BM21 – Porton Down

Preliminary Ecological Appraisal

On behalf of Beard Construction

MN2022005Av1

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This report has been produced by Wild Service within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client.

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1 Introduction

1.1 Scope

1.1.1. Wild Service was commissioned by Beard Construction Ltd to undertake a Preliminary Ecological Appraisal at BM21, DSTL, Porton Down, Salisbury, SP4 0JQ (hereafter referred to as the 'Site'). The survey was requested to inform the construction of a new building.

1.1.2. The proposal involves the removal of a small section of calcareous grassland, to be replaced with a building.

1.1.3. The Preliminary Ecological Appraisal comprised a Phase 1 Habitat Survey and protected species survey assessment.

1.1.4. This report includes a description of methods used to identify habitats, results and recommendations for mitigation.

1.2 Site Description

1.2.1. The Site is located within Porton Down Science Park, approximately 10km north-east of Salisbury. The footprint of the Site falls within the Porton Down Special Protection Area (SPA)/Special Area of Conservation (SAC)/Site of Special Scientific Interest (SSSI) and Salisbury Plain SPA/SSSI. The proposed building would be situated within an existing developed site consisting of small buildings and hardstanding.

1.2.2. The surrounding habitat consists of calcareous grassland and blocks of deciduous broadleaved woodland.

1.2.3. The central Ordnance Survey Grid Reference for the Site is SU 22978 36423.

1.3 Legislation

1.3.1. This report has been prepared in accordance with relevant legislation and policy. Further detail is provided in Appendix 1, however the following primary documents are of relevance:

- The Wildlife and Countryside Act 1981 (as amended) (WCA 1981);

- The Countryside and Rights of Way Act (CRoW Act), 2000 (as amended);
- The Natural Environment and Rural Communities Act (NERC Act), 2006;
- The Protection of Badgers Act 1992 (PBA 1992); and
- The Conservation of Habitats and Species Regulations 2017 (as amended) (CHS 2017).

1.3.2. No part of this report should be considered as legal advice and when dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.

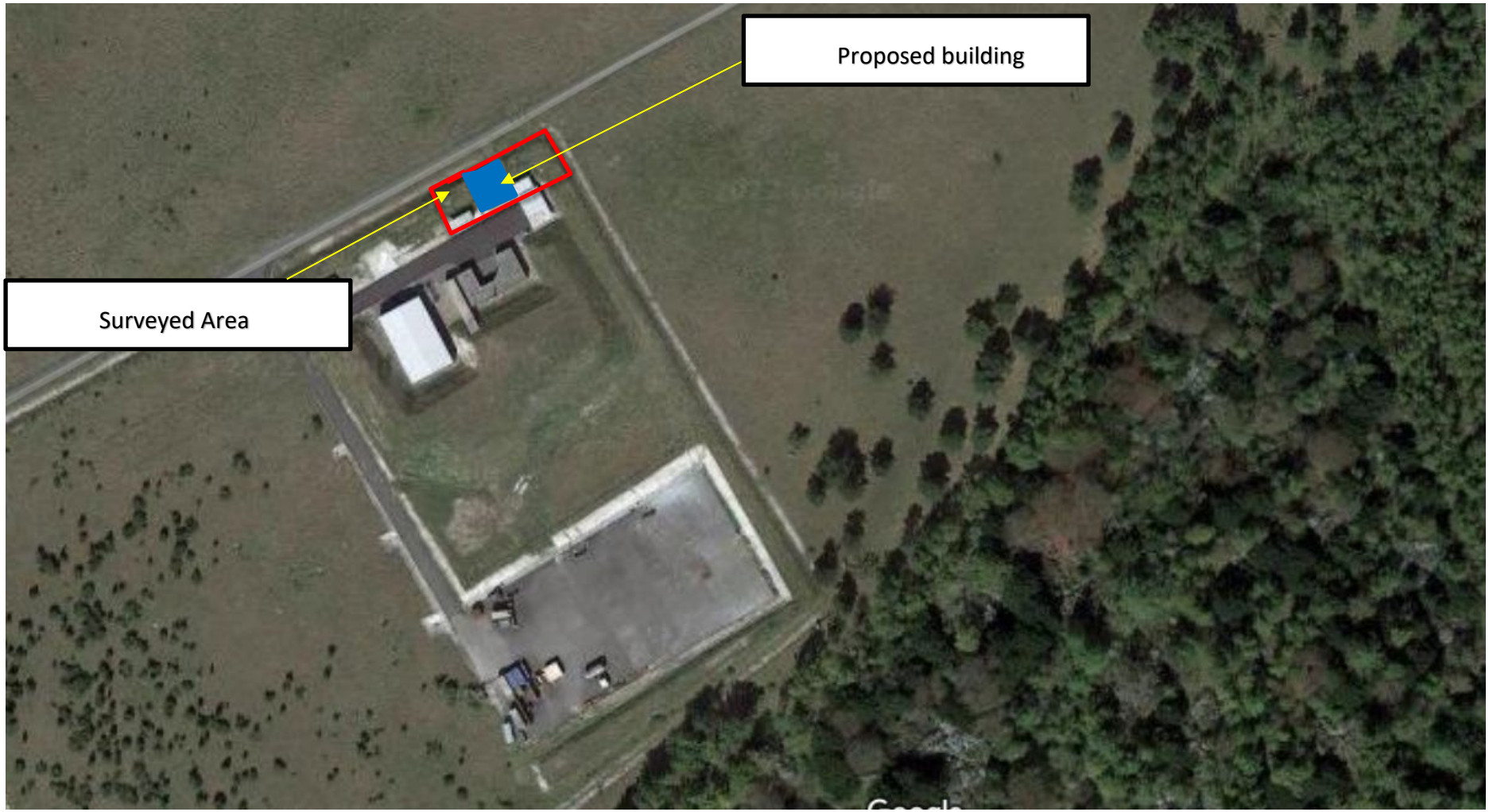

Figure 1. Site Plan (Google images 2022)

