bird Species

2.4.5 Bird species observed and heard during all site visits were recorded.

2.4.6 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

Barn Owl

2.4.7 The exterior and interior of the buildings were searched for pellets, faecal splashes and feathers which may indicate use by roosting or nesting barn owl. Guidance in *The Barn Owl Conservation Handbook* (Barn Owl Trust, 2012) and *Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting* (Shawyer, 2011) was referred to.

Great Crested Newt

Ponds

2.4.8 In accordance with current Natural England guidance (Natural England, 2015) all ponds within an unobstructed 500 metres of a site should be considered for their suitability to support breeding great crested newts. The potential of the proposed development to impact upon any great crested newt population(s) whose breeding ponds are within 500 metres must be considered.

2.4.9 There are no ponds within the site or within an unobstructed 500 metre radius[2]. The presence of great crested newt is reasonably discounted and no further survey effort is required to inform the proposals.

Reptile Species

2.4.10 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document *'Reptile Mitigation Guidelines'* (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined below.

Table 2.4: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

2.5 Survey and Reporting Limitations

2.5.1 All areas of the site were accessed with the exception of the interior of the concrete silo (refer to **Figure 2**). Owing to the fabrication and condition of this structure, as described in **Section 3.3**, this is not a significant limitation and it is considered that the inaccessibility of the interior of the tower does not affect the assessment and conclusions.

2.5.2 Measurements within this report are approximate only, and have been either estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC and Google Earth.

2.6 Evaluation Methods

2.6.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

2.6.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities* (NERC) *Act 2006*. Where suitable, the ecological value of the habitats present have been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition* (CIEEM, 2016).

2.6.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, February 2019) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species*

[2] The pond marked on Ordnance Survey maps approximately 130 metres to the north of the main barn (Building 1) is no longer present.

Regulations 2017, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.

2.6.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of species listed by the Lancashire BAP Provisional Long List has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study

Designated Sites for Nature Conservation: Statutory Sites

3.1.1 There are no statutory designated sites for nature conservation within the site or immediately adjacent to the site boundary.

3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for the Hodden River Section SSSI. The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2019):

Minerals, Oil and Gas: Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variation to conditions etc. Oil and gas exploration / extraction.

3.1.3 The proposals at the site do not meet the criteria that would trigger the need for the LPA to consult with Natural England in relation to adverse effects on the statutory designated sites.

Designated Sites for Nature Conservation: Non-statutory Sites

3.1.4 The north-eastern boundary overlaps with Brockhall Wood Biological Heritage Site (BHS) by a maximum of 5 metres, refer to **Figure 2**.

3.1.5 The site lies within 2 kilometres of 17 Biological Heritage Sites (BHS) which are non-statutory designated sites for nature conservation. These are presented in **Table 3.1** below.

Table 3.1: Non-statutory Designated Sites Within a 2km Radius

Biological Heritage Site	OS Grid Reference, Distance and Direction from Site	Reason for Designation
Bailey Hall Wood and Merrick's Wood	SD 682371 1.6km to the west	The site comprises semi-natural woodland which is identified within Natural England's Inventory of Ancient Woodland.
Brockhall Wood	SD 703372 Overlaps the north-eastern boundary of the site and extends to the east	The site comprises semi-natural woodland. The mixed deciduous woodland predominates with Ash, Field Maple, Oak, Sycamore and Wych Elm with some Beech and lesser amounts of Larch and Horse Chestnut.
Calderstones Hospital Woodland / Railway Line	SD 722376 1.8km to the east	The site comprises an area of Alder-Willow carr woodland with adjoining swamp and grassland to the west with a diversity of woodland and grassland herbs.

Biological Heritage Site	OS Grid Reference, Distance and Direction from Site	Reason for Designation
Cat Scar Wood	SD 710385 1.4km north-east	Comprises semi-natural woodland which is identified within Natural England's Inventory of Ancient Woodland.
Chew Bank Wood	SD 711363 1.1km to the south-east	The site comprises woodland which is ancient semi-natural in character.
Cross Gills Former Sand Quarry	SD 694378 0.9km to the north-west	The site comprises a former sand quarry, and now supports a mosaic of semi-natural habitats. Sandy cliffs on the eastern side of the site regularly support around 40 pairs of breeding sand martins.
Dinckley Bridge Wood	SD 695354 1.75km to the south-west	The site comprises woodland which is ancient semi-natural in character.
Great Wood and Mill Wood	SD 697367 0.6km to the south-west	The site comprises of mixed woodland, noteworthy for the presence of Yellow Archangel (*Lamium galeobdolon*), listed as Sensitive in the *Provisional Lancashire Red Data List of Vascular Plants.*
Holden's Breast Wood	SD 713386 1.5km to the north-east	Listed in the *Lancashire Inventory of Ancient Woodland (Provisional)* and supports a heronry.
Hollins Wood and Dinckley Fields	SD 683363 1.6km to the south-west	The site comprises a large mosaic of semi-natural habitats bordering the south bank of River Ribble. It includes marshy grassland with species-rich flushes, neutral grassland, acid grassland, woodland and scrub.
Lambing Clough Meadow	SD 682370 1.9km to the west	The site comprises a field of semi-natural, neutral grassland situated 0.8km south of Hurst Green. The grassland is notable for its species richness.
Mitton Hall Wood	SD 714382 1.3km to the north-east	The site comprises woodland which is ancient semi-natural in character.
Mitton Wood	SD 713377 0.8km to the north-east	The site comprises a large, semi-natural woodland. It is listed in the *Lancashire Inventory of Ancient Woodland (Provisional)*. An uncommon mollusc, the ash-grey slug (*Limax cinereonige*), has also been recorded here.
Raid Deep Wood	SD 689374 1.2km to the west	The site comprises semi-natural woodland situated alongside the north bank of the River Ribble. It is listed in the *Lancashire Inventory of Ancient Woodland (Provisional)*. Yellow star-of-Bethlehem, a species listed as endangered in the *Provisional Lancashire Red Data List of Vascular Plants,* occurs in the wood.
River Hodder	SD 710381 to SD 702589 1.2km to the north-east	The river is important for otter, and is a Class 1 river (good/excellent water quality) and supports salmon, brown trout, sea trout, bullhead, dace stone loach. Three species included in the *Provisional Lancashire Red Data List of Vascular Plants* are present along the riverside, namely Yellow Star-of-Bethlehem, Green Figwort (*Scrophularia umbrosa*) and Melancholy Thistle (*Cirsium heterophyllum*).
River Ribble	SD 553287 to SD 856836 100m to the north and 100m to the east	The site comprises the River Ribble and associated semi-natural habitats. The river is important for salmon, sea trout, otter and water vole.
Spring Wood	SD 706388 1.6km to the north	No description present on the citation.

Protected and Notable Species

3.1.6 LERN holds no records of protected and notable species for the site. Records of protected and notable species for a 2 km radius of the site are presented below.

Table 3.2: Records of Protected Species Within a 2 Kilometre Radius of the Site

Taxon Group	Species Name and Designations[1] and Notes
Amphibian	Common frog (*Rana temporaria*): WCAs5 (sale only), LBAP. 5 records, dated between 1994 and 2013, the closest of which is 1120m from the site. Common toad (*Bufo bufo*): WCAs5 (sale only), PS & LBAP. 2 records, dated between 1997 and 2018, the closest of which is 990m from the site. Great crested newt (*Triturus cristatus*): EPS, WCAs5, PS & LBAP. 13 records, dated in 2017, the closest of which is 890m from the site. Palmate newt (*Lissotriton helveticus*): WCAs5 (sale only). 3 records, dated between 1997 and 2011, the closest of which is 1900m from the site. Smooth newt (*Lissotriton vulgaris*): WCAs5 (sale only). 2 records, dated in 1997, the closest of which is 1480m from the site.
Bird	**WCAs1 & LBAP** Goshawk (*Accipiter gentilis*) **WCAs1** Kingfisher (*Alcedo atthis*) and redwing (*Turdus iliacus*) **PS & LBAP** Bullfinch (*Pyrrhula pyrrhula*), cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), dunnock (*Prunella modularis*), grey partridge (*Perdix perdix*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), lapwing (*Vanellus vanellus*), lesser spotted woodpecker (*Dendrocopos minor*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*), tree sparrow (*Passer montanus*), wood warbler (*Phylloscopus sibilatrix*) and yellow wagtail (*Motacilla flava*). **PS only** Lesser redpoll (*Acanthis cabaret*) and marsh tit (*Poecile palustris*). **LBAP only** Black-headed gull (*Chroicocephalus ridibundus*), common sandpiper (*Actitis hypoleucos*), grey heron (*Ardea cinerea*), kestrel (*Falco tinnunculus*), meadow pipit (*Anthus pratensis*), oystercatcher (*Haematopus ostralegus*), pink-footed goose (*Anser brachyrhynchus*), red-breasted merganser (*Mergus serrator*), redshank (*Tringa totanus*), snipe (*Gallinago gallinago*), swift (*Apus apus*) and willow warbler (*Phylloscopus trochilus*).
Bony fish	**PS & LBAP** Atlantic salmon (*Salmo salar*), brown/sea trout (*Salmo trutta*) and European eel (*Anguilla anguilla*) **LBAP only** Brown trout (*Salmo trutta subsp. fario*), bullhead (*Cottus gobio*) and grayling (*Thymallus thymallus*)
Fern	Killarney Fern (*Trichomanes speciosum*): EPS & LBAP. 1 record, dated 1964, 1250m from the site.
Flowering plant	**WCAs8 & LBAP** Bluebell (*Hyacinthoides non-scripta*) **LBAP only** Greater Pond-sedge (*Carex riparia*), Slender Tufted-sedge (*Carex acuta*), Stone Bramble (*Rubus saxatilis*), Tea-leaved Willow (*Salix phylicifolia*), Thin-spiked Wood-sedge (*Carex strigosa*) and Yellow Star-of-Bethlehem (*Gagea lutea*).

Taxon Group	Species Name and Designations[1] and Notes
Horsetail	**LBAP** Horsetail (*Equisetum palustre x telmateia = E. x font-queri*)
Insect – Butterfly	**PS & LBAP** Wall (*Lasiommata megera*)
Insect – Moth	**PS only** Oak hook-tip (*Watsonalla binaria*), september thorn (*Ennomos erosaria*) and small square-spot (*Diarsia rubi*) **LBAP only** Chimney sweeper (*Odezia atrata*)
Jawless fish	**PS & LBAP** Sea lamprey (*Petromyzon marinus*)
Terrestrial mammal	Brown hare (*Lepus europaeus*): PS & LBAP. 4 records, dated between 1981 and 2013, the closest of which is 660m from the site. Brown long-eared bat (*Plecotus auritus*): EPS, WCAs5, PS & LBAP. 3 records, dated between 2014 and 2015, the closest of which is 1720m from the site. Eurasian badger (*Meles meles*): PBA. 8 records, dated between 1982 and 2018, the closest of which is 220m from the site. European otter (*Lutra lutra*): EPS, WCAs5, PS & LBAP. 3 records, dates in 2004, the closest of which is 370m from the site. Pipistrelle (*Pipistrellus pipistrellus*): EPS, WCAs5 & LBAP. 5 records, dated between 1986 and 2010, the closest of which is 390m from the site. European hedgehog (*Erinaceus europaeus*): PS & LBAP. 3 records, dated between 2003 and 2015, the closest of which is 900m from the site.

