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) 01296 728351 · * enquiries@bernwood.net · 8 www.bernwood.net

Adstock Fields Farm Calf Barn Adstock Buckinghamshire

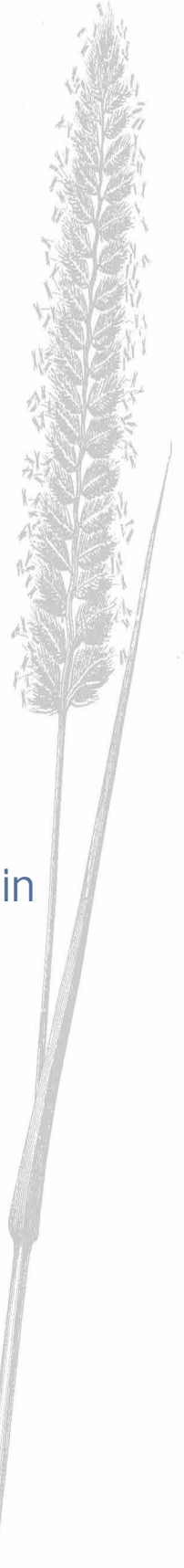


Preliminary Ecological Appraisal, Roost Assessment, Bat Surveys and Biodiversity Net Gain Assessment Report

Jo Nicholson

29th August 2023

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Proud to be:



Hensmans Farm, Nearton End, Swanbourne, Buckinghamshire, MK17 0SL

Limitations

Ecological assessments can be used to draw conclusions as to the likely presence or absence of species (animals and plants), population size, use of the site by animals. Any ecological survey is a snapshot in time and should not be regarded as definitive nor complete.

The preparation of mitigation strategies, consultation exercise and submission of any licence applications cannot be relied upon until approved (licensed) in writing by the Statutory Nature Conservation Organisation. Allowance must be made for both programme and financial change to projects as a result of application failure, amendment, or refusal.

Every professional effort and due diligence have been applied to provide an accurate ecological assessment of the site at the time of the preparation of this report, but no liability can be assumed for omissions, or subsequent changes to design and development. Additional works should be anticipated as surveys and proposals for the site progress.

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Quality Assurance

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Author: M. Davis BSc., CIEEM Qualifying Member, Assistant Ecologist

Proof-reader: C. Damant, MCIEEM, Principal Ecologist

Executive Summary

Bernwood Ecology have undertaken a Preliminary Ecological Appraisal, Roost Assessment and three bat activity surveys of Adstock Field Farms in Adstock, Buckinghamshire. The site includes a series of brick-built calf pens. The proposals are for the conversion of part (only) of the calf pens into a visitors' centre.

Habitats recorded on site include hardstanding and a building. The loss of no habitats are anticipated in the proposals. The Biodiversity Net Gain assessment indicates a gain will be delivered under the proposals through the implementation of offsite habitat enhancement (modified grassland to traditional orchard).

The 3.1 DEFRA Metric BNG calculator determined the habitats within the site boundary to have very low distinctiveness. The proposals are calculated to result in a net gain for biodiversity of a +100% in habitat units (+0.06 units) through the use of offsite habitat enhancement. The proposed habitat (Traditional Orchard) must be created and managed to achieve and maintain its target condition (moderate) identified within this report.

The Preliminary Roost Assessment confirmed the calf pens (all) as containing roosts for bats, due to the presence of faecal (droppings) and feeding remains in two roof voids of the calf pens with further evidence in the remainder of the building excluding the swimming pool. The proposed works are likely to have an adverse effect on roosting bats in the absence of mitigation. Further survey effort was undertaken to characterize the roost type. A European Protected Species Licence in relation to bats will be required prior to commencing works.

Three dawn emergence surveys of the of the building, as a whole, were conducted to determine presence/ absence of roosting bats and how the building is being used by bats if present. The survey concluded that the calf barns are used by low numbers of brown long-eared, Natterer's, soprano pipistrelle and common pipistrelle bats, and as such, it can be determined that the proposed work will have an impact upon roosting bats (roost modification only) within the structure. Mitigation and compensation is proposed. It is recommended that a European Protected Species Licence is acquired before the proceeding of works.

There is a risk that nesting birds will utilise spaces on and/or within the structure; recommendations are made to avoid the damage or destruction of active nests.

Any additional or changes in artificial lighting as part of the proposals must not increase light levels on nearby habitats of high ecological value, including known bat roosts.

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1. Introduction and Objectives

- 1.1 Bernwood Ecology were instructed by Jo Nicholson on 3rd January 2023 and 7th March 2023 to undertake a Preliminary Ecological Appraisal, Biodiversity Net Gain Assessment, Preliminary Roost Assessment and three bat activity surveys, at the calf barns at Adstock Fields Farm, Adstock, Buckinghamshire, MK18 2JE (SP7509830739) (Appendix 1).
- 1.2 The aim of the Preliminary Ecological Appraisal (PEA) survey is to identify any ecological constraints to the development proposals, identify further survey effort required and provide recommendations on ecological enhancements for biodiversity net gain (CIEEM, 2017).
- 1.3 The aim of the Biodiversity Net Gain (BNG) assessment is to calculate the measurable change to biodiversity through changes in habitats before and after development (CIEEM et al., 2016).
- 1.4 As the proposals will directly impact a building within the site boundary a Preliminary Roost Assessment (PRA) was conducted. The aim of the PRA is to ascertain whether bats are or could be using the building for roosting, through either the identification of evidence of bat presence or through the assessment of suitability of the building to support roosting bats.
- 1.5 The aims of the emergence surveys are to ascertain whether bats are using the building for roosting, identify roost locations, determine entry/ exit points, and classify the roost through identification of species, numbers, and usage if present.
- 1.6 The proposals are for the conversion of part of a series of calf barns into a visitors' centre (Appendix 2).
- 1.7 During the Preliminary Roost Assessment undertaken by Bernwood Ecology on 4th January 2023, the calf barns were confirmed as a roost for bats, due to the presence of faecal (droppings) and feeding remains within the structure. Recommendations were made for three further surveys to be undertaken in order to characterise the type of roost present to inform future mitigation measures. A European Protected Species Licence in relation to bats will be required prior to works commencing.

2. Legal Protection

- 2.1 The finding of this report represents the professional opinion of qualified ecologists and does not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this report.

- 2.2 The following information is a simplified summary of the legislation and the full text of the Wildlife & Countryside Act 1981 (as amended) (WCA 1981), the Conservation of Habitats and Species Regulations 2017 (2017 Regulations) and other legislation together with current published guidelines should be consulted.

European Protected Species

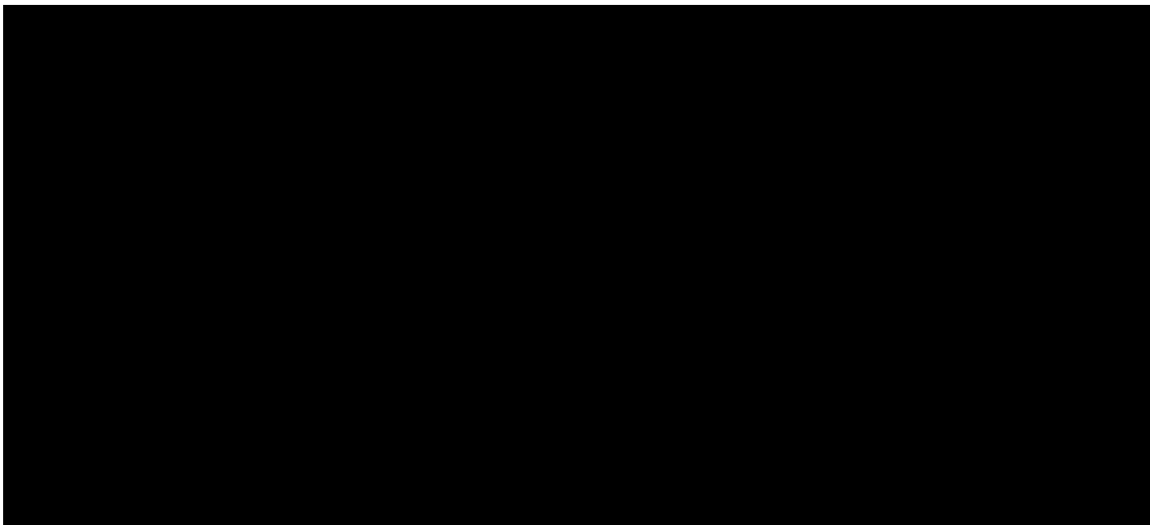
- 2.3 It is understood that 2017 Regulations will be further amended due to the departure of the UK from the EU on 31st January 2020. From that date the provisions in The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 will apply (see <https://www.legislation.gov.uk/uksi/2019/579/contents/made>). Existing protection for habitats and species including standards and assessment procedures will remain as they have been prior to the UK leaving the EU.
- 2.4 The 2017 Regulations and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 should be read together until further clarification or changes are made available by the UK Government or legal case law.
- 2.5 All European Protected Species (EPS; great crested newts, bats, otter, white-clawed crayfish, hazel dormice, etc.) are protected under the 2017 Regulations and the WCA 1981. It is an offence under section 41 of the 2017 Regulations to:
- deliberately capture, injure or kill any wild animal of a EPS;
 - deliberately disturb a EPS (including in particular any disturbance which is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or which affects significantly the local distribution or abundance of the species);
 - deliberately take or destroy the eggs of a EPS;
 - damage or destroy a breeding site or resting place of a EPS; or,
 - possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a EPS, or any part of, or anything derived from a EPS.
- 2.6 Section 9(4) (b) and (c) of the WCA 1981 makes it an offence to:
- intentionally or recklessly disturb a EPS while it is occupying a structure or place which it uses for shelter or protection; or,
 - intentionally or recklessly obstruct access to any structure or place which any EPS uses for shelter or protection.
- 2.7 In order for otherwise illegal acts to proceed lawfully, an appropriate licence must be sought under the 2017 Regulations and WCA 1981. Licences for the purpose of development are currently determined by Natural England and must include an

appropriate mitigation and monitoring scheme to secure the “favourable conservation status” of the species in the local area.

Widespread Species of Reptile

2.8 Widespread species of reptiles (grass snakes, adder, slow worm and common lizard) are protected under the WCA 1981. These species receive partial protection under Section 9(1) and section 9(5). It is an offence to:

- intentionally kill or injure a common species of reptile; or
- sell, or attempt to sell a live or dead reptile or any part of or anything derived from it.



2.10 Licences are available from Natural England to allow activities that would otherwise be offences for:

- scientific or educational purposes;
- the purpose of ringing or marking;
- conserving wild animals or introducing them to particular areas;
- preserving public health or public safety;
- preventing the spread of disease; and,
- preventing serious damage to any form of property or to fisheries.

2.11 There is no provision under wildlife legislation for licensing what would otherwise be offences for the specific purpose of development, maintenance or land management, but consideration will be given to licensing a development proposal if licensable actions will provide a conservation benefit for water voles.

Non-native Species

- 2.12 It is an offence, under section 14, to release or allow to escape into the wild any animal listed on Schedule 9 Part I of the WCA 1981.
- 2.13 It is an offence, under section 14, to grow, or cause to grow in the wild any plant listed on Schedule 9 Part II of the WCA 1981.

Wild Birds

- 2.14 Wild birds are protected under the WCA 1981. The basic principle of the Act is that all wild birds, their nests and eggs are protected by law and some rarer species are afforded special protection. Wild birds are defined as those resident in or visitors to Great Britain, in a wild state (does not include poultry or game bird). Section 1(1) of the WCA 1981 states that it is an offence to intentionally or recklessly:
- kill, injure or take any wild bird;
 - take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
 - take or destroy an egg of any wild bird.
- 2.15 Section 1(2) of the WCA 1981 states that it is an offence to possess or control any live or dead wild bird or any part of or anything derived from a wild bird or an egg or part of an egg of a wild bird.
- 2.16 It is an offence under section 1(5) of the WCA 1981 to intentionally or recklessly:
- disturb any wild bird included in schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or,
 - disturb dependent young of such a bird.

3. Planning

- 3.1 The local planning authority has the power to request information under Article 4 of the Town and Country (Planning Applications) Regulations 1988 (SI1988.1812) (S3) which covers general information for full applications.
- 3.2 The National Planning Policy Framework (NPPF) revised in 2021 requires the planning system and policies to balance economic, social and environmental factors of sustainable development. The environmental component of the NPPF states that any planning application must: *'contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy'*. Chapter 15 (Conserving and Protecting the Natural Environment) includes the methods by which this is to be achieved, including:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value;
 - recognising the intrinsic character and beauty of the countryside; and,
 - minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- 3.3 Planning permission should be refused if: significant harm from a development cannot be adequately avoided, adequately mitigated, or as a last resort compensated for. The presumption in favour of development does not apply where development requiring appropriate assessment under the Habitats Directive is being considered, planned or determined. Planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscape and nature conservation. Please see updated Planning Practice Guidance <https://www.gov.uk/government/speeches/local-planning>.
- 3.4 Section 99 of ODPM Circular 06/2005 states: 'It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and/ or planning obligations, before permission is granted'.
- 3.5 Local authorities have a duty to consider the three derogation 'tests' of the Habitats Directive: no satisfactory alternative, imperative reasons of overriding public interest (including those of a social or economic nature or beneficial consequences for the environment) and that the favourable conservation status of the species will be maintained. If any of these requirements are not met, the local authority should refuse planning permission regardless of any commitment to obtain a Natural England licence.