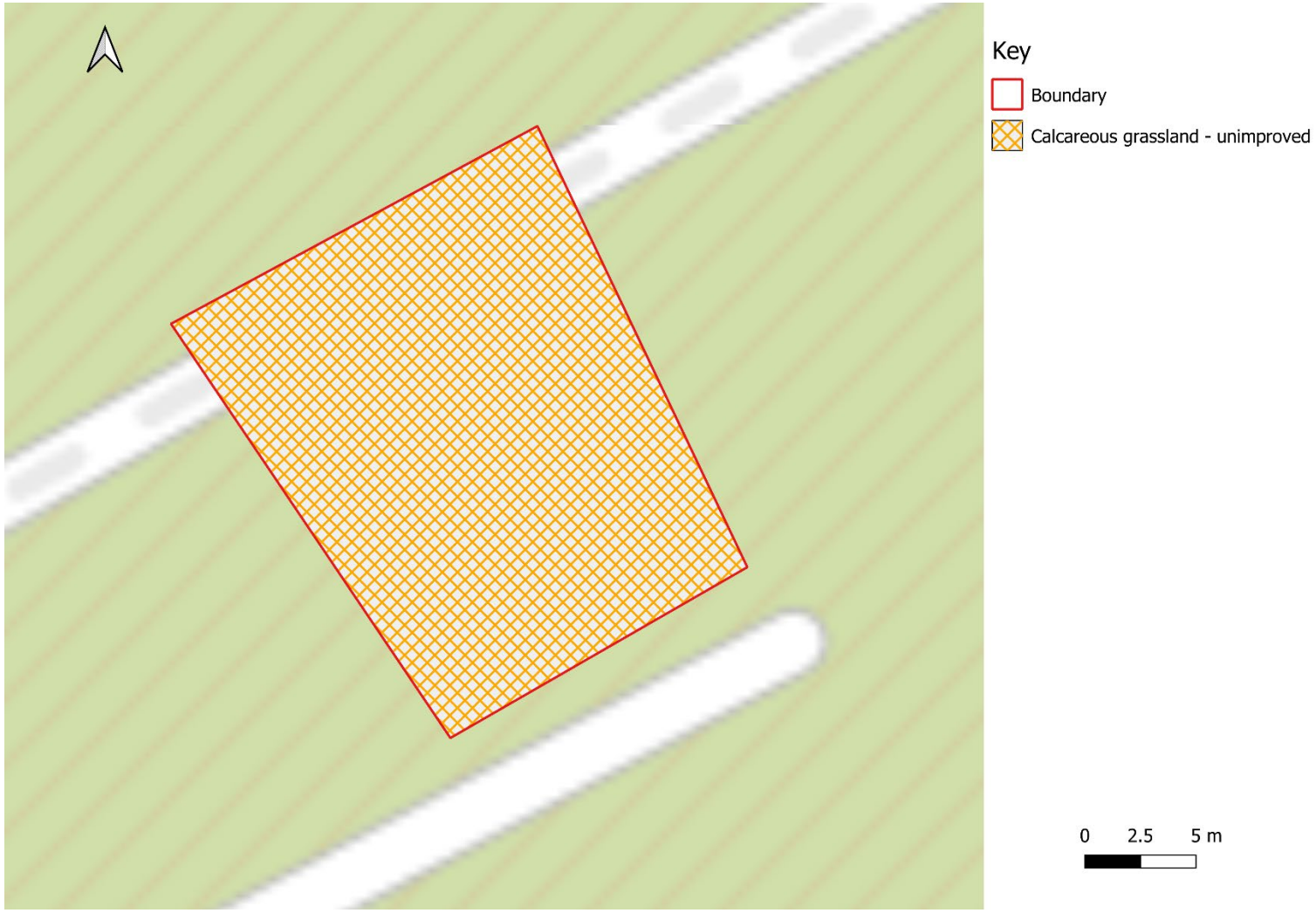

Figure 2. Site Plan (Google images 2022)

2 Methods

2.1 Desk Study

2.1.1 The objectives of the desk study are to review the existing available information in order to identify the following:

- Statutory and non-statutory nature conservation sites within 1km of the Site (including an extended search of 5km for SPAs, SACs and Ramsar sites); and
- Records of protected and rare/notable species within 1km of the Site.
- Records of bats within 2km of the Site.

2.1.2 Ecological data were provided by Wiltshire and Swindon Biological Records Centre (WSBRC) and sourced from the Multi-Agency Geographic Information for the Countryside (MAGIC) website (2022).

2.2 Phase 1 Habitat & Protected Species Survey

2.2.1 The methods used for the Phase 1 habitat and protected species surveys are outlined in Table 1.

2.2.2 Michelle Newman of Wild Service undertook the appraisal on 29th March 2022.

2.3 Limitations and Constraints

2.3.1 While every attempt has been made to collect accurate baseline data, all ecological surveys represent a 'snapshot' of activity. Ecological features are dynamic and often transient, and it is not possible to confirm the absence of a species through survey. It may be necessary to update the ecological surveys if sufficient time elapses since the surveys and data collection presented in this report were carried out.

2.3.2 Due to the sensitive nature of the Site, photographs could not be taken, however the descriptions of the habitats below are deemed sufficient and so this is not a significant constraint.

2.3.3 The survey was undertaken in late March and therefore outside the optimal season for assessing habitats. The Site is part of Porton Down SPA/SAC/SSSI and Salisbury

Plain SPA/SSSI and so is likely to support diverse botanical species, however due to the small scale of the development within an existing developed area, a full botanical survey was not undertaken.