[1]Key to Designation Codes:
EPS = European Protected Species under the *Conservation of Habitats and Species Regulations 2017.*
WCAs1 = Species receives full protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended).
WCAs5 = Species receives full protection under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended).
PS = Priority Species listed under Section 41 of the NERC Act 2006.
LBAP = Species listed on the Lancashire Biodiversity Action Plan Provisional Long List.
PBA = Protection of Badgers Act 1992.

3.1.7 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

General Description

3.2.1 Refer to **Figures 1** and **2.**

3.2.2 The site is located to the north-east of Brockhall Village at Old Langho, near Clitheroe. The site is accessed via a single track of compacted stone that extends through a field of improved grassland from Old Langho Road and along the eastern side of Brockhall Village.

3.2.3 The site comprises six buildings in various condition surrounded by concrete and stone cobble hard-standing. North of the main barn are dilapidated Dutch barns and a concrete silo. Two occupied farmhouses are also present but lie outside the survey area.

3.2.4 Land surrounding the site comprises of sheep and cattle grazed improved grassland. Brockhall Wood, a mature Ash (*Fraxinus excelsior*), Oak (*Quercus robur*), Sycamore (*Acer pseudoplatanus*) and Wych Elm

(*Ulmus glabra*) riparian woodland along the steep banks of the River Ribble, lies within 10 metres of the eastern most buildings.

3.2.5 A Phase 1 Habitat Survey map is appended at **Figure 2**. Photographs are appended at **Table 8.1**.

Buildings

3.2.6 The buildings are described in relation to their suitability for use by roosting bats at **Section 3.3** below.

Farmyard

3.2.7 The concrete stone cobble hard-standing bordering the buildings and trampled areas at doorways and gateways support sparse ruderal herb vegetation characterised by very locally frequent plants of Pineappleweed (*Matricaria discoidea*), Greater Plantain (*Plantago major*), Annual Meadow-grass (*Poa annua*), Groundsel (*Senecio vulgaris*), Scentless Mayweed (*Tripleurospermum inodorum*), Redshank (*Persicaria maculosa*) and Creeping Bent (*Agrostis stolonifera*). The vegetation is characteristic of the OV21 *Poa annua – Plantago major* community of the NVC; this plant community is a widespread and common community associated with trampled tracks and farms.

3.2.8 Less frequently disturbed corners of the yard have been colonised by Common Nettle (*Urtica dioica*), Common Chickweed (*Stellaria media*), Yorkshire-fog (*Holcus lanatus*) and Perennial Rye-grass (*Lolium perenne*).

3.2.9 Rupestral (wall-growing) plants such as Ivy-leaved Toadflax (*Cymbalaria muralis*) and Wall-rue (*Asplenium ruta-muraria*) occur occasionally in the lime mortar in the brick walls.

3.2.10 A plant species list for the farmyard and buildings is appended at **Table 8.2**.

Tall-herb Vegetation

3.2.11 North of the buildings is an area of less frequently disturbed tall-herb vegetation colonised by abundant Indian Balsam with frequent Yorkshire-fog, Common Nettle, Cock's-foot (*Dactylis glomerata*), Cleavers (*Galium aparine*) and Great Willowherb (*Epilobium hirsutum*).

3.2.12 A plant species list for the tall-herb vegetation is appended at **Table 8.3**.

Trees

3.2.13 There are no trees within the site. One mature Lime (*Tilia* sp.) is present to the west of the access track, refer to **Figure 2**.

Invasive Plant Species

3.2.14 As annotated on **Figure 2**, invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) detected at the site comprise:

a. Scattered plants of Indian Balsam throughout the farmyard;

b. Dense stands of Indian Balsam associated with the cuttings pile on the edge of Brockhall Wood to the north-east of the site; and

c. Young plants of Japanese Knotweed within the cuttings pile on the edge of Brockhall Wood to the north-east of the site.

3.3 Bat Species

Habitat Assessment for Commuting and Foraging Bats

3.3.1 The site is surrounded by favourable habitats for the attraction of foraging bats such as the mature Brockhall Wood and the River Ribble. The habitats surrounding the site are assessed to be of high suitability for the attraction of foraging bats, in accordance with Table 4.1 of the *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins, J. (ed), 2016).

3.3.2 Habitats within the site boundary are of limited (low) suitability for the attraction of foraging bats owing to the low cover of vegetation, although the site boundaries and location of former middens do provide a source of invertebrates for the attraction of foraging bats.

Daylight Survey: Buildings

Building 1 (Main Barn): Exterior

3.3.3 Refer to **Photos 1** to **12**.

3.3.4 The main barn is located in the centre of the site and comprises a brick barn with various pitched and slate covered roofs with terracotta ridge copings. Timber fascia are present at the roof line and the door and windows support timber frames. The majority of the building is single storey with timber floors present at the northern end to create a hayloft.

3.3.5 Open window and doorway apertures and gaps in the slate covered roofs are present to permit bat access to the interior of the barn.

3.3.6 Other opportunities for bat access to crevices were identified in the following areas:

a. Gaps in the brick elevation walls, particularly where there is damage (e.g. at the southern elevation, refer to **Photo 10**);

b. Between the slates and the wall tops at the roof verge on the gable ends, refer to **Photo 11**;

c. Beneath local areas of lead flashing;

d. Behind the timber fascia, particularly at areas of rotten timber, refer to **Photo 9**;

e. Gaps between the roof slates and between the slates and the timber rafters;

f. Gaps between the lintels / underarches at the window and doorway apertures; and

g. Gaps beneath the ridge copings, refer to **Photo 12**.

Building 1 (Main Barn): Interior

3.3.7 For ease of description the internal areas the barn has been split into Sections A to I.

Section A

3.3.8 Refer to **Photos 13** to **16**. Section A is located at the north-eastern corner of the barn and comprises of former livestock stalls on the ground floor with a timber floor to form a hayloft above. A large brick arched doorway aperture is present at the northern elevation. The roof is unlined and the underside of the slates are visible. The roof timbers comprise a traditional kingpost with purlin and rafter arrangement. The ridgeboards are covered with dense cobwebs.

3.3.9 No bats were found. Bat droppings (8) were found scattered over the floor of the hayloft to indicate access by bats to the interior of the building.

Section B

3.3.10 Refer to **Photos 19** and **20**. Section B is located at the north-western corner of the barn and is similar in construction to Section A with local areas of concrete rendered walls (internally).

3.3.11 No bats were found and closer inspection confirms that the eaves are well sealed, no gaps are present at the mortise joints at the roof timbers and the bricks at the arched doorways are tightly fitted.

3.3.12 Bat droppings were found scattered over the floor of the hayloft to indicate access by bats to the interior of the building.

Section C

3.3.13 Refer to **Photo 21**. Section C is located along the western edge of the barn and comprises a lower, single storey area with a pitched slate covered roof. The roof is mostly unlined, although local areas are lined with plastic sheeting beneath the slates.

3.3.14 A hole in the roof formed by damage and water ingress is present at the point where Section C meets Section G, refer to **Photo 8**. No bats or bat droppings were found inside or around Section C.

Section D

3.3.15 Refer to **Photo 22**. Section D forms the former milking area and supports a monopitch corrugated sheet covered roof. The walls are lined internally with render. No bats or bat droppings were found inside or around Section D.

Section E

3.3.16 Refer to **Photos 23** and **24**. Section E comprises two cow sheds in the centre of the barn. The underside of the slates is lined with boards at the eastern shed and with timber sarking at the western shed. The large voids are light owing to the presence of skylights in the roof.

3.3.17 The eaves and wall-tops are sealed with timber planks and the internal walls are well pointed or sealed with a white wash and this limits opportunities for bat access to roosts internally. An old uncovered and water-filled tank was searched; no dead bats were found.

3.3.18 No bats or droppings were found inside the cow sheds, although it is accepted that the presence of straw on the floor limits the search.

Section F

3.3.19 Refer to **Photo 25**. Section F is attached to the eastern elevation of Section E and comprises a single storey building with concrete render covered walls. The underside of the slates is mostly board lined. Skylights are present in the roof to create a light internal area. The eaves and wall-tops are sealed with timber planks; no gaps were noted at the roof timbers. No bats or bat droppings were found inside or around Section F.

Section G

3.3.20 Refer to **Photo 26**. Section G comprises a former stable area in the south-western corner of the barn. The internal areas are in a similar condition to Sections A and B with rendered and painted / white washed walls. The underside of the slates is unlined. No bats or bat droppings were found.

Section H

3.3.21 Refer to **Photos 27** to **30**. Section H is located at the south-eastern corner of the barn; the internal area is divided into two storage areas and a disused toilet by brick walls. The slates at the western part of Section H are unlined. At the eastern part over a garage / workshop area, the slates are board lined.

3.3.22 A dead bat (suspected pipistrelle species) was found in the dry toilet bowl, refer to **Photo 28** and **Figure 3**. No other bats or droppings were found in this section of the barn.

Section I

3.3.23 Refer to **Photos 31** to **34**. Section I is located at the south-western corner of the barn and comprises a garage area with a narrow store. The internal walls are painted white and the roof is not lined. No bats were found in this section of the building, however approximately 30 bat droppings and the remains of the large yellow underwing moth (*Noctua pronuba)* were found beneath the ridge board over the narrow store. The droppings and prey remains are indicative of a brown long-eared bat (*Plecotus auritus*) feeding / night / day roost [**Roost 1**].

Assessment

3.3.24 In consideration of the frequency of potential roost features and the high suitability of the surrounding habitats for the attraction of bats, Building 1 (all sections) is assessed to be of high suitability for use by roosting bats.

Building 2

3.3.25 Refer to **Photos 35** and **36**. Building 2 is a concrete block structure with a timber frame. There is evidence of fire damage and no roof covering is present.

3.3.26 No bats or droppings were found. Owing to the absence of potential roost features and the exposed conditions present, Building 2 is assessed to be of negligible suitability for use by roosting bats.

Building 3

3.3.27 Refer to **Photos 37** to **39**. Building 3 is a single storey brick building with a pitched corrugated sheet covered roof. All elevation walls (exterior and interior) including the wall tops are well pointed; no gaps or opportunities for bat access into the walls were found.

3.3.28 No bats or droppings were found. Owing to the absence of potential roost features, Building 3 is assessed to be of negligible suitability for use by roosting bats.

Building 4

3.3.29 Refer to **Photos 40** to **43**. Building 4 is a single storey brick structure of a pitched slate covered roof. The opportunities for bat access are similar to those described for Building 1.

3.3.30 Internally the walls and wall tops are pointed and painted and the underside of the slates is unlined. The ridgeboard is covered with dense cobwebs and the presence of skylights creates a light internal area.

3.3.31 No bats or droppings were found. Owing to the presence of crevices suitable for bat access and the building's proximity to the woodland to the east, Building 4 is assessed to be of high suitability for use by roosting bats.

Building 5

3.3.32 Refer to **Photo 44**. Building 5 is a small (1 metre by 1 metre) brick structure with a monopitch corrugated sheeting covered roof; the building is assessed to be of negligible suitability for use by roosting bats.

Building 6

3.3.33 Refer to **Photos 45** to **50**. Building 6 is a single storey brick building with a hipped slated covered roof and terracotta ridge copings. The timber eaves are overhanging and the roof is constructed from traditional timber trusses with rafters and purlins.

3.3.34 Internally the walls and wall tops are pointed and painted and the underside of the slates is unlined. The presence of skylights creates a light internal area.

3.3.35 The ridgeboard is covered with dense cobwebs in the majority of the areas with the exception of the central and highest point. A cluster of 10 fresh bat droppings were found on the floor and tractor beneath the central area of the building in July. The number of droppings had increased to approximately 40 by September 2019 to indicate the presence of a bat roost **[Roost 2]**.