- 3.6 The Vale of Aylesbury Local Plan (VALP) 2013-2033 (adopted in 2021) includes Policies NE1, NE2, and NE8, detailing strategies concerning biodiversity and geodiversity, watercourses as well as trees, hedgerows and woodlands, respectively.
- 3.7 Policy NE1 sets out the strategies for protecting and enhancing biodiversity and geodiversity through measures including:
- seeking net gains in major and minor developments;
 - refusing permission where significant detriment (including to sites of principal importance such as Priority Habitats) cannot be avoided, mitigated or compensated;
 - requiring that mitigation for Priority Habitats be delivered on site and,
 - promoting site permeability for wildlife by maintaining existing corridors and ensuring continued and enhanced habitat connectivity in new developments.
- 3.8 Policy NE2 relates to protecting watercourses and their associated corridors. The policy states that developments should conserve and enhance the biodiversity value of the watercourse and its corridor through good design... Opportunities for de-culverting of watercourses should be actively pursued and planning permission will only be granted for proposals which do not involve the culverting of watercourses. Development proposals adjacent to or containing a watercourse must provide or retain a 10m ecological buffer (unless existing physical constraints prevent) between any watercourse and the development. There must also be a long-term landscape and ecological management plan for this buffer.
- 3.9 Policy NE8 aims to protect the trees, hedgerows and woodlands of Aylesbury Vale, requiring full tree surveys and AIAs as part of planning applications, and adequately sympathetic replacement planting of any justified losses.

4. Methodology

Desk Study

- 4.1 A search of MAGIC Map (magic.defra.gov.uk) for statutory sites within 5km; European Protected Species Licenses (EPSLs), great crested newt environmental DNA (eDNA) results for pond surveys undertaken by DEFRA 2017-2019, and great crested newt licence returns within 2km; and priority habitats within 1km was undertaken by Bernwood Ecology. It should be noted that the MAGIC EPSL database was last updated in February 2022, therefore licences granted after that time will not yet be uploaded into the database.
- 4.2 A 1km search for designated sites and historical species records was commissioned from Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC).

- 4.3 Ponds within 500m of the survey boundary (application boundary excluding access road) were identified through their visibility on Ordnance Survey maps (at a 1:3000 scale).

Preliminary Ecological Appraisal

- 4.4 The purpose of the Preliminary Ecological Appraisal (PEA) is to establish the presence or potential presence of protected species and habitats on or near the site (zones of influence), and specifically:
- identify likely ecological constraints associated with the proposals;
 - identify any mitigation measures likely to be required, following the ‘mitigation hierarchy’;
 - identify any additional surveys which may be required to inform a full ecological assessment; and,
 - identify opportunities offered by a project to deliver ecological enhancements (CIEEM, 2017).
- 4.5 Habitats on site are assessed and mapped following the JNCC Phase I Habitat Survey methodology (JNCC, 2010). The survey was undertaken by C. Damant MCIEEM and M. Davis CIEEM Qualifying Member on 4th January 2023, adhering to good practice guidelines and industry standard (BSI, 2013; CIEEM, 2021).
- 4.6 Weather at the time of the survey was dry, with a light breeze, cloud cover ~60% and temperatures ~12°C.

Biodiversity Net Gain Assessment

- 4.7 The DEFRA BNG metric 3.1 (released April 2022) been used to calculate and compare the areas of existing habitats to be affected with habitats to be lost, retained, enhanced, and created post development.
- 4.8 The DEFRA BNG delivery mechanism is yet to be finalised, with no Supplementary Planning Documents yet established nationally or locally. The Environment Act 2021 which mandates the BNG assessment process and sets the uplift of required net gain as 10% requires the amendment of the Town and Country Planning Act. This is currently anticipated to become law in November 2023.
- 4.9 Whilst the BNG calculations are useful for providing a numerical understanding of impacts on biodiversity, the results should be only be used as an indication as to the biodiversity value change on site. The BNG values are a proxy for biodiversity, and they are relative, and not absolute. Some habitat creation has no weighting or bearing on the values in the BNG calculations, however these still provide an

enhancement for wildlife that include targeted biodiversity gains to specific protected species.

- 4.10 A BNG assessment has been undertaken to establish and demonstrate the measurable changes in biodiversity value of the site from its existing pre-works habitats and their conditions to its proposed post-development habitats and conditions. Habitat conditions are determined using the Condition Assessments provided in the DEFRA BNG technical guidance (Panks et al., 2022a & 2022b), and according to legislation (Environment Act 2021, Schedule 7A, part 1 section 5) and guidance, the value of any recently destroyed or degraded habitats are to reflect their value prior to any loss or degradation using remaining onsite evidence such as site photos, recent maps, and/or satellite imagery (CIEEM 2021b, Panks et al., 2022a). The use of historical maps (for example Google Earth or National Library of Scotland) will be used to assist in the identification of broad habitat types prior to the site survey where required.
- 4.11 The JNCC Phase I habitats have been translated into the UKHabs using the tool in the BNG calculator. The convention of the '70% rule' –i.e., where a habitat covers more than 70% within a polygon it will be coded as that habitat –has been applied. Secondary codes from the UKHabs have not been applied. A Minimum Mapping Unit (MMU) of 25m² for polygons (areas) and 5m for linear features has been adopted based on the UKHabs methods (Butcher et al., 2020a, 2020b) and this is measured using georeferenced plans in QGIS (version 3.16.7). The BNG includes habitats to Level 4 of the UKHabs, and where possible, to Level 5.
- 4.12 The BNG assessment was undertaken by M. Davis BSC., CIEEM Qualifying Member, Assistant Ecologist, following the most recent guidance (Panks et al., 2022a & 2022b; Natural England, 2022), and was reviewed by C. Damant who has undertaken training on the DEFRA metric (2.0, 3.0/1 and 4.0) and has completed many assessments since their implementation.

Preliminary Roost Assessment

- 4.13 The objective of the Preliminary Roost Assessment (PRA) is to undertake a daytime inspection of the structure to assess whether there are actual or potential bat roosts present by searching for evidence of bat use and assessing the suitability of the structure to support bat roosts. If evidence of bats is found, the assessment searches for evidence to indicate:
- which species are present;
 - an indicative roost size;
 - roost access point(s);

- the roost type(s); and,
 - whether further survey effort is required in relation to the proposals.
- 4.14 The PRA was carried out by C. Damant (bat survey class licence levels 3 & 4 surveyor: 2015-12601-CLS-CLS/ 2015-12602-CLS-CLS), and M. Davis on 4th January 2023 following the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2016). The building subject to the proposed development was systematically searched internally and externally (from the ground) for evidence indicating the presence of bats (live and dead bats, staining at potential roost entry points, feeding remains, droppings and urine marks) and assessed for suitability to support bat roosts through the identification of potential roosting features (PRFs) and potential bat access points.
- 4.15 Equipment available for use during the PRA included ladders, high-powered torches, digital camera, and sample jars (for collecting droppings for subsequent DNA analysis if required).

Bat Emergence Surveys

- 4.16 Three dusk bat emergence surveys were undertaken (Table 1). The surveys were carried out by J. Sowden (bat survey class licence level 2 surveyor: 2016-24351-CLS-CLS), Z. Paraskevopoulou MBIol., M. Davis BSc., S. Freemantle MSc., and E. Damant BSc. in line with best practice guidelines (e.g., English Nature, 2004; Natural England, 2016; and Collins, 2016). Surveyors were positioned to cover all potential roost entry/ exit points (internally and externally) where possible to determine presence/ absence of bat use.
- 4.17 Surveys were conducted with an Anabat Walkabout full spectrum handheld detector and Pettersson 240X time expansion handheld detectors recording to Tascam digital audio recorders. The surveys were supported by Pettersson D500X remote bat detectors. Details of the remote bat detector settings used are included (Table 2). Canon XA20, Canon XA30, Canon XA40, Sony HDR SR5 night-shot video cameras, and SANNCE 4CH 1080N Security Camera System (1TB HDD+ 10.1" LCD screen monitor built-in, 4X 2.0MP outdoor CCTV cameras system with up to four cameras), paired with infrared lights, were used, in addition to a Pulsar Helion thermal imaging scope and a FLIR Scion OTM266 thermal monocular camera.

Table 1. Bat activity survey details.

Date	Start Time	End Time	Sunset/ Sunrise	Surveyor Initials	Weather Conditions
14/06/2023	21:09	22:54	21:24	MD, ZP, ED	20-17°C, dry, 0% cloud cover, light breeze
29/06/2023	21:12	22:57	21:27	ZP, SF, ED, SD	19-15°C, dry, 45% cloud cover, light breeze
25/07/2023	20:49	22:34	21:04	JS, MD, ED, SD	15°C, dry, 15% cloud cover, light breeze

Table 2. Pettersson D500X settings.

Settings	Standard (User 0)
Sample frequency	500
Pre trigger	Off
Record length	3
High pass filter	Yes
Auto record	Yes
Trigger sense	Very high
Input gain	45
Trigger level	36
Interval	5
Relative timers	
On/Off	-00:30/+00:30
Batteries	4 x AA 1.5v Alkaline

Biosafety and Biosecurity

- 4.18 All fieldwork is undertaken in line with the current government and professional (CIEEM, BCT, IUCN, etc.) COVID-19 guidelines at the time, including maintaining physical distancing between surveyors and wildlife as appropriate.
- 4.19 Hygiene and biosecurity measures set out with Bernwood Ecology's Health and Safety Policy are strictly adhered to, including regular thorough handwashing where possible and, where not, regular use of an appropriate viricidal hand sanitiser.

Data Analysis

- 4.20 All sonograms recorded using handheld bat detectors were manually verified by Bernwood Ecology using BatSound (3.31) to visualise the sonograms, to confirm identification.
- 4.21 All recordings from remote bat detectors were analysed using BatClassify; an automated call extraction and identification software by University of Leeds (Scott 2014; Scott & Altringham, 2014). The software analyses the recordings and returns a 'probability of occurrence' value (0-1) for each species (barbastelle *Barbastella barbastellus*, alcatheo *Myotis alcatheo*, Bechstein's bat *M. bechsteinii*, whiskered Brandt's bat *M. mystacinus*/*M. brandtii*, Daubenton's bat *M. daubentonii*, Natterer's bat *M. nattereri*, brown long-eared bat *Plecotus auritus*, lesser *Rhinolophus hipposideros* and greater *Rhinolophus ferrumequinum* horseshoe, common *Pipistrellus pipistrellus* and soprano *P. pygmaeus* pipistrelle and large species of bats termed 'NSL' [noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Leisler's bat *N. leisleri*]) to be present within a call sequence. The values highest to 1 indicate a higher likelihood of a species present within a call sequence. The presence of other species, including Nathusius's pipistrelle *P. nathusii*, are not considered by the software.
- 4.22 Scott & Altringham (2014) recommend a standard threshold of acceptance of ≥ 0.9 for all species. Bernwood Ecology have undertaken a number of verification exercises of sonograms and compared these to BatClassify, resulting in the following observations:
- Barbastelle results ≥ 0.8 are accurate, but as this is generally an under-recorded species, verification of any records is always undertaken.
 - Results for *Myotis* bats are occasionally above the recommended 0.9 threshold, possibly due to the similarities between call characteristics of bats within this genus. Bernwood Ecology found that *Myotis* sp. calls ≥ 0.5 were reliably emitted by a *Myotis* bat, but identification beyond genus to species was difficult, if not impossible. For this reason, the *Myotis* bats have been grouped and a threshold of ≥ 0.5 applied; however, this may result in the double-counting of *Myotis* and caution is advised when drawing conclusions on the abundance of this genus within a set of recordings.
 - 'NSL', common and soprano pipistrelle results appear to be accurate above ≥ 0.9 .
 - Brown long-eared bats are rarely recorded using remote bat detectors, even where high numbers of brown long-eared bats are known, resulting in an underrepresentation of this species on most sites. Verification of brown long-eared bat calls > 0.5 are mostly accurate but verification is required.

- Greater and lesser horseshoe bats have not been positively recorded at any sites where Bernwood Ecology has surveyed; therefore, the recommended threshold of ≥ 0.9 has been applied.

5. Constraints and Limitations

Historical Records

- 5.1 Environmental records can provide an indication of the likely presence of a species on, or within proximity, to the site. The absence of records for protected species and sites does not necessarily indicate absence. The use of historical environmental records is not a substitute for appropriate surveys at the correct time of year when informing land use change and development proposals.
- 5.2 Qualifications for historical records, e.g., if a badger record is of a road casualty or of a sett, may not always be known.
- 5.3 Data search accuracy is variable and will often range from 10km to 1m. Most commonly, accuracy will be within 10m. The original raw data from data searches should be consulted where the record accuracy is needed.

Safe Access

- 5.4 Part or all the site may be considered to be inaccessible following an assessment of risk and therefore the survey may be constrained. Risks that may limit the survey effort include structurally unsafe structure(s) (including roof joists), confined spaces and dangerous egress and ingress points, asbestos, sharps, livestock, and hostilities from members of the public. Details of any access constraints are provided within the results of the report.

Digital Mapping

- 5.5 Every effort is made to ensure mapping accuracy; however, the exact locations of features should not be relied upon.

Mobile Species

- 5.6 Bats are a highly mobile species and move throughout a landscape often using multiple roost sites (depending on the species). Bats may be found in any suitable roosting cavity or void at any time of the year.

6. Results

Data Search

- 6.1 Two statutory sites; a Site of Special Scientific Interest (SSSI), and a Local Nature Reserve (LNR) were found within 2.5km. Additionally, two types of priority habitat; traditional orchard and deciduous woodland, were found within 1km. A summary of relevant statutory sites and priority habitats is included in Table 3.
- 6.2 The MAGIC Map Licensing Layer returned a licence for the destruction of a common pipistrelle *Pipistrellus pipistrellus* breeding site (2015-16980-EPS-MIT) ~2km to the northeast.
- 6.3 The MAGIC Map search found no records DEFRA eDNA surveys or great crested newt survey class licence returns within 2km of the site.
- 6.4 Two ponds were found within 500m of the survey boundary, both of which were <250m from site: P1 at ~50m south and P2 at ~140m west.

Table 3. Summary of relevant priority habitats. Obtained from MAGIC Map and BMERC.