Table 1. Phase 1 Habitat & Protected Species Survey Methods	
Phase 1 habitat survey	The aim of the Phase 1 survey is to provide a description of the habitats on a particular site and is made in accordance with the JNCC Phase 1 Habitat Survey methodology (JNCC, 2010). The survey includes a detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The survey has been carried out to identify the range of habitats within the site and the predominant and notable species of flora. Where necessary, the condition of habitat has been described. The appraisal also aims to identify invasive plants listed on Schedule 9 of the Wildlife & Countryside Act that could have implications for works on site. Where appropriate, maps are provided in other formats, such as annotated aerial photographs/site plans.
Badgers	The site is assessed for suitable habitats that may support badgers *Meles meles*. Where relevant habitat occurs, evidence of badgers including setts, latrines, tracks, snuffle holes, padding or guard hairs is recorded.
Bats	The Site is assessed for suitable habitats, generally buildings and trees, that may support roosting bats. For example, buildings are assessed for holes in soffits, missing tiles and gaps in the masonry whilst trees are assessed for features such as cracks, holes, flaky bark and established ivy cover. Where possible the interior of buildings are also inspected for suitable roosting features and any evidence of bats in the form of bats, droppings, urine staining and feeding remains are noted. Potential roosting features are classed as negligible, low, moderate, or high potential in (Collins, 2016). The suitability of the habitats for foraging bats is also assessed.
Birds	The site is assessed for suitable habitats that may support birds in terms of feeding, nesting and roosting. Where relevant habitat occurs, evidence identifying the presence of birds including nests, droppings, pellets and feathers is recorded.
Dormice	The site is assessed for suitable habitats that may support dormice *Muscardinus avellanarius* including woodland and hedgerows. Where relevant habitat occurs evidence of dormice including nests and gnawed nuts is recorded.
Great crested newts	During the site visit the potential of the site to support great-crested newts *Triturus cristatus* is assessed; this includes looking for potential breeding sites such as ponds, disused swimming pools and other water-bodies. The appraisal also focuses on the potential for this species to find refuge in places such as log piles, rubble and compost heaps. Where still water-bodies occur a Habitat Suitability Index (HSI) is calculated. This is a standard appraisal method developed specifically to evaluate the habitat suitability for great crested newts (Oldham *et al*. 2000). A series of factors must be considered. Each factor is assessed along suitability guidelines and allocated a value of between 0.1 (highly unsuitable) to 1.0 (highly suitable). The geometric mean of these values provides an overall suitability value for the site. Although this is no substitute for a dedicated survey the suitability value informs the decision on whether to undertake a dedicated survey.
Otters	The area under appraisal is searched for suitable habitat along water-bodies, recording where appropriate, evidence pertaining to the presence of otters *Lutra lutra* in the form of holts, spraints, anal jelly, tracks and feeding remains.
Reptiles	The site is assessed for suitable habitats that may support reptiles including slow-worms *Anguis* fragilis, common lizards *Zootoca vivipara* grass snakes *Natrix natrix* and adder *Vipera berus*. Where relevant habitat occurs, evidence identifying the presence of reptiles, particularly tracks and sloughed skin is recorded.
Water voles	The area under appraisal is searched for suitable habitat along water-bodies, recording where appropriate, evidence pertaining to the presence of water voles *Arvicola amphibius* in the form of burrows, latrines, runs, footprints and distinctive “feeding lawns”.
White-clawed crayfish	The area under appraisal is searched for suitable habitats that may support white-clawed crayfish *Austropotamobius pallipes*. This typically includes freshwater streams and rivers but may also include still water-bodies.

3 Results

3.1 Desk Study

3.1.1. The Site falls within both Porton Down SPA/SAC/SSSI, which is designated for its chalk grassland, and Salisbury Plain SPA/SSSI, which is also designated for its open chalk grassland, lichens, vascular plants and invertebrates.

3.1.2. The biological data search yielded records of several protected and notable species within 1km of the Site, but none from within the Site boundary. The data are summarised in Table 3.

3.2 Phase 1 Habitat and Protected Species Survey

3.2.1 The results of the Phase 1 habitat and protected species survey assessment are outlined in Tables 2 and 3. Reference should be made to the Site Plan presented in Figure 1 and Phase 1 Habitat Plan in Figure 2.

Table 2. Phase 1 Habitat Survey and Recommendations

Habitat/Feature	Description	NERC[1] habitat (Y/N)	Evaluation and potential impact	Recommendations Avoidance / mitigation / enhancement measures
UNIMPROVED CALCAREOUS GRASSLAND	The footprint of the Site falls within the Porton Down SPA/SAC/SSSI and Salisbury Plain SPA/SSSI, however due to the Site being within an existing developed site, the habitat shows signs of recent disturbance. The Site is made up of a bund and dry ditch adjacent to a single track road. Species include meadow oat-grass *Helictotrichon pratense*, false brome *Brachypodium sylvaticum,* upright brome *Bromopsis erecta*, red fescue *Festuca rubra*, selfheal *Prunella vulgaris*, early dog-violet *Viola reichenbachiana*, common vetch *Vicia sativa*, cut-leaved crane's-bill *Geranium dissectum*, cleavers *Galium aparine,* creeping thistle *Cirsium arvense*, Yorkshire-fog *Holcus lanatus*, yarrow *Achillea millefolium*, dandelion *Taraxacum officinale* agg., cock's-foot *Dactylis glomerata,* wild strawberry *Fragaria vesca*, common nettle *Urtica dioica*, hogweed *Heracleum sphondylium*, agrimony *Agrimonia eupatoria* and perennial rye-grass *Lolium perenne.* The sward height is approximately 30cm, but is likely to be taller further into the growing season.	Y	The habitat is of moderate ecological value. There are large areas of habitat of better value adjacent to the Site. A small section of the grassland will be removed permanently to accommodate the new building. The footprint of the development is small, within an existing development with continuous disturbance.	Due to the relatively recent disturbance of the Site, the small scale of the development, the current nature of the adjacent area including hardstanding and buildings, and the large areas of better quality, undisturbed habitat surrounding the Site, the impacts to the Porton Down SPA/SAC/SSSI and Salisbury Plain SPA/SSSI are not thought to be significant due to the small scale of the development on land recently disturbed, however consultation with Natural England will be required in order to assess if further assessments are required. Unnecessary removal of habitat must be avoided and limited to the development footprint only, and areas of existing hardstanding should be used for storage of materials and machinery use. Replacing the lost grassland habitat will not be feasible. However, the remaining bund and ditch could be enhanced by planting species known to be present in the designated sites and of value to invertebrates, such as sheep's-fescue *Festuca ovina,* common dog-violet *Viola*