3.3.36 The DNA analysis of the droppings collected from beneath Roost 2 confirmed the species to be Brandt's bat (*Myotis brandtii*), refer to **Appendix 3**.

Other Structures

3.3.37 Refer to **Photos 51** to **54**. North of the main barn is a concrete silo and the remnant metal frames of former Dutch barns; none of these structures have suitability for use by roosting bats.

Daylight Survey: Trees

3.3.38 There are no trees within the site boundary. The mature Lime tree adjacent to the access track at the western site boundary does not currently support any potential roost features.

Bat Activity Surveys

3.3.39 The raw data recorded by the surveyors and the analysis of the Anabat recordings are appended at **Tables 8.4** to **8.6**.

3.3.40 Five different roost locations were detected during the bat activity surveys as summarised at **Table 3.3** and annotated on **Figure 3.**

Table 3.3: Summary of Roosts Detected at Brockhall Farm in 2019

Roost Number	Species	Maximum Number of Bats Detected			Roost Type[3]	Notes
		29th July 2019	20th August 2019	10th September 2019		
1 (Building 1: Section I)	Brown long-eared	0	3	0	Day / feeding	Between the timber ridgeboard / rafters at the narrow store behind the garage at Building 1 Section I.
2 (Building 6)	Brandt's bat (confirmed by droppings)	0	0	0	Day / feeding	Species confirmed by DNA analysis. Type of roost confirmed by number of droppings and position.
3 (Building 1: Section I)	Common pipistrelle / soprano pipistrelle	1	1	0	Day	Beneath eaves at gable apex on southern elevation of Building 1 Section I
4 (Building 1: Section C)	Common pipistrelle	1	0	0	Day	Emerged from hole in roof at Building 1 Section C
5 (Building 6)	Common pipistrelle	0	1	0	Day	Beneath eaves / at wall top on eastern elevation of Building 6.

3.3.41 In addition, during both the dusk emergence survey on 29th July 2019 and the first dawn re-entry survey on 20th August 2019 the presence of a common and soprano pipistrelle commuting route through the site between the riparian woodland habitats to the north-east and the direction of the residential properties at Brockhall Village was very evident, refer to **Figure 3**. Bats were observed commuting over the site from south-west to north-east from 5 minutes after sunset during the dusk survey and up until 25 minutes prior to sunrise during the dawn survey on the 20th August 2019. The vast majority of the bats used the gap between the two farmhouses (anecdotal information from Surveyor 1 as the number of bats passing was not counted accurately). This information indicates the likely presence of maternity roosts at the residential properties to the south of the site.

3.3.42 In addition, noctule bats were recorded flying over the site, particularly during the dusk emergence survey.

3.4 Animal Life

Badger

3.4.1 No evidence of badger activity was found within the site and survey area.

3.4.2 The wooded riparian corridor to the north-east of the site is suitable for use by badger and the data search confirmed the presence of badger within a 500 metre radius of the site. For the purpose of this assessment the presence of badger in the local area is confirmed, however, there are no setts or other

[3] In accordance with Natural England's terminology / definitions available at https://www.gov.uk/government/publications/bats-apply-for-a-mitigation-licence and based on all field signs and evidence

features inhabited by badger within the site or within a zone of potential influence of the development proposals.

Bird Species

Barn Owl

3.4.3 Refer to the annotations on **Figure 3.**

3.4.4 Use of Building 1 by nesting barn owl was confirmed by the presence of at least two nestlings in the void between the floor joists in the northern portion of the building on 23rd July 2019, refer to **Photos 17** and **18.** Adult barn owl were observed entering the barn carrying food during the dusk emergence survey on 29th July 2019 and the dawn survey on 20th August 2019. On the 20th August 2019 three barn owl fledglings were present in Section E of Building 1.

3.4.5 The nestlings were audibly hissing during the dawn bat survey on the 29th July 2019.

3.4.6 The floors of the cattle sheds in Building 1 and the floor of Building 6 are littered with barn owl pellets to indicate used by nesting and roosting barn owl.

Swallow

3.4.7 Old swallow nests were found against the roof timbers in Buildings 1 and 6; no active nests were observed in summer 2019.

Other Bird Species

3.4.8 Tawny owls were audible from the direction of the woodland along the stream to the east of the site during bat activity surveys.

Reptiles

3.4.9 The regularly disturbed and heavily managed habitats within the site provide poor quality habitat for sheltering, basking and hibernating reptile. The site is not adjacent or linked to any areas of favourable habitat for reptile species, and there are no records of reptile for the site or the wider area. The presence of reptiles within the site is reasonably discounted.

Incidental Observations

3.4.10 A butterfly species recorded during the surveys comprised small tortoiseshell (*Aglais urticae*); a common and widespread species.

4.0 EVALUATION AND ASSESSMENT

4.1 Description of Proposals

4.1.1 In accordance with the plans prepared by ZMA (reference 65.19.01 to 65.19.17, dated January 2021) the proposals comprise:

a. Conversion of Building 1 to residential properties with associated garden areas and car parking;

b. Conversion of Building 6 to a garage (East Piggery);

c. Conversion of Building 4 to a store (North-east Piggery);

d. Conversion of Building 2 to a store (Implement Shed);

e. Demolition of Building 2 and the concrete silo;

f. Construction of two new garages within the curtilage of the site;

g. Access (both during construction and in the long-term) will be via the existing track from Old Langho Road; and

h. No works are proposed at the two existing farmhouses (with the exception of the landscaping at the garden curtilages).

4.1.2 The ecological baseline data, as evaluated below, has informed the feasibility and scope of the proposals and the ecological data have informed the scope of mitigation required to comply with relevant wildlife legislation, Natural England licensing requirements, best practice guidance and relevant planning policy.

4.2 Designated Sites for Nature Conservation

Statutory Designated Sites for Nature Conservation

4.2.1 Owing to the small scale nature of the proposals, the distance between the site and any statutory designated sites and the absence of any direct habitat or hydrological connectivity, direct and indirect adverse effects on statutory designated sites for nature conservation as a result of the proposal are reasonably discounted.

Non-statutory Designated Sites for Nature Conservation

4.2.2 It is recognised that there will be a minor encroachment into the area designated as Brockhall Wood BHS to the north-east of the site to create garden space; this is a small ($25m^2$) area and is not considered to be significant nor will it impact the integrity of the wider BHS. The proposals will not directly affect the woodland habitats and the encroachment of the red line boundary into this area enables the treatment of the invasive plant species.

4.2.3 Given the proximity of the site to Brockhall Wood the need for demarcation and protective measures, particularly during the construction phase, is identified and appropriate measures are described in **Section 5.2**.

4.3 Vegetation and Habitats

4.3.1 None of the habitats within the site or along the access track are representative of semi-natural habitat or Priority Habitat. The site contains only common and widespread plant species and habitats that are typical of the conditions present.

4.3.2 Brockhall Wood to the north-east of the site is a Lowland Mixed Deciduous Woodland Priority Habitat. Implementation of the protective measures described at **Section 5.2** will ensure the protection of this habitat during the construction period.

4.3.3 The off-site mature Lime tree to the west is of value at the site level and must be retained to conserve it's function by providing opportunities for nesting birds, feeding bird and bats and possibly as a navigational marker on the landscape for use by bird and bat species.

4.3.4 The presence of Indian Balsam and Japanese Knotweed (invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended)) is a consideration. The proposals present an opportunity for the control of these species as part of the proposed development. Further guidance is presented at **Section 5.3**.

4.3.5 The conversion proposals involve the creation of garden habitats which will provide an opportunity to enhance the structural habitat diversity in the site and improve habitat connectivity by introduction of native tree species to the site to complement the nearby woodland habitats. Further details are provided at **Section 5.7**.

4.4 Protected Species and Other Wildlife

Bats

4.4.1 The detection of five roost positions (day / feeding roosts) used by four bat species (including soprano pipistrelle and brown long-eared bat, both Priority Species) in Buildings 1 and 6 is a significant consideration in connection with the proposals.

4.4.2 All roosts are confirmed day / feeding roosts; no evidence of the previous or current use of the buildings as a roost of higher conservation significance as defined by Figure 4 of the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004) was detected[4].

4.4.3 Use of the buildings as a maternity roost or a major hibernation roost of high conservation significance is reasonably discounted owing to the dilapidated condition and structure of the buildings which is unlikely to offer the thermally stable and humid conditions typically selected by bats in the hibernation season[5].

4.4.4 In the absence of mitigation, the conversion of Building 1 to a residential dwelling and Building 6 to a garage will result in the disturbance and loss of the day / feeding roosts. In accordance with Natural England's standing advice[6] this is a low scale of impact.

4.4.5 In addition, the preparation and implementation of an unsympathetic design for the site may have an adverse impact on the suitability of the site for the attraction of roosting and foraging bats in the long-term. For example, the inappropriate use of lighting and excessive lighting will deter bats from using the woodland edge habitats and use of the site as a commuting route between roosts at Brockhall Village and the favourable foraging habitats at the riparian woodland; this would be a significant adverse effect.

4.4.6 A bat mitigation strategy is necessary to describe how the proposals can be achieved whilst protecting roosting bats, ensuring there is no net loss of roost opportunity at the site in the long-term and to detail how any post-development interference impacts will be avoided, refer to **Section 5.4**.

4.4.7 The works may then only be carried out under a Natural England European Protected Species Mitigation (EPSM) licence issued under Regulation 55 of *The Conservation of Habitats and Species Regulations 2017.*

[4] i.e. no signs of a maternity roosts were detected.

[5] It is recognised that common and soprano pipistrelle (*Pipistrellus pipistrellus* and *P. pygmaeus*) are occasionally found individually or in low numbers in locations not typically associated with other species of hibernating bats, and may be found hibernating at features otherwise considered unsuitable; this has been taken into account when recommending appropriate precautionary actions during the proposed works at the site, refer to **Section 5.4**.

[6] Available at https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects#assess-the-impacts

Nesting Birds

4.4.8 The presence of nesting barn owl (listed under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended)) and swallow is a consideration.

4.4.9 In the absence of mitigation, the conversion of Building 1 will result in the permanent loss of a barn owl nest site. Mitigation and compensatory measures in accordance with recognised conservation handbooks (namely the *Barn Owl Conservation Handbook* (Barn Owl Trust, 2012)) are necessary and feasible in connection with the proposals, and is described further at **Section 5.5**.

Badger

4.4.10 Adverse effects on badger setts are avoided by the proposals, however, owing to the known presence of badger activity in the habitats bordering the site the implementation of the best practice measures described at **Section 5.6** are recommended.

Other Protected Species

4.4.11 Appropriate survey effort and / or assessment in accordance with standard guidance has been carried out to discount adverse effects on other relevant protected species namely great crested newt and reptile species. No further survey is necessary to inform a planning application and decision.

5.0 MITIGATION STRATEGIES, RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

5.1.1 The proposals must seek to adhere to wildlife legislation relating to the protected species found at the site and to relevant planning policy. All recommendations outlined below are appropriate and proportionate to the ecological baseline, the proposed development, the geographical area and the habitats in the wider area. The mitigation strategies for protected species have been prepared in consultation with the architect to ensure all protected species are accommodated by the proposals.

5.1.2 In addition, opportunities to enhance the ecological interest and seek biodiversity gain have been identified, as required by the NPPF and other relevant planning documents.

