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Preliminary Ecological Appraisal

Sawbridgeworth Church

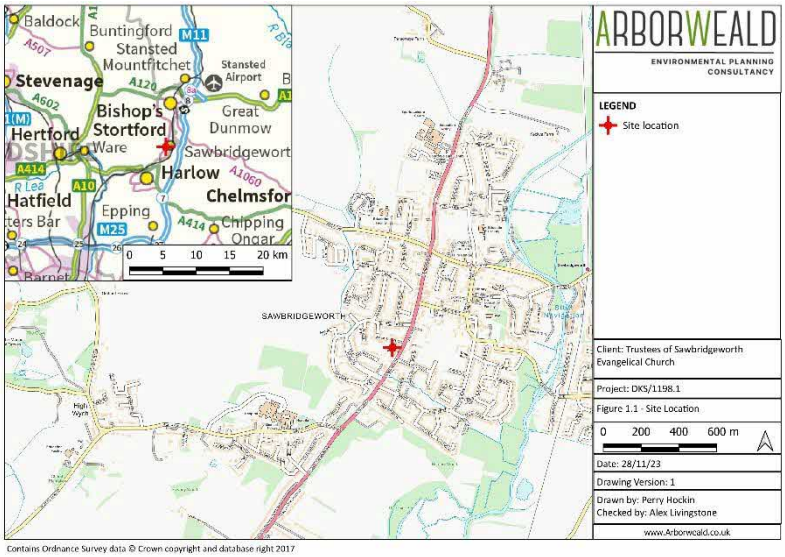
London Road

Sawbridgeworth

East Hertfordshire

CM21 9JS

TL 48012 14646



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Document information

Report title:	DKS/1198.1 Preliminary Ecological Appraisal and Preliminary Roost Assessment
Client:	The Trustees of Sawbridgeworth Evangelical Church. Also, [redacted]
Document ref:	DKS/1198.1 PEA, PRA
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Report date:	28th November 2023

Declaration: The information which I have prepared and provided for this report is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct; I confirm that the opinions expressed are my true and professional bona fide opinions.

Printed: Perry Hockin BSc (Hons.), FDSc, ACIEEM – Principal Ecologist

Signed: [redacted]

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No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of species abundances or habitat management efficacy described in the report.

The material presented in this report is confidential. This report has been prepared for the exclusive use of the client and shall not be distributed or made available to any other company or person without the knowledge and written consent of the author. Notwithstanding confidentiality, this document may be utilised and publicly displayed with reference to the development proposal planning application.

This report and all survey work have been prepared to British Standard 42020 and rely on information and methodology from the Joint Nature Conservation Committee and the Chartered Institute of Ecological and Environmental Management.

Additionally, this report relies on information from other third parties, some of which may include, but not be limited to; DEFRA's MAGIC database, local record centres, local wildlife spotter groups such as badger groups, and the NBN atlas.

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EXECUTIVE SUMMARY

0.1 Arborweald Environmental Planning Consultancy (AEPC) were commissioned by Mr [redacted] on behalf of The Trustees of Sawbridgeworth Evangelical Church to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) at Sawbridgeworth Church, London Road, Sawbridgeworth, East Hertfordshire, CM21 9JS, TL 48012 14646 to help inform the proposed application for the demolition and replacement of two sections of the complex.

0.2 Through a proportionally comprehensive desk study and site visit the habitats within the redline boundary of the proposed development were assessed for their potential to support protected species. This report evaluates the constraints that the presence of any protected species or species of conservation concern may place on the proposed re-development of the site.

0.3 The habitats present within the proposed development footprint comprise buildings, hardstanding, amenity grassland, scattered trees, bramble scrub and hedgerows.

0.4 Development plans on site comprise the demolition of the attached school house and kitchen / utility room and replacement with a modern equivalent.

0.5 The habitats present on site have the potential to provide suitable habitat for the following protected species: bats, badgers, birds, dormice, great crested newts and reptiles; this suitability was accordingly assessed and discounted as appropriate.

0.6 Biodiversity enhancements should be incorporated into the development and section 6 of this report provides detail on potential enhancements.

0.7 A single dusk bat emergence survey is recommended to ascertain presence / likely absence of bats.

1 INTRODUCTION

1.1 Arborweald Environmental Planning Consultancy (AEPC) were commissioned by Mr [redacted]n behalf of The Trustees of Sawbridgeworth Evangelical Church to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) at Sawbridgeworth Church, London Road, Sawbridgeworth, East Hertfordshire, CM21 9JS, TL 48012 14646 to help inform the proposed application for the demolition and replacement of two sections of the complex.

1.2 The objectives of the PEA were to assess the potential of the site to support protected species and/or species of conservation importance by identifying potential habitat for protected species and/or species of conservation concern and by evaluating the constraints that the presence of any protected species or species of conservation concern may place on the proposed re-development of the site.

1.3 The PRA of buildings on site involved carrying out a detailed assessment to assess their likelihood and potential to support bat species. The assessment comprised of a thorough internal and external inspection of the buildings for the presence of bats and/or any evidence of bats or the likelihood that a particular structure could support bat species.

Legislation and Policy

1.4 Certain habitats and species including nesting birds, bats, dormice, and great crested newts, are afforded protection under the Conservation of Habitats and Species Regulations 2017 and the Wildlife & Countryside Act 1981 (as amended). Further information on the legislation is included in Appendix A.

1.5 In general, the above legislation makes it an offence to:

- Deliberately/intentionally or recklessly kill, injure or take a protected species;
- Intentionally or recklessly damage, destroy or obstruct access to any place that a protected species uses for shelter or protection whether the species is present or not;
- Intentionally or recklessly disturb a protected species while it is occupying a structure or place that it uses for shelter or protection;
- Deliberately take or destroy the eggs of species protected by this legislation (such as nesting birds).

1.6 Section 41 of the Natural Environment and Rural Communities Act (2006) lists the species and habitats of principal importance for the conservation of biodiversity in England and acts as a guide to local authorities in implementing their duties under Section 40, to have regard to the conservation of biodiversity in England.

1.7 The Protection of Badgers Act (1992) prohibits reckless and/or intentional cruelty, injury or killing of badgers and the interference with badger setts.

1.8 Under The National Planning Policy Framework (NPPF, 2018) protected sites and species are a material consideration in determining planning applications in terms of minimising impacts on biodiversity.

1.9 National Planning Policy guidance uses a mitigation hierarchy, whereby potential impacts are first avoided through changes to design plans; then unavoidable impacts are mitigated against to reduce the negative effect of the impact; finally, residual impacts that remain after avoidance and mitigation measures are applied are compensated for (BS 42020, 2013, Section 5.2). Further to this, it is a requirement under National Planning Policy for developers to actively enhance the biodiversity value of development projects.

1.10 Schedule 14 of the Environment Act 2021 mandates the need for a minimum 10% net gain in biodiversity value for development sites.

Site Description

1.11 The site is located in the centre of Sawbridgeworth to the south of Bishop's Stortford, East Hertfordshire, CM21 9JS (Ordnance Survey Grid Reference for the centre of the site: TL 48012 14646). The development site is approximately 0.32ha in area and comprises buildings, hardstanding, amenity grassland, scattered trees, bramble scrub and hedgerows.

1.12 The location of the site is shown in Figure 1.1 with the extent of the site boundary shown in Figure 1.2.

Development Proposals

1.13 Development plans on site comprise the demolition of the existing dilapidated schoolhouse and kitchen utility room that are attached by a corridor to the main church building. They will be replaced with a similar modern equivalent larger than the original.

1.14 Biodiversity enhancements should be incorporated into any development and section 6 of this report provides detail on potential enhancements to be included in the landscape plan.

2 METHODS

Desk Study

2.1 The Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (DEFRA) was consulted for information with regard to protected habitats and species within 2 km of the proposed development (red line) boundary.

2.2 Aerial photos of the site (Google, 2020) were examined to determine habitats surrounding the site and hence species likely to be present in order to make appropriate recommendations in the wider landscape context.

2.3 Following guidance contained within sections 5.5 and 6.2.1 of BS 42020:2013, records from the local biodiversity record centre may be deemed necessary, in which case the results are screened for relevance. This involves an analysis (in conjunction with DEFRA's MAGIC map software) of connectivity between recorded instances and the site boundary. Records are also screened for age; records are prioritised from the last 10 years, with records from the past 20 and 40 years deemed as less accurate, but still included where possible.

Field Survey

2.4 The survey was conducted in accordance with The Handbook for Phase 1 Habitat Survey (JNCC, 2016), and included searches for signs of protected species, as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

2.5 A Preliminary Ecological Appraisal survey of the site was carried out by suitably qualified ecologist Perry Hockin on the 21st November 2023 in order to evaluate any habitat on the site with the potential to support protected species and/or other species of conservation concern that could be relevant in respect of planning policies.

2.6 In addition, the habitats within the survey area were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where suitable habitat was identified on site, a search was conducted for signs indicating the presence of protected species such as droppings, burrows, tracks and evidence of feeding. Where species are not specifically evaluated, this indicates that no habitat of potential value for these species was identified during the survey.

2.7 Consideration was also given to habitats outside the site boundary, in order to evaluate the ecological context of the site within the wider landscape. Adjacent habitats were also considered with respect to their own ecological value and their potential to enhance the ecological value of habitats within the site.

2.8 Searches were made for invasive non-native plant species focussing on those species currently listed in the revised Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Species were listed split into non-natives and invasive non-natives with different advice for each.