Abbreviations: SSSI: Site of Special Scientific Interest. LNR: Local Nature Reserve.

Site name	Designation	Approx. distance from site (at closest point)	Details
<u>Statutory Sites</u>			
Pilch Fields	SSSI	1.3km	Remnants of old meadowland in the Vale of Aylesbury. Represents rare habitat including ridge-and-furrow and spring-fed marshy areas.
Coombes Quarry	LNR	2.5km	A blend of archaeological, geological, and botanical interest..
<u>Priority Habitats</u>			
Deciduous woodland	-	150m	Six areas within 1km
Traditional orchard	-	600m	One area within 1km

Table 4. Summary of relevant protected species records. Obtained from BMERC.

Abbreviations: WCA Sch1.1: Wildlife and Countryside Act 1981 Schedule 1 part 1. WCA Sch5: Wildlife and Countryside Act 1981 Schedule 5 (applicable section of legislation stated). PBA: Protection of Badgers Act 1992. EPS: European Protected Species.

Species	Highest designation	Year of most recent record	Approx. distance from the site	Details
<u>Amphibians</u>				
Great crested newt <i>Triturus cristatus</i>	EPS	2019	1km	eDNA survey positive result
<u>Reptiles</u>				
Grass snake <i>Natrix helvetica</i>	WCA Sch5 s9.1 & 9.5	2008	820m	One dead on road
<u>Non-Flying Mammals</u>				
Badger <i>Meles meles</i>	PBA	2012	>1km	One adult dead on road
<u>Birds</u>				
Fieldfare <i>Turdus pilaris</i>	WCA Sch1.1	2017	640m	16 individuals observed
Redwing <i>Turdus iliacus</i>	WCA Sch1.1	2017	640m	11 individuals observed

Preliminary Ecological Appraisal

- 6.5 The site is part of an active farm located northeast of the village of Adstock, surrounded by agricultural (arable, grassland, and recently planted woodland) fields. The nearest linear water feature is a tributary off the Claydon Brook, located ~350m east. The A413 major road is located ~1.4km south.
- 6.6 The site is approximately 0.12ha in size (without access), and consists of buildings and hardstanding. Habitats are described in greater detail in Table 5 below and mapped in Appendix 4. Photographic evidence is provided.

Table 5. Habitat descriptions.

Habitat	Description
Hardstanding	The majority of the site is hardstanding access (Figures 1 & 2), mostly poured concrete and gravel . The concrete is generally in good condition with a low number of shallow cracks in places (Figure 3). Moss species <i>Bryophyta sp.</i> (Figure 4), perennial rye, spear thistle, and red fescue were occasionally found growing out of the cracks and covering the surface of concrete.
Buildings	The remainder of the site is part of a series of calf barns (Figure 5), where the proposed works are planned. Buildings are described in detail in the PRA section below.



Figure 1. Hardstanding access.



Figure 2. Hardstanding access.



Figure 3. Cracks in hardstanding in places.



Figure 4. Moss and vegetation growing on hardstanding in places.



Figure 5. Part of a series of calf barns.

Table 6. Summary of pond eDNA and egg search survey effort.

Location	Grid Reference	Date	Egg search	eDNA result
Pond 1:	SP 75036 30616	19/04/2023	Present	NA
Pond 2:	SP 74892 30697	19/04/2023	NA	Positive

Biodiversity Net Gain Assessment

- 6.7 The area of the site assessed under the BNG assessment totals 0.922ha. The entire site as existing has been evaluated to be very low distinctiveness habitat (developed land; sealed surface). The habitats present on the site are easily identifiable and the specimens provide sufficient confidence in habitat assessment. Therefore, assigning to a higher habitat condition as a precaution is not necessary.
- 6.8 The BNG calculator results are shown below (Figure 6) and more detailed information (calculator matrix) is appended (Appendix 8).
- 6.9 The BNG metric displays an error in the ‘Total on-site net % change plus off-site surplus –Habitat units’ row due to the on-site units remaining on 0.00 (‘Developed land; sealed’ surface all retained). However, the metric still displays a clear gain of 0.06 habitat units (100%) through the use of off-site habitat enhancement.
- 6.10 All habitats to be created will be comprised of native species. The habitats created and enhanced post development will include the habitats listed in Tables 7, 8 & 9.

Adstock Fields Farm Calf Barn		Return to results menu
Headline Results		
On-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
On-site net % change <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00%
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.03
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.09
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.06
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	Check Data ⚠
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes ✓	

Figure 6. Biodiversity Net Gain assessment headline results.

Table 7. Baseline habitat descriptions.

Habitat	Description	Habitat Condition (determined by Metric 3.1 calculator)	Area (ha)	Lost/Retained
Urban –Developed Land; Sealed Surface	Concrete access road and farmyard and a section of a series of brick-built calf barns.	N/A - Other	0.922	Retained

Table 8. Baseline offsite habitat descriptions.

Habitat	Description	Habitat Condition (determined by Metric 3.1 calculator)	Area (ha)	Lost/Retained/Enhanced
Grassland –Modified Grassland	Area of poor quality improved grassland west of the proposed distillery building. Proposed orchard is to be planted upon this area.	Poor	0.017	Enhanced

Table 9. Habitat creation off site.

Habitat	Quantity	Creation/Enhancement	Target Condition	Years to reach target condition	Condition justification
Traditional Orchard	170m ²	Enhancement	Moderate	20	Enhancement of modified grassland (poor condition) into traditional orchard. Will meet a minimum of four criteria on the condition assessment.

Preliminary Roost Assessment

- 6.11 The building proposed to be converted into a visitors' centre is part of series of disused calf pens (Figure 7). The north-eastern section of the calf pens, which the proposed designs will affect, is ~190m². The pens are single-storied in part, with sections of loft spaces on the south-eastern and western sides. The remaining building sections will remain unchanged.
- 6.12 The pens have brick-built walls and are in mostly good condition with minimal gaps/missing bricks (Figure 8). The pens feature multiple windows with PVC frames and concrete lintels (Figure 9) in good condition with no gaps or potential bat access points. However, the northern side of the pens feature wooden framed windows, which are in poor condition with split wood, and a broken windowpane (Figure 10).
- 6.13 The pens have wooden doors in poor condition with split wood and holes found (Figure 11) The north-eastern section of the calf pens has a wooden stable door (Figure 12), which allows potential direct bat access from the outside into the interior of the building.
- 6.14 The walls have a wooden fascia in places (Figure 13) in poor condition with large gaps leading directly into the roof void. In other places there is no fascia in place and the eaves are open (Figure 14), again allowing potential bat access into the void.
- 6.15 The roof structure of the pens is comprised of square-sawn timbers, with joists, rafters, purlins, and a ridge board (Figure 15). All of the timber is in moderate condition with occasional small holes or split wood, which could be seen as potential bat roosting features (Figure 16). The timber roof frame is lined with a breathable roofing membrane (Figure 17) and topped by slate tiles, which are both in good, tight condition (estimated 60 year life) with no slipped or lifted tiles found (Figure 18). The roof appears to have been re-roofed within the last 10-20 years.
- 6.16 Three old birds' nests were found within the pens: two in the wooden roof frame (on the purlins and ridge board) (Figure 19), and one externally at the eaves (Figure 20).
- 6.17 Two loft void spaces were inspected during the survey: one on the eastern side of the pens (Figure 21), and one on the western side (Figure 22). These loft voids are ~1.9m tall and feature concrete blocks topped with mineral wool insulation and wooden ceiling joists and under purlins. The loft voids had minimal cobwebbing.
- 6.18 Within the loft voids, a moderate amount of bat droppings (three collections) (suspected to be Brown long-eared bat *Plecotus auritus* due to the shape and size) were found (Figure 23). Four samples were collected at the time for potential DNA

testing (Dropping Samples 1-4) from both roof voids (Figure 24). The largest amounts of droppings found were two collections of ~20 droppings in the eastern void (dropping samples 2 and 3). Furthermore, moth wings and a small amount of (suspected brown long-eared bat due to the shape and size) droppings were found on a table on the ground floor of the north-eastern calf pen (Figure 25).

- 6.19 The western side of the calf pens (swimming pool area) was not accessible at the time of the survey and was therefore not assessed.
- 6.20 The low-moderate number of PRFs observed internally and externally in/on the calf pens could support roosts of cavity-dwelling bat species. The openness of the north-eastern calf pen ground floor due to the stable door and broken window (causing a high amount of light ingress and draught) is likely to reduce the suitability for roosting bats and is likely used as a 'low status' feeding roost or purely as a means of exiting the roof spaces. The two roof voids however have collections of relatively fresh bat droppings (suspected to be Brown long-eared based on size and shape) were found, indicating the presence of a bat roost or roosts.
- 6.21 The north-eastern section of the calf pens is assessed as being a confirmed bat roost. The works are likely to have an adverse effect on roosting bats in the absence of mitigation. Recommendations are made to undertake three bat roost emergence/ re-entry surveys on the building in order to characterise the roosts within the structure and inform the design process including requirements for avoidance, mitigation, enhancement and/or compensation through the design process.
- 6.22 A summary plan of the findings of the Preliminary Roost Assessment can be found in Appendix 9.



Figure 7. Calf pens building.



Figure 8. Walls of the calf pens.



Figure 9. PVC window frames and concrete lintels.



Figure 10. Wooden window frames and missing windowpane.



Figure 11. Wooden door in calf pens.



Figure 12. North-eastern calf pen with wooden stable half door.



Figure 13. Gaps in wooden fascia.



Figure 14. Missing fascia with birds' nest at eaves.



Figure 15. Internal timber roof structure.



Figure 16. Square-sawn timbers of roof.



Figure 17. Breathable roofing membrane.



Figure 18. Slate-tiled roof in good condition.



Figure 19. Birds' nests on the purlins and ridge board.



Figure 20. Eastern roof void.



Figure 21. Western roof void.



Figure 22. Concrete blocks and mineral wool insulation in roof voids.



Figure 23. Occasional bat (faeces) droppings among rodent faeces.

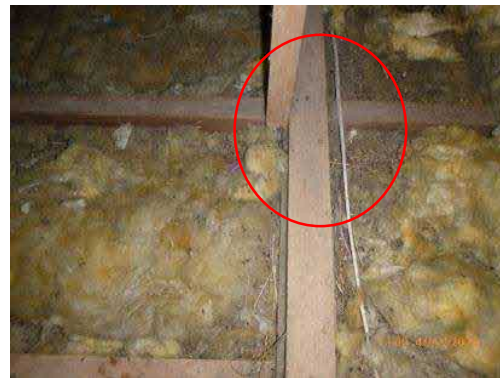


Figure 24. DNA sample collection point 1



Figure 25. Bat droppings on downstairs table in calf pens.

Bat Emergence Surveys

- 6.23 Survey conditions were optimal for the survey to be considered valid under the BCT Good Practice Guidelines (Collins, 2016) and surveyor positions provided adequate coverage of all aspects of the structure, assisted with high-quality technology (infrared cameras and thermal imaging scope). The emergence surveys were able to determine bat use with a high degree of confidence.
- 6.24 The first dusk emergence survey on 14th June 2023 found up to three Brown Long-eared bats *Plecotus auritus* flying freely within the calf barns and exiting/re-entering the structure through a large open section, as well as nearby passes of Common pipistrelle *Pipistrellus pipistrellus*, *Myotis sp.* and Soprano pipistrelle *Pipistrellus pygmaeus*.
- 6.25 The remote bat detectors recorded a total of 13 passes: including *Myotis sp.*, 'NSL' and common pipistrelle bats. The majority of the calls were recorded from detectors within the calf barns (Table 6).
- 6.26 No birds were observed nesting within the structure at the time of the survey.
- 6.27 The second dusk emergence survey on 29th June 2023 found a peak count of five Brown Long-Eared bats flying within the calf barns, as well as roosting on multiple rafters within the eastern loft void. One of these bats was observed perching on a rafter in the north-eastern roof void, and these bats were seen exiting and re-entering the structure through the large opening throughout the night. Furthermore, two

soprano pipistrelle bats were seen exiting and re-entering the building through the same opening. Common pipistrelle bats were observed passing above the building.

- 6.28 The remote bat detectors recorded a total of 12 passes: including *Myotis sp.*, 'NSL' and common pipistrelle. The majority of the calls were recorded from north of the calf barns.
- 6.29 No birds were observed nesting within the calf barns.
- 6.30 The third and final dusk bat emergence survey on 25th July 2023 revealed common pipistrelle bats to also be roosting within the calf barns, eight of which were observed emerging from the structure. Further to common pipistrelle, brown long-eared bats and a single Natterer's bat were seen flying within the calf barns, as well as perching on beams within the north western storage rooms. Details of the emergence surveys can be found in Table 5, a plan of summarised bat activity in Appendix 10, and details of the static detector recordings are in Appendix 1.
- 6.31 The remote bat detectors recorded a total of 14 calls: four of which were common pipistrelle from within the calf barns and ten of which were from an exterior position to the north east (Table 6).

Table 5. Summary of bat emergence survey results.

Time	Species	Description of activity
<i>Survey 1. 14th June 2023</i>		
21:27	Brown long-eared	One bat was seen flying within the eastern calf barn loft void.
21:48	Soprano pipistrelle	One bat was observed passing the calf barns to the west.
22:00-22:36	Brown long-eared	Peak count of three bats flying within the calf barns, between the north-western and south-eastern roof voids and foraging within the barn. These bats were seen emerging and re-entering through the open central barn.
22:37	<i>Myotis</i> (probably Natterer's)	One bat was heard but not seen from the southern position.
22:38-22:49	Brown long-eared	One bat observed emerging/ re-entering and foraging around the open central barn.
<i>Survey 2. 29th June 2023</i>		
21:10	Common pipistrelle	One bat seen foraging around the garden to the south.
21:43-22:58	Brown long-eared	Peak count of five bats roosting on rafters in south-eastern loft void, flying between this and north-western void. Observed emerging and re-entering building through the open southern side throughout the night.
21:56	Soprano pipistrelle	Two bats seen emerging the calf barns through the open barn and flying south.