5.2 Protection of Surrounding Habitats and the Biological Heritage Sites

5.2.1 To ensure the protection of the BHS outside the redline boundary during the construction phase temporary protective fencing will be used to demarcate the woodland edge and protect the trees and shrubs to be retained. The fencing must extend outside the canopy of the trees at the woodland edge and must remain in position until all construction operations have been completed to ensure protection is provided throughout the construction phase.

5.2.2 The fencing will be in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction: Recommendations (BSI, 2012).

5.3 Invasive Plant Species

5.3.1 It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of Indian Balsam and Japanese Knotweed in the wild. It is recommended that a specialist contractor is appointed

for the eradication / control of these species (particularly the Japanese Knotweed) at the site, and that the works are completed under a suitable Invasive Species Management Plan.

5.4 Roosting Bats

Natural England Licensing Requirements

Three Tests

5.4.1 Owing to the presence of roosting bats and the protection afforded to bats and their roosts, the works at the Buildings 1 and 6 must only be carried out under an appropriate Natural England licence granted under Regulation 55 of *The Conservation of Habitats and Species Regulations 2017* (as amended). The licence permits the destruction and disturbance of bats and bat roosts which would otherwise be an offence.

5.4.2 To achieve the licence the applicant must be able to demonstrate to Natural England that the following three tests of Regulation 55 of *The Conservation of Habitats and Species Regulations 2017* will be satisfied.

Test 1: *That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range* [Regulation 55 (9)(b)];

Test 2: *Demonstration that the proposals for which a licence is sought are for the purposes of 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'* [Regulation 55(2)(e)]; and

Test 3: *Consideration of 'There is no satisfactory alternative' including the implications of the 'do-nothing' option* [Regulation 55(9)(a)].

5.4.3 The outlined mitigation strategy below aims to demonstrate that compliance with Test 1 is achievable. Tests 2 and 3 are also considered below.

Further Survey

5.4.4 An application for a Natural England licence can only be carried out once planning permission has been obtained and all wildlife-related conditions have been discharged. In addition, an application must typically be based on data from the most recent survey season; dependent on the timescales involved, prior to a Natural England licence application it may be necessary to supplement the 2019 survey with updated (top-up) survey data.

Mitigation Strategy: Bat Roosts at Buildings 1 and 6

Introduction

5.4.5 This mitigation strategy draws on the following resources:

a. Current Natural England guidance;

b. Information presented in the *BCT Mitigation Conference Proceedings* (BCT, January 2017) and the *Mitigation Case Studies Forum* (BCT, January 2017);

c. Implemented and monitored activities/specifications carried out by ERAP (Consultant Ecologists) Ltd at other sites / properties; and

d. Information presented on the 'Roost' website provided by the Bat Conservation Trust.

5.4.6 The paragraphs below outline the minimum requirements (in accordance with Natural England guidance as specified in the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004)) to be accommodated at the site to appropriately mitigate the identified impacts on bats and their roosts. All actions are summarised on **Figure 4**, appended.

Works to Be Carried Out Prior to Commencement

5.4.7 Prior to the commencement of works and to ensure a suitable feature is present at the site to receive any bats found during the works, six bat boxes will be installed on the trees to the east of the farm, refer to **Insert 1**.

Insert 1: Example of commercially available bat box: Greenwood's Ecohabitats two crevice box (available from http://www.greenwoodsecohabitats.co.uk/shop)

Timing of Works

5.4.8 Based on the roost types detected there is no timing restriction on the commencement of works (subject to nesting birds, refer to **Section 5.5**). Preparation and adherence to a Work Schedule will form part of the Natural England EPSM licensed works.

Capture and Exclusion

5.4.9 The conversion works will involve the loss of Roosts 1 to 5 during works to re-roof the buildings.

5.4.10 The licensed ecologist must be present during the careful removal / soft strip of the roof coverings in the vicinity of Roosts 1 to 5 and all other features with suitability for use by roosting bats. Roof tiles / slates and ridge copings must be lifted (rather than slid) and the underside of the roof covering will be checked for bats prior to discard / stacking.

5.4.11 If a bat is present or found the licensed ecologist will carefully collect the bat (using a hand held static net or by direct handling), place the bat in an appropriate container and transfer the bat(s) to the bat box.

Roost Re-creation

5.4.12 The redevelopment provides an opportunity to accommodate provisions for roosting brown long-eared bat, Brandt's bat, common and soprano pipistrelle at the new / converted buildings.

5.4.13 The strategy will comprise the installation of a combination of opportunities for bats that typically select roof voids (i.e. brown long-eared and Brandt's bat) and crevice roosting species (pipistrelle species). A suggested strategy is outlined at **Figure 4**, appended.

5.4.14 To avoid any risk of bat entanglement it is mandatory that the roof at the new garages is lined with hessian backed bitumastic undertile felt (Type 1F); breathable roofing membranes will not be approved by Natural England.

Toolbox Talk

5.4.15 Prior to the commencement of works the licensed ecologist will inform all contractors of the following:

a. The wildlife legislation and protection afforded to bats and their roosts;
b. The presence of the licence and the associated method statement and the need to abide by the content;
c. The licensable actions;
d. Good working practices;
e. The presence of the any provisions for roosting bats installed in advance of the works and the need for them to remain undisturbed;
f. The protocol to be followed if a bat is discovered when the licensed ecologist is not on site; and
g. An outline of the proposals and timescales.

Mechanism for Ensuring Implementation / Success

5.4.16 If the licensed ecologist has any concerns regarding the quality of workmanship or there is non-compliance with the Natural England licence, the Mitigation Strategy and / or guidance provided by the licensed ecologist then this will result in additional site visits to make inspections.

5.4.17 It is always the intention to ensure all parties are aware of the importance of the Natural England licence and compliance with the Mitigation Strategy and this is achieved through good communication. However, in extreme / significant cases of non-compliance the licensed bat surveyor will report the issue to Natural England and further action may be taken.

Post-development Interference Impacts and Mitigation

5.4.18 Post-development interference impacts may occur as a result from the disturbance of the bat roosts (and bird nests) by residents at the redeveloped site. The risk of impacts will be minimised by providing guidance to the new residents at the properties on the protection afforded to bats and their roosts and nesting birds.

Monitoring

5.4.19 Under the Natural England licence there is likely to be a post-construction monitoring requirement.

Artificial Lighting Impacts and Mitigation

5.4.20 Paragraph 180, bullet point 'c' in Chapter 15 (conserving and enhancing the natural environment) of the National Planning Policy Framework (NPPF) states that development should:

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

5.4.21 Any lighting scheme to be implemented at the redeveloped site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over the roosting

provisions, provisions for barn owl and any landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.

5.4.22 The lighting scheme will be designed with reference to current guidance, namely:

a. Guidance Note 08/18. *Bats and Artificial Lighting in the UK.* Bats and Built Environment series.(Bat Conservation Trust and Institution of Lighting Professionals, 2018); and

b. Bats and lighting: Overview of current evidence and mitigation guidance (Stone, 2014).

Consideration of Tests 2 and 3

5.4.23 In consideration of the demonstration that the proposals are for imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment [Regulation 55(2)(e)] it is confirmed that the redevelopment proposal is of economic benefit to the family that currently own the farm and the wider environment. As detailed in the Design and Access Statement prepared by ZMA, the existing farm and out-buildings are substantial in size and require significant financial input to maintain. The redevelopment provides the opportunity for the family to own and occupy a purpose-built property.

5.4.24 The new build has been designed specifically to meet the family's living requirements and will be a low-energy, eco-home, built using the same materials as the main building with similar features and a number of contemporary additions.

5.4.25 In consideration of the alternatives to redevelopment [Regulation 55(9)(a)], as outlined in the Design and Access Statement, the existing buildings are not suitable for modern farming methods as the buildings would require significant modernisation to be suitable for a low labour, high output system to be financially viable. There are relatively low profit margins from beef cattle unless rearing large numbers, of which the scale of the farm could not accommodate. The redevelopment provides the family with the opportunity to remain at the farm and for Mr and Mrs Willan to enjoy their retirement.

5.4.26 The do-nothing option is not feasible as this would result in the progressive deterioration of the existing buildings and would not enable the family to remain at the farm due to financial and space constraints.

Non-licensed Works

5.4.27 As no evidence of a bat roost has been detected at Buildings 2, 3, 4, 5, the concrete silo and the remnant metal framed Dutch barns there is no requirement for a Natural England licence to proceed with the works (demolition / conversion etc.) at these buildings. In accordance with best practice it is recommended that works at these buildings are carried out in accordance with an appropriate method statement and all contractors are fully briefed in relation to the presence of protected species elsewhere at the site.

5.4.28 The measures can be delivered via a pre-works Toolbox Talk and will also detail the best practice actions to be carried out during demolition such as the soft strip of the slates at Building 4 by hand.

5.5 Nesting Birds: Protection, Mitigation and Enhancement Strategy

Legal Protections

5.5.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is an offence to kill, injure or take any wild bird, take damage or destroy the nest for any wild bird whilst the nest is in use or being built and take or destroy the egg of any wild bird.

5.5.2 Barn owl is listed on Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended) and therefore they are also protected against disturbance whilst nesting. It is an offence to intentionally or recklessly disturb any wild bird included on Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young and disturb dependent young of such a bird.

Mitigation Strategy: Barn Owl

5.5.3 The presence of nesting barn owl does not preclude the conversion proposals provided an appropriate Barn Owl Mitigation Strategy, as outlined below, is applied. The outlined strategy is in accordance with relevant wildlife legislation, the NPPF and the guidance in the *Barn Owl Conservation Handbook* (Barn Owl Trust, 2012) and *Barn Owls and Rural Planning Applications "What needs to happen" - A Guide for Planners* (Ramsden, 2009) and best practice.

Alternative Provision for Use by Roosting / Nesting Barn Owl

5.5.4 Prior to the conversion works an alternative provision suitable for use by nesting barn owl must be provided within proximity to the site. This will involve:

a. Installation of a barn owl box on a suitable tree within land under the same ownership as the client as a temporary measure;

b. Followed by the allocation of a section of a building for long-term use by barn owl. At this stage, the northern elevation of Building 4 (the north-eastern piggery) has been identified (refer to **Figure 4**, **Appendix 4** and the annotations on ZMA drawing 65.19.07).

5.5.5 The provision at the converted barn may comprise a dedicated 'Barn Owl Loft' in accordance with the guidance at *Barn Owls and Rural Planning Applications "What needs to happen" - A Guide for Planners* (Ramsden, 2009); relevant extracts are presented at **Appendix 4** and **Figure 4** for ease of reference. The Barn Owl Loft will be a permanent feature which will not be removed. To increase the likelihood of uptake barn owl pellets collected from inside the barn will be placed inside the Barn Owl Loft.

Access for Monitoring

5.5.6 Regardless of the mitigation / compensation measure provided, access for monitoring and removal of debris will need to be provided.

Timing of Commencement of Works

5.5.7 The commencement of works must be preceded by a pre-work inspection for nesting barn owl. In accordance with best practice it is advised that works are not scheduled to commence between March and August inclusive. Unless it is appropriately demonstrated by an appropriately licensed ecologist that no evidence of nesting barn owl (or other bird species) is present.

Ownership

5.5.8 The occupier of the property must be made aware of the protections afforded to barn owl and the nest provisions provided.

Maintenance and Monitoring

5.5.9 General maintenance will comprise:

a. Ensuring the barn owl entrance to the Barn Owl Loft is free from obstructions including climbing plants; and

b. Clearing out of the Barn Owl box every 3 to 4 years in the winter months.