2.9 The plant species nomenclature follows that of Stace (2019). Plant species observed within each habitat type were recorded using the DAFOR system which stands for Dominant, Abundant, Frequent, Occasional or Rare.

2.10 All references to relevant literature required to maintain industry best practice and compliance with legislation is listed in the References section of this report.

Preliminary Roost Assessment

2.11 The methods used in the Preliminary Roost Assessment were based on those recommended in English Nature's Bat Mitigation Guidelines (Mitchell-Jones 2004), the Joint Nature Conservation Committee's Bat Worker's Manual (Mitchell-Jones and McLeish 2004) and the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).

2.12 The suitability of the buildings to support roosting bats was assessed by examining structural features. Structural features that may influence the suitability of a building to support roosting bats include the presence of a roof void, the presence of access points into the building (including gaps beneath barge boards, soffits and fasciae, gaps under lead flashing, gaps within masonry and under loose tiles, gaps between mortise and tenon joints), the complexity and size of any roof void, daytime light ingress, and night time temperatures within a roof void.

2.13 The suitability of the buildings for roosting bats was also assessed by examining the surrounding habitat. Important habitat features surrounding the structure which may influence roost potential include whether the structure is in a semi-rural or parkland location, its proximity to significant linear habitat features such as a watercourse, mature hedgerow, wooded lane or an area of woodland.

2.14 Taking account of these architectural and habitat features, the buildings were then assigned a level of roost suitability based the criteria given in the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) and professional judgement. The primary objective of this exercise was to identify the need for further detailed bat surveys later in the year, or alternatively to obtain sufficient information that would dismiss the need for further assessment.

2.15 A detailed PRA was undertaken on the 21st November 2023 by qualified ecologist Perry Hockin BSc (Hons) FDSc, ACIEEM. An external search around the perimeter of the buildings was conducted and any possible access points i.e. gaps and crevices were noted and investigated further where possible.

2.16 All surfaces were surveyed for signs of bat presence; as bat presence was ruled out a systematic internal inspection of the building for visual indicators of bat presence was conducted using a high powered torch to illuminate areas to check for evidence of bats such as feeding remains or droppings.

2.17 Features of potential value to bats were surveyed not only for the presence of bats but also for signs that could indicate use by bats, such as:

Bat droppings;

Staining of access points used by bats to enter the structure; and

Feeding remains such as moth and butterfly (Lepidoptera) wings.

Survey Constraints

2.18 Due to seasonal behaviour of animals and the seasonal growth patterns of plants, ecological surveys may be limited by the time of year in which they are undertaken.

2.19 The information gathered for this ecological survey has facilitated an evaluation of the habitats on site and the likely use of the site by legally protected and notable species. This survey has also given appropriate baseline data for the determination of the requirement for further surveys and/or mitigation and enhancement works.

Recommendation categorisation

2.20 So as to ensure biodiversity net gain for all development projects, the enhancement recommendations outlined in Section 6 of this report are categorised as Red, Amber or Green:

Red recommendations should be designated as conditions attached to a planning consent, and the development must not proceed without these enhancements / compensation measures being put in place, as they form a crucial role in achieving biodiversity net gain targets.

These recommendations are designed to be as effective and swift as possible, whilst taking into account cost and ease of implementation / future management in context with the scale of the development site.

Amber recommendations should be included within the development, however it is not necessary for them to be designated as conditions, as the author believes that their implementation is not key to achieving biodiversity net gain targets. The client / developer should seriously consider including these measures to improve the biodiversity value of the site and to reduce their carbon footprint.

These recommendations are designed to be a good balance between efficacy and cost efficiency.

Green recommendations are additional enhancements which would improve the biodiversity value of the site; however, they are not key to achieving biodiversity net gain targets. These recommendations are aimed at clients wishing to ‘go the extra mile’ with their site so as to improve visual impact, public engagement, and property value

These recommendations are often more costly, either financially or in terms of time input in context with the size of the site, however they can also deliver longer term benefits for a greater original outlay.

2.21 Recommendations are prioritised into the above categories taking into account multiple factors, including, but not limited to:

Measurable impact on biodiversity net gain using the methodology of Biodiversity Metric 3.0

Habitat classification factors utilised by the Natural England Biodiversity Metric 3.0 (For a list of factors, refer to the BM3.0 ‘Technical Supplement’ tables TS2-4

to TS2-17); for instance, how valuable would the enhancements be from a habitat creation / modification perspective?

Likelihood of the client to undertake or follow through with recommendations, and to maintain recommendations post-development [as appropriate]

Ease and cost of implementation, such that high impact and swiftly effective recommendations are prioritised over slower or less easily maintained enhancements on smaller development sites

Surveyor and author experience of effectiveness of enhancement features in areas similar to the site, such as on other sites nearby, or enhancements already implemented as a part of local designated-site management plans (such as AONB strategies)

2.22 An example of recommendations for two imaginary sites are outlined below – these recommendations do not apply specifically to the subject site of this report:

Large Example – 50ha industrial site; recommendations designed to be most effective and easily implemented at the post-development stage without reducing amenity value	**Small Example – 0.2ha residential garden;** recommendations designed to be less expensive, and to involve less labour with implementation and management
Red: Dedicated wildlife area with multiple fruit trees, grassland management, wildlife pond and hedgerows in undeveloped area of site	**Red**: Planting of three fruit trees at the rear of the property
Amber: Additional fruit trees planted within curtilage of all new houses	**Amber**: Replacement of non-native laurel hedging with native species mixture
Green: Community orchard in the centre of the site with wildflower planting throughout	**Green**: Construction of a wildlife pond at the rear of the property

3 RESULTS

Desk Study

3.1 Records of designated sites and European sites within 2 km of the site boundary were obtained from Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (Defra).

Designated sites

3.2 There are no international / European designated sites within 3km of the proposed site.

3.3 There is one statutory designated site within 2km of the proposed site; Sawbridgeworth Marsh SSSI.

Designated habitats

3.4 The habitats in the wider landscape comprise arable, semi-improved grassland, semi-natural deciduous woodland, and urban residential. Further to this, the wider landscape contains five Habitats of Principal Importance (HPIs) covered under Section 41 of the Natural Environment and Rural Communities Act, consisting of deciduous woodland including ancient woodland, wood pasture and parkland, traditional orchards, coastal and floodplain grazing marsh, and lowland fens.

Waterbodies

3.5 There is one waterbody within 500 m of the site boundary. The 500m buffer around the site boundary is shown in Figure 3.1. The site is isolated in terms of its surroundings being in a predominantly urban residential area with multiple roadways, buildings and walls in excess of 50cm.

Biological Records

3.6 Following guidance contained within sections 5.5 and 6.2.1 of BS 42020:2013, it was deemed not necessary to obtain biological records from the local Biological Records Centre, as the development can be contained within areas of lowest quality habitat and comprises a simple extension of the existing building.

Biodiversity Metric 4.0 calculator from Natural England

3.7 To ensure compliance with the requirement for biodiversity net gain, a calculation was made using the Natural England 'Biodiversity Metric 4.0' calculator.

3.8 The biodiversity net gain calculation has been completed using area measurements gained from QGIS covering the whole red-line site boundary (Figure 3.3). The baseline is outlined in table 3.1. For clarity, the JNCC habitat type is listed next to the BM4.0 habitat type.

Table 3.1 – Existing baseline habitat areas and units:

Habitat type	Existing area (ha)	Baseline habitat units
Modified grassland – Amenity grassland	0.1881	1.13
Developed land - Buildings	0.0559	0.00
Artificial unvegetated, unsealed surface – Hardstanding	0.0345	0.00
Bramble scrub	0.039	0.16
TOTAL	0.3175	1.29

3.9 Condition scoring was undertaken using the BM4.0 Technical Annex 1 condition score sheet. The results of which are outlined in Table 3.2.

Table 3.2 – Existing baseline habitat conditions:

Habitat type	Sheet	Condition	Justification
Modified grassland – Amenity grassland	5A	Good	6 point out of a possible 8. Lost points due to: Homogenous sward height Low sward diversity
Developed land - Buildings	N/a	N/A - Other	N/a
Artificial unvegetated, unsealed surface – Hardstanding	N/a	N/A - Other	N/a
Bramble scrub	N/a	N/A - Other	N/a
Hedgerow	8A	Moderate	6 points out of a possible 10. Lost points due to: Gaps at the base Lack of base vegetation Damage to the hedgerow Low diversity of age classes

3.10 The site is located within an area that is undesignated and not within a local strategy.

3.11 The development will result in habitat loss, detailed in Table 3.3.

Table 3.3 – Existing baseline habitats lost:

Habitat type	Lost area (ha)	Sections
Modified grassland – Amenity grassland	0.0315	Section to the rear and front of the schoolhouse
Developed land - Buildings	0.0167	Schoolhouse and kitchen
Hedgerow	0.019	Northern boundary
TOTAL	0.0482	

3.12 A small area of existing habitats on site will be removed and replaced, resulting in a total loss of 0.19 units. These habitats will be replaced with habitats that are of an overall lower value to wildlife, and as such this reduction will need to be compensated for.

3.13 The new habitats that will be created are detailed in Table 3.5 below. This includes habitats that will be created by the development, such as the new buildings, hardstanding and grassland, as well as new habitats that should be created as a part of the compensation and enhancement process such as hedgerows.