Table 5. Summary of bat emergence survey results. Continued.

Time	Species	Description of activity
22:10	Soprano pipistrelle	One bat seen re-entering the calf barns through the open barn.
22:24-22:55	Common pipistrelle	Occasional passes and foraging from the east of the calf barns. Peak count of one bat observed.
<i>Survey 3. 25th July 2023</i>		
21:28	Common pipistrelle	Three bats emerged from inside the storage area at the north western corner of the calf barns, flying through the loft void and exiting the building through the open central barn.
21:30-21:41	Common pipistrelle	One further bat emerged from open central barn. The peak count of four common pipistrelles were observed re-entering, emerging and foraging south of the open bar .
21:31	Common pipistrelle	One bat was observed emerging from a gap between a roof and a brick wall in the south-eastern open garage section of the calf barns. The bat was seen flying away from the building east.
21:32	Brown long-eared bat	Two bats were observed flying within the open barn, as well as touching down on the rafters within.
21:44-21:45	Common pipistrelle	Two bats were observed exiting the calf barns from the gap between the roof and brick wall in the south eastern open garage, flying east.
21:45-22:17	Natterer's	One bat was observed flying within the north western loft void and hanging up on the ridge beam within the storage room. This bat was later found roosting on the same ridge beam and was caught by hand and identified to be a male Natterer's bat.

Table 5. Summary of bat emergence survey results. Continued.

Time	Species	Description of activity
21:52	Common pipistrelle	One bat was observed emerging from the gap between the roof and brick wall in the south-eastern open garage section of the calf barns, once again flying east.
22:30	Brown long-eared bat	Two bats were found perching on the ridge beam within the north-western storage room, neat the dividing wall which separates this room to the remaining western calf barn.

Table 6. Summary of remote bat detecting results by species, genus, or group.

Species	Summary
<i>Survey 1. 14th June 2023</i>	
Barbastelle	There were no recordings made by bat detectors.
<i>Myotis</i> species	There was one recording made from by a bat detector within the calf barns.
'NSL' group	Four recordings were made by a bat detector within the calf barns and three made from east of the barn. All recordings were from bats flying outside the building.
Brown long-eared bat	There were no recordings made by bat detectors.
Common pipistrelle	Four recordings by a bat detector within the calf barns and one from a bat detector south of the barn.
Soprano pipistrelle	There were no recordings made by bat detectors.
<i>Survey 2. 29th June 2023</i>	
Barbastelle	There were no recordings made by bat detectors.
<i>Myotis</i> species	There was one recording from a bat detector south of the calf barns.
'NSL' group	There were two recordings made by bat detectors from north of the barn.
Brown long-eared bat	There were no recordings made by bat detectors.
Common pipistrelle	The most frequently recorded species with eight recordings made from a bat detector north of the barn.
Soprano pipistrelle	There were no recordings made by bat detectors.
<i>Survey 3. 25th July 2023</i>	
Barbastelle	There were no recordings made by bat detectors.
<i>Myotis</i> species	There were no recordings made by bat detectors.
'NSL' group	There were no recordings made by bat detectors.
Brown long-eared bat	There were no recordings made by bat detectors.
Common pipistrelle	Total of 14 calls. From an exterior position north east of the barn.

Table 6. Summary of remote bat detecting results by species, genus, or group. Continued.

Soprano pipistrelle	There were no recordings made by bat detectors.
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7. BNG Implementation, Management and Monitoring Plan

- 7.1 BNG habitats are to be created within 12 months from the completion of works.
- 7.2 The ultimate responsibility for the works and future management to comply with the BNG conditions and environmental legislation remains with the Client; Jo Nicholson. The Client can appoint a contractor to undertake the management works if they wish to do so. The clients and/or any contractors working to deliver the project, must uphold the recommendations within this report and environmental legislation relevant to the site.
- 7.3 Should the site be sold within the lifetime of the BNG timeframe (30 years), the property sale must transfer over all responsibilities for the planning condition implementation for the BNG through an appropriate covenant.
- 7.4 The property will be inspected 12 months from completion of works to verify that the habitats specified in Table 9 have been created in line with this report. A short statement with photographs verifying that works have been completed will be submitted to the Local Planning Authority (LPA) in writing.

8. Discussion and Conclusions

Designated Sites

- 8.1 The proposed plans for the distillery are limited in scale and to habitats which are not considered to be priority or of high ecological value; it can therefore be concluded that the proposals will result in no significant adverse effect upon any designated sites in the local area, such as Pilch Fields SSSI and Coombes Quarry LNR, both of which are over 1.3km away from the site. Within 1km of the site are six deciduous woodland priority habitats and a traditional orchard (the closest of which is more than 150m away). The proposed designs are very unlikely to have a negative effect on these habitats due to the small scale and localised nature of the plans.

Habitats

- 8.2 Based on the 3.1 BNG calculator the site as existing has very low ecological value. The BNG metric has calculated the proposals to convert part of a calf barn into a visitor

centre with offsite traditional orchard planting will deliver a +0.06 net gain in habitat units (+100%). It is therefore, anticipated that the proposals will provide a higher ecological value when including the off-site enhancements, forecasting an overall net gain for biodiversity.

8.3 The BNG Good Practice Principles (CIEEM, CIRIA & IEMA, 2016) are:

- Principle 1 - Apply the Mitigation Hierarchy;
- Principle 2 –Avoid losing biodiversity that cannot be offset by gains elsewhere;
- Principle 3 –Be inclusive and equitable;
- Principle 4 –Address risks;
- Principle 5 –Make a measurable net gain;
- Principle 6 –Achieve the best outcome for biodiversity;
- Principle 7 –Be additional;
- Principle 8 –Create a net gain legacy;
- Principle 9 –Optimise sustainability;
- Principle 10 –Be transparent

8.4 The ten Good Practice Principles have been followed throughout the BNG calculations and process. The mitigation hierarchy has been followed and although impacts on the site cannot be avoided or reduced, it is considered that the biodiversity loss can be adequately compensated for with the ecological value of the site uplifted as shown by the forecast increase of 100% in the net gain value for habitat. The traditional orchard will provide more opportunities for wildlife, than is currently available. In addition, there is no irreplaceable habitat within the survey boundary as it consists of habitats with no ecological value which is all to be retained.

Great Crested Newt

8.5 Adstock Fields Farm is within an 'Amber' zone under the local district-level licensing (Nature Space) (DLL) scheme, which is defined by NatureSpace as to –' *Contain suitable habitat and great crested newt are likely to be present.*' There are two ponds within 250m of the site, the closest of which is ~50m away. The development is considered to be of 'minor' scale by NatureSpace upon review, and no records of DEFRA eDNA surveys or great crested newt licence returns were found within a 1km radius of the site during the desktop study. One record for newt presence was found 1km from the application boundary.

8.6 An egg search of pond 1 confirmed great crested newts to be present and no further eDNA survey was necessary or carried out. The eDNA survey confirmed the presence of great crested newts in pond 2 confirmed the presence of great crested newts.

- 8.7 The proposed visitor centre (existing calf barn) is upon an area consisting of building, surrounded by hardstanding which have very low suitability to support resting places for great crested newts due to the absence of any deep cracks or crevices. Retained habitats nearby such as semi-improved grassland offer some limited potential for the support of great crested newts.
- 8.8 Natural England’s Rapid Risk Assessment tool was used to assess the likelihood of an offence taking place with 0.922ha of impact outside 100m distance from the closest breeding great crested newt populations (Figure 26) in the absence of mitigation measures set out in a Non-Licensed Method Statement (NLMS).

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	0.5 - 1 ha lost or damaged	0.3
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	No effect	0
Rapid risk assessment result:		Maximum: 0.3
AMBER		

Select effect on land 100-250m from any breeding pond. Note this is all land, not just newt habitat.

Figure 26. Natural England great crested newt risk assessment tool.

- 8.9 As a precaution due to the DDL ‘Amber’ zone (for presence of great crested newt in the local area) and the potential for individuals to be adversely affected by the proposals during the enabling and construction work, recommendations are made to avoid impacts upon these areas, as well as recommendations for best practice methods to be applied when undertaking all works in the site through a NLMS.

Non-flying Mammals

- 8.10 No field signs (badger latrine pits or setts, rabbit warrens, prints, etc) of mammalian wildlife were found on or adjacent to site during the survey. Habitats on site were assessed as offering very low suitability (due to its small scale and lack of vegetation) for the support of terrestrial mammals. Best practice recommendations to reduce the risk of harm to any individuals passing through the site are included.

Bats

- 8.11 *Myotis* (confirmed to be Natterer’s after hand netting) and Brown long-eared bats were confirmed to be roosting on the rafters of the north-western most room (used for storage) of the calf barns. Brown long-eared bats were also confirmed to be roosting on rafters within the eastern loft void. Roost types present include

occasional night roosts, feeding roosts, and a transitional roost. Natural England roost types are summarised in Appendix 11 for the roosts present within the calf barns.

- 8.12 Brown long-eared bats (peak count of five), common pipistrelle (peak count of three), soprano pipistrelle (peak count of two) and Natterer's (peak count of one) were observed flying (including foraging) within the calf barns and exiting (most often through the open sided barn).
- 8.13 Two confirmed (Brown long-eared, soprano pipistrelle and common pipistrelle bats) entry/exit locations on the building were found during the three dusk emergence surveys. This included the open-south-sided barn in the centre of the calf barns, as well as a gap above the brickwork in the open section of barn to the south-east (used currently as a garage) which creates a connection to the rest of the calf barn structure.
- 8.14 Artificial light levels at the site are currently low, which is likely to contribute to the moderate levels of observed bat activity. Recommendations are made to ensure that any lighting as part of the development does not negatively impact local bat populations.
- 8.15 No roof works are taking place and as such the current installation of breathable roofing membranes will remain unaltered. If, during the post development monitoring clusters of bats are found to be present and fraying roof membrane noted, one millimetre gauge netlon will be installed to reduce risk (not it cannot prevent) of entanglement with pre existing BRM materials (see <https://www.bats.org.uk/our-work/buildings-planning-and-development/roost-replacement-and-enhancement/case-studies/retrospective-measures-to-prevent-death-and-injury-to-bats-from-non-bitumen-coated-roofing-membranes>) where it is practicable and achievable to do so.
- 8.16 The following measures, subject to a bat EPS Licence being granted, are proposed to ensure bats and their roosts are well considered within the working methods and materials used:
- The contractor will be given a toolbox talk by the Project Ecologist regarding the legal obligations of any licence having been granted, importance of maintaining the well-being of bats and other protected species which may be present on site.
 - Scaffolding is to be designed and installed per the Project Ecologist's recommendations to avoid blocking potential bat access points.

- Undertake works in accordance with any licence having been granted and the Project Ecologist's recommendations, and allow time for ecological supervision throughout the duration of the works.
- Additional breathable membrane types or synthetic poly-spun fibres are not permissible for use around bat roosts (Natural England), and subject to confirmation by Project Ecologist before installation.
- All chemically treated wood (*in situ* or by manufacturers of products) must be first approved by the Project Ecologist.
- Retention of actual or potential bat roost and bat access points as described by the Project Ecologist.

8.17 Undertaking works in strict accordance with the ecological recommendations will ensure no negative impacts, directly or indirectly, to bats using the building and will allow continued ecological functionality of the building for roosting bats in future years.

Wild Birds

8.18 Old disused bird's nests were found within the building. Recommendations are made to avoid the risk of damage and destruction of active nests during construction activities.

9. Recommendations

9.1 The ecological mitigation hierarchy must be followed by all elements of the project, from design, to construction, to end use, to ensure there is a net gain to biodiversity on site and the favourable conservation status of protected species is maintained. The mitigation hierarchy follows:

- *Avoid*: avoid impacts on biodiversity as a priority.
- *Minimise*: minimise impacts that cannot be completely avoided, through alternations to design, use, scale, location, timing of phases, etc.
- *Mitigate and compensate*: undertake works which will have an impact by implementing safeguarding measures, such as using an Ecological Clerk of Works (ECoW) where there are risks to wildlife. Provide compensation to replace habitats that have been lost as a consequence of proposals.
- *Enhance*: Provide additional habitats and features for wildlife to ensure biodiversity net gain. Habitat offsetting may be required where net biodiversity gain cannot be secured within the site boundary.

Great Crested Newt

- 9.2 All construction works are to be carried out in compliance with the Non-licensed Method Statement throughout the duration of works and overseen by a suitably qualified Ecological Clerk of Works.

Habitat Retention, Creation and Enhancement

- 9.3 The proposed offsite traditional orchard must be created in line with and meet its condition assessment criteria (Panks et al. 2022b), including:
- Meeting 'moderate' condition by achieving these criteria:
 1. Less than 5% of fruit trees are to be smothered by scrub.
 2. There is evidence of formative pruning.
 3. At least 95% of the trees are free from damage caused by humans or animals.
 4. There must be an absence of invasive non-native species and species indicative of sub-optimal condition must make up less than 10% of ground cover.
- 9.4 Root Protection Areas, informed by an arboricultural assessment are to be implemented in line with the tree in relation to design, demolition and construction (BSI, 2012) where adjacent off-site trees and hedgerows are to be retained.
- 9.5 Works on the calf barn that cannot avoid affecting bats or their roosts will require a European Protected Species Licence (EPSL) from Natural England. A licence can only be sought from Natural England once planning permission has been granted and all ecological conditions that are capable of being discharged are discharged. The application needs to be made in advance of works commencing on site. Time must be allowed for the project ecologist to prepare and complete the application, as well as for the appropriate determination period (generally 30 working days). Licences can only be applied for up to twelve weeks prior to commencement of work activities.
- 9.6 Proposed bat mitigation can be seen in Appendix 13 and includes;
- Retention of the bat roosts in the wider building complex not impacted by the current proposals.
 - retention of the roof voids as a movement corridor throughout the range of the buildings excluding the swimming pool.
 - Installation of a single bespoke bat dormer and three Morris Bat slates to provide bat access to the retained bat movement corridor.
- 9.7 Any changes in the bat use of the building will require a full review of the impacts, and potentially a revision to the proposals. This may include amending the licence

from Natural England before any works can commence/continue. This could cause additional time delays and costs for the works.