[1] 'Habitats of Principal Importance' under Section 41 of the Natural Environment and Rural Communities (NERC Act 2006.

Habitat/Feature	Description	NERC[1] habitat (Y/N)	Evaluation and potential impact	Recommendations Avoidance / mitigation / enhancement measures
				riviniana, primrose *Primula vulgaris* and cowslip *Primula veris*.

Table 3. Protected Species Survey & Recommendations

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
BADGERS	The grassland provides some foraging habitat for badgers. The bund provides a suitable location for sett excavation, however there is no cover and it is likely that continuous human activity on Site will deter badgers.	None.	None.	Likely present passing through the Site.	Low impact during works.	**No further surveys required**. Badgers are offered full protection under the PBA 1992. Should any trenches or pits need to be excavated, these should be fitted with a ramp to enable any animals to escape.
BATS	The grassland will provide some foraging value to bats, although the continuous use of the Site and external lighting will deter some species. There is higher quality habitat available in close proximity to the Site which is undisturbed. There are no structures or trees present and so no roosting opportunities.	None.	17 records of six species of bat were returned from the desk study, which are common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, *Myotis* sp., noctule *Nyctalus noctula,* Natterer's bat *Myotis nattereri* and serotine *Eptesicus serotinus*.	Likely to be present, commuting/ foraging over the grassland.	Removal of a small section of grassland is not expected to result in negative impacts for bats using the Site.	**No further surveys required**. Bats and their resting places are protected under the WCA 1981 and the CHS Regs 2017. If external lighting is required for the proposed building, it is recommended that this is designed in a sensible manner to avoid disturbing foraging bats. Further information can be found in Section 4.5. Artificial roosts could be incorporated into the new building, as described in Section 4.5.
BIRDS	The grassland provides suitable habitat for ground nesting birds, however it is in close	Skylark was noted singing and flying close to the Site. They are	Biological records yielded results of 16 species of bird within 1km of the Site,	Potentially present nesting within the	Negligible impact if mitigation measures are followed.	**No further surveys required**. All birds are protected under the WCA 1981. It is therefore generally unlawful to intentionally kill or injure a bird,

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
	proximity to the regularly used building and roads which is likely to deter birds from using the area. The habitat is sub-optimal for stone curlews *Burhinus oedicnemus*, but potentially suitable for skylarks *Alauda arvensis*.	known to nest across the DSTL Porton Down site, and less disturbed habitat is available in close proximity. No evidence of nesting was recorded within the surveyed area. Carrion crow *Corvus corone* was also noted.	including fieldfare *Turdus pilaris*, golden plover *Pluvialis apricaria*, grey partridge *Perdix perdix,* lapwing *Vanellus vanellus,* quail *Coturnix coturnix*, red kite *Milvus milvus,* redwing *Turdus iliacus,* skylark and stone curlew.	Site, although regular disturbance may deter birds from the area.		damage or destroy an occupied nest or take or destroy eggs other than in exceptional prescribed circumstances. Therefore, development operations should take care to avoid the risk of harm to birds and their nests, especially during the nesting season (generally considered to be March to August). As a precautionary measure the Site and immediate surrounding area should be checked immediately prior to works commencing to ensure no ground nesting birds such as skylarks or stone curlews are present. If birds are recorded nesting within 5m of the development works at any point of the proposal, works should cease immediately. They should only recommence once all young have fledged. Nesting opportunities for birds could be incorporated into the new building, as described in Section 4.6.
DORMICE	There are no suitable habitats for dormice on or adjacent to the Site.	None.	None.	Unlikely to be present.	None.	**No further surveys required.** Dormice and their resting places are protected under the WCA 1981 and the CHS Regs 2017.

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
GREAT CRESTED NEWTS AND OTHER AMPHIBIANS	There are no waterbodies on or within 500m of the Site which could provide breeding sites for GCN. The grassland and dry ditch provide some terrestrial habitat for GCN and other amphibians, however due to the lack of waterbodies, it is unlikely that they are present.	None.	None.	Unlikely to be present.	Negligible impact.	**No further surveys required.** GCN and their resting/breeding places are protected under the WCA 1981 and CHS Regs 2017.
OTTERS, WATER VOLES AND WHITE-CLAWED	There are no waterbodies or watercourses on or near to the Site which could provide habitat for these species.	None.	None.	None.	None.	**No further surveys required.** Otters, white-clawed crayfish and water voles, including water vole resting places, are protected under the WCA 1981. Otters and their resting places are also protected under the CHS Regs 2017.
REPTILES	The grassland and dry ditch provide suitable habitat for reptiles. The continuous use of the Site may deter reptiles, however their presence cannot be ruled out.	None.	One common lizard record was returned from the desk study.	Potentially present in small numbers.	Negligible impact if mitigation measures are followed.	**No further surveys required.** Reptiles are protected under the WCA 1981. As reptiles could be present in small numbers, prior to any works commencing a fingertip search by a suitably qualified ecologist should be undertaken within the development footprint and immediate area. This should be followed by a vegetation cut using hand tools only. If reptiles are found, they should be moved into

