BETTS ECOLOGY and ESTATES

PRELIMINARY ECOLOGICAL APPRAISAL/PEA, WITH NEWT HABITAT SUITABILITY INDEX AND PUBLIC RECORDS SEARCH

LAND OFF BRAMPTON ROAD, LITTLE BRAMPTON, MADLEY HR2 9PA

for

ALLENSMORE NURSERIES

RESULT INDICATOR OF THIS SURVEY

- **RED.** Do not proceed. Without major modification this project will have significant adverse ecological & biodiversity impacts. It will not be sustainable or compliant with current legislation and approved planning policy. Discussion is required with the Planning Authority.
- **AMBER.** Caution. The proposals as conceived could have substantial negative impacts and cannot achieve a "No Net Loss to Biodiversity" outcome unless changes are made to avoid, mitigate/restore or, as a last resort, compensate for the ecological impacts. With such changes and subject to pre-application agreement with the Planning Authority, the project is considered likely to be feasible, however.
- **GREEN.** On present information, the proposals are expected to have no or only minor adverse impacts on ecology & biodiversity, and some gains. In terms of ecology, the project can proceed providing all the recommendations are met, enforced and monitored.

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N.B. Information on legally protected, rare or vulnerable species may appear in ecological reports. In such cases it is recommended that appropriate caution be used when circulating copies.

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REPORT TITLES — AN EXPLANATORY NOTE.

PEA of a site is exactly that: an examination of a defined area that includes a walk-over to provide a reliable basic reference for clients. The terminology for reports varies between practitioners. Please note that the old Phase 1 habitat codes are replaced by the newer UK Habitat Classification (UKHab) and "Phase 1" is being phased out as a report title.

For more extensive or ecologically complex sites, please be aware that an EcIA - Ecological Impact Assessment and/or other more detailed examinations may be required, and please remember that, in any case, all basic surveys may identify matters that require more thorough investigation. PEAs may not be sufficient for a formal Planning Application.

PROJECT DATA – PRELIMINARY ECOLOGICAL APPRAISAL	
Surveyor	Nicholas Valori
Date of site risk assessment	11 July 2022
Site address	Land off Brampton Road, Little Brampton, Madley HR2 9PA
Project proposed	Installation of flower beds across four arable fields and construction of an associated water reservoir.
Boundary as specified by client	YES
Site area (ha) & central OS Grid Ref.	The site surveyed is approximately 27.9 hectares in all and is located at OS Grid Reference **SO401373** (approx. centre of update area coverage).
Survey date	11 July 2022

REPORT CONTROL General Report Information	
Ecologists	Nicholas Valori
Date report issued	9 August 2022
Contract manager	Natalie Loben

Report Version Control

Version	Date	Author	Description
1.0	1 August 2022	Nicholas Valori	Document created
1.1	8 August 2022	Nicholas Valori	Document completed

INTRODUCTION

As almost all baseline ecological surveys relate to a planning application, it is useful to consider our work in this context. British Standard 42020: 2013 *Biodiversity. Code of practice for planning and development* is helpful in this respect (www.bsigroup.com) as it makes recommendations in the five typical stages of a planning application:

- Stage 1 (pre-application) – biodiversity in project design, the mitigation hierarchy (avoidance, adequate mitigation, or as last resort compensation), the impacts with constraints and opportunities, proportionality, surveys and reports;
- Stage 2 (validation, registration) – ensuring submitted information is sufficient;
- Stage 3 (decision making) – consultation, further information if needed, resolving issues;
- Stage 4 (determination) – setting deliverable Conditions, obligations if not covered by Conditions, additional consents that may be needed;
- Stage 5 (implementation) – protecting wildlife/biodiversity during construction, long term management and monitoring.

We are often only contacted after a project has been designed, which can be costly and problematic if biodiversity has not been sufficiently considered. We always ask clients to contact us at the very earliest stage of a project, preferably when options for alternative sites are available. This can save significant costs and delays. We can and do assist with all five stages. Although the PEA is primarily confined to Stages 1 and 2, we include text suitable for incorporation as Conditions where relevant and we can offer assistance in negotiating, writing and discharging them. When appropriate, as is commonly the case to ensure the overarching aim of No Net Loss but rather Net Gains to Biodiversity, we can take full responsibility for all long term ecological management and monitoring as an exclusive service through our Estates division.