- 9.8 There must be no additional lighting on site that will spill artificial light onto any new or existing bat roost habitat (e.g., purpose built or original bat access points) or habitats of ecological value (surrounding trees/ woodland and hedges). Published guidance on the use of lighting in relation to bats (published by the Institute of Lighting Professionals and the Bat Conservation Trust in August 2023) provides information on lighting types and designs. A lighting designer should be consulted to detail the final lighting design and layout, implementing the following principles:
- LED luminaires to be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
 - A warm white spectrum (ideally <2700Kelvin) to be adopted to reduce blue light component.
 - Luminaires to feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2013).
 - Any external security lighting to be set on motion-sensors and short (<1min) timers.
 - Non active emergency (fire event) green lighting to be positioned at eaves levels above external doors.
 - As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.
 - The planting of trees, bushes and hedges can be used to mitigate for impacts of artificial lighting through the creation of dark buffers.
- 9.9 In order to ensure that active nests are not damaged or destroyed during the construction activities, it is advised that works on the building are started during the autumn or winter months (i.e., September-February) when birds are least likely to be nesting. Works undertaken outside of this period will require a nesting bird check to be conducted by a suitably experienced ecologist no more than 24 hours prior to works starting. If active nests are observed, construction activity within the vicinity must cease and an appropriate safe zone around the nest established until the young have been verified to have fledged by the ecologist.

Faunal Enhancements

- 9.10 Two double chamber Vivara Pro WoodStone House Sparrow Nest Boxes are to be installed onto an external wall of a nearby distillery building (Appendix 14). Two Schwegler 1FF bat boxes are to be installed in the woodland to the south-west of the site, on appropriate mature trees (Appendix 15). The boxes are to be positioned at a minimum of 2m above the ground. The boxes are to be maintained for the 30 year

period. Any vegetation growth obscuring the boxes must be trimmed to allow free access for birds and bats into the boxes. If the boxes become damaged or ineffective due to deterioration they must be replaced with the same or similar product.

Changes in Proposal Designs

- 9.11 Any changes to the proposed designs shown in Appendix 2 will require the impacts on ecology to be re-assessed and the DEFRA BNG assessment to be re-evaluated.

Age of Survey Data

- 9.12 It is accepted that ecological surveys have a limited period of validity due to changing habitats and the transient behaviours of some UK wildlife species. Delays on the progression of the project beyond 12-18 months will require the surveys to be repeated (CIEEM, 2019).

10. References and Further Reading

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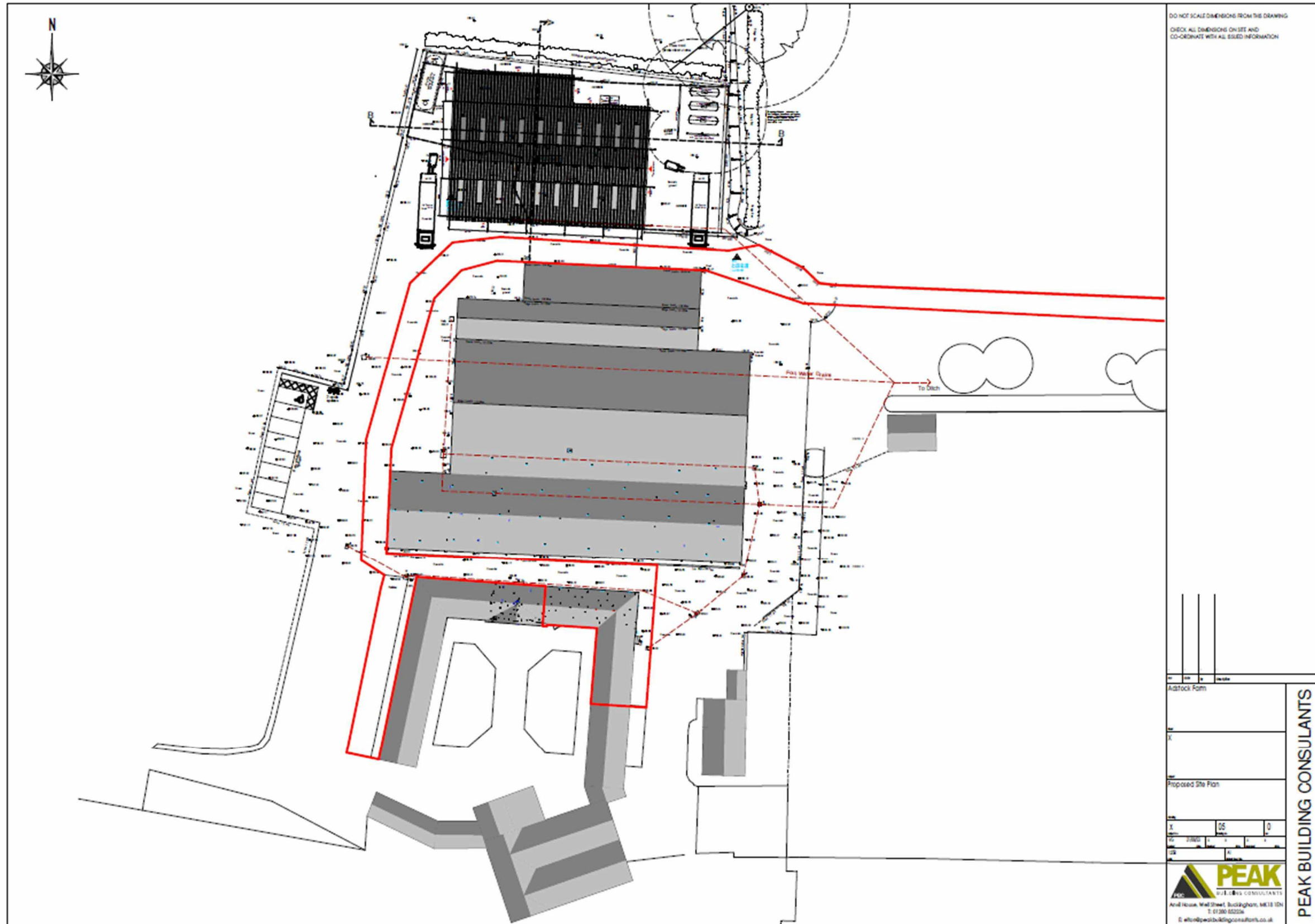
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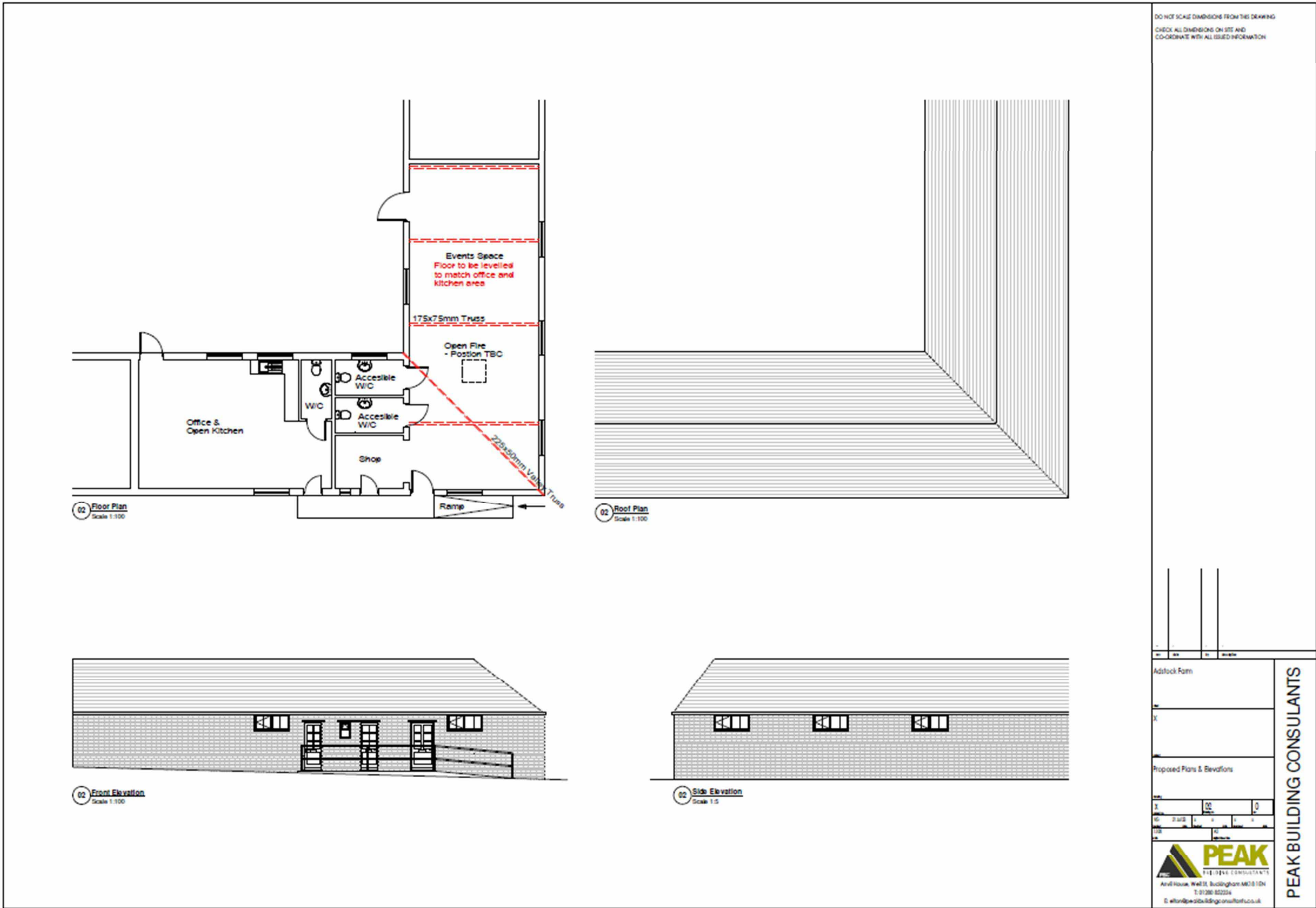
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Appendix 1. Site location in relation to existing landscape.



Appendix 2. Proposals.