5.5.10 Signs of use will be reported to the LERN to contribute to their long-term record database.

Mitigation Strategy: Swallow

5.5.11 As the conversion proposals will exclude access by swallow to Buildings 1 and 6, the provision of compensatory opportunities for nesting swallow are required.

5.5.12 Swallow typically build a mud nest against the roof timbers within a structure.

5.5.13 It is recommended that provisions for nesting swallow (i.e. protruding nails to provide an attachment point to enable swallow to construct their nests) are accommodated at the roof timbers of the converted 'Implement Shed' (Building 3). Access from the exterior will also need to be provided.

Habitat Creation and Enhancement

5.5.14 Habitat creation and enhancement for nesting birds, including Priority Species, at the site to satisfy the requirements of the NPPF will be provided through installation of bird boxes.

5.5.15 The specification of the number, type and location of the nest boxes will be provided as part of a detailed plan as the site proposals are finalised. The range of products at **Insert 2** is suitable based on the habitats present and the bird species known to occur in the local area.

Insert 2: *Nest boxes suitable for installation on appropriate buildings to enhance the opportunities available for use by nesting birds, including Priority Species. Left to right: Schwegler 1SP house sparrow terrace and 1MR Avianex box*

5.6 Best Practice in Relation to Badger

5.6.1 As badger activity is known to be present in the local area the following best practice measures are advised during the demolition and construction period:

a. Fires must not be lit at the site;

b. Chemicals or other potentially harmful materials must not be stored where they can be accessed by inquisitive badger;

c. Pipes should be stored with covers over the ends;

d. Trenches or pits must not be left open overnight where they pose a risk of trapping badger. Trenches or pits should be covered with a board or fitted with a means of escape such as an earth ramp or sloping plank of timber; and

e. If badger activity, particularly sett excavation, within or closer to a proposed or existing working area is detected or suspected the ecologist must be contacted for guidance.

5.7 Landscape Planting

5.7.1 Any landscape planting associated with the development provides an opportunity to enhance the value of the site for feeding bats, birds and invertebrates with the use of native species and species known to be of value for the attraction of wildlife. Suitable tree and shrub species that are complementary to the existing woodland habitats at Brockhall Wood are presented at **Table 5.1** and suitable plant species for the attraction of wildlife within a garden habitat are detailed at **Table 5.2**.

Table 5.1: Suitable Native Species for Tree and Shrub Planting

Scientific Name	Common Name	Scientific Name	Common Name
Acer campestre	Field Maple	*Prunus spinosa*	Blackthorn
Corylus avellana	Hazel	*Rosa arvensis*	Field Rose
Crataegus monogyna	Hawthorn	*Rosa canina*	Dog-rose
Ilex aquifolium	Holly	*Sambucus nigra*	Elder
Malus sylvestris	Crab Apple	*Sorbus aucuparia*	Rowan
Prunus avium	Wild Cherry	*Ulmus glabra*	Wych Elm
Prunus padus	Bird Cherry	*Viburnum opulus*	Guelder Rose

Table 5.2: Recommended Plants for Use in Gardens to Attract Bats[7]

Flowers for Borders		Herbs
Aubretia (spring to early summer)	Mexican aster (summer to autumn)	Angelica
Candytuft (summer to autumn)	Michaelmas daisy	Bergamot (summer to early autumn)
Cherry pie (summer to autumn)	Night-scented stock (summer)	Borage (spring to early autumn)
Corncockle	Ox-eye daisy (summer)	Coriander (summer)
Cornflower	Phacelia (summer to autumn)	English marigolds
Corn marigold	Poached egg plant (summer)	Fennel (summer to early autumn)
Corn poppy	Primrose (spring)	Feverfew (summer to autumn)
Echinacea	Red campion (spring)	Hyssop (summer to early autumn)
English Bluebell (spring)	Red valerian	Lavenders
Evening primrose	Scabious (summer)	Lemon balm
Field poppies (summer)	St John's wort (spring)	Marjoram (summer)
Honesty (spring)	Sweet William (summer)	Rosemary (spring)
Ice plant 'Pink lady' (early autumn)	Tobacco plant	Sweet Cicely
Knapweed (summer to autumn)	Verbena (summer to autumn)	Thyme (summer)
Mallow (summer to autumn)	Wallflowers	

6.0 CONCLUSION

6.1 The development proposals at Brockhall Farm can be achieved with no significant adverse effect on designated sites for nature conservation and ecologically valuable habitats. Protection of the features of special interest at Brockhall Wood BHS will be achieved.

[7] Extracted from *Encouraging bats, A guide for bat-friendly gardening and living* (Bat Conservation Trust, August 2015)

6.2 Mitigation and protective / conservation measures for relevant protected species namely roosting bats, nesting barn owl, nesting birds and badger are entirely feasible and are accommodated by the proposals. In relation to the requirement for a Natural England EPSM licence, the 'three tests' of *The Conservation of Habitats and Species Regulations 2017* will be met and the appropriate bat mitigation licence will be obtained to facilitate the works.

6.3 Adverse effects on other protected species are reasonably discounted.

6.4 Actions to ensure compliance with wildlife legislation and best practice will be implemented and are described in **Section 5.0**. Measures to achieve a net gain for biodiversity in accordance with the development proposals are specified in **Section 5.0** and are entirely feasible to achieve compliance with the NPPF and relevant local planning policy.

7.0 REFERENCES

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8.0 APPENDIX 1: TABLES

Table 8.1: Table of Photographs

Building 1: Main Barn

Photo 1: South-western corner

Photo 2: North-western corner

Photo 3: North elevation

Photo 4: Eastern elevation

Photo 5: South-eastern corner

Photo 6: Southern elevation

Photo 7: Courtyard area (facing north-west)

Photo 8: Courtyard area (facing south-west) and damage to roof at Section C

Photo 9: South-western corner (Section I) and damage to timber soffits and fascia

Photo 10: Gaps in brickwork at southern elevation

Photo 11: Gaps beneath the slates at the roof verge on southern elevation

Photo 12: Gaps beneath the ridge copings and between the slates over the whole building

Photo 13: Interior of Section A showing mortared walls, underside of slates and skylights

Photo 14: Underside of roof at Section A

Photo 15: Section A facing Section B (west)

Photo 16: Sealed brick archways

Photo 17: Concentration of barn owl faeces at Section A

Photo 18: Gap / void between floor joists used by nesting barn owl (chick present but difficult to photograph); Dead vole prey present.

Photo 19: Section B showing sealed brick walls

Photo 20: Roof timbers at Section B

Photo 21: Section C

Photo 22: Section D

Photo 23: Section E (east)

Photo 24: Section E (west)

Photo 25: Section F (facing south)

Photo 26: Section G

Photo 27: Section H (west)

Photo 28: Dead bat in toilet bowl at Section H

Photo 29: Section H (east)

Photo 30: Section H (east)

Photo 31: Underside of roof at Section I

Photo 32: Underside of roof at Section I

Photo 33: Bat droppings and Yellow Underwing moth wings beneath Roost 1 at Section I

Photo 34: Bat droppings and Yellow Underwing moth wings beneath Roost 1 at Section I

Building 2

Photo 35: Damaged roof and exposed conditions

Photo 36: Damaged roof and exposed conditions

Building 3

Photo 37: Western and southern elevations

Photo 38: Eastern and northern elevations

Photo 39: Interior of Building 3

Building 4

Photo 40: Western and southern elevations

Photo 41: Eastern and northern elevations

Photo 42: Gaps at the roof covering

Photo 43: Interior of Building 4

Building 5

Photo 44: Building 5

Building 6

Photo 45: Western and southern elevations

Photo 46: Northern and western elevations

Photo 47: Interior

Photo 48: Rafters and cobweb free section of ridgeboard

Photo 49: Bat droppings beneath the ridgeboard in the centre of the building [Roost 2]

Photo 50: Bat droppings beneath the ridgeboard in the centre of the building [Roost 2]

Other Structures

Photo 51: Concrete silo to the north of the main barn

Photo 52: Remnant metal framed barn to the north of the main barn

Photo 53: Remnant metal framed barn to the north of the main barn

Photo 54: Remnant metal framed barn to the north of the main barn

Table 8.2: Plant Species List for Ruderal Vegetation at the Farmyard

Scientific Name	Common Name	DAFOR[1]	% Cover
Agrostis stolonifera	Creeping Bent	LF	5%
Asplenium ruta-muraria	Wall-rue	O	<1%
Cymbalaria muralis	Ivy-leaved Toadflax	VLF	<1%
Dryopteris filix-mas	Male-fern	O	<1%
Fraxinus excelsior	Ash sapling	O	<1%
Holcus lanatus	Yorkshire-fog	F	5%
Impatiens glandulifera	Indian Balsam	VLF	<1%
Lolium perenne	Perennial Rye-grass	LA	5%
Matricaria discoidea	Pineappleweed	VLF	<1%
Persicaria maculosa	Redshank	VLA	<1%
Plantago major	Greater Plantain	VLF	<1%
Poa annua	Annual Meadow-grass	LA	1%
Poa trivialis	Rough Meadow-grass	F	5%
Polygonum aviculare	Knotgrass	VLF	<1%
Rumex obtusifolius	Broad-leaved Dock	O	<1%
Senecio jacobaea	Common Ragwort	O	<1%
Senecio vulgaris	Groundsel	VLF	<1%
Sonchus oleraceus	Smooth Sow-thistle	R	<1%
Stellaria media	Common Chickweed	F	5%
Taraxacum officinale agg.	Dandelion	O/ VLA	1%
Trifolium repens	White Clover	VLF	<1%
Tripleurospermum inodorum	Scentless Mayweed	VLF	<1%
Urtica dioica	Common Nettle	LF	5%

[1]**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.3: Plant Species List for Tall-herb Vegetation to the North and North-east

Scientific Name	Common Name	DAFOR[1]	% Cover
Agrostis stolonifera	Creeping Bent	LF	5%
Calystegia sepium	Hedge Bindweed	VLA	2%
Cirsium vulgare	Spear Thistle	O	<1%
Dactylis glomerata	Cock's-foot	A	5%
Dryopteris filix-mas	Male-fern	O	<1%
Epilobium hirsutum	Great Willowherb	A	5%
Fallopia japonica	Japanese Knotweed	VLF	2%
Fraxinus excelsior	Ash sapling	O	<1%
Galium aparine	Cleavers	A	2%
Geranium robertianum	Herb-Robert	VLF	1%
Heracleum sphondylium	Common Hogweed	O	<1%
Holcus lanatus	Yorkshire-fog	A	5%
Impatiens glandulifera	Indian Balsam	A	5%
Lolium perenne	Perennial Rye-grass	F	5%
Matricaria discoidea	Pineappleweed	VLF	1%
Plantago major	Greater Plantain	VLF	1%
Polygonum aviculare	Knotgrass	VLF	1%
Rubus fruticosus agg.	Bramble	LA	5%
Stellaria media	Common Chickweed	VLA	1%
Taraxacum officinale agg.	Dandelion	O	<1%
Tripleurospermum inodorum	Scentless Mayweed	VLF	<1%
Urtica dioica	Common Nettle	A	5%

[1]**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.4: Activity Survey 1, Date: 29th July 2019, Sunset time: 21:14 Start time: 20:59

Note: All bats are individuals (i.e. one bat) unless otherwise stated. Only observed bat activity has been listed in the notes

Surveyor Position 1: Victoria Burrows

Time	Species	Notes
21:19 and 21:21	Common pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:24 and 21:31	Common pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:33	Myotis species	Pass
21:35	Common pipistrelle x 2	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:37	Myotis species	Pass
21:39	Soprano pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:41	Noctule	High over site
21:42	Common pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:43	Noctule	High over site
21:47	Common pipistrelle and soprano pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:49	Noctule	High over site
21:50	Common pipistrelle	Flew into site from south and headed north-east towards Brockhall Wood and River Ribble
21:54	Noctule	High over site
21:58	Noctule	High over site
21:59	Myotis	Emergence from interior of Building 6 via open aperture doorway on south elevation **[Roost 2]**
22:00	Common pipistrelle	Foraging activity (feeding buzzes)
21:07	Soprano pipistrelle	Foraging activity (feeding buzzes)
22:45	End	

Surveyor Position 2: Molly Meadows

Time	Species	Notes
21:40	Bat	Left the garage (Section I) via open aperture on south elevation (cross-reference with the Anabat Scout recording confirmed no echolocation)
21:42	Bat	Pass
21:53	Common pipistrelle	Emerged from beneath the soffit at the apex on the south facing gable end **[Roost 3]**
22:03	Common pipistrelle	Pass
22:05 to 22:10	Soprano pipistrelle	Pass
22:45	End	
The Anabat Scout recorded: 6 common pipistrelle passes between 21:53 and 22:10; and 2 soprano pipistrelle passes at 22:05.		