WORK NEEDED FOR COMPLIANCE AS REVEALED BY THE SURVEY

RESULT INDICATOR OF THIS SURVEY

- **RED.** Do not proceed. Without major modification this project will have significant adverse ecological & biodiversity impacts. It will not be sustainable or compliant with current legislation and approved planning policy. Discussion is required with the Planning Authority.
- **AMBER.** Caution. The proposals as conceived could have substantial negative impacts and cannot achieve a "No Net Loss to Biodiversity" outcome unless changes are made to avoid, mitigate/restore or, as a last resort, compensate for the ecological impacts. With such changes and subject to pre-application agreement with the Planning Authority, the project is considered likely to be feasible, however.
- **GREEN.** On present information, the proposals are expected to have no or only minor adverse impacts on ecology & biodiversity, and some gains. In terms of ecology, the project can proceed providing all the recommendations are met, enforced and monitored.

Please note that, in determining the requirements listed below, Betts adopt an objective and independent view, taking account of current legislation and the official guidance published by, or used by, Local Planning Authorities and the Statutory Agencies whom they consult[1]. The aim is always to inform the project's proponents within a framework of the published policies of international, national and local governments on ecology and biodiversity, as may be relevant to the circumstances of the case, but always proportionately and based in science.

IMPORTANT

In the two Tables below, ecological requirements listed should be contained as formal Conditions within any permission the Planning Authority may be minded to issue. It is essential to include a suitable mechanism for verification, monitoring and enforcement. We will be pleased to assist with suggested wording if needed.

[1] The regulatory context includes the Wildlife & Countryside Act, Berne Convention, Bonn Convention, Countryside & Rights of Way Act, Natural Environment and Rural Communities Act, Convention on Biological Diversity (Rio de Janeiro, Nagoya/Aichi/Paris, Kunming, *etc.* – UK Post-2010 Biodiversity Framework), British Standards 42020: 2013, 8583: 2015 and 8683: 2021, Chartered Institute of Ecology & Environmental Management ecological impact assessment guidance, *etc.*

REQUIRED FURTHER WORK (PROTECTED SPECIES & HABITATS)	
From observations of this walk-over examination, is further work likely to be needed regarding notable/protected species, habitats, planning policy, biodiversity duty or related regulatory compliance?	Yes

Work required if "yes":	Reason
To avoid the risk of infringement of regulations, conduct a pre-clearance search of all areas of the site using suitably qualified ecological scientists under a Betts Method Statement or one formally pre-agreed by us immediately prior to site stripping to move any vulnerable taxa to safety or allow other necessary precautions to be taken prior to the commencement of development activity.	Legal compliance, especially laws protecting mammals, birds and herpetofauna.
Undertake site clearance outside the bird nesting season (usually taken as March to mid-August inclusive in this part of Britain). If this is unavoidable, pre-clearance inspection by a suitably experienced ornithologist will be required to identify whether any nests are present, and ensure appropriate action is taken.	Compliance with law protecting active birds' nests.
If there are any steep-sided excavations created during construction, please ensure they are covered overnight or provided with ramps to prevent any vulnerable animals becoming trapped. Re-fill such excavations as soon as feasible. Also, take care to seal/cover over open pipes, tanks, materials/rubble piles, bonfire stacks or other features that may be a danger to wildlife taking shelter/hibernating/*etc*.	Prevention of cruelty, maintaining best practice.
Avoid unnecessary negative impacts of new lighting at night, *e.g.* on bats, invertebrates, plants, night sky. Minimise the hours when lighting is used, avoid "spillage" by using directional down-lighting, reduce brightness of necessary illumination and keep light from shining on bat roost entries, mammal holes, *etc*.	Reducing ecological impact and compliance with National Planning Policy Framework.
Generally, retain habitats and features of manifest ecological interest and wildlife value such as the species-rich hedgerows and trees forming the site boundaries (seeking further advice from us if uncertain) within the development proposals. Create new wildlife habitats appropriate to the site's context, *e.g.* through the use of log piles, "wild" corners and native planting; install six bird, eight bat and six invertebrate boxes of mixed designs, and incorporate these into the project's landscape/building design scheme. (We can provide specific recommendations for models and siting on request, but they must be of good quality and durable.) Bat and bird boxes must be inspected annually and replaced when needed (usually after ten years). Permeability for hedgehogs commuting through the landscape should be incorporated within the development.	Best practice and compliance with government policy on biodiversity protection and enhancement.