Table 3.4 – New habitats created:

Habitat type	Created (ha area / km length)
Modified grassland – Amenity grassland	0
Developed land - Buildings	0.0343
Artificial unvegetated, unsealed surface – Hardstanding	0.0139
Bramble scrub	0
TOTAL	0.0482
Native species rich hedgerow	0.05km

3.14 The full biodiversity metric 4.0 calculation is shown in table 3.5 below.

Table 3.5 Biodiversity Metric 4.0 - Habitats**:**

Habitat type	Existing area (ha)	Baseline habitat units	Area retained (ha)	Area enhanced (ha)	Units retained / lost	Units enhanced
Modified grassland – Amenity grassland	0.1881	1.13	0.0566	0.1	0.19	0.95
Developed land - Buildings	0.0559	0.00	0.0392	0.00	0.00	0.00
Artificial unvegetated, unsealed surface – Hardstanding	0.0345	0.00	0.0345	0.00	0.00	0.00
Bramble scrub	0.039	0.16	0.039	0.00	0.00	0.00
TOTAL	**0.3175**	**1.29**	**0.2693**	**0.00**	**0.19**	**0.95**

Habitat type	Existing length (km)	Baseline habitat units	Length retained (km)	Length enhanced (km)	Units retained / lost	Units enhanced
Hedgerow	0.069	0.28	0.05	0.05	0.08	0.29

3.15 To achieve 10% net gain, the proposed development must result in total biodiversity units of 1.419 up from 1.29.

Table 3.6 Biodiversity Metric 4.0 – Unit creation**:**

Habitat type	Created (ha area / km length)	Habitat units created
Native species rich hedgerow	0.02km	0.18

Table 3.7 Biodiversity Metric 4.0 – Net change**:**

Site baseline:		Post intervention:		Percentage change:		Planning requirement satisfied?
Habitat units	1.28	Habitat units	1.45	Habitat units	+12%	**Yes**
Hedgerow units	0.28	Hedgerow units	0.47	Hedgerow units	+70%	
River units	0.00	River units	0.00	River units	0.00%	

3.16 In total, the scheme achieves over 12% biodiversity net gain by providing 0.16 basic habitat units. In addition to this, 0.19 hedgerow units are provided.

3.17 The calculation takes in lots of information including about the surroundings of the site, as outlined above. However, it does not take account of any enhancement works to the buildings, bat / bird boxes, or other green initiatives discussed with the client.

3.18 A full explanation of how conditions of existing habitats will be improved to achieve the enhancement criteria is detailed in Section 6 of this report.

Field Study

Preliminary Roost Assessment Survey

3.19 The site at Sawbridgeworth church comprises three buildings; the main church building with chapel hall, a flat roofed kitchen and toilet block, and a schoolhouse. Both the kitchen and schoolhouse will be affected by the proposed development, with minimal effects to the church structure. All buildings are detailed in Table 3.8 below and Figure 3.2.

3.20 Development plans on site comprise the demolition of the schoolhouse and kitchen / toilet block building and replacement with modern equivalents. The main body of the church will remain largely unaffected by the proposed works, as the kitchen block connects to the main church by a flat roof tied into the brickwork. As such, the main church building was not surveyed in detail.

Table 3.8: Preliminary Roost Assessment Survey results

Building Number/ Reference	Building Description	Suitable Bat Roost Features	Direct evidence of Roosting Bats?	Suitability to Support Roosting Bats
1	Building 1 is the main church building with attached adjacent church hall. Sawbridgeworth church comprises a traditional 19th century church of coloured bricks with a pitched slate roof. Built in the traditional gothic style with a slate roof supported by timber common rafters and queen posts. Internally both lofts of the main sanctuary and the church hall have been boarded over and plastered with only a small roof void accessed by hatches. Roof void of main church building will remain undisturbed throughout – no further action.	Numerous low-quality features including exposed wooden rafters; suitability reduced by lack of insulation, lack of an appropriately sized and shaped roof void, and lighting.	None	**Low suitability**; no further action required as the proposed works will not affect any parts of the building with potential to support bats, and will only comprise tying in to the walls.
2	Adjacent to and connected by a small passage to the church hall is a block of two buildings, the first a kitchen / WC block (building 2) of modern construction being early 20th century. The WC block is single storey of brick construction with a flat roof of bituminous felt with skylight.	None	None	**Negligible suitability** due to a lack of suitable features including lack of a roof void and tight fitting overall good condition box soffits.

3	Building 3 is a Sunday school, two-storey also of brick with a peaked dual pitch open gable roof with slate tile covering. Sunday school is currently used sporadically but was cold and damp at the time of survey being unheated. Standard roof void comprising common rafters with no bitumen felt lining, just slate tiles in overall good condition. Chimney breast in centre of building shows historic damage to lead flashing with noticeable holes. Ventilation holes in gable end walls have caused a cold and damp interior to the void, however there is insulation in the ceiling of the second floor which protects the building interior.	Numerous low-quality features including exposed wooden rafters; suitability reduced by lack of insulation, lack of an appropriately sized and shaped roof void, and lighting.	None	Overall building is **low suitability** due to the cold and damp conditions and exposure being one of the tallest buildings in the immediate wider landscape.

Phase 1 Habitat Survey

3.21 The habitats present on site are shown in Figure 3.2 and are described in detail below.

3.22 The grounds of the church comprise a graveyard to the rear with hardstanding leading to a parking area at the front. Habitats on site comprise buildings, hardstanding, amenity grassland, scattered trees, bramble scrub and hedgerows.

Buildings

3.23 There are 3 buildings on site described in detail in the PRA section above.

Hardstanding

3.24 Hardstanding on site comprises numerous areas of tarmac and a double ended parking area at the front. Additionally, there are numerous graves and tombs, the most significant of which are marked on the map. Vegetation makes up less than 1% coverage.

Amenity grassland

3.25 Amenity grassland is dominated by grasses and is mown homogenously to 6cm with some patches as tall as 30cm in the centre.

3.26 Grass species recorded as dominant on site comprise common species including perennial rye grass *Lolium perenne*, creeping bent *Agrostis stolonifera*, rough stalked meadow grass *Poa trivialis*, and red fescue *Festuca rubra*. Other grass species recorded occasionally included Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum*, and cocksfoot *Dactylis glomerata*.

3.27 Other species include creeping cinquefoil *Potentilla reptans*, dandelion *Taraxacum officinale*, daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata*, and in the taller areas nettle *Urtica dioica*.

Scattered trees

3.28 Scattered trees on site comprise planted individuals, the majority of which are mature pollarded limes *Tilia europaea*, with a pair of yew *Taxus baccata*, London plane *Acer pseudoplatanus* x *hispanica*, and a plum *Prunus sp*..

Bramble scrub

3.29 There is a small patch of unmanaged bramble scrub in the north-west corner of the site averaging 100cm high at the time of the survey comprising entirely bramble *Rubus fruticosus* and nettle.

Hedgerows

3.30 Hedgerows bound the site on the north and west edges. They are relatively unmanaged being loosely clipped to 1.5m thick and 3m high with significant regrowth. Species comprise dogwood *Cornus sanguinea*, *Prunus sp*., and ivy *Hedera helix*.

Protected Species

3.31 The habitats present on site provide suitable potential to support a range of protected species including badgers, bats, breeding birds, dormice, great crested newts, and reptiles. These species are considered in greater detail below, along with protected species for which the habitats on site are suboptimal or unsuitable.

Bats

3.32 A full ground level tree assessment was not within the scope of this survey, however a brief assessment revealed that none of the trees within the development boundary provide habitat features suitable to support roosting bats such as deep cracks, loose bark, crevices, rot holes and dry cavities. This is primarily due to their young age, and according lack of age-related features.

3.33 The larger lime trees on site are of the right age to provide features, however they have been recently pollarded and as such do not provide any features due to their lack of canopy.

3.34 The habitats within the site boundary provide some foraging and commuting opportunities for bats with occasional scattered trees, with further opportunities found within the wider landscape.

3.35 The areas of woodland and older buildings in the wider landscape may provide additional roosting opportunities for bats.

Badgers

3.36 The site provides sub-optimal habitat for badgers, as sett building opportunities are very limited due to the number of buildings and areas of hardstanding. The grass is a short sward and there are no fruit trees on site providing foraging opportunities.

3.37 These opportunities are also limited in the immediate wider landscape as the site is surrounded by other urban residential dwellings.

3.38 No signs of badger activity were recorded on site.

Breeding birds

3.39 An abundance of songbirds was recorded during the survey, with species being both heard and seen. Species recorded included blackbird *Turdus merula*, blue tit *Cyanistes caeruleus*, great tit *Parus major*, wren *Troglodytes troglodytes*, jackdaw *Corvus monedula*, house sparrow *Passer domestica*, and starling *Sturnus vulgaris*.

3.40 All of the habitats on site provide nesting and foraging opportunities for breeding birds, with further opportunities found within the wider landscape.

3.41 The buildings on site provide potential nesting opportunities for birds, however, no intact or in-use birds nests were discovered during the survey. Birds could potentially access the school house due to the vents at either end in the gables.

Dormice

3.42 No signs of dormice were recorded during the survey.

3.43 The site provides no habitat suitable to support dormice, as it lacks features key for their survival. These features include:

- Hazel coppice with dense canopy for arboreal activity, and of a mature enough stock to produce nuts;
- Good connectivity with areas of higher quality habitat

The site does provide native fruit bearing species such as small quantities of bramble; however, the centre of the site lacks an appropriate level of cover for dormice.

3.44 Connectivity within the development site is poor, and the site is broadly open with no canopy connectivity between trees in the wider landscape, none of which will be affected by the proposals.