Surveyor Position 3: John Harrison-Bryant

Time	Species	Notes
21:13	Barn owl	Flew over courtyard north to south
21:24	Barn owl	Flew over courtyard north to south carrying prey
21:28	Common pipistrelle	Emerged from hole in roof at Section C **[Roost 4]**
21:37	Common pipistrelle	Foraging over courtyard
21:39	Noctule	Pass over site
21:41	Noctule	Pass over site
21:44	Common pipistrelle x 3	Foraging over courtyard, social calls audible / recorded
21:45	Barn owl	Young barn owl heard 'hissing' from inside Building 1
22:45	End	
The Anabat Walkabout recorded: 2 brown long-eared passes at 22:01 and 22:07; 55 noctule passes between 21:41 and 22:13; 147 common pipistrelle passes between 21:28 and 22:19; and 6 soprano pipistrelle passes between 21:52 and 22:22.		

Surveyor Position 4: Charlotte Walsh

Time	Species	Notes
21:32	Soprano pipistrelle	Faint call
21:41 to 21:50	Noctule	High over site
21:45	Barn owl	Pass
21:47	Common pipistrelle	Flying south to north down the track to the west of Building 1
21:55	Noctule	High over site
21:58	Common pipistrelle	Flying south to north down the track to the west of Building 1
22:02	Soprano pipistrelle	Pass
22:09	Barn owl	-
22:14 to 22:00		
22:45	End	
The Anabat Walkabout recorded: 1 brown long-eared pass at 22:02; 50 noctule passes between 21:41 and 22:13; 50 common pipistrelle passes between 21:38 and 22:21; and 22 soprano pipistrelle passes at 22:32 and 22:22.		

Survey Position 5: Chris Swindells

Time	Species	Notes
21:20	Common pipistrelle	Flew into Building 1 from exterior via open doorway aperture
21:25 to 22:35	Common pipistrelle	Foraging around the building elevations
22:45	End	

Survey Position 6: Leah Hart

Time	Species	Notes
21:20 to end	Common / soprano pipistrelle	Foraging around the building elevations; no emergence
22:45	End	
The Anabat SD2 recorded: 2 brown long-eared pass at 22:06 and 22:12; 1 Myotis pass at 22:23; 38 noctule passes between 21:41 and 21:59;		

68 common pipistrelle passes between 21:25 and 22:25; and 76 soprano pipistrelle passes at 21:20 and 22:25.

Survey Position 7: Amy Sharples

Time	Species	Notes
21:27	Common pipistrelle	Pass along woodland edge
21:29 to 21:49	Common pipistrelle	Foraging along woodland edge
21:41	Noctule	Pass
22:45	End	

Table 8.5: Activity Survey 2, Date: 20th August 2019, Sunrise time: 05:54 Start time: 04:00

Surveyor Position 1: Victoria Burrows

Time	Species	Notes
04:00	-	On arrival no bats were flying inside Buildings 1, 4 or 6
04:15 to 04:25	Common pipistrelle, soprano pipistrelle and Myotis species	Flying along southern elevation of Building 1; heard not seen.
04:37	Brown long-eared	Pass
05:04 to 05:10	Soprano pipistrelle	Passes from woodland to the north-east over site and farmhouse towards the south (towards Brockhall Village and other residential properties)
05:11	Soprano pipistrelle	Pass from woodland to the north-east over site and farmhouse towards the south (towards Brockhall Village and other residential properties)
05:12	Tawny owl	Audible in Brockhall Woods
05:14	Soprano pipistrelle	Pass from woodland to the north-east over site and farmhouse towards the south (towards Brockhall Village and other residential properties)
05:17		
05:21		
05:24		
05:28		
05:33		
05:42		
06:10	End	
06:11	Barn owl	Three fledglings on the trusses inside Building 1 Section E.
The Anabat Express recorded: 5 brown long-eared passes between 04:34 and 04:47; 11 Myotis passes between at 04:23 and 04:45; 21 common pipistrelle passes between 04:24 and 05:47; and 24 soprano pipistrelle passes between 04:11 and 05:40.		

Surveyor Position 2: Marie Pickering

Time	Species	Notes
04:15	Common pipistrelle, soprano pipistrelle and Myotis species	Flying along southern elevation of Building 1; heard not seen.
04:22	Myotis pass	Heard not seen
04:25	Soprano pipistrelle	Heard not seen
04:30 to 04:40	Common pipistrelle, soprano pipistrelle and Myotis species	Flying along southern elevation of Building 1; heard not seen.
05:20	Brown long-eared	Flew into Building 1 Section I via open aperture on southern elevation **[Roost 1]**
05:24	Brown long-eared	Flew into Building 1 Section I via open aperture on southern elevation **[Roost 1]**
05:31	Brown long-eared	Flew into Building 1 Section I via open aperture on southern elevation tracked back to crevice between ridge board / rafter and slate above the droppings and large yellow underwing remains at **[Roost 1]**
05:38	Soprano pipistrelle	Entered gap beneath the soffit at the apex on the south facing gable end **[Roost 3]**

06:10	End	
The Anabat SD2 recorded: 2 brown long-eared passes at 04:16 and 04:44; 7 Myotis passes between 04:23 and 04:45; 27 common pipistrelle passes between 04:04 and 05:13; and 26 soprano pipistrelle passes between 04:11 and 05:45.		

Surveyor Position 3: Stuart Laverick

Time	Species	Notes
06:10	- End	No emergence or re-entry activity
The Anabat Express recorded: 4 brown long-eared passes at 04:17, 04:18, 04:25 and 04:55; 14 common pipistrelle passes between 04:12 and 05:03; and 5 soprano pipistrelle passes between 04:10 and 04:42.		

Surveyor Position 4: Aidan Pickering

Time	Species	Notes
04:17	Brown long-eared	Pass
04:34 to 04:36	Pipistrelle species	Foraging
04:44	Soprano pipistrelle	Pass
04:50	Soprano pipistrelle	Pass
06:10	End	
The Anabat Express recorded: 3 brown long-eared passes at 04:16, 04:19 and 04:43; 21 common pipistrelle passes between 04:15 and 05:12; and 26 soprano pipistrelle passes between 04:15 and 05:44.		

Surveyor Position 5: Leah Hart

Time	Species	Notes
04:30 to 05:04	Common and soprano pipistrelle bats	Heard and observed up to two bats at one time foraging around the north-eastern corner of Building 1
06:10	End	
The Anabat Express recorded: 3 brown long-eared passes at 04:21, 04:35 and 04:46; 10 Myotis passes between 04:22 and 05:37; 76 common pipistrelle passes between 04:20 and 05:46; and 19 soprano pipistrelle passes between 04:12 and 05:39.		

Survey Position 7: Chris Swindells

Time	Species	Notes
04:20 to 05:22	Common pipistrelle	Heard and observed up to two bats at one time foraging along the woodland margin
05:24	Common pipistrelle	Entered eastern elevation of Building 6 beneath the eaves **[Roost 5]**
The Anabat Express recorded: 1 brown long-eared pass at 04:33; 10 Myotis passes between 04:22 and 05:37; 1 noctule pass at 04:54; 10 common pipistrelle passes between 04:06 and 05:24; and 13 soprano pipistrelle passes between 04:31 and 05:45.		

Table 8.6: Activity Survey 3, Date: 10th September 2019, Sunrise time: 06:33 Start time: 04:45

Surveyor Position 1: Victoria Burrows

Time	Species	Notes
04:45	-	On arrival no bats were flying inside Buildings 1, 4 or 6
05:33	Common pipistrelle	Pass
05:49	Tawny owl	Audible in the woodland to the east
05:51	Common pipistrelle	Brief pass
05:54	Soprano pipistrelle	Flew across site east to west
05:56	Soprano pipistrelle	Heard not seen
06:00	Soprano pipistrelle	Heard not seen
06:02	Barn owl	Audible in wider area
06:03	Soprano pipistrelle	Flew north to south over farmhouses towards the village
06:05	Tawny owl	Pair audible in the woodland to the east
06:20	Soprano pipistrelle	Flew north to south over farmhouses towards the village
06:24	Soprano pipistrelle	Flew north to south over farmhouses towards the village
06:48	End	
The Anabat Express recorded: 2 common pipistrelle passes at 05:33; and 9 soprano pipistrelle passes between 05:52 and 06:24.		

Surveyor Position 2: Victoria Burrows Lonsdale

Time	Species	Notes
05:24	Soprano pipistrelle	Brief pass
05:33	Soprano pipistrelle	Pass
05:45	Soprano pipistrelle	Pass
05:49	Soprano pipistrelle	Pass
05:53	Soprano pipistrelle	Pass
05:54	Soprano pipistrelle	Pass
05:58	Soprano pipistrelle	Pass
06:16	Soprano pipistrelle	Pass
06:17	Soprano pipistrelle	Pass
06:48	End	
The Anabat Express recorded: 1 soprano pipistrelle pass at 06:16.		

Surveyor Position 3: Stuart Laverick

Time	Species	Notes
-	-	No emergence or re-entry activity
06:48	End	

Surveyor Position 4: Leah Hart

Time	Species	Notes
05:16	Soprano pipistrelle	Pass
05:52	Soprano pipistrelle	Pass
05:53	Soprano pipistrelle	Pass
05:58	Soprano pipistrelle	Pass
06:17	Soprano pipistrelle	Pass
06:48	End	

The Anabat SD2 recorded: 9 soprano pipistrelle passes between 05:09 and 06:17.

Surveyor Position 5: Molly Meadows

Time	Species	Notes
06:16	Soprano pipistrelle	Pass; no emergence or re-entry activity
06:48	End	
The Anabat Express recorded: 1 soprano pipistrelle passes at 06:16.		