REQUIRED FURTHER WORK FOR GENERAL REGULATORY & GOOD PRACTICE COMPLIANCE	
Is further work recommended to observe ecological best practice and/or planning policy as recognised by the various statutory authorities at local, regional, national, or international levels as may be applicable?	Yes
Work required if "yes":	Reason
Appoint an Ecological Clerk of Works[2] and formally instruct ("toolbox talk") contractors and site personnel on agreed policies, recommendations, and requirements to maintain environmental quality and minimise impacts during construction, generally avoiding unnecessary disturbance and pollution.	Best practice (BS42020, *etc.*)
Establish "green" roofs and walls on all suitable structures that can accommodate them, ensuring appropriate ecological science input to their management and maintenance.	Green Infrastructure and biodiversity enhancement.
Use native planting (preferably of local origin and reflecting local botany) wherever feasible in all landscaping. Where exotic species are planted, always avoid invasive species, and choose those with wildlife value such as for nectar or shelter. (A selection of species is available from us.)	Biodiversity enhancement and helping to assure Biodiversity Net Gain and no net loss.
Embody Green Infrastructure protocols in landscaping and ensure ecological linkage out from and into the site. (Please ask us if you require further details.) Please ensure we are provided with the proposed landscape planting plan to verify compliance with Green Infrastructure, Pollinator Policy and Biodiversity Net Gain. Ensure that permanent monitoring and management of all ecological elements and greenspace of the site is established. This should be confirmed within the planning approval.	Ecological connectivity and future biodiversity protection/ enhancement in accordance with latest guidelines.
Always retain mature trees and established native hedgerows on site and at the periphery by designing around them. Protect trees in line with BS5837 and do not remove ivy, mistletoe, standing dead wood, snags, or rot unless there is a clear and material safety risk or presence of a serious pathogen. (Ask for advice on pathogens from a qualified silvicultural ecologist if in doubt.)	Tree and biodiversity protection; BS5837: 2012 *Trees in relation to design, demolition, and construction.*
Ensure that the "carbon footprint" and measures to combat climate change (see also tree planting above) in all aspects of the project and its future operation are compliant with current best practice. This should include taking appropriate steps to avoid or reduce the use of fossil fuels, minimising ground disturbance to conserve soil biology/ecology, employing scientifically sound carbon offset/CO_2 sequestration and instating renewable energy technologies. Ensure the measures agreed are quantified, independently verified and monitored.	To follow government and international policy on climate change and soils conservation.

[2] This should be a suitably qualified senior person who will keep a daily log and report throughout the construction process.

RESULTS – WHAT WE FOUND

Objectives

To conduct a Preliminary Ecological Appraisal, a newt Habitat Suitability Index (HSI) and a Public Records search

Methods and Limitations

The site was examined using appropriate methods generally following the current guidance from the (Chartered) Institute of Ecology and Environmental Management[3] and the UK Habitat Classification[4], with further reference to British Standards such as 42020[5] and 8683[6] as appropriate or practicable.

It should be noted that, whilst the investigation of the site was appropriately intensive within the intended framework of the commission, and we feel it is unlikely that significant matters have been overlooked, a single visit will inevitably miss species not apparent on the date of survey by reason of seasonality, mobility, habits, or chance. The month of July is within the optimal survey period for many taxa of nature conservation interest in this part of the United Kingdom.

It should always be recalled that wildlife surveys of the kind required for planning and development, or similar project purposes are seldom granted sufficient time or resources to examine non-vascular plants, invertebrates, or fungi in detail, yet these are the fundamental elements of ecosystems that provide the niches and habitats for larger fauna to exploit. In an ideal world, all surveys would include results of full sampling of vascular and non-vascular plants, micro- and macro-invertebrates and mycological status at individual, population, and community levels. As that involves skills, time, and expense well beyond what is available, we ask readers of our general survey reports to understand that we do consider the larger species we record in their wider ecosystem context and take into account the impacts of proposals at an ecosystem level when prescribing avoidance, mitigation, enhancement and/or compensation.

[3] **The Chartered Institute of Ecology and Environmental Management** guidelines which are regularly updated and we use our best endeavours to observe.