3.45 Hedgerows within the site and wider landscape broadly comprise short sections of mixed native and non-native species and lack continuity with the wider landscape due to the presence of numerous highways with little significant canopy connectivity.

3.46 Connectivity with areas of higher quality dormouse habitat in the wider landscape is poor, as the site is set within an urban landscape.

Great crested newts

3.47 No signs of great crested newts were recorded during the survey.

3.48 All of the vegetated habitats on site provide sub-optimal foraging and commuting opportunities for great crested newts as the sward height within the grassland is such that newts would be vulnerable to predation.

3.49 There is only one waterbody within 500m of the development boundary, and the site is disconnected from this by multiple roadways, areas of urban residential, and walls in excess of 50cm.

3.50 There is little on site to attract newts with limited potential hibernation habitat and no breeding habitat on site.

Reptiles

3.51 Although no signs of reptiles were recorded during the survey all of the vegetated habitats on site provide sub-optimal foraging and commuting opportunities for reptiles, with sub-optimal potential basking habitat on the areas of hardstanding.

3.52 As with great crested newts, reptiles often require a taller sward height to avoid predation, and this is not provided by the majority of the site. Taller sward is limited to the edges of the grassland.

3.53 The site is poorly connected with areas of higher quality reptile habitat in the wider landscape as the site is immediately surrounded by other urban residential properties and areas of hardstanding such as roadways.

4 EVALUATION

Habitats

4.1 The habitats present on site are of average ecological quality and comprise locally abundant species typical of the wider landscape.

Protected species legislation

4.2 Protected species legislation, its importance, and the penalties that would be incurred if an offence were committed are summarised in Appendix A of this report. This section provides information on which species could be affected by any proposed development of the site.

Species

This section discusses two separate issues;

- Potential species constraints whereby a protected species has the potential to pose a constraint on a development therefore requiring a phase 2 species specific survey to further analyse such a threat, and whether added mitigation is required to reduce the risk of an offence being committed.
- Habitat suitability to support protected species, i.e. whether prudent habitat management can be targeted towards a species to improve the biodiversity value of the development site, and contribute towards Biodiversity Net Gain (BNG) targets.

Bats

4.3 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2017, and the Wildlife and Countryside Act 1981 (as amended).

4.4 The site is considered overall to be suitable to support roosting bats. Building 3 has low suitability to support bats due to the size of its roof void, number of access points into the void from either end, and other access points. Suitability is reduced by the cold damp conditions within the building and the void, such that bat presence would likely be incidental with individuals using it as an occasional roost in summer.

4.5 A more detailed Ground Level Tree Assessment was not within the scope of this survey, but a brief assessment revealed that most of the trees on site have limited potential to support roosting bats as they lack features associated with age, such as areas of decay, woodpecker holes, lifted or cracked bark, or quantities of ivy.

4.6 As the trees on site are unlikely to support roosting bats and / or are not due to be affected by the proposed development, bats in trees are not considered to pose a constraint to the works.

4.7 All of the habitats on site provide foraging and commuting opportunities for bats.

4.8 As the site has potential to support bats, they are considered further in Section 6 of this report as enhancements for bats will be required to ensure biodiversity net gain due to the fact habitat will be lost.

Badgers

4.9 Badgers receive full protection under the Protection of Badgers Act 1992.

4.10 Connectivity with areas of higher quality habitat is poor for badgers as the site is surrounded by areas of urban residential. There is little on site to attract badgers due to its small size and lack of foraging or sett building opportunities.

4.11 Badger presence on site would therefore likely be transient / vagrant.

4.12 No badger activity was recorded on site during the survey, therefore subject to effective mitigation measures badgers are not considered to pose a constraint to development on site.

4.13 The site has no potential to support badgers in future, therefore, they are not considered further in this report.

Breeding birds

4.14 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

4.15 All of the habitats on site provides nesting and foraging opportunities for breeding birds, however no active nests were discovered during the Preliminary Roost Assessment.

4.16 The removal of buildings 1 and 2 is necessary for the development. Therefore, in the absence of mitigation measures birds have the potential to be affected by the development. Failure to observe mitigation measures leading to birds being disturbed whilst nesting would constitute a criminal offence.

4.17 Birds were also recorded on site, therefore the loss of habitat for birds will need to be compensated for, and habitats remaining post-development must be enhanced to ensure biodiversity net gain is achieved.

4.18 Therefore, breeding birds are considered further in Section 6 of this report.

Dormice

4.19 Hazel dormice are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, capture, or destroy dormice, or to disturb a breeding area.

4.20 Dormice generally require large areas of connected ancient woodland with healthy, stratified vegetative layers providing a heterogeneous habitat (Bright et al., 2006). They also utilise hedgerows to a lesser extent, particularly for foraging and commuting and less so for nesting. This heterogeneous habitat is not provided by the site.

4.21 There are hedgerows on site, however the site is disconnected from large areas of woodland and no wooded habitats will be disturbed by the proposed development.

4.22 The site generally lacks species key for dormouse success as all of the habitats within the development boundary are sparse and homogenous in composition. The main development area is entirely hardstanding and buildings with.

4.23 Given the lack of high-quality habitat within the development area, dormouse presence within the site can be effectively ruled out.

4.24 Therefore, subject to a precautionary approach, dormice are not considered to pose a constraint to development.

4.25 Dormouse presence in the immediate wider landscape is unlikely therefore dormice are not considered further in this report. However, connectivity and plant biodiversity improvement measures will benefit dormice should they be present within the wider landscape.

Great crested newts

4.26 Great crested newts are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, injure or destroy great crested newts or their eggs.

4.27 No signs of great crested newts were recorded during the survey; the grassland on site is of too short a height to support commuting and foraging great crested newts, as newts generally require a taller sward height to evade predation.

4.28 The likelihood of a meta-population being present within the wider landscape is considered to be low as there are no waterbodies within 500m of the site boundary.

4.29 The site is fundamentally undesirable for newts due to the lack of breeding habitat on site, poor foraging opportunities with the short sward grassland, and the fact that the site is an isolated island of poor-quality habitat within a wider landscape of similar habitats. Should newts be present on site during the active season, they would likely be vagrant individuals, as the site cannot sustain a population of newts.

4.30 The proposed development is of a small scale affecting only habitats of lowest quality; therefore, newts will not be affected by the proposed development. Additional surveys for newts will not be necessary at this stage as newts are not considered to pose a constraint to the proposed development.

4.31 As the site has potential to support newts, they are considered further in Section 6 of this report.

Reptiles

4.32 All species of reptile are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, injure or destroy reptile species or their eggs.

4.33 No signs of reptiles were recorded during the survey; however, all of the habitats on site provide sub-optimal suitability habitat for reptiles. Reptiles are also transient species and can make use of different sward heights and habitats at different times of day.

4.34 Connectivity with areas of higher quality reptile habitat is poor, however it is likely that reptile presence in the wider landscape is relatively widespread. The proposed works are not considered likely to affect reptiles, and reptile presence can be effectively mitigated.

4.35 As the site has potential to support reptiles, they are considered further in Section 6 of this report.

Biodiversity Metric 4.0

4.36 The Biodiversity Metric 4.0 calculator returned a favourable result for the development indicating just over 12% increase in biodiversity brought by the scheme. This is entirely due to the replacement of the enhancement of existing habitats and provision of additional hedgerows / existing hedgerow enhancement.

4.37 However, as the system is still in its beta test stages it is not perfect, and some limitations of the system are outlined below:

The tool uses Natural England's habitat classifications, rather than those outlined in the JNCC Phase 1 Habitat Survey Guidelines used by Stace et al as a part of the PEA methodology. As such, habitats have been put into their category of best fit;

Not all enhancements are supported, including things such as bat roof voids, bat and bird boxes, and wildflower planting. Therefore, the biodiversity value of the development is artificially lower as the author has had to put enhancements in the category of best fit;

The system relies on arbitrary units which, although chosen and calculated by a committee of Natural England staff, are not outlined or explained in the metric itself;

The metric doesn't take into account the grey area of how, or in what way, a habitat is lost as some methods of loss are more destructive to biodiversity than others, whereas others would not necessarily be counted as a 'loss', but more of a change;

Some man-made habitats such as 'Artificial un-vegetated, unsealed surface' i.e. hardstanding are considered to have 'very low' biodiversity value such that they require no form of loss based compensation.

4.38 Despite these limitations, the metric has provided a means of quantifying the enhancement potential of the development. The metric returned high biodiversity enhancement values for the hedgerow and tree planting, with comparatively low potential benefit offered by the other enhancements.

4.39 The metric results provided are for indicative purposes only, and do not provide an accurate representation or guarantee of biodiversity success and should only be used for comparative purposes. Successful implementation of the enhancements contained within this report will guarantee an increase in biodiversity compared with a development with no associated enhancements.

4.40 The author considers it necessary to comment that works to the site will result in the immediate permanent destruction of the existing habitats, which will not be immediately compensated for. Therefore, enhancement of the grassland areas as well as tree and hedge planting should commence as soon as possible once works commence, and be protected by a CEZ to avoid damage or vandalism.

Other Items

4.41 There are no other items of note.

5 CONCLUSION

5.1 The proposed development site is currently considered to have low ecological value within a local context as it comprises locally common habitats supporting locally abundant species typical of the wider landscape.

5.2 The biodiversity value of the total site area is largely attributed to the following factors:

The poor diversity of species and sward heights within the habitats on site when compared to the wider landscape, being typical of urban residential areas in the south-east.