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
						suitable habitat close to the Site. Vegetation should be taken down to ground level to deter reptiles from using the area. As an additional precautionary measure, all material should be stored on pallets or otherwise separated from the ground in order to eliminate any potential refugia for reptiles. Aggregates should also be delivered in bags and stored in this way.
HEDGEHOGS	The grassland provides foraging habitat for hedgehogs.	None.	None.	Possibly present.	Limited potential impact if precautionary measures taken.	**No further surveys required.** Hedgehogs are listed as a Species of Principal Importance under the NERC Act 2006. Should any trenches or pits need to be excavated, these should be fitted with a ramp to enable any animals to escape.
OTHER INVERTEBRATES	Porton Down SPA/SAC/SSSI and Salisbury Plain SPA/SSSI are designated partially for their invertebrate assemblage. The habitat on Site is more recently disturbed than the surrounding designated areas, however it still	None, although the weather was sub-optimal for invertebrates.	Several species were returned from the desk study, including silver-spotted skipper *Hesperia comma,* pearl-bordered fritillary *Boloria euphrosyne,* wall *Lasiommata megera* and Duke of Burgundy *Hamearis lucina.*	Common and potentially more notable species present.	Low impact as large areas of habitat of higher quality would be retained in close proximity to the Site.	**No further surveys required.** If any non-flying invertebrates of note are found during the fingertip search for reptiles, these should be moved to suitable habitat close by. Enhancements could include planting the grassland with sheep's-fescue, which is suitable for silver-spotted skipper caterpillars, common dog-violet, which is suitable for pearl-bordered fritillary, and primrose and

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
	provides suitable habitat for invertebrates.					cowslip, which are suitable for Duke of Burgundy.

4 Discussion

4.1 Nature Conservation Sites

4.1.1 Due to the relatively recent disturbance of the Site, the small scale of the development, the current nature of the adjacent area including hardstanding and buildings, and the large areas of better quality, undisturbed habitat surrounding the Site, the impacts to the Porton Down SPA/SAC/SSSI and Salisbury Plain SPA/SSSI are not thought to be significant due to the small scale of the development on land recently disturbed, however consultation with Natural England will be required in order to assess if further assessments are required and if the development is appropriate.

4.2 Habitats

4.2.1 The habitats that need consideration in relation to this development are discussed below with detailed enhancement measures.

4.2.2 The grassland is of moderate ecological value due to its recent disturbance and the fact that it forms part of an existing developed site which is in continuous use.

4.2.3 Unnecessary removal of habitat must be avoided and limited to the development footprint only, and areas of existing hardstanding should be used for storage of materials and machinery use.

4.2.4 Replacing the lost grassland habitat will not be feasible. However, the remaining bund and ditch could be enhanced by planting species known to be present in the designated sites and of value to invertebrates, such as sheep's-fescue, common dog-violet, primrose and cowslip.

4.3 Protected Species

4.3.1 The protected species and their mitigation that need consideration in relation to this development are discussed below.

4.4 Badgers

4.4.1 Badgers and active setts are offered full protection under the PBA 1992. No setts or signs of badgers were recorded.

4.4.2 Should any trenches or pits need to be excavated, these should be fitted with a ramp to enable any animals to escape.

4.5 Bats

4.5.1 Bats and their resting places are protected under the WCA 1981 and the CHS Regs 2017. The grassland is of low value for foraging bats and there are no structures or trees on the Site that would provide roosting opportunities.

4.5.2 If any lighting needs to be incorporated into the development, it should be low-powered (i.e. lux level of 3 or ideally less), downward-pointing and/or mounted at a low level (e.g. standard bollard height) to minimise the level of impact from lighting on bats. The best types of lighting for use are narrow spectrum lights with no UV content, warm white LED or low-pressure. Should lighting be required then it would be necessary for the lighting scheme to be reviewed by an ecologist prior to submission to planning.

4.5.3 Roosting opportunities for local bats could be incorporated into the new building through the installation of bat boxes under the eaves, either on the exterior walls (e.g. Schwegler 1WQ/1FF bat box) or fitted into the walls (e.g. Habibat 001 bat box), and the creation of raised ridge tiles. Bat boxes should ideally be installed at a minimum height of 3.5m - 4m, facing away from external illumination in a south-east or south-west orientation. Examples are provided in Appendix 2.

4.6 Birds

4.6.1 All birds are protected under the WCA 1981. It is therefore generally unlawful to intentionally kill or injure a bird, damage or destroy an occupied nest or take or destroy eggs other than in exceptional prescribed circumstances. Therefore, development operations should take care to avoid the risk of harm to birds and their nests, especially during the nesting season (generally considered to be March to August).

4.6.2 As a precautionary measure, the Site and the immediate surrounding area should be checked immediately prior to works commencing to ensure no ground nesting birds, such as skylarks or stone curlews, are present. If birds are recorded nesting within 5m of the development works at any point of the proposal, works should cease immediately. They should only recommence once all young have fledged.