[4] **The UK Habitat Classification and User Manual**, see https://ukhab.org/.

[5] **British Standards Institute (2013).** *British Standard 42020: 2013 Biodiversity. Code of practice for planning and development.* British Standards Institute, London, UK.

[6] **British Standards Institute (2021)** *British Standard 8683 Process for designing and implementing Biodiversity Net Gain* British Standards Institute, London, UK.

Habitat Plan

Please note: this plan is intended only to indicate the approximate location of features and should therefore, not be treated as an accurate scale plan.

Results Table

ITEM	OBSERVATIONS
Habitats & Vegetation (*NB.* Please be aware that several designated habitat types and many plants enjoy legal protection in Britain.)	
General description	This survey is in support of a planning application for the installation of new flower beds from a nearby nursery across four adjacent arable fields, covering an area of 27.9ha. Works are to start from the two eastern-most fields, expanding into the western fields as required over time. Fields that are not immediately scheduled to be converted for flower bed installation will continue being managed as arable farmland. An associated, gravity and rainfall-fed water reservoir is to be constructed in the north-east corner of the eastern-most field, at the foot of a slight slope. The site is located off Brampton Road, bordered by large agricultural fields and occasional rural residences. The village of Madley lies 1.7 km north, while the city of Hereford is 10.7km north-east. The surrounding area is largely rural farmland used for intensive arable farming and orchards. The boundaries of each field are marked by hedgerows, with occasional trees planted directly within. All three hedgerows marking the internal boundaries between the fields are scheduled to be retained, with rabbit proof fencing installed on either side. Permeability for small mammals across the landscape will be as such retained through these corridors, while still excluding them from sensitive work areas. Trees and woody shrubs recorded during this survey of the site were: Ash *Fraxinus excelsior*, elm *Ulmus* sp., hazel *Corylus avellana*, field maple *Acer campestre*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, Holly *Ilex aquifolium*, dogwood *Cornus sanguinea*, lime *Tilia* sp, sycamore *Acer pseudoplatanus*, pedunculate oak *Quercus robur* and bramble *Rubus fruticosus* agg. Grasses and forbs recorded were: daisy *Bellis perennis*, mistletoe *Viscum album*, ivy *Hedera helix*, cock's foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius*, red fescue *Festuca rubra s.l.*, perennial rye-grass *Lolium perenne*, Yorkshire-fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, white bryony *Bryonia dioica*, field horsetail *Equisetum arvense*, field forget-me-not *Myosotis arvensis*, scentless mayweed *Tripleurospermum inodorum*, common fumitory *Fumaria officinalis*, field bindweed *Convolvulus arvensis*, nipplewort *Lapsana communis*, long-stalked crane's-bill *Geranium columbinum*, black medick *Medicago lupulina*, scarlet pimpernel *Anagallis arvensis*, upright hedge-parsley *Torilis japonica*, common poppy *Papaver rhoeas*, common mallow *Malva sylvestris*, musk mallow *Malva moschata*, greater plantain *Plantago major*, common nettle *Urtica dioica*, spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex obtusifolius*, cow parsley *Anthriscus sylvestris*, white clover *Trifolium repens*, cleavers *Galium aparine*,

ITEM	OBSERVATIONS
	ragwort *Jacobaea vulgaris*, herb-robert *Geranium robertianum*, lords and ladies *Arum maculatum*, Sixteen Target Notes were identified on site during the survey because of their ecological interest and/or value, and how they may be impacted by the development.
Target Note (TN) 1 (for location of TNs please see plan above)	**Target Note 1.** A species-rich hedgerow, composed mainly of hawthorn, dogwood, blackthorn, coppiced hazel and elder, extends along the eastern portion of the northern boundary, where it meets the eastern boundary hedgerow (**TN3**). These two boundary hedgerows are at their tallest and densest, and thus at their best ecological condition, across these eastern portions of the site's boundary. Boundary hedge composition, height and cover becomes significantly lower and sparser in the western sections of the northern and southern boundaries, with only the western boundary having a dense structure similar to that on the east. Clusters of two to five semi-mature and maturing trees are present intermittently where the internal field boundaries meet the northern hedge, around the access gates. The reservoir and its catchment channel are scheduled to be constructed alongside these hedgerows, with earthworks likely required in close proximity.
Target Note (TN) 2 (for location of TNs please see plan above)	**Target Note 2.** All four fields were bordered to varying extents by strips of arable field margin vegetation, the most extensive of which being along the eastern and western boundaries of the first, eastern-most field. As much of these strips should be retained as possible, particularly that present immediately at the base of the hedge lines, as it provides important sources of habitat and shelter for commuting animals. The planned reservoir is currently scheduled to be located in the corner marked by the Target note. The soil in this particular area is compacted by frequent tractor traffic, and field margin vegetation sparser across the area. The area is the lowest point of a gentle slope across all four fields, and is expected to collect catchment from rainfall without requiring any pumps, to then be used for watering all flower beds on site.
Target Note (TN) 3 (for location of TNs please see plan above)	**Target Note 3.** A species-rich, dense hedgerow marks the south-eastern boundary of the site. A section of the hedge is currently scheduled to be removed for the construction of an access gate on the eastern boundary. As previously outlined, hedge removal should be conducted outside the bird nesting season, or otherwise preceded by a pre-clearance check conducted by a suitably experienced ecologist. Retained sections of hedgerow should similarly be protected by buffer strips throughout the development