The poor vegetative structure and connectivity within the development boundary, and connectivity with higher quality habitat in the wider landscape; and

The ease with which biodiversity enhancement measures can be implemented within the overall site boundary without compromising amenity value.

5.3 Development plans on site comprise the demolition of the existing kitchen / WC block and schoolhouse and replacement with a modern equivalent.

5.4 The habitats on site have the potential to be constrained by bats and breeding birds. Therefore, compensation and enhancement measures would have to focus on these species specifically.

5.5 In the absence of mitigation, the current development proposals have the potential to affect protected species. To reduce the risk of an offence being committed, recommendations are outlined in Section 6 of this report. These should be followed to ensure that any potential impacts to protected species are adequately addressed during the planning stage, development and post-development stage.

6 RECOMMENDATIONS

6.1 Due to the presence of habitats on site that have the potential to support protected species recommendations to further consider these species in line with the legislation protecting them are given below.

6.2 Proposed development of the site is likely to be of small scale in planning terms and of small scale in an ecological context; however, the quality of the habitats that could be affected and their potential to support protected and notable species is such that without mitigation, the development has the potential to harm, injure, kill or disturb protected or notable species.

6.3 These recommendations are therefore mitigative and are designed to work on a worst-case scenario basis, and to offer biodiversity enhancements to benefit the local area by attracting species in.

Species specific mitigation measures

6.4 ***Bats***:

All of the habitats on site have the potential to support foraging and commuting bats.

A minimum of one dusk bat emergence survey must be undertaken to ascertain presence / likely absence of bats within Building 3. Further surveys may be required after this.

A precautionary approach to bats is recommended to include hand stripping of roof materials on the buildings. If bats are discovered at any time during the works, all works must cease, and a licenced bat ecologist contacted. Works cannot then resume without the appropriate survey effort and European Protected Species Mitigation licence.

Failure to do so would constitute a criminal offence.

Lighting

6.5 While different species of bat react differently to night-time lighting, research has found that bats overall are sensitive to artificial lighting. Excessive and/or poorly directed lighting may delay bats in emerging from their roosts; shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds, movement corridors or roosting sites, to alternative dark areas (Jones, 2000).

6.6 To minimise indirect impacts from lighting associated with the proposed development, it is recommended that artificial lighting is only directed where necessary for health and safety reasons. Lighting should not illuminate any trees, hedgerows or mitigation and compensation features, such as hanging tiles and integrated bat boxes, or suspected or confirmed bat roosting sites. Lighting should only be used for the period of time for which it is required (Jones, 2000). This can be achieved by following accepted best practice (Fure, 2006; Institute of Lighting Engineers 2009; Bat Conservation Trust 2011):

The level of artificial lighting including flood lighting should be kept to an absolute minimum;

Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);

Lighting required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor-activated lamps;

Lights utilising LED technology are the preferred option as these lights do not emit on the UV spectrum, are easily controllable in terms of direction/spill and can be turned on and off instantly;

Avoid the use of sodium or metal halide lamps, these gas lamps require a lengthy period in which to turn off and the diffuse nature of the light emitted makes light spillage a significant problem.

Lights required for night time deliveries or security patrols could be set to activate with pressure activated sensors set into the ground;

Lighting should be directed to where it is needed to minimise light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield/hood/cowl/ that directs the light below the horizontal plane and restricts the lit area;

Artificial lighting should not directly illuminate any confirmed or suitable bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features or compensatory bat roosting features should not be directly lit; and

6.7 ***Badgers:***

All of the habitats on site are sub-optimally suitable to support badgers, and access to the site for badgers is poor.

If badger activity is suspected on site (evidence may include feeding remains, sett digging, paw prints, droppings, hair, or active sightings) all works must cease and a licenced badger ecologist notified. Works cannot then restart until the appropriate survey effort and [as necessary] licencing has occurred. Failure to do so would constitute a criminal offence.

6.8 ***Breeding birds***:

The scattered trees, hedgerows and buildings on site have the potential to support breeding birds.

All tree and hedge cutting works as well as any potential clearing and roof stripping works should be confined to outside of the bird breeding season (February – October inclusive) or should be undertaken under ecological supervision where works are undertaken within nesting season. If an active nest is found it should be left protected by a 5m radius buffer of habitat until the chicks have fledged (approximately 1 month).

No further surveys for breeding birds are deemed necessary at this stage.

6.9 ***Reptiles and Newts:***

Due to the methods that will be employed to create footings, it will be necessary for the works to be mitigated through seasonal avoidance measures. Therefore, further surveys will not be necessary at this stage.

The precautionary approach laid out below should be followed to ensure that in the event that vagrant reptiles are discovered appropriate mitigation measures are put in place to avoid the risk of an offence being committed, and so that construction workers are aware of the constraints that herptile species could present to the development.

Toolbox talk

Prior to works commencing, a toolbox talk will be presented to all operatives to inform them as to the legislation protecting herptile species, the importance of their conservation, how to identify them so as to prevent injury, and the site-specific risks to them.

If the works are undertaken by experienced ecologically trained personnel, a toolbox talk will not be necessary.

Fencing

Herptile fencing should not be utilised due to the risk of illegally trapping newts within a fenced area, which is an offence under the Wildlife and Countryside Act 1981. Instead, seasonal avoidance measures and a destructive search should be utilised to ensure an offence is not committed.

Capture and translocation of reptiles

Should reptiles be discovered at any time during the development, they should be captured and translocated to an adjacent receptor site. If there is any doubt as to the species present, works must cease and an appropriately trained and licenced ecologist contacted, as capturing a great crested newt would constitute an offence, *unless rescuing the newt was an emergency measure that would otherwise negate the risk of a more serious offence being committed.*

So as to reduce the risk of an offence being committed, Natural England's guidance should be followed as outlined in the Reptile Mitigation Guidelines handbook, such that reptiles are captured and excluded from the work area and relocated to an adjacent receptor site within the ownership boundary that will be subject to restoration and enhancement.

In the unlikely event that great crested newts or other licensable reptile species are discovered during any stage of the works, all works must cease and the advice of an appropriately licenced ecologist sought.

Turf stripping

Any turf stripping or vegetation removal works should be undertaken under ecological supervision. In the unlikely event that herptiles are found at any time during the development, work should cease immediately, and a suitably licensed ecologist should be sought. Thereafter work can only recommence upon working in accordance with legislatively compliant recommendations. Failure to do so constitutes a criminal offence.

Grass cutting works should be undertaken in a staged manner consisting of cut and collect to 75mm, left for two hours, then cut and collect to ground level.

Maintenance of the site

Once the entire development site has been cut to ground level, it should be maintained as such until foundation operations can begin so as to keep the site as unsuitable for habitation by reptiles as possible.

The rest of the development

Once the hardstanding and footings have been poured, works are to be exclusively limited to these areas with no vehicle movements outside of the built habitats. Works can then proceed at any time of year.

As above, should herptiles be discovered at any time during the works all works must cease, and a qualified and experienced ecologist contacted.

6.10 **Additional recommendations**

Information on creating reptile habitat features can be found in section 9 of the Reptile Habitat Management Handbook 2010.

No further surveys for reptiles are deemed necessary at this stage.

Bonfires should not be lit during hibernation season of October to March to reduce the likelihood of affecting hibernating reptiles, amphibians and small mammals such as hedgehog Erinaceus europaeus.

Construction waste, building materials and machinery should be stored on existing areas of hardstanding at the front of the building(s) during the demolition and construction process. Construction waste should be stored in skips, with all new building materials kept on pallets until immediate use to avoid the possibility of protected species utilising piles as habitat.

Biodiversity enhancement and compensation

Scale of enhancement and compensation

It is the author's professional opinion that due to the scale of the proposed development, a dedicated area for wildlife compensation and enhancement measures is necessary.

Necessity for planning conditions – note to the LPA

Sometimes it can be deemed necessary for biodiversity enhancements and compensation measures to be recommended to be designated as conditions attached to a planning consent. The following symbols will be utilised below, with categorisation methodology explained in Section 2.21:

Red recommendations should be designated as conditions attached to a planning consent, and the development must not proceed without these enhancements / compensation measures being put in place, as they form a crucial role in achieving biodiversity net gain targets

Amber recommendations should be included within the development, however it is not necessary for them to be designated as conditions, as the author believes that their implementation is not key to achieving biodiversity net gain targets. The client / developer should seriously consider including these measures to improve the biodiversity value of the site and to reduce their carbon footprint

Green recommendations are additional enhancements which would improve the biodiversity value of the site; however, they are not key to achieving biodiversity net gain targets. These recommendations are aimed at clients wishing to 'go the extra mile' with their site so as to improve visual impact, public engagement, and property value

Enhancement and compensation measures

Construction Exclusion Zone (CEZ): a construction exclusion zone should be established to cover the areas of habitat that will not be affected by the proposed development. These areas should be fenced off with Heras fencing to limit damage to these areas during development; this accords with section 10.9 of BS:42020 (2013). Refer to section 10.9.3 of BS:42020 (2013) for additional information on required timings for fencing.

The CEZ will remain in place for the entire time that heavy machinery (including but not limited to excavators, graders, dumpers, lorries, and other vehicles over 2,000kg kerb weight) is on site.

The CEZ will also help to protect the remaining buildings that will not be affected by the proposed development.

Bird and bat boxes should be placed on the eastern sides of the building and suitably sized trees within the wider site boundary. These should also include dedicated swift boxes on the north-eastern aspect of the building. Bird boxes should be placed at a minimum height of 4.5

metres i.e. first floor / eaves height away from doors and windows and areas of high disturbance (footpaths, lighting etc.).