4.6.3 Nesting opportunities for house sparrows *Passer domesticus* and swifts *Apus apus* could be provided in the form of sparrow terrace nest boxes. The swift bricks are fitted into the walls and are readily used by these and other species of small bird, or where it is not possible to fit into the wall, they can be fitted externally. Swift boxes should ideally be installed at a height of 4 - 5m to ensure usage. House martins *Delichon urbicum* could be provided with nesting provision in the form of house martin cups, which can be fitted on the exterior walls of a building. Barns, carports and open fronted porches or large overhanging eaves are suitable locations for swallow cups to provide nesting features for swallows *Hirundo rustica*. All these species have undergone a decline in recent years. These nesting features should be installed under the eaves of a building at minimum heights of 2 - 2.5m, facing in a north to south-east direction. Examples are provided in Appendix 2.

4.7 Reptiles

4.7.1 Reptiles are protected under the WCA 1981. The grassland and dry ditch provide suitable habitat for reptiles, although they are unlikely to be present due to the disturbed nature of the Site.

4.7.2 As reptiles could be present in small numbers, prior to any works commencing a fingertip search by a suitably qualified ecologist should be undertaken within the development footprint and immediate area. This should be followed by a vegetation cut using hand tools only. If reptiles are found, they should be moved into suitable habitat close to the Site. Vegetation should be taken down to ground level to deter reptiles from using the area.

4.7.3 As an additional precautionary measure, all material should be stored on pallets or otherwise separated from the ground in order to eliminate any potential refugia for reptiles. Aggregates should also be delivered in bags and stored in this way.

4.8 Hedgehogs

4.8.1 Hedgehogs are listed as a Species of Principal Importance under the NERC Act 2006. Hedgehogs could use the Site, however there are no areas of shelter that would be disturbed.

4.8.2 Should any trenches or pits need to be excavated, these should be fitted with a ramp to enable any animals to escape.

4.9 Invertebrates

4.9.1 Porton Down SPA/SAC/SSSI and Salisbury Plain SPA/SSSI are designated partially for their invertebrate assemblage. The habitat on Site is more recently disturbed than the surrounding designated areas, however it still provides suitable habitat for invertebrates.

4.9.2 If any non-flying invertebrates of note are found during the fingertip search for reptiles, these should be moved to suitable habitat close by.

4.9.3 Enhancements could include planting the grassland with sheep's-fescue, which is suitable for silver-spotted skipper caterpillars, common dog-violet, which is suitable for pearl-bordered fritillary, and primrose and cowslip, which are suitable for Duke of Burgundy.

4.10 General Protected Species

4.10.1 There appear to be no other obvious and immediate issues for this development with regard to any other species protected under the WCA 1981 and the CHS Regs 2017, and no further dedicated surveys for any other species are recommended. However, in the unlikely event that any protected species listed in Section 2 are found on the Site during the works then all works must cease immediately, and the advice of a suitably qualified ecologist must be sought.

5 References

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Appendix 1: Policy and Legal Considerations

Statutory nature conservation sites and protected species are a 'material consideration' in the UK planning process (DCLG, March 2012). Where planning permission is not required, for example on proposals for external repair to structures, consideration of protected species remains necessary given their protection under UK law.

The **Conservation of Habitats and Species Regulations 2017** transpose the requirements of European Directives such as the Habitats Directive and Birds Directive[2] into UK law, enabling the designation of protected sites and species at a European level.

The **Wildlife and Countryside Act 1981** (as amended) forms the key piece of UK legislation relating to the protection of habitats and species. The **Countryside and Rights of Way Act 2000** provides additional support to the 1981 Act, for example, increasing the protection of certain reptile species. Specific protection for badger is provided by the **Protection of Badger Act 1992**. The **Wild Mammals (Protection) Act 1996** sets out the welfare framework with respect to wild mammals prohibiting a range of activities which may cause unnecessary suffering.

The Government has a duty to ensure that parties take reasonable practicable steps to further the conservation of habitats and species of Principal Importance for Conservation in England listed under Section 41 of the **Natural Environment and Rural Communities Bill 2006**[3]. In addition, the 2006 Act places a Biodiversity Duty on public authorities who 'must, in exercising [their] functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity' (Section 40 (1)). Criteria for selection of priority habitats and species include, for example, international threat (such that species may be protected in their strong holds) and marked national decline.

The **National Planning Policy Framework 2021**[4] states that the planning system should minimise impacts on biodiversity, providing net gains in biodiversity, wherever possible. Section 15 states that when determining planning applications, local planning authorities should apply the following principles:

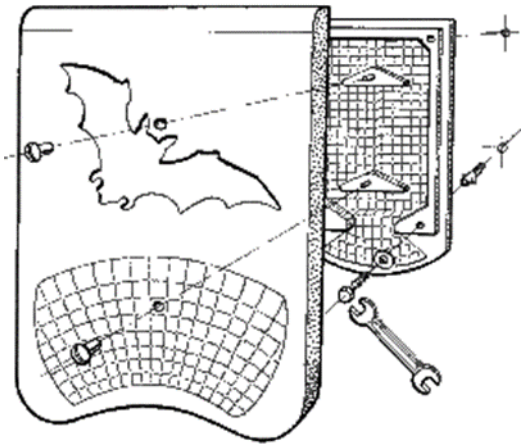
a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[5] and a suitable compensation strategy exists; and
d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

[2]Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, respectively.
[3]**The NERC Act** refers to "*species of principle importance for the conservation of biodiversity*", which translates to BAP habitats and species occurring in England.
[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf
[5] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

e) impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
f) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[6] and a suitable compensation strategy exists; and
g) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

[6] For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills) where the public benefit would clearly outweigh the loss or deterioration of habitat.