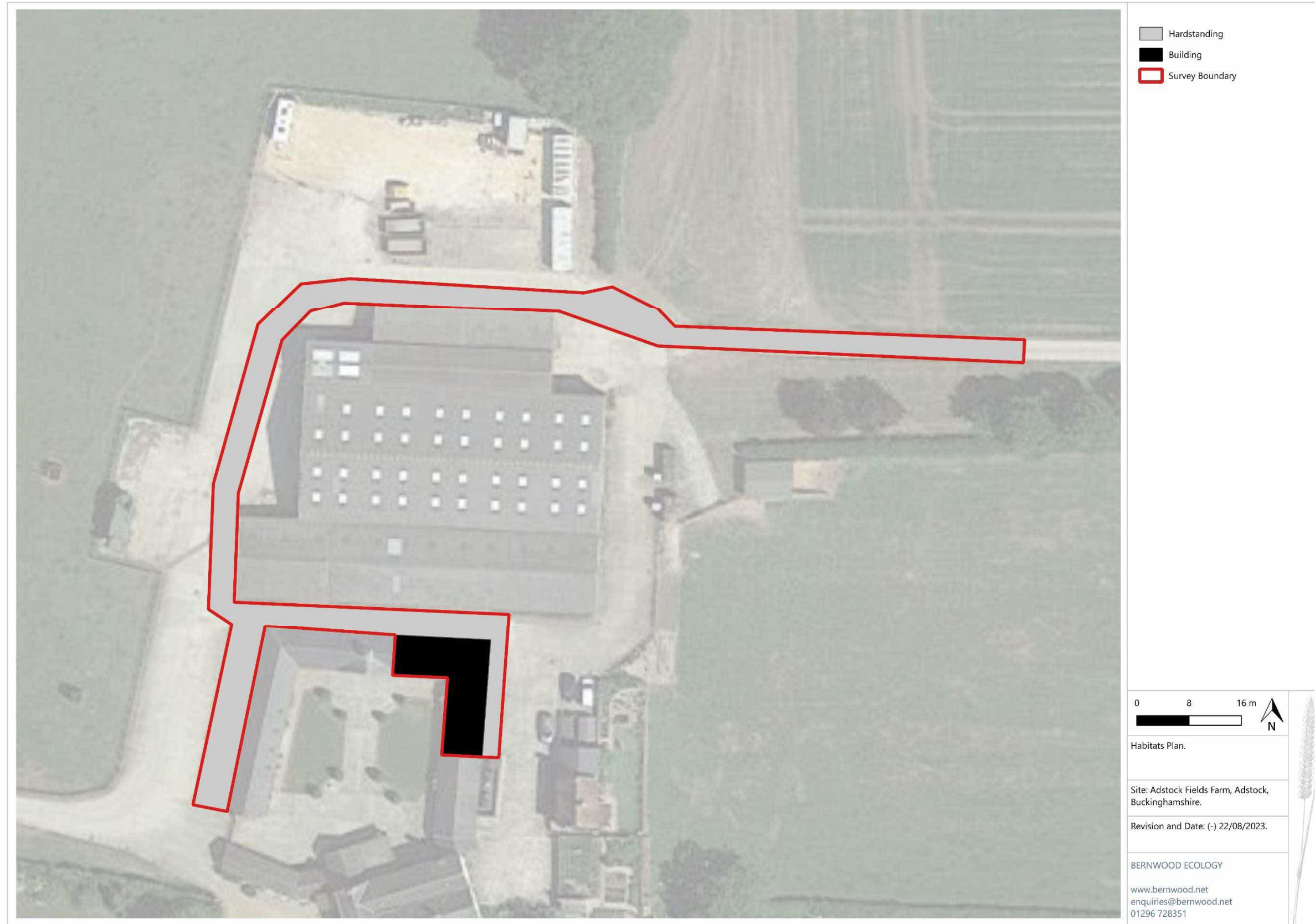




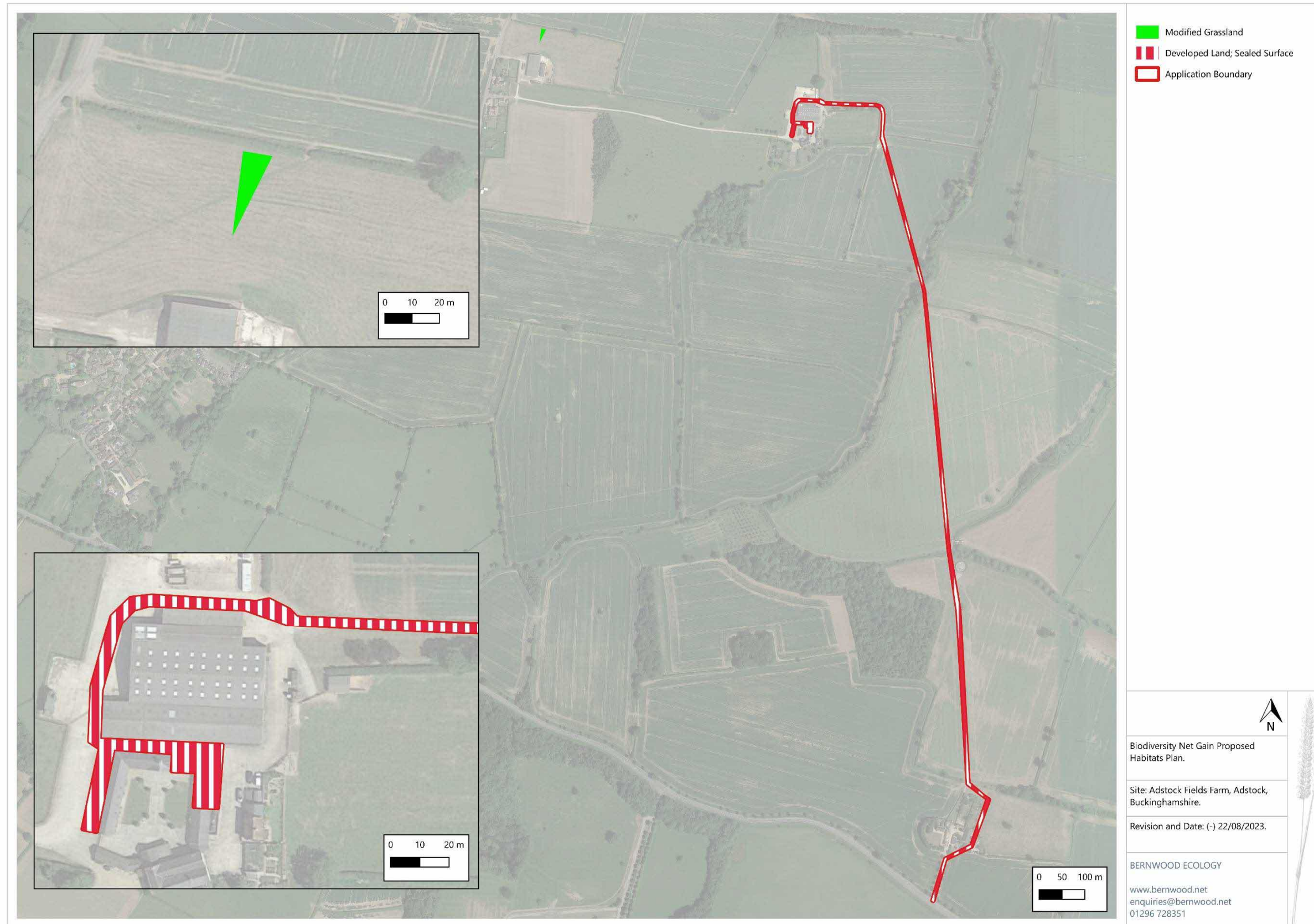
Appendix 3. Pond Location Plan (application boundary excluding full access to highlight working area).



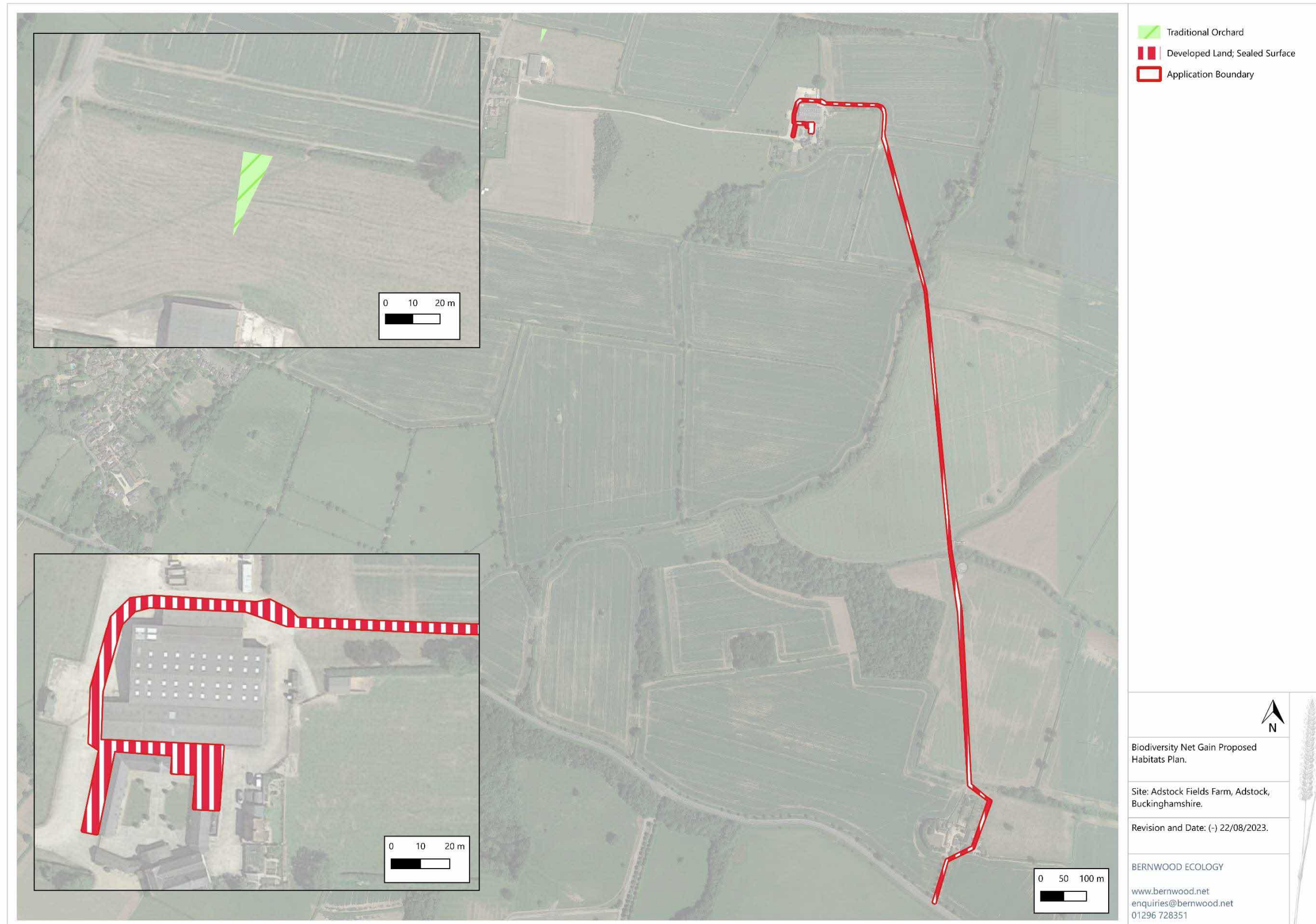
Appendix 4. Preliminary Ecological Appraisal plan.



Appendix 6. Biodiversity Net Gain Baseline Habitats plan.



Appendix 7. Biodiversity Net Gain Proposed Habitats plan.



Appendix 8. Biodiversity Net Gain 3.1 Metric results.

Adstock Fields Farm Calf Barn
 Detailed Results

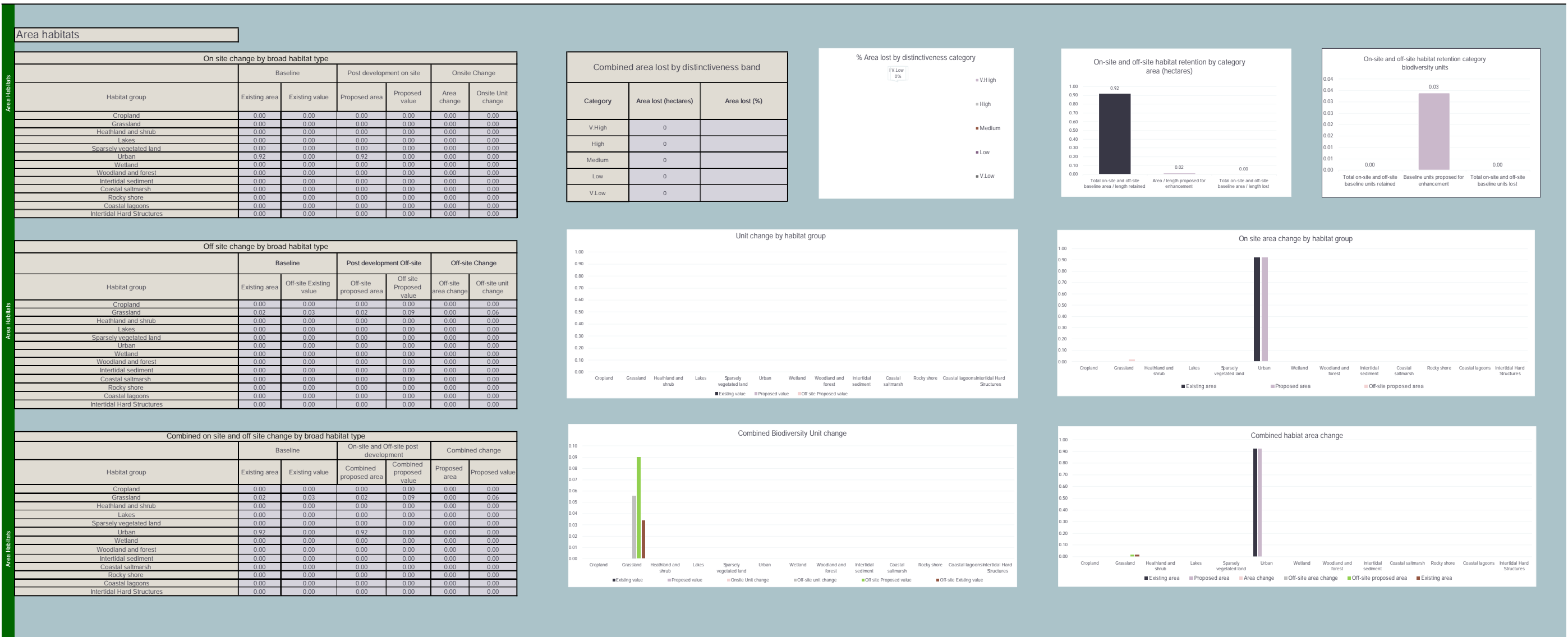
Return to results menu

Summary Figures

Net project biodiversity units (including all on-site & off-site habitat retention/creation)	<i>Habitat units</i>	0.06
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00

Total project biodiversity % change (including all On-site & Off-site Habitat Creation + Retained Habitats)	<i>Habitat units</i>	Check Data 
	<i>Hedgerow units</i>	0.00%
	<i>River units</i>	0.00%

Combined habitat retention and enhancement			
	Habitats	Hedgerows	Rivers
Total on-site and off-site baseline area / length	0.94	0.00	0.00
Total on-site and off-site baseline units	0.03	0.00	0.00
Total on-site and off-site baseline area / length retained	0.92	0.00	0.00
Total on-site and off-site baseline units retained	0.00	0.00	0.00
Area / length proposed for enhancement	0.02	0.00	0.00
Baseline units proposed for enhancement	0.03	0.00	0.00
Total on-site and off-site baseline area / length lost	0.00	0.00	0.00
Total on-site and off-site baseline units lost	0.00	0.00	0.00



Adstock Fields Farm Calf Barn																					
A-1 Site Habitat Baseline																					
Condense / Show Columns			Condense / Show Rows																		
Main Menu			Instructions																		
Ref	Habitats and areas		Area (hectares)	Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value				Bespoke compensation agreed for unacceptable losses	Comments			
	Broad Habitat	Habitat Type		Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier			Area retained	Area enhanced	Baseline units retained	Baseline units enhanced		Area habitat lost	Units lost	Assessor comments	Reviewer comments
1	Urban	Developed land; sealed surfaces	0.922	V.Low	0	N/A - Other	0	Area compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	0.922	0	0.00	0.00	0.00	0.00	0.00	Hardstanding access and part of a calf barn building	
2																					
3																					
4																					
5																					
6		Total habitat area	0.92									0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.00		