As bats prefer more sheltered and less disturbed areas to roost, it is recommended that bat boxes are placed at a height of 4 metres on the southern sides of suitably sized trees within the wider site boundary.

As a minimum, two bat boxes should be provided on mature trees within the wider site boundary. As a minimum, a single bird box should be provided along with a single swift box / brick on the north-eastern aspect of the building. This will ensure that bats remain undisturbed by usage of the buildings, and that birds utilising nest boxes do not overheat in summer months.

It is recommended that bat boxes are of the Schwegler 2F universal usage type, and that bird boxes are constructed of woodcrete / woodstone similar to such boxes as the Schwegler 1B nest box. The swift box should be similar to the Vivara Pro WoodStone swift nest box.

Care should be taken when erecting bat boxes to ensure they remain sheltered, but accessible with clear flight paths and without damaging the tree during erection. Tertiary branches that block the flight path to the box should be trimmed, with the whole area remaining unlit.

Hedge planting: the development should include new hedge planting along linear boundaries using a native species-rich hedgerow mix to include a minimum of 7 species from the following list: hazel, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, spindle *Euonymus europaea*, wayfaring tree *Viburnum lantana*, crab apple *Malus sylvestris*, hornbeam *Carpinus betulus*, dog rose, field maple *Acer campestre* and wych elm *Ulmus glabra*. Furthermore, any existing hedgerows in the wider site boundary should be gap planted and bolstered with species from the list above.

These species are hardy allowing them to be managed in multiple ways and provide excellent privacy once full grown. If further privacy is required in specific areas, then yew *Taxus baccata* and beech *Fagus sylvatica* should be considered. Non-native species should be avoided.

Scattered mature standards comprising hornbeam *Carpinus betulus*, field maple, or lime *Tilia cordata* var. ‘Green Spire’ should be planted across the site to increase woody coverage and connectivity. These species are hardy, low maintenance and also do not risk dominating the landscape in later life as they can be coppiced or pollarded effectively.

Additionally, honeysuckle *Lonicera periclymenum* should be included in hedgerow mixes.

New hedgerows should be planted at a density of 10 plants per metre in two rows of 5 plants each, with rows 30cm apart and plants 20cm apart. Bolster planting should be undertaken at the same density taking into account existing mature individuals as contributing to this density;

e.g. existing hedgerow has density of 3 plants per metre, bolster planting would comprise 7 additional plants.

As a minimum, 50m of native hedgerow should be planted throughout the wider ownership boundary; sparse hedgerows should be bolster planted. Areas of hedgerow with non-native invasive species should have these species removed and replaced with native species. **Hedge planting proportions should comprise a minimum 20m of new hedgerow, and 50m of bolster planting, as this is key to achieving net gain.**

New trees; the development should include new trees to ensure an appropriate level of cover for bats and to provide a micro-climate between trees to support insect species. Fruit trees also work well within linear boundaries such as hedgerows.

These should be scattered throughout the site boundary, and comprise robust native woody species such as hornbeam, field maple, or lime *Tilia cordata*, or fruiting species such as pear *Pyrus spp.,* apple *Malus spp.,* or mountain ash *Sorbus aucuparia*. These could include historically important varieties rare in the county. These species provide foraging opportunities for badgers, birds and small mammals.

Sward management around planted trees should be careful to avoid damage to trees and should be as varied as the rest of the amenity grassland within the wider site boundary.

Effort should mainly be concentrated on planting native species where possible, and attached with this report is our 'alternative planting list'.

No trees are proposed to be removed as a part of the development.

As a minimum, two new trees should be planted across the wider ownership boundary.

Mowing regime; Existing and new areas of grassland on site should continue to be mown on a scheme that benefits both biodiversity and the usage of the graveyard. Areas without graves should be left long and cut once in October to allow the soil nutrients to be removed. These measures can also be supplemented for 'planting of a wildflower meadow' below. **Enhancement of at least two thirds of the grassland to that of 'Semi-improved grassland' ('Other neutral grassland') is a key part of achieving biodiversity net gain.**

Hedge cutting; Existing and new hedgerows on site should be cut biannually (every 2 years) except around gateways (annually). Hedgerows gradually lose their shape and density at the cost of amenity and functionality as they mature; therefore, hedge laying in the traditional Kent or Sussex style should occur every 10 years on rotation to maintain hedge structure.

Removal of invasive non-native species; Invasive species registered under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded on site. **This legislation makes it a criminal strict liability offence to allow these species to spread into the wild.** They should be removed immediately and disposed of appropriately according to DEFRA standing advice.

Planting of a wildflower meadow; an increase in invertebrate habitat should be a key part of the plan, to include wildflower planting for bees and other pollinators within the site boundary to the east and south of the development to help increase the number of foraging opportunities available for bats.

Wildflower meadow mixes are available online, and should preferably focus on native bee-friendly mixtures to include the following species:

Common agrimony	Cornflower	Wild marjoram

Borage	Ox-eye daisy	Meadow cranesbill
Wild clary	Wild foxglove	Musk mallow
Red clover	Common knapweed	Common poppy
White clover	Greater knapweed	Ragged robin
Corn cockle	Purple loosestrife	Sainfoin
Field scabious	Bird's-foot trefoil	Yarrow

Wildflower mixes should focus on supporting invertebrates (such as bees, ants, wasps, butterflies and flies) and birds, and should ideally not contain non-native species as these can out-compete native plants for pollination.

Climbing plants should be trained up the walls of the new buildings or fences using trellis. Species could include; passion flower, honeysuckle, hops, ivy, star jasmine, wisteria, climbing roses, or clematis. These species all provide feeding opportunities for invertebrates and small mammals, and nesting opportunities for birds once they reach maturity.

Butterfly planting should focus on species rare in Sussex and Kent such as the silver-spotted skipper *Hesperia comma*, dingy skipper *Erynnis tages*, grizzled skipper *Pyrgus malvae*, Adonis blue *Pollyomatus bellargus*, chalk hill blue *Polyommatus corridon*, small heath *Coenonympha pamphilus*, and fiery clear wing *Pyropteron chrysidiformus.* Plant species to encourage these butterflies should include the following in a large planter or area of ornamental planting (species that support more than one of these butterfly species are in bold):

Common sorrel	Tormentil	**Birds foot trefoil**
Curled dock	Salad burnet	**Horseshoe vetch**
Sheep's fescue	Agrimony	Wild strawberry