ITEM	OBSERVATIONS
Target Note (TN) 4 (for location of TNs please see plan above)	**Target Note 4**. The first arable field, occupied by cereal crops at the time of the survey.
Target Note (TN) 5 (for location of TNs please see plan above)	**Target Note 5**. The first internal boundary hedge is low-growing and with more distinct gaps across it than the northern, southern and eastern hedges. A large strip of spoil heap covers the central portion of the field boundary. The most prominent feature of this area is a mature oak of significant conservation value. Animal boxes were present within its crown, within knots along the trunk likely providing nesting habitat for birds of prey, such as barn owl. The tree is to be retained, with it and all similarly retained sections of hedgerow being protected as in **TNs 1** and **3**.
Target Note (TN) 6 (for location of TNs please see plan above)	**Target Note 6**. The second arable field was being used to grow potatoes at the time of the survey.
Target Note (TN) 7 (for location of TNs please see plan above)	**Target Note 7**. The southern hedgerow extends across the second and third field, dense but with prominent gaps leading into a pear orchard to the south. Trees and large shrubs are planted intermittently along the length of this section.
Target Note (TN) 8 (for location of TNs please see plan above)	**Target Note 8**. The second and third internal hedgerows featured more prominent gaps across their length, with occasional sections of dense, bramble scrub.
Target Note (TN) 9 (for location of TNs please see plan above)	**Target Note 9**. The third arable field was being used to grow maize at the time of the survey. Arable field margins were at their thinnest within this section of the site.
Target Note (TN) 10 (for location of TNs please see plan above)	**Target Note 10**. The fourth and furthest west field was being used to grow maize at the time of the survey. The field is bordered to the east by a large, rural residence.
Target Note (TN) 11 (for location of TNs please see plan above)	**Target Note 11**. The fourth field's external boundaries are marked by a dense and tall hedgerow, with particularly prominent patch of sycamore, hawthorn, elder and hazel in the south-western corner. The boundary hedges are lower along the northern boundary, with woody shrubs becoming interspersed by an increasingly dense strip of bramble and bracken cover. A single mammal track was observed within the hedgerow, in southern portions of the western boundary.
Target Note (TN) 12 (for location of TNs please see plan above)	**Target Note 12**. This section of the northern boundary is occupied almost entirely by dense bracken. Trees and shrubs are present in patches where the internal hedge lines meet the boundary.