Appendix 2: Ecological Enhancements

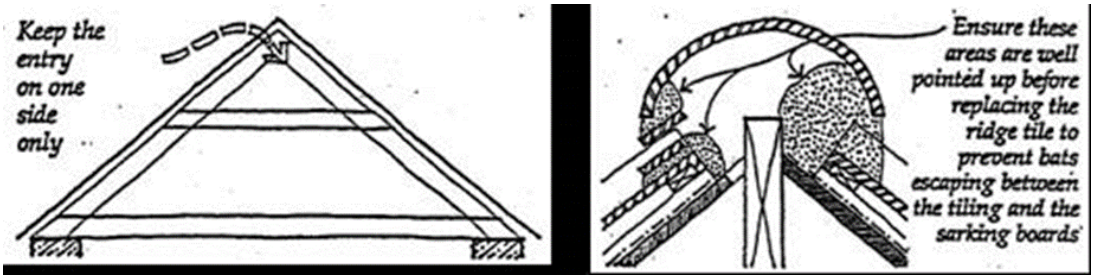
BAT ROOSTING FEATURES	
Schwegler 1FF bat box	
	
Schwegler 1WQ Summer and Winter bat box	
	

Habibat 001 bat box – integral bat box, fitted into wall





Diagrammatic view of ridge tile and cross section through ridge tile showing access point (taken from Scottish Natural Heritage 1996). Bitumastic lining must be used near/on the ridge beam to ensure bats only have contact with this type of membrane to avoid any possible entanglement with a breathable membrane.



BIRD BOXES

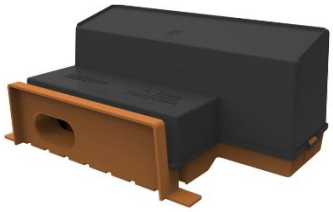
Two designs of swift boxes





Swift brick

Swallow cup





House martin terrace box



Planting for Wildlife

Many wildlife species benefit greatly from considerate planting choices that still meet our practical and aesthetic needs. Plants and trees provide food for wildlife as well as places to nest and rest. Vegetation providing a variety of these functions creates an environment more beneficial for wildlife.

Non native species

Native species provide the best habitat for UK wildlife but there are also many non-native species, which are single flowering and/or provide fruits/nuts/seeds that can be used as food sources for insects, birds and small mammals. When using these non-native species in planting schemes, care should be taken to avoid invasive species such as Cotoneaster and Rhododendron. This is especially important when sites are adjacent to open countryside particularly nature reserves.


Butterfly bush

Uses of Wildlife Planting

Wildlife value can be easily incorporated into visually pleasing and useful green areas and amenity spaces, such as borders, grass verges and tree screens.

Attractive Borders: Well selected decorative borders can be valuable for many insects and birds. Native plants can be mixed with single flowering ornamental species to add aesthetic interest and increase the flowering period of a planting scheme.

Shrubs and hedges: Native spiky species like blackthorn and hawthorn are effective barriers when used in hedges. They also provide an attractive feature at all times of year especially when in blossom and fruit. Bushy areas of foliage provide useful nesting and feeding areas for birds and small mammals, as well as foraging/commuting corridors for bats.

Grasses mixes and verges: Leaving uncut areas of suitable grasses provides great wildlife value and is economical to manage. Diverse grassy areas and verges also create an attractive human environment with different flowers and colours. There are a range of native grass and flower mixes for various soil types available on the market.


Wild flower grass mix

Selecting Suitable Species

There are wildlife friendly species suitable for all situations, from fields, verges, shady corners or small gardens. Listed below are native wildlife friendly plant species organised by type and suitability for different locations.

Large Trees

Ash *Fraxinus excelsior*
Beech *Fagus sylvatica*
English Elm *Ulmus procera*
Oak *Quercus robur* or *Q. petraea*
Small-leaved lime *Tilia cordata*
White willow *Salix alba*
Wild cherry *Prunus avium*


White willow

Medium/small trees

Alder *Alnus glutinosa*
Aspen *Populus tremula*
Crab apple *Malus sylvestris*
Field maple *Acer campestre*
Holly *Ilex aquifolium*
Rowan *Sorbus aucuparia*
Silver birch *Betula pendula*
Yew *Taxus baccata*


Tussocky grassland

Native shrubs

Blackthorn *Prunus spinosa*
Dogwood *Cornus sanguinea*
Elder *Sambucus nigra*
Guelder rose *Viburnum opulus*
Hawthorn *Crataegus monogyna*
Hazel *Corylus avellana*


Blackthorn

Plants for shady areas

Archangel *Lamiastrum galeobdolon*
Betony *Stachys officinalis*
Bluebell *Hyacinthoides non-scriptus*
Bugle *Ajuga reptans*
Foxglove *Digitalis purpurea*
Ground ivy *Glechoma hederacea*
Lily of the valley *Convallaria majalis*
Lords-and ladies/cuckoopint *Arum maculatum*
Nettle-leaved bellflower *Campanula trachelium*
Primrose *Primula vulgaris*
Sweet violet *Viola odorata*
Wild daffodil *Narcissus pseudonarcissus*

Plants for marshy areas & pond edges

Bugle *Ajuga reptans*
Hemp agrimony *Eupatorium cannabinum*
Marsh marigold *Caltha palustris*
Marsh woundwort *Stachys palustris*
Meadowsweet *Filipendula ulmaria*
Purple loosestrife *Lythrum salicaria*
Ragged robin *Lychnis flos-cuculi*
Water avens *Geum rivale*
Water forget-me-not *Myosotis scorpoides*
Water mint *Mentha aquatica*
Water violet *Hottonia palustris*
Yellow flag *Iris pseudacorus*

Beneficial cultivated plants
(generally non-natives)