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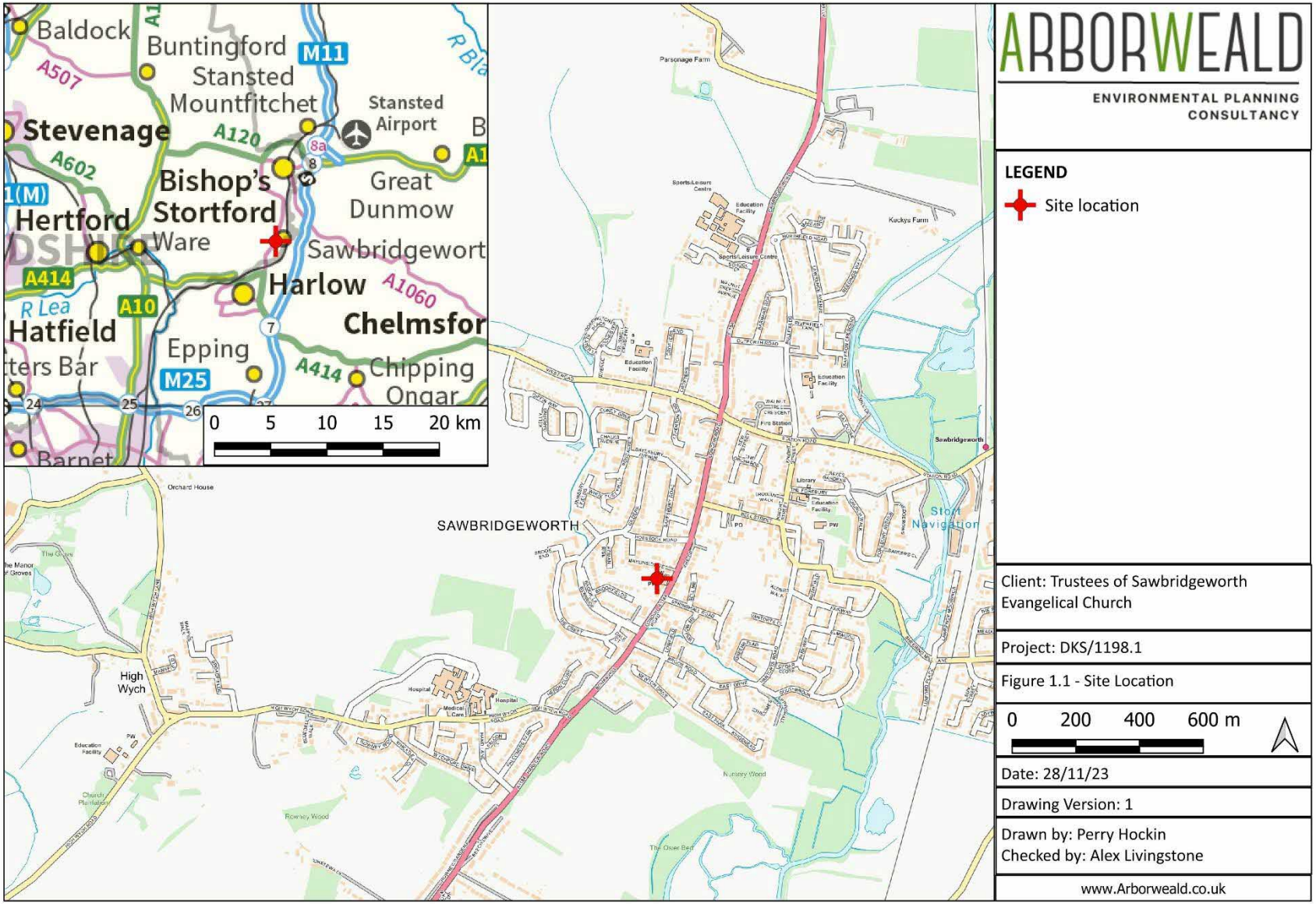
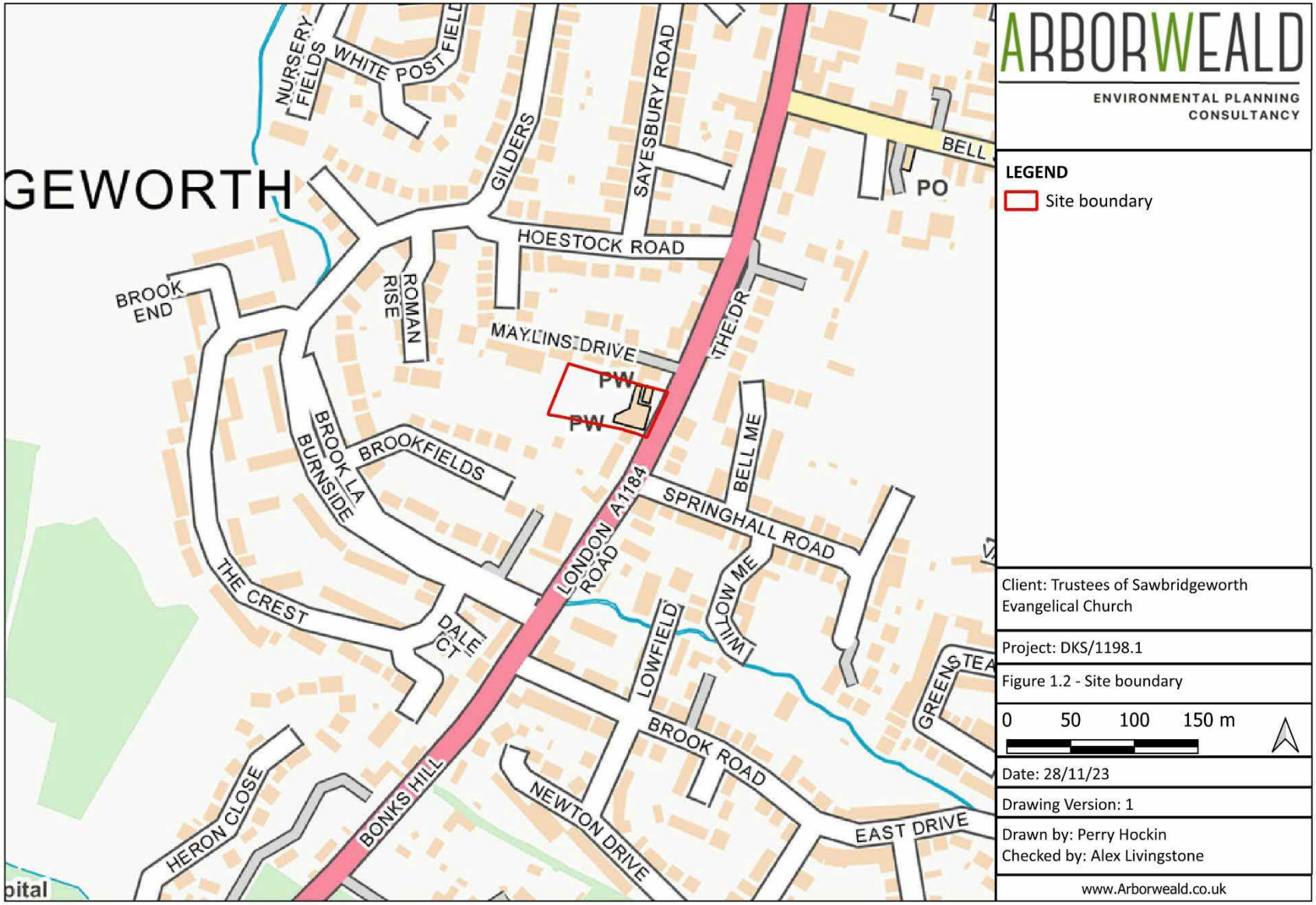
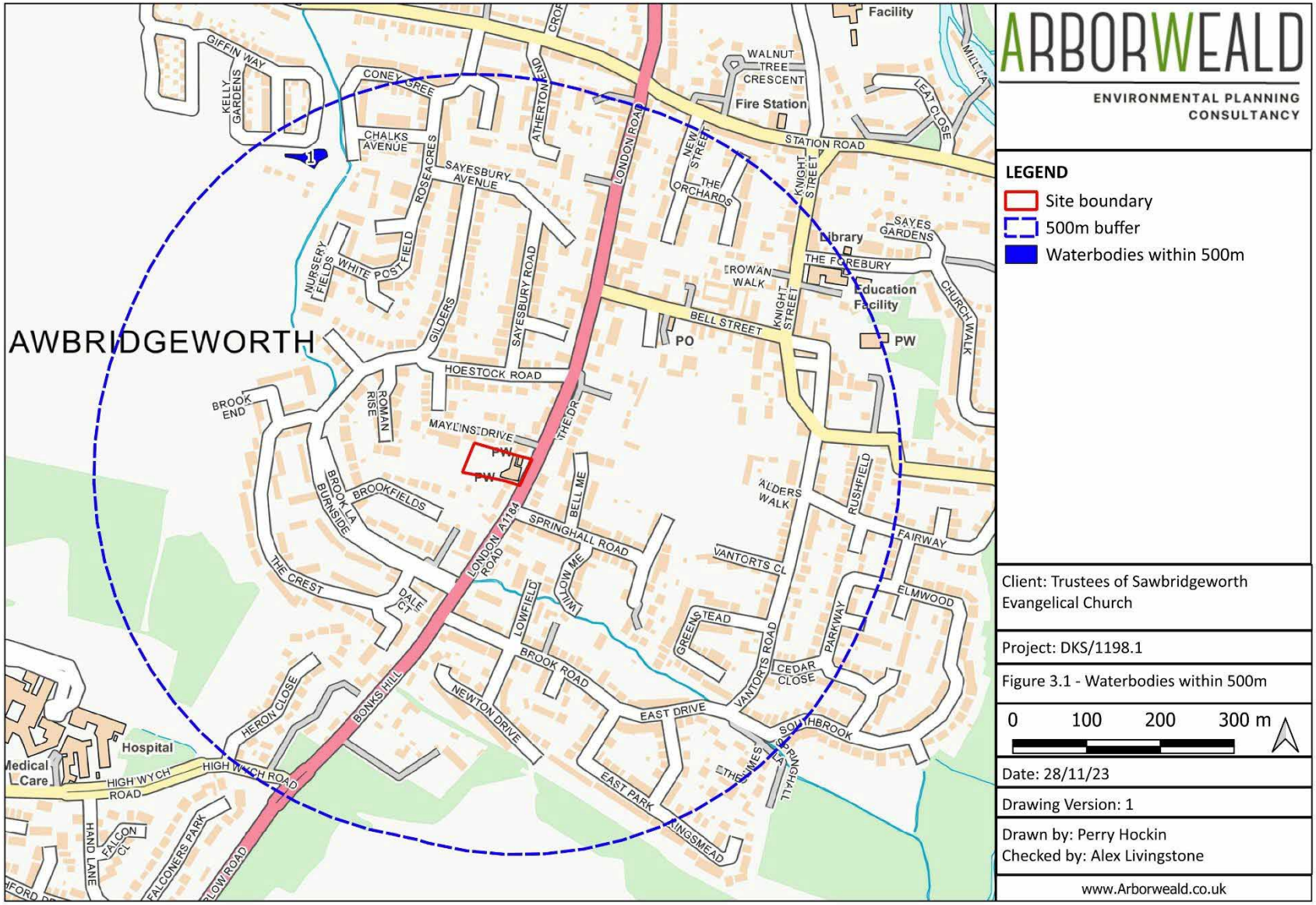
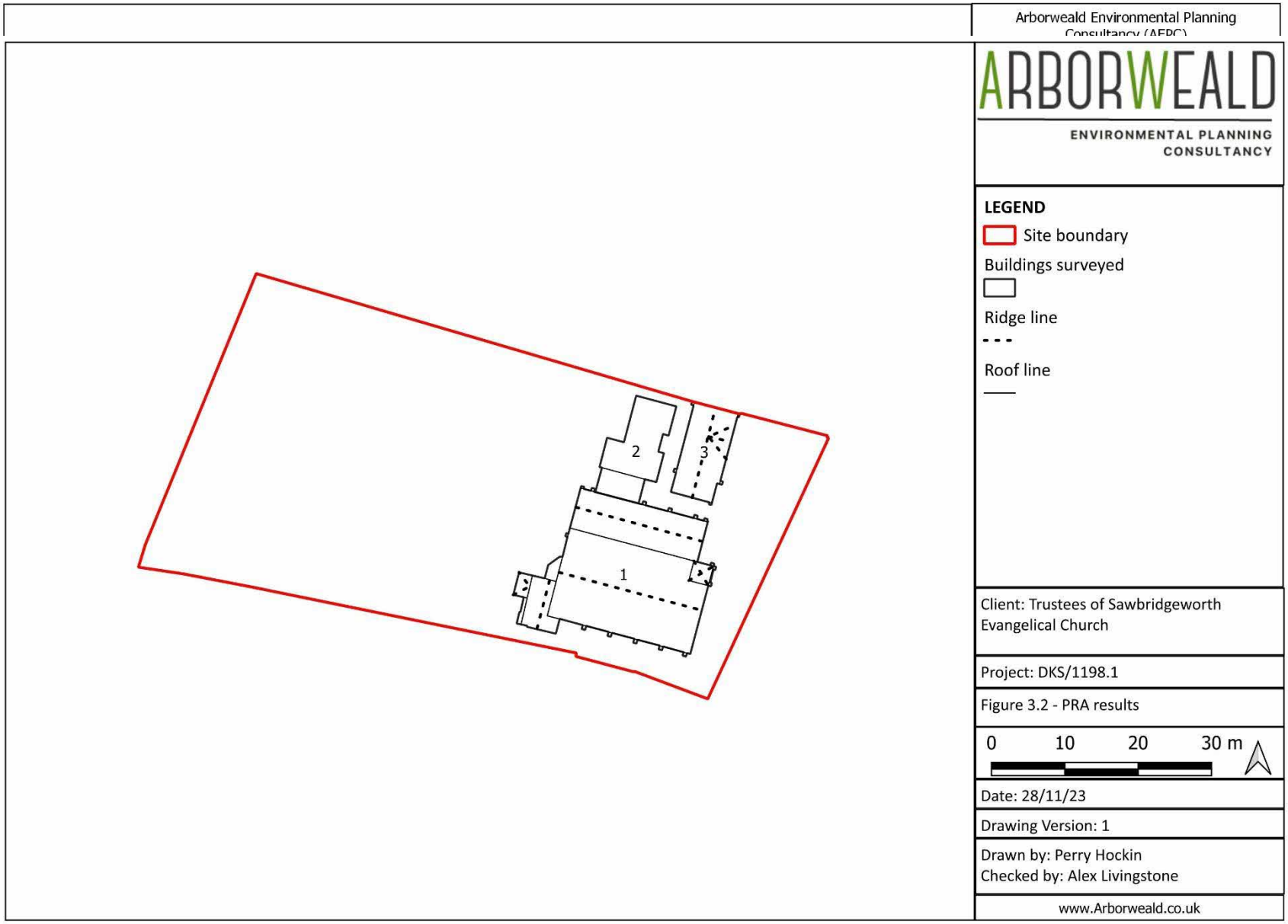
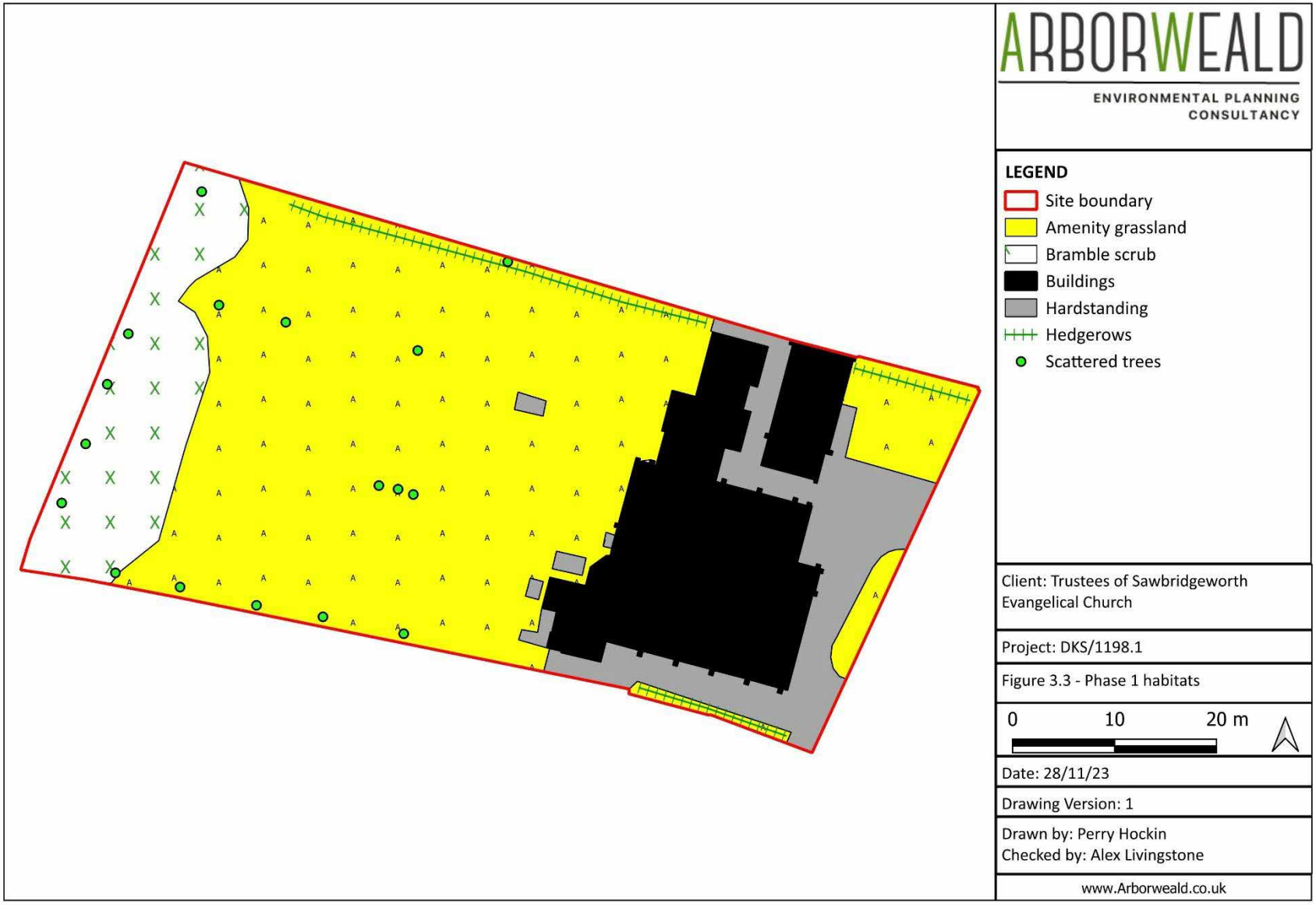
FIGURES