Total area lost (excluding area of Urban trees and Green walls)	0.00
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Adstock Fields Farm Calf Barn																	
D-1 Off Site Habitat Baseline																	
Condense / Show Columns			Condense / Show Rows														
Main Menu			Instructions														
Baseline ref	Habitats and areas			Habitat distinctiveness	Habitat condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Strategic significance			Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost		Assessor comments	Reviewer comments
1	Grassland	Modified grassland	0.017	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.03	0	0.017	0.00	0.03	0.00	0.00		Poor quality, species-poor semi-improved grassland.	
2																	
3																	
4																	
5																	
			0.02				Total Site baseline	0.03	0.00	0.02	0.00	0.03	0.00	0.00			
										Total area lost (excluding area of Urban trees and Green walls)		0.00					

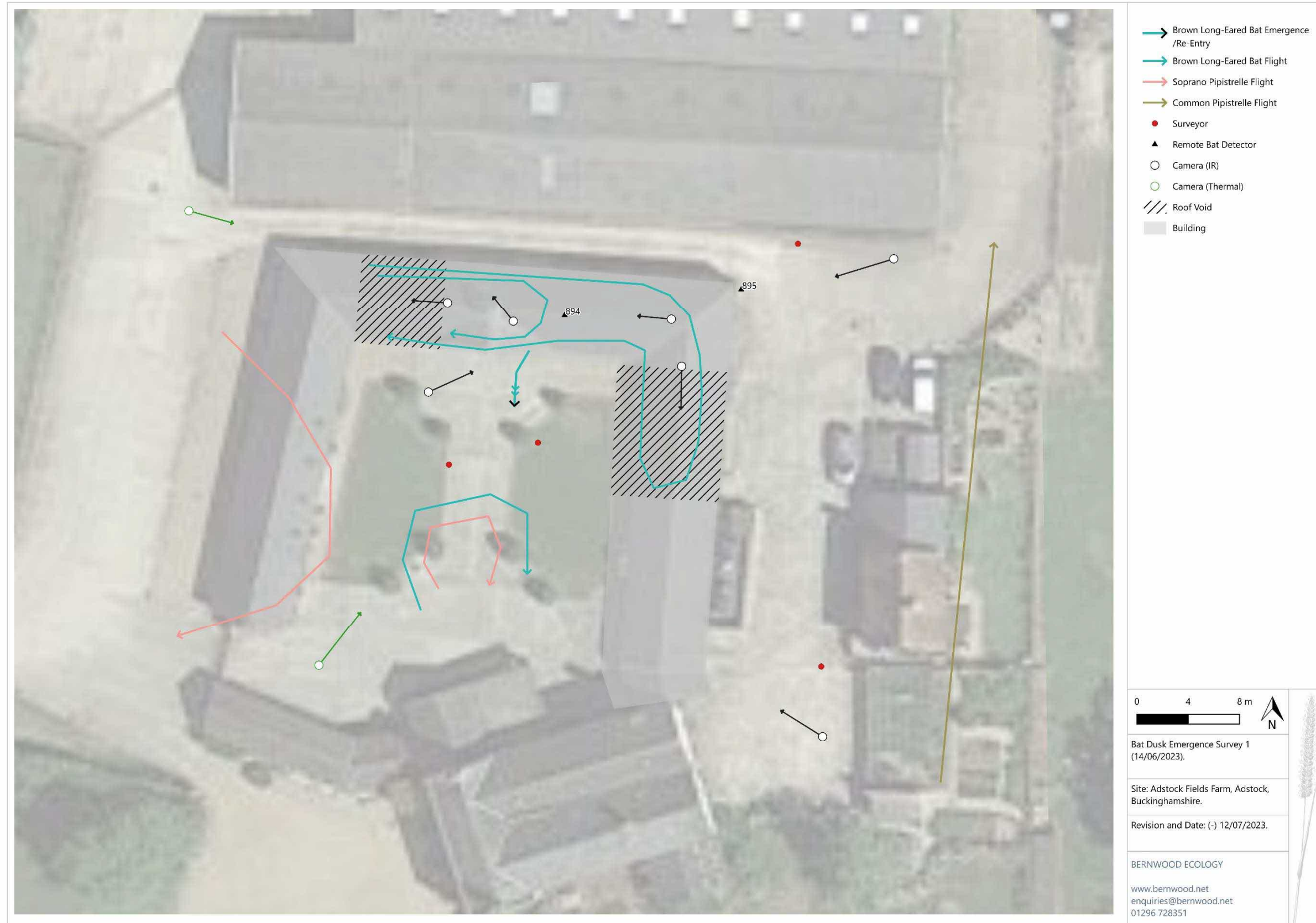
Adstock Fields Farm Calf Barn												
D-3 Off Site Habitat Enhancement												
Condense / Show Columns			Condense / Show Rows									
Main Menu			Instructions									
Baseline habitats												
Baseline ref	Baseline habitat			Total habitat area	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action to address habitat losses
1	Grassland - Modified grassland			0.017	Low	2	Poor	1	Low Strategic Significance	1	0.034	Same distinctiveness or better habitat required ≥

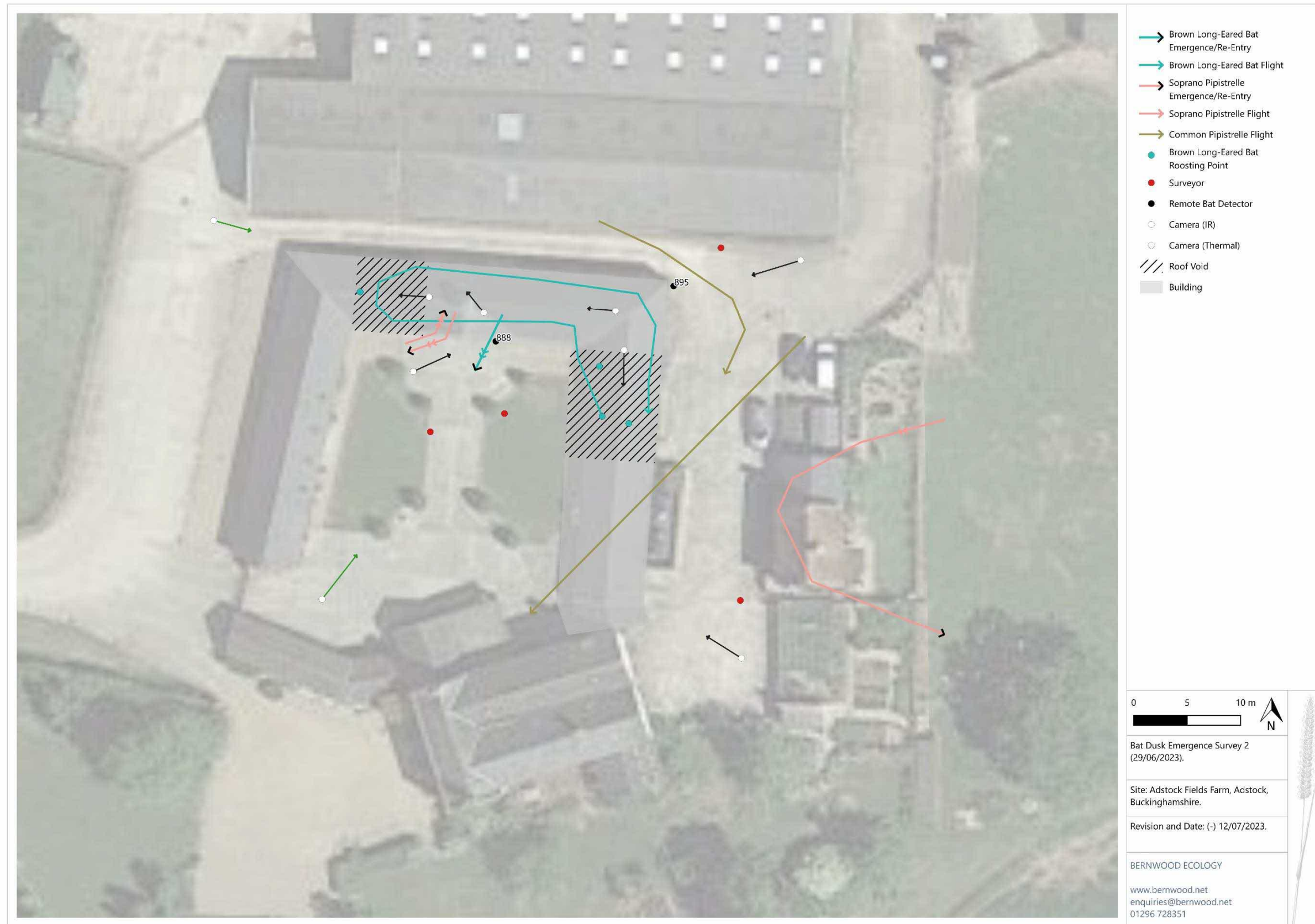
Proposed Habitat (Pre-Populated but can be overridden)		Change in distinctiveness and condition		Area ha	Distinctiveness	Score	Condition	Score	Strategic significance		Temporal multiplier					Difficulty multipliers			Spatial risk multiplier				
Proposed Broad Habitat	Proposed Habitat	Distinctiveness change	Condition change						Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Difficulty of enhancement category	Applied difficulty multiplier	Difficulty	Difficulty multiplier applied	Spatial risk category	Spatial risk multiplier
Grassland	Traditional orchards	Low- High	Lower Distinctiveness Habitat- Moderate	0.017	High	6	Moderate	2	Area/compensation not in local strategy no local strategy	Low Strategic Significance	1	20	0	0	Standard time to target condition applied	20	0.490	Medium	Standard difficulty applied	Medium	0.87	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss.	1
				0.02																			

Appendix 9. Preliminary Roost Assessment plan.



Appendix 10. Bat emergence survey summary plans.







Appendix 11. Summary plan of present roost types.