Surveyor Position 7: Richard Lowe

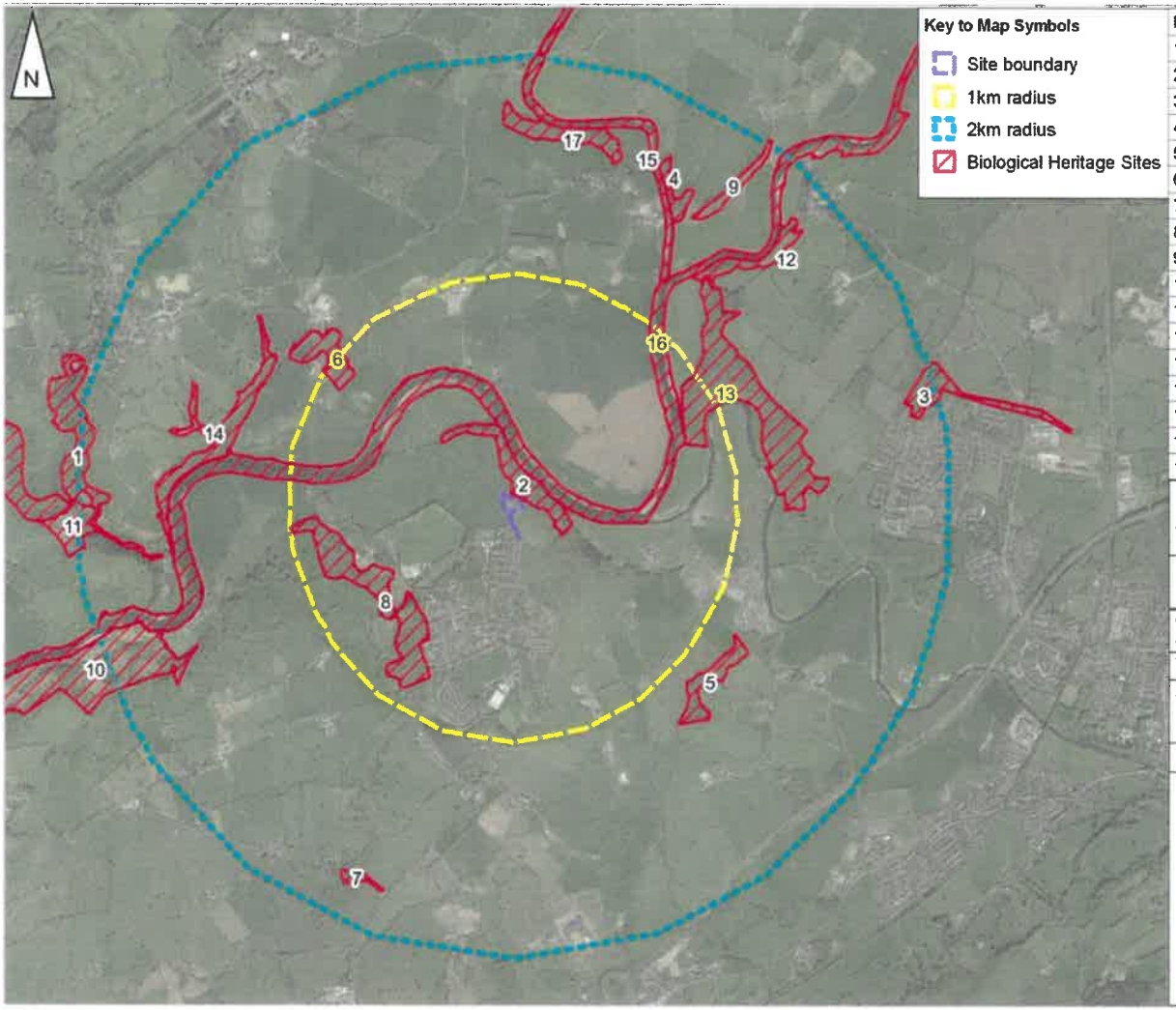
Time	Species	Notes
05:24	Soprano pipistrelle	Heard not seen; feeding buzzes heard
05:33	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:03	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:05	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:13	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:19	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:27	Soprano pipistrelle	Heard not seen; feeding buzzes heard
06:48	End	
The Anabat Express recorded: 2 common pipistrelle passes at 05:33; and 6 soprano pipistrelle passes between 04:50 and 06:19.		

Detector Position 8: SD2 inside Building 6

Time	Species	Notes
The Anabat SD2 recorded: 1 soprano pipistrelle pass at 06:00.		

9.0 APPENDIX 2: FIGURES

Figure 1: Site Location and Designated Sites within a 2 km Radius



Ref.	Biological Heritage Site
1	Bailey Hall Wood and Merrick's Wood
2	Brockhall Wood BHS
3	Calderstones Hospital Woodland/Railway Line
4	Cat Scar Wood
5	Chew Bank Wood
6	Cross Gills Former Sand Quarry
7	Dinckley Bridge Wood
8	Great Wood and Mill Wood
9	Holden's Breast Wood
10	Hollins Wood and Dinckley Fields
11	Lambing Clough Meadow
12	Mitton Hall Wood
13	Mitton Wood
14	Raid Deep Wood
15	River Hodder
16	River Ribble
17	Spring Wood

Figure 1:
Site Location and Designated Sites within a 2km Radius

Project Name:
Brockhall Farm, Old Langho, BB6 8BB

Central Grid Ref:	Reference No.
SD 7029 3711	ERAP Ltd. 2019-196

Version & Date: v2 (CH) 04/02/2021

Scale: 1:30000 at A4

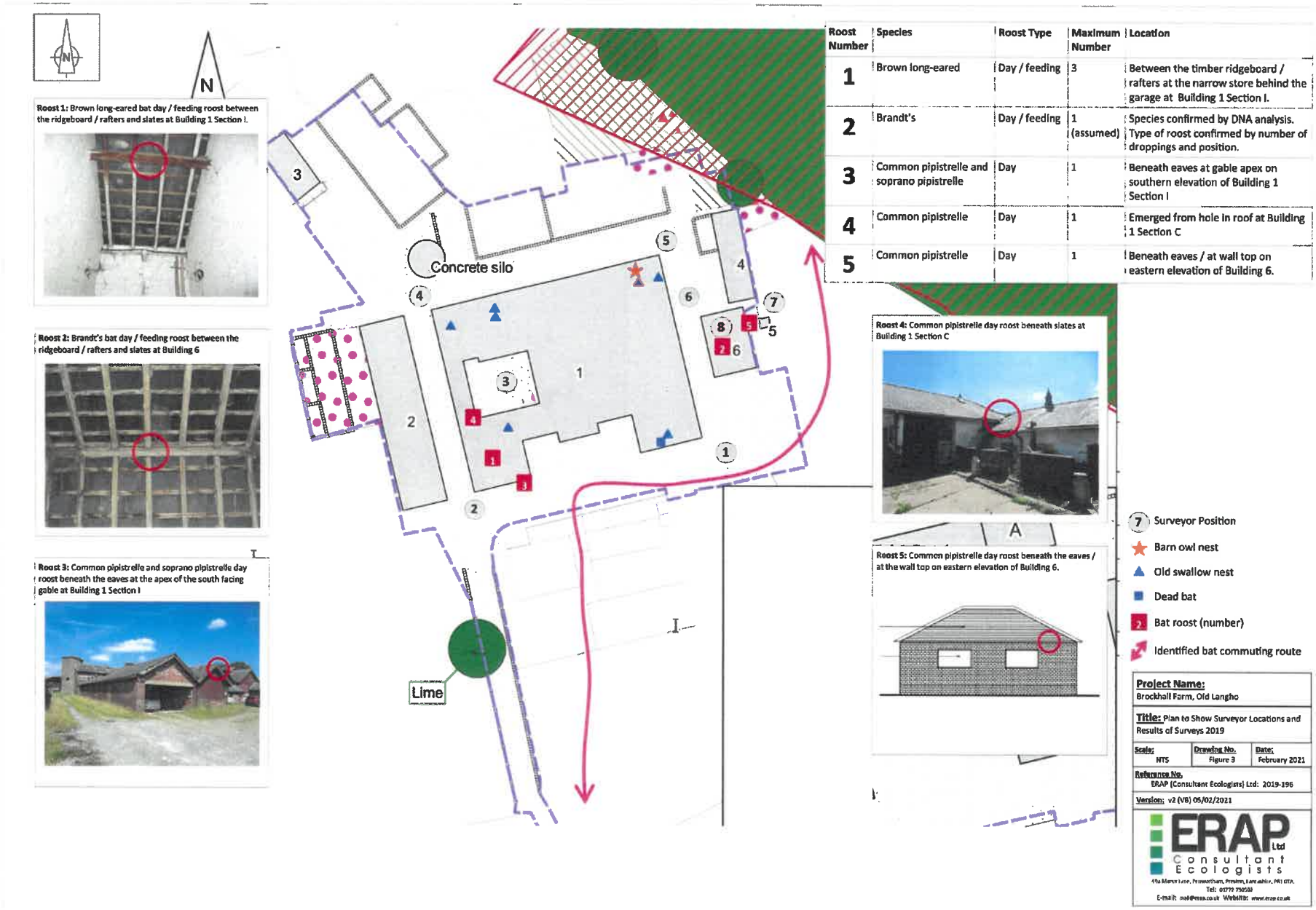
0 500 1000 1500 m

C:\Users\...\OneDrive\Documents\ERAP\Jobs\2019\2019-196 Brockhall Farm Old Langho\GIS Maps\2019-196 Brockhall Farm.qgs

ERAP Ltd Consultant Ecologists
Building N2, Chorley Business and Technology Centre
East Terrace, Euxton Lane, Euxton, Chorley PR7 6TE
Tel: 01772 750 502 Email: mail@erap.co.uk
Website: www.erap.co.uk

Figure 2: Phase 1 Habitat and Vegetation Map

Figure 3: Plan to Show Surveyor Locations and Results of Surveys 2019



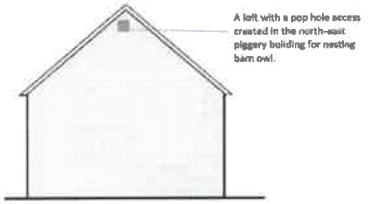
Roost Number	Species	Roost Type	Maximum Number	Location
1	Brown long-eared	Day / feeding	3	Between the timber ridgeboard / rafters at the narrow store behind the garage at Building 1 Section I.
2	Brandt's	Day / feeding	1 (assumed)	Species confirmed by DNA analysis. Type of roost confirmed by number of droppings and position.
3	Common pipistrelle and soprano pipistrelle	Day	1	Beneath eaves at gable apex on southern elevation of Building 1 Section I
4	Common pipistrelle	Day	1	Emerged from hole in roof at Building 1 Section C
5	Common pipistrelle	Day	1	Beneath eaves / at wall top on eastern elevation of Building 6.

Figure 4: Plan to Show Suggested Mitigation Strategy

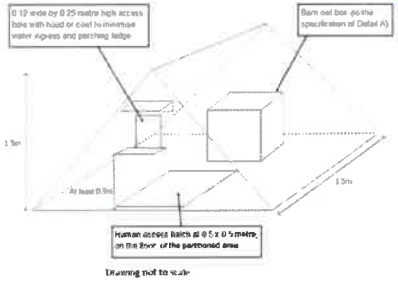
Barn Owl Loft
A loft for nesting barn owl will be accommodated at the northern end of the 'North-east Piggery' / Building 4.

This over the communal outdoor store. A 'pop-hole' access for barn owl will be provided at the northern elevation.