APPENDIX A Wildlife Legislation

The Wildlife and Countryside Act 1981 (as amended)

Schedule 1

*A*pplies to all wild birds where it is an offence:

to take, damage or destroy a nest whilst it is being built or in use
to kill, injure or take any wild bird (subject to certain exceptions and / or licencing)
to take or destroy the egg of any wild bird.

It is also an offence to disturb any wild bird listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended):

while it is nest building
at a nest containing eggs or young
to disturb the dependant young of any such bird.

Schedule 5

Other protected animals are listed in Schedule 5; a full list of protected species can be found on the Legislation.gov.uk website. Schedule 5 contains several advancing levels of protection outlined below:

Protected under section 9(5) of Schedule 5, it is an offence:

to sell or advertise for sale, or participate in the sale of these species; many species of invertebrate are listed under this section including butterflies, moths and beetles as well as common frog, palmate and smooth newts

Protected under section 9(1) of Schedule 5, it is an offence:

to intentionally kill or injure or take these species – this applies to adder, grass snake, common lizard and slow worm

For animals fully protected under Schedule 5 - which includes, the hazel dormouse, otter, water vole, pine marten, shrews, hedgehog, great crested newt, natterjack toad, sand lizard, smooth snake, red squirrel and all bats – all of the above apply, however it is also an offence:

to intentionally or recklessly damage or destroy or obstruct access to any structure or place which a species uses for shelter or protection, at any time even if the animal is not present.
to intentionally or recklessly disturb whilst it is occupying a place which it uses for shelter or protection.

Schedule 8

Specific species of plants listed in Schedule 8 are protected. It is an offence: to intentionally pick, uproot or destroy a wild plant listed in Schedule 8.

Schedule 9

Invasive non-native species are listed under Schedule 9. It is an offence:

to plant or otherwise cause to grow in the wild.

If soils are contaminated by invasive non-native plant species it becomes classified as '*controlled waste*' under the Environmental Protection Act 1990 (England, Wales & Scotland), and must be disposed of accordingly.

The Conservation of Habitat and Species Regulations 2017

Schedule 2 applies to all European Protected Species (EPS) which includes all bat species, great crested newts, otter and dormice. The protection afforded is overlapping but separate from the Wildlife and Countryside Act 1981 (as amended)

The Protection of Badgers Act 1992

Under this Act it is an offence:

To intentionally or recklessly interfere by damaging, destroying, obstructing access to, or disturbing a badger whilst in a sett either directly or through causing a dog to enter a badger sett
To wilfully kill, injure or take a badger, or to attempt to do so; in a case of attempt, if there is reasonable evidence to suggest an offence may have been committed, evidence would be required to prove innocence
To possess or be under control of a dead badger, or part of, or anything derived from a dead badger which may have been killed in contravention of the above
To sell, possess or attempt / offer to sell a live badger

Where interference with a badger sett cannot be avoided during development, a licence from Natural England must be applied for.