Grecian windflower *Anemone blanda*
Angelica *Angelica archangelica*
Aubretia *Aubretia deltoidea*
California poppy *Eschscholtzia californica*
Candytuft *Iberis sempervirens*
Christmas rose *Helleborus niger*
Cosmos *Cosmos bipinnatus*
Evening primrose *Oenothera biennis*
Fleabane *Erigeron spp.*
Forget-me-not *Myosotis spp.*
French marigold *Tagetes patula*
Globe thistle *Echinops ritro*
Grape hyacinth *Muscari botryodes*
Hollyhock *Althaea rosea*
Honesty *Lunaria rediviva*
Ice plant *Sedum spectabile*
Lenten rose *Helleborus orientalis*
Tree mallow *Lavatera spp.*
Michaelmas daisy *Aster nova-belgii*
Mint *Mentha x rotundifolia*
Perennial cornflower *Centaurea montana*
Perennial sunflower *Helianthus decapetalus*
Phlox *Phlox paniculata*
Poached-egg plant *Limnanthes douglasii*
Red valerian *Centranthus ruber*
Snapdragon *Antirrhinum majus*
Spring crocus *Crocus chrysanthus* and hybrids
Sweet alyssum *Lobularia maritima*
Sweet bergamot *Monarda didyma*
Sweet William *Dianthus barbatus*
Tobacco plant *Nicotiana affinis*
Wallflower *Cheiranthus cheiri*
Alpine rock-cress *Arabis alpina*
Winter aconite *Eranthis hyemalis*
Yellow alyssum *Alyssum saxatile*

Native wildflowers for borders

Agrimony *Agrimonia eupatoria*
Betony *Stachys officinalis*
Bluebell *Hyacinthoides non-scriptus*
Chicory *Cichorium intybus*
Chives *Allium schoenoprasum*
Common poppy *Papaver rhoeas*
Corncockle *Agrostemma githago*
Cornflower *Centaurea cyanus*
Corn marigold *Chrysanthemum segetum*
Cowslip *Primula veris*
Cuckooflower *Cardamine pratensis*
Dame's-violet *Hesperis matronalis*
Devil's-bit scabious *Succisa pratensis*
Field scabious *Knautia arvensis*
Foxglove *Digitalis purpurea*
Goldenrod *Solidago virgaurea*
Great mullein *Verbascum thapsus*
Greater knapweed *Centaurea scabiosa*
Harebell *Campanula rotundifolia*
Herb-robert *Geranium robertianum*
Lady's bedstraw *Galium verum*
Marjoram *Origanum vulgare*
Meadow cranesbill *Geranium pratense*
Common mallow *Malva sylvestris*
Oxeye daisy *Leucanthemum vulgare*
Primrose *Primula vulgaris*
Red campion *Silene dioica*
Snowdrop *Galanthus nivalis*
Spiked speedwell *Veronica spicata*
Tansy *Tanacetum vulgare*
Teasel *Dipsacus fullonum*
Toadflax *Linaria vulgaris*
White campion *Silene alba*
Wild thyme *Thymus drucei*
Yellow loosestrife *Lysimachia vulgaris*


Marjoram


Cornflower


Perennial sunflower

Appendix 3: Ecological Experience

Michelle Newman: Senior Ecologist, BSc (Hons)

Michelle has worked in ecological consultancy for several years and has also volunteered for a number of nature conservation organisations over the years. She is experienced in undertaking Phase 1 habitat surveys and protected species surveys including those for bats, birds, otters, water voles, badgers, great crested newts and reptiles (including adder handling experience). She has also undertaken a variety of invertebrate surveys, specialising in bumble bee surveys. She holds a CSCS card and has worked as an Ecological Clerk of Works (ECoW) on a wide variety of sites. Michelle has prepared Preliminary Ecological Appraisals, Landscape and Ecological Mitigation Plans, Construction and Environmental Management Plans and Habitat Enhancement Schemes for a range of projects. In addition to project delivery, she is also involved with the management of Wild Service projects and advises clients on the ecological aspects of the planning process. She is experienced in analysing bat call data using a variety of software packages. Michelle holds a Natural England great crested newt licence. She is currently working towards her Natural England bat and white-clawed crayfish licences.

Benjamin Goodger: Associate Ecologist, MA (Oxon) MSc CEnv MCIEEM

Ben has over 20 years' experience as a professional ecologist, five in nature conservation and the rest in consultancy. As a consultant he has worked on a wide range of development projects at sites across the UK. These have ranged from housing and employment developments, land reclamation projects, road schemes and major infrastructure projects. He has undertaken numerous site assessments, using information obtained from habitat and protected species surveys and desk-based studies. He is particularly skilled in Ecological Impact Assessments and the design of mitigation solutions, and has written ecology chapters for a number of Environmental Statements. He has also undertaken several Habitat Regulations Assessments. Ben is a skilled botanist and has undertaken many plant and habitat surveys in his career, including Phase 1 habitat surveys, National Vegetation Classification surveys and targeted plant surveys. Ben holds a Natural England GCN and dormouse licence.

Wild Service

Wildlife Trust Consultancies

ECOLOGICAL SERVICES

MITIGATION

CONSERVATION

- We provide ecological surveys and assessments, mitigation, advice and guidance regarding wildlife, plants and habitats for both development and conservation projects throughout the UK.
- Wild Service is the Ecological Consultancy for Gloucestershire Wildlife Trust. As such, the company reinvests its profits into local conservation work.
- We are also part of a wider network of Wildlife Trust Consultancies enabling us to offer national delivery with local expertise.
- We offer the following types of service to clients:

Ecological Surveys
Protected Species Licences
Ecological Management Plans
Biodiversity Net Gain
Ecological Impact Assessments (EcIA)
BREEAM Assessments
Mitigation, Enhancement & Rewilding
Green Infrastructure Planning (Building with Nature)
Arboricultural Surveys
Landscape Consultancy Services

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