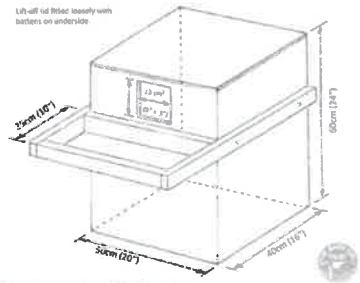
The specification will be in accordance with the guidance at *Barn Owls and Rural Planning Applications "What needs to happen" - A Guide for Planners* (Ramsden, 2009) and **Appendix 4.**



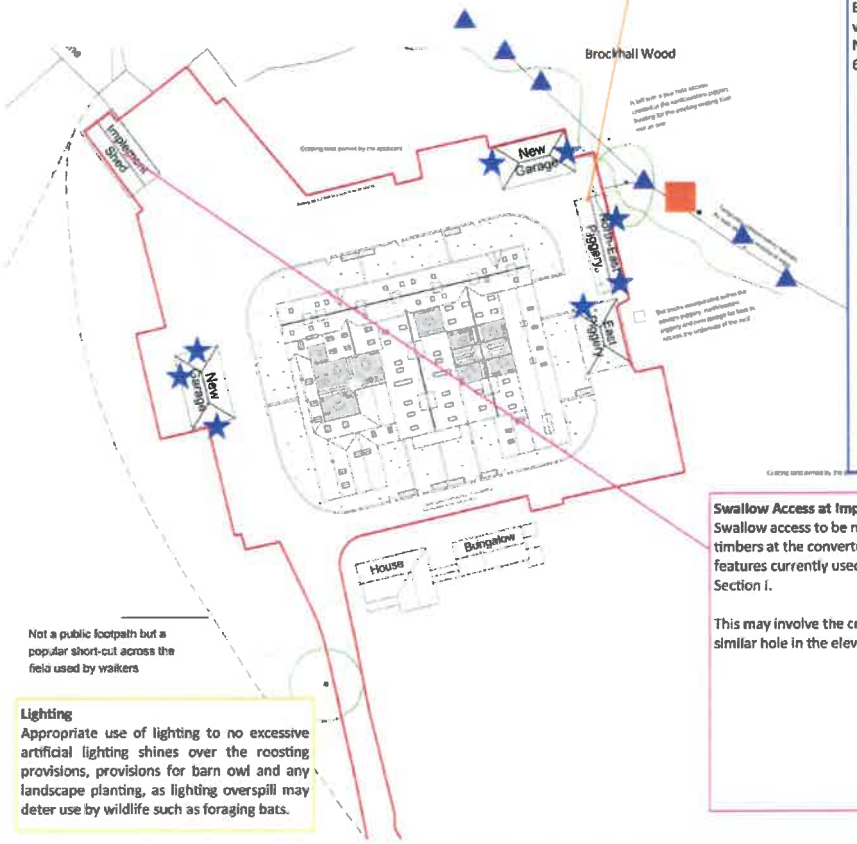
Insert 1: North Elevation of Building 4 (the North-east Piggery)



Insert 2: Suggested Barn Owl Loft



Insert 3: Internal Box Specification



Lighting
Appropriate use of lighting to no excessive artificial lighting shines over the roosting provisions, provisions for barn owl and any landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.

Bat Access Panels
Bat access panels (at least 8 recommended) will be installed in the elevation walls of the North-east Piggery (Building 4), East Piggery (Building 6) and the two new garages.

Insert 6: Bat Access Panel / Integral Bat Box
The outer leaf can be clad to match the brick elevations
(available from http://www.habibat.co.uk)

Bat Boxes
Prior to the commencement of works six bat boxes (see specification at **Insert 5**) will be installed on suitable trees on the edge of Brockhall Wood.

Insert 5: Bat Box
(available from http://www.greenwoodsecohabitats.co.uk/shop)

Barn Owl Box
Prior to the commencement of works a barn owl box (see specification at **Insert 4**) will be installed on a suitable tree on the edge of Brockhall Wood.

The box must face outwards.

Insert 4: Barn Owl Box

Swallow Access at Implement Shed
Swallow access to be made available to the roof void / roof timbers at the converted Implement Shed to replicate the features currently used at Building 6 and at Building 1 Section i.

This may involve the creation of a pop hole or installation similar hole in the elevation wall to permit access.

General Bird Boxes (not annotated)

Habitat creation and enhancement for nesting birds, including Priority Species, at the site to satisfy the requirements of the NPPF will be provided through installation of bird boxes.

The specification of the number, type and location of the nest boxes will be provided as part of a detailed plan as the site proposals are finalised. The range of products at **Insert 2** is suitable based on the habitats present and the bird species known to occur in the local area.

Plan extracted from ZMA drawing 65.19.07

Project Name: Brockhall Farm, Old Langho		
Title: Plan to Show Suggested Mitigation Strategy		
Scale: NTS	**Drawing No.** Figure 4	**Date:** February 2021
Reference No. ERAP (Consultant Ecologists) Ltd: 2019-196		
Version: v2 (VB) 05/02/2021		

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Tel: 01772 745401
E-mail: mail@erap.co.uk Website: www.erap.co.uk

10.0 APPENDIX 3: DNA ANALYSIS RESULTS

10.1 Results of DNA Analysis for Dropping Sample Taken from Beneath Interior of Building 6 (Roost 2: Brandt's Bat Day / Feeding Roost)

WARWICK
THE UNIVERSITY OF WARWICK

EcoWarwicker
Ecological Forensics

2 October 19

Re: Identification Results for Victoria Burrows, ERAP Ltd

Job number 14597, received 13 September 2019
Sample labelled: PO 2019-196 Brockhall Farm, Old Lango, Tractor.
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCTCACCCCTTAATAAAAATTATTAACAGCTCATTTATTGA
CCTCCCTGCCCCATCAAACATTTCATCTTGATGAAACTTTGGATCTCTCCCTAGG

Phylogenetic analysis identification: *Myotis brandtii*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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11.0 APPENDIX 4: PROVISIONS FOR BARN OWL

Extracted from *Barn Owls and Rural Planning Applications "What needs to happen" - A Guide for Planners* (Ramsden, 2009)

PERMANENT PROVISION

How to make permanent provision for Barn Owls in a barn conversion or other development

Background

The loss of traditional agricultural buildings through unsympathetic conversion into dwellings has frequently resulted in the loss of roosting and nesting sites, many of which were available to Barn Owls for hundreds of years. Far from being the worst-case scenario, re-development can be a potential lifeline, safeguarding the site for future generations. Experience shows that Barn Owls can continue to use sites during the development phase and adapt to radical alterations, provided that their needs are catered for.

Barn Owls have lived alongside man for thousands of years and some old farmhouses have had owls in the attic for countless generations. Although they are rather shy, Barn Owls will readily occupy dwellings, or any other type of building, provided they can enter and hide unseen. The range of site-types they will use includes: churches and chapels, barns, houses, modern farm buildings, industrial units, ruins, hollows in trees, rock crevices and occasionally even mine shafts. For many years Barn Owls were actively encouraged into buildings, evidence of which can still occasionally be seen in the form of owl windows, usually in the gable ends of traditional agricultural buildings.

Not every building or tree is suitable and some basic requirements must be met. Obviously the birds must be able to get in and will sometimes use surprisingly small entrance holes. They must be able to perch out of sight somewhere that is always dry and for nesting they need an adequately-sized dry ledge or cavity. The vast majority of holes, perches and nests used by Barn Owls are more than three metres above ground level and low-level opportunities are generally ignored.

PLEASE NOTE: provision for Barn Owls should not normally be made within 1km of a motorway, dual-carriageway, or similar (if in doubt please seek advice info@barnowltrust.org.uk)

The importance of making a space for owls INSIDE one of the developed buildings

You may think that the best way to provide a long-term nesting place is to fix a wooden nestbox on the outside of one of the buildings or perhaps on a nearby tree. However, an outdoor nestbox will, at best, last about fifteen years so cannot be considered as permanent provision. You cannot be certain that such boxes will ever be replaced. Most traditional barns have been available for Barn Owls to use for hundreds of years. Making permanent provision means making sure the site continues to be available for at least another hundred years and this is why it really needs to be inside a permanent structure. However, there are lots of different ways in which permanent provision can be made and provided that the owls' needs are taken into account, you can choose exactly where and how you do it within your development.

PERMANENT PROVISION cont.

Deciding on the best way to do it
First of all, check your wildlife survey report. If you employed an ecological consultant he/she should have recommended where permanent provision is made within the development. You may wish to take further advice or simply proceed once you've read the "essential requirements" and "positioning" information below.

In a single-building development it's simply a question of choosing the best place for the hole - the most suitable gable end, or part of the roof. In a group of buildings you should be choosing one of the tallest. However, provided that it is high enough (and meets the other requirements) the provision could be made in a new or redeveloped outbuilding such as a garage overlooking open countryside. Although most holes are incorporated into walls, owl holes have been successfully made through re-thatched roofs and through slate/tile roofs either by constructing a miniature dormer or fashioned in lead. The hole itself is quite small (see below) and the nesting space can be immediately inside the hole, you can create a tunnel that leads to the nesting space, or in the case of a large loft, the birds can fly from the entrance hole to a conventional indoor nestbox. If necessary, a tunnel or passageway can slope upwards to discourage the ingress of rainwater, or downwards, or turn horizontally. Where a nesting space is being built-in, you can make it any shape provided that it meets the "essential requirements" (see below).

If there is no residual loft space, then the box can be partly contained within the wall and the remainder incorporated into a room as an interesting feature. Provided that it is done properly there are no health, nuisance, or condensation problems. For viewing the owls, one-way glass and peep holes can be problematic. However, where a range of barns are converted for holiday accommodation, customers will often return year after year to watch the owls through a CCTV system or webcam. Please note that artificial lighting of nests or nest inspections have licence implications and the relevant Country Agency must be consulted.

PERMANENT PROVISION cont.

Positioning requirements - for permanent provision in barn conversions etc.

The owl hole should be at a height of not less than 3 metres above ground level and positioned so that it is easily noticed by a bird flying past over open ground (i.e. - not screened by other buildings or trees).

At sites with evidence of occupation by Barn Owls, the position of the owl hole and the proximity of the new nest-place should replicate (as far as possible) those already used by the bird(s). However, where birds may have been "forced" to use one of the lower buildings (because, for example, the larger buildings had no owl hole or no nest-ledge) the permanent provision should be made in one of the tallest buildings irrespective of which building birds are currently using.

Essential design requirements - for incorporating a nesting space (for Barn Owls) into barn conversions, other redeveloped buildings and new build

- Entrance hole: minimum size 100mm wide x 200mm high, optimum size 130mm W x 250mm H, maximum size 200mm W x 300mm H.
- Floor area of nest chamber: absolute minimum 0.4m^2, ideal size is 1m^2 (These dimensions are bigger than those for nestboxes because built-in provision usually lacks external exercise areas that would permit maximum wing stretching prior to fledging).
- Depth from bottom of entrance hole to floor of nesting area must be not less than 460mm.
- Interior must remain dry during prolonged heavy rain coming from any direction.
- Human access for easy clearing-out of nest debris is essential (probably once every 3-4 years or less).
- Measures aimed at reducing the chances of entry by other species (such as Jackdaws) are to be encouraged provided that they do not significantly reduce the box's suitability for Barn Owls.
- Should be substantially constructed and well-insulated against condensation and noise.
- Should not be constructed from tropical hardwood unless the timber is certified as sustainably grown (FSC).
- Hipped roofs, and pitched roofs where optimal siting of the access is through the roof rather than the wall/gable end, will require the use of a specially built miniature dormer or owl-hole 'tile'.
- Where the access is in a vertical structure such as a wall or gable end, there should be an external landing platform or perch below the entrance hole to facilitate the Barn Owls' arrival and departure.
- Owners of buildings with permanent provision in the roof space should also be aware of the following subjects: foraging habitat requirements, the need for clearing out debris so as to maintain internal depth, what to do if a young Barn Owl is found and human safety issues. See barnowltrust.org.uk