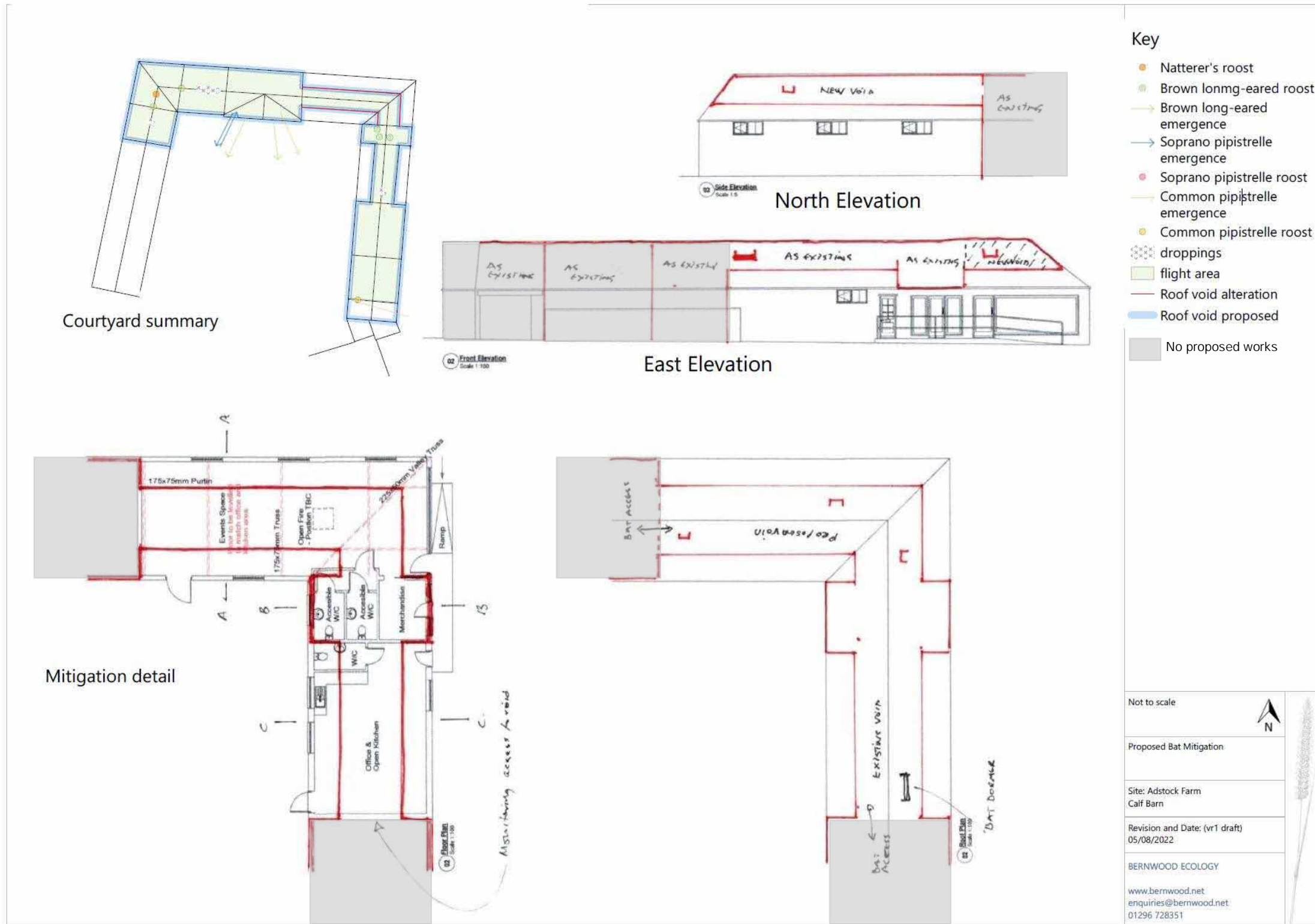


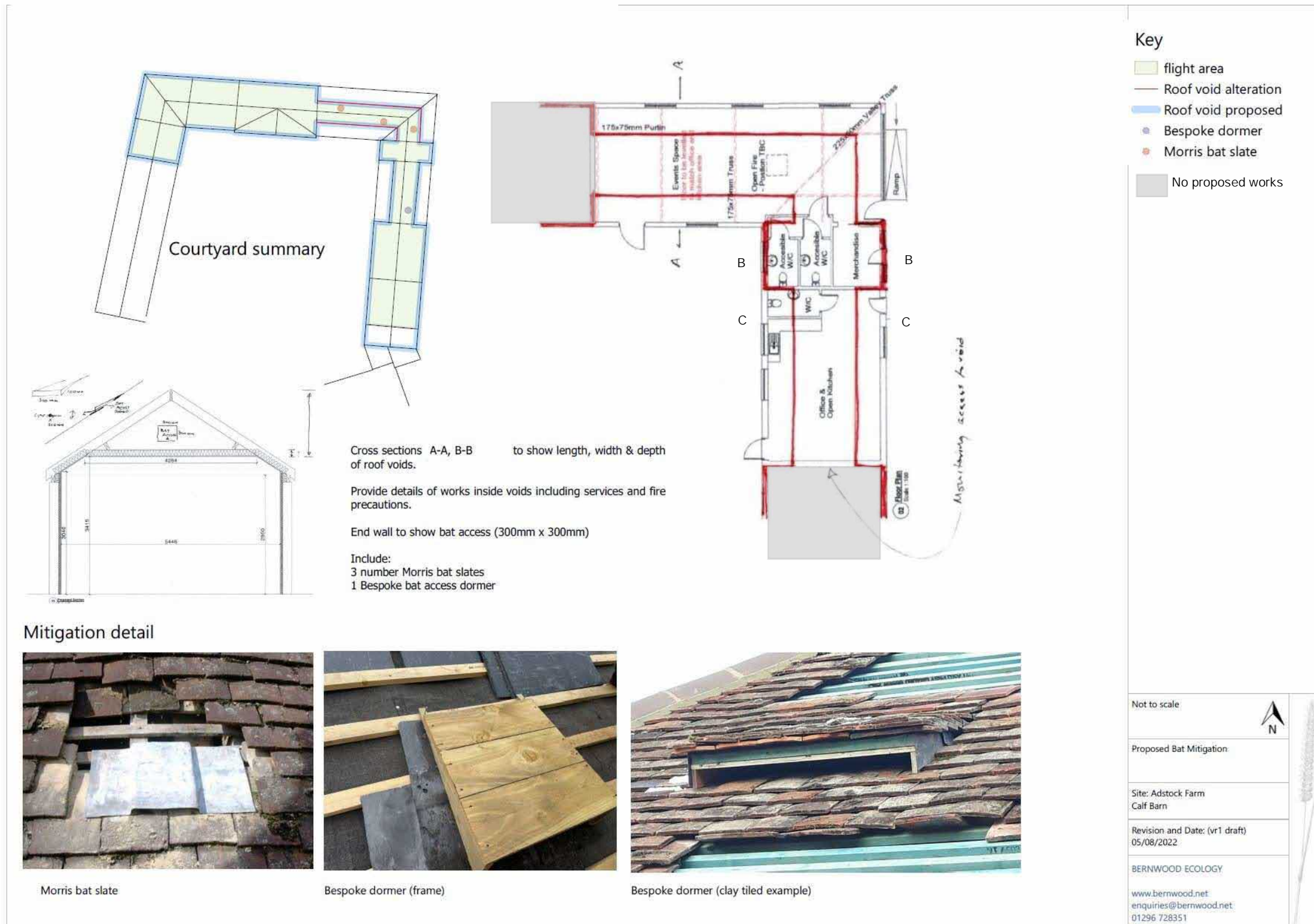
Appendix 12. Summary of remote bat detector recordings.

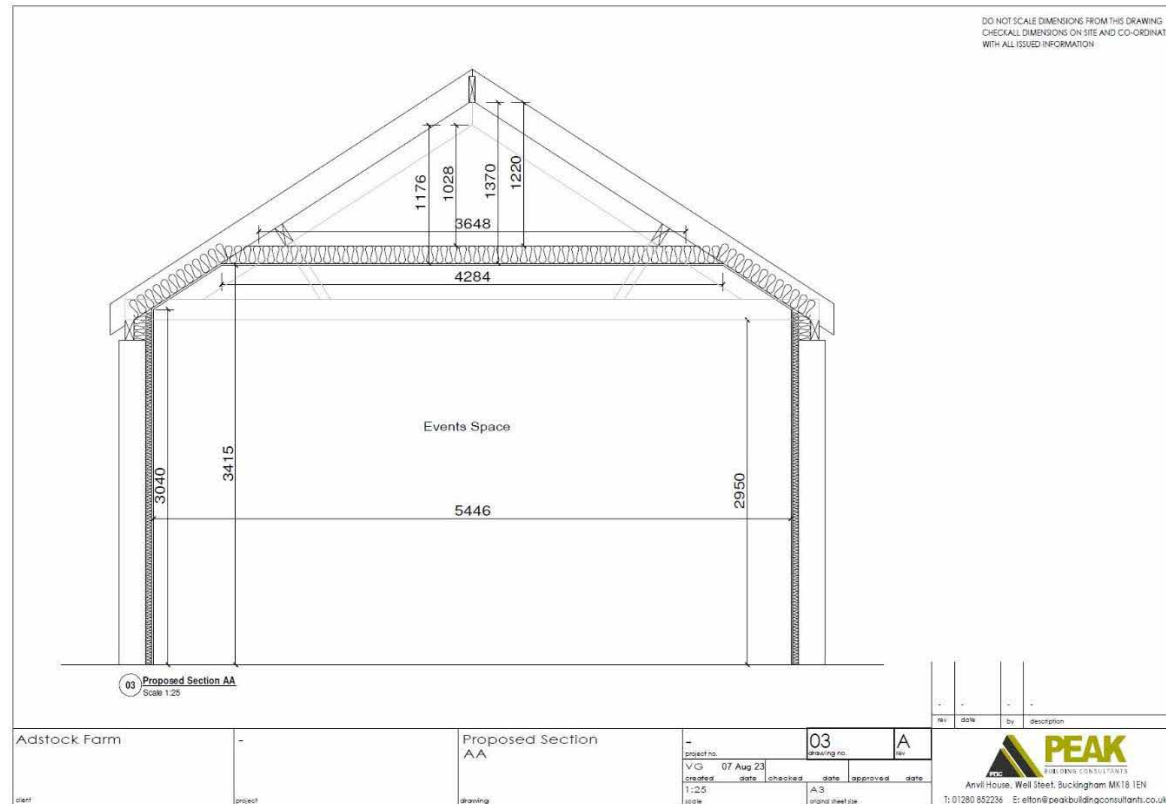
The quantity of recordings does not necessarily indicate levels of bat activity, as other noises may also be recorded. Most calls (barbastelle, *Myotis* sp., 'NSL' and long-eared bat) verified for accuracy.

Location	ID	Recording period	No. of recordings	Detection probability	Barbastelle	<i>Myotis</i> sp.	'NSL'	Long-eared bat	Common pipistrelle	Soprano pipistrelle
					>0.8	>0.5	>0.9	>0.5	>0.9	>0.9
<i>Survey 1. Dusk 14/06/2023.</i>										
North of calf barns	888	21:00 to 23:29	28	No. of calls	0	0	0	0	0	0
Inside calf barns	894	20:30 to 23:30	137	No. of calls	0	1	4	0	4	0
South of calf barns	895	21:21 to 23:01	42	No. of calls	0	0	0	0	1	0
East of calf barns	1025	20:55 to 23:29	63	No. of calls	0	0	3	0	0	0
<i>Survey 2. Dusk 29/06/2023.</i>										
South of calf barns	888	20:50 to 23:15	23	No. of calls	0	1	0	0	0	0
North of calf barns	895	20:52 to 23:24	69	No. of calls	0	0	2	0	8	0
<i>Survey 3. Dusk 25/07/2023.</i>										
Inside calf barns	894	19:53 to 22:56	53	No. of calls	0	0	0	0	4	0
North east of calf barns	895	19:48 to 22:58	47	No. of calls	0	0	0	0	10	0

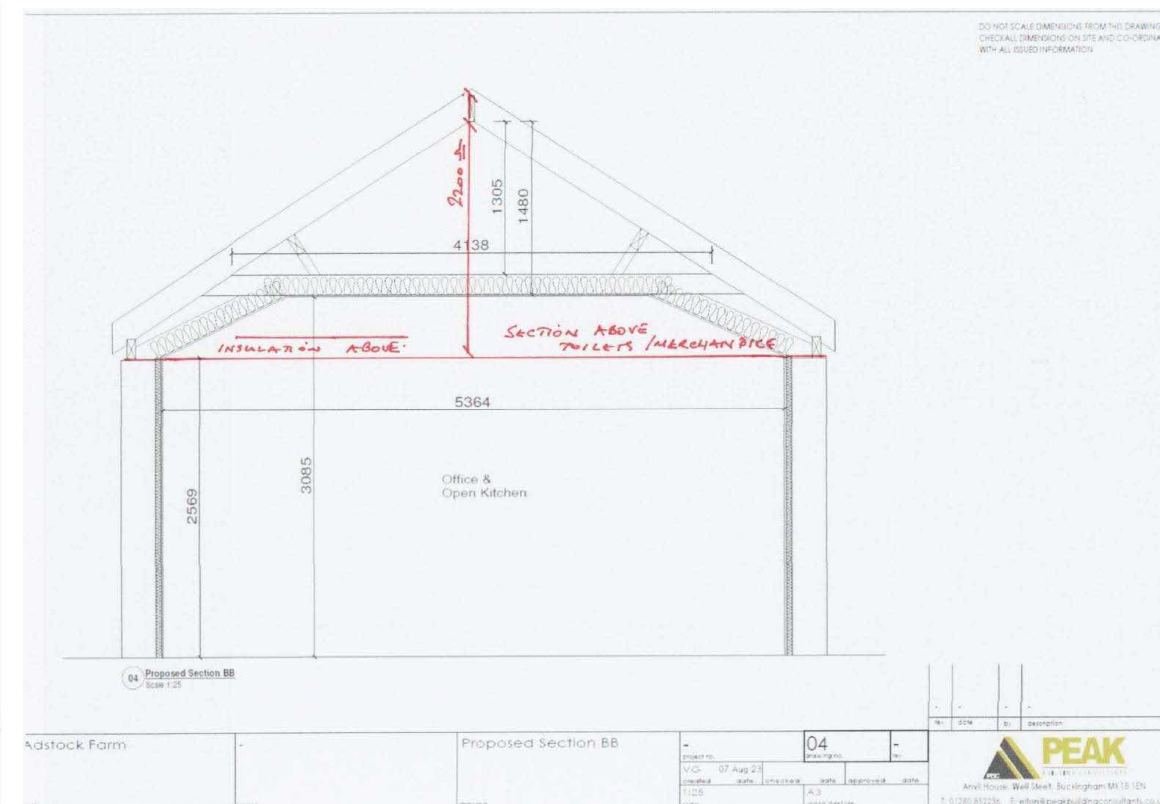
Appendix 13. Proposed bat mitigation.



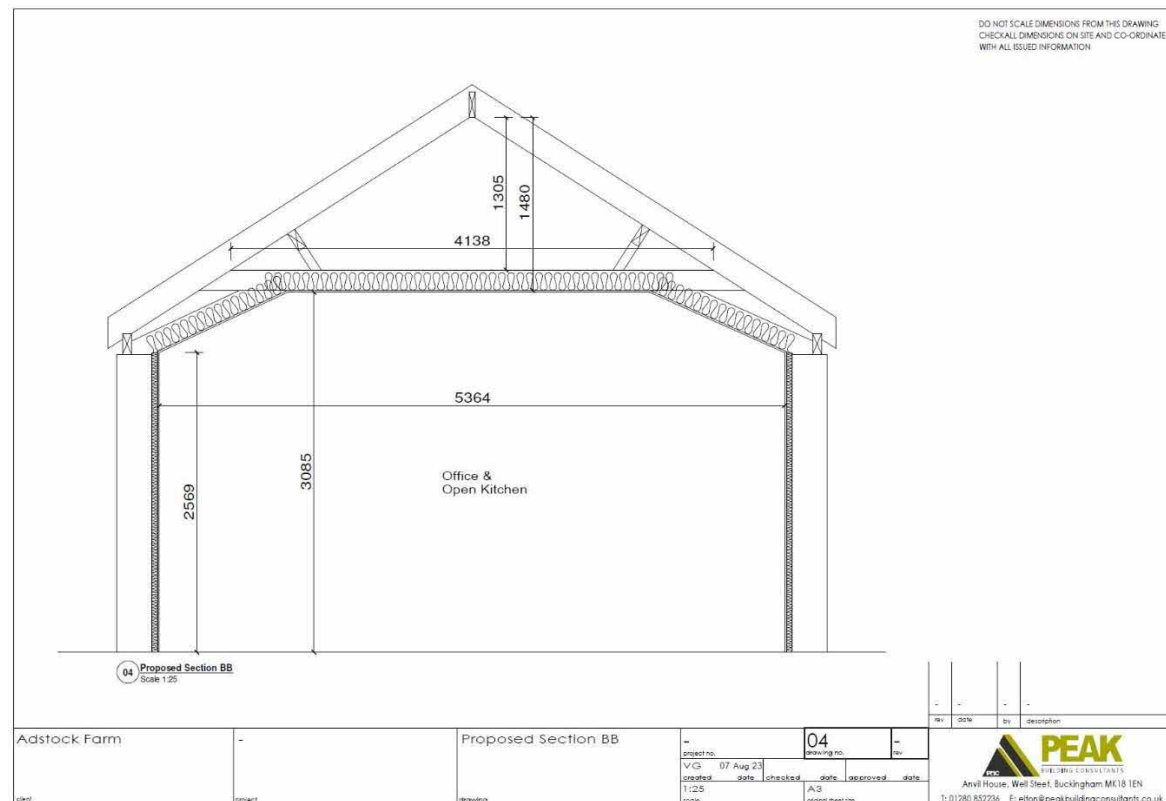




Section AA



Section BB (red line)



Section CC

Appendix 14. Proposed bird boxes plan.



Appendix 15. Proposed bat boxes plan.