ITEM	OBSERVATIONS
Statutory designations (on/near)	A Public Records Search revealed no Statutory Designated Sites to be within a 2km search radius.
Non-statutory designations (on/near)	A Public Records Search revealed six Local Wildlife Sites (LWS) within a 2km search radius: SO33/28 Timberline Wood and adjoining woodland; SO33/31 Brampton Hill Wood; SO43/01 Two Ponds at Castle Farm; SO43/02 Bucknail's Wood; SO43/05 Whitfield; SO43/10 Cage Brook. None of these sites would be impacted by the proposed developed.
Notable hedgerows, woodland or scrub	**See Target Notes 1, 3, 5, 7, 8, 10, 11** and **12**
Ecologically notable trees (*e.g.* veteran, wildlife significant)[7]	The mature oak highlighted in Target Note 5 is of particular ecological value due to its age and features.
Ponds/water courses	Four standing water bodies were present within a 500m radius of the site ponds within 500m with access unrestricted by obstacles including main roads and railways: a shallow, seasonally wet dip at the edge of an adjacent field, 130m west of the site; a pond area within a woodland, 240m north of the fourth field; a pond within an arable field, 300m north of the site's first field; a hollow 260m south-west of the first field. Two dry ditches were also present in the fields adjacent to the north and the west of the site.
Notable vascular plants	None observed on site.
Notable bryophytes/algae	None observed on site.
Notable lichens	None observed on site.
Notable fungi	None observed on site.
Other notable habitats/vegetation	None observed on site.
Features that should be retained	Refer to **Target Notes 1, 2, 3, 5, 7, 8, 9 and 11**. As many trees as possible should be retained throughout the works. All trees and hedgerows to be retained (including their root zones) should be protected by buffer strips during site construction activities, and nowhere within the buffer strips should be used for the storage of machinery or materials, particularly during the earthworks required for developing the planned reservoir. Similarly, as much of the arable field margin grassland should be retained as possible, particularly that present immediately at the

[7] Please note that we do not check TPO status as this is a landscape/amenity planning classification.

ITEM	OBSERVATIONS
	base of hedge rows and in conjunction with retained trees, as it provides important sources of foraging habitat and shelter for both local and commuting animals. Sections of hedge scheduled to be removed should be compensated for by planting and encouraging a species-rich composition of five or more woody species across the western portion of the northern boundary. Site clearance is best undertaken outside the bird nesting season (usually taken as March to mid-August inclusive in this part of Britain). If this is unavoidable, pre-clearance inspection by a suitably experienced ornithologist will be required to identify whether any nests are present, and ensure appropriate action is taken. Given the potential for the spoilage heaps and field edge-boundaries to provide shelter for protected reptile and amphibian species, a pre-clearance check and fingertip search of these features is also recommended prior to the start of works. All field edge vegetation to be cleared should be first strimmed to a height of 0.15m. A pre-clearance check of these ecological features should then be conducted up to two days prior to the commencement of works, with appropriate measures taken should any protected species be found.
Mammals (*NB.* Several species and their habitats have strict protection in British law.)	
Badger *Meles meles*	None observed. [redacted]
Otter *Lutra lutra*	N/A. No suitable habitat.
Other mustelids	No obvious signs noted but it is possible that the site is utilised by other mustelid species (*e.g.* stoat). A Public Records Search revealed two records of polecats within the 2km search radius. The most recent record is from 2016.
Bats	Bats are very likely to forage across the fields, using the hedgerow lines to commute across the landscape. A Public Records Search revealed forty-two records involving five species of bat within a 2km search radius. Install eight tree-mounted bat boxes on a south-easterly facing aspect across the field boundaries.
Deer **Cervidae**	None observed, but likely to use the site at any time.

ITEM	OBSERVATIONS
Hedgehog *Erinaceus europaeus*	None observed, and no field signs found but could possibly use the site. A Public Records Search revealed two records of hedgehog within the 2km search radius. The most recent record is from 2012.
Shrews **Soricidae**	No signs of shrew were noted although it is highly likely that they are present within parts of the site.
Others	A Public Records Search revealed one record of water vole *Arvicola amphibius* within the 2km search radius. The record is from 2019. None observed, and no suitable habitat present. A Public Records Search revealed three records of brown hare *Lepus europaeus* within the 2km search radius. The most recent record is from 2017. An old hare carcass was found at the edge of the fourth, western-most field. A Public Records Search revealed one record of harvest mouse *Micromys minutus* within the 2km search radius. None observed and no signs of activity were found, but may possibly use the site. It is likely that other common mammals (*e.g.* fox, grey squirrel, rabbit, rats, mice, mole, and voles) utilise the site.
Birds (*NB.* With the exception of eleven derogated pest or very common species, the Wildlife and Countryside Act (1981 and amendments) gives protection to all wild birds in Britain from killing, injuring or taking as well as taking, damaging or destroying nests in use or being built, and taking or destroying eggs. Many species are also protected by international statutes to which Britain is a signatory. [8])	
Red list	The following, amber-listed avian species were seen and/or heard on/flying over the site: house martin
Amber list	The following, amber-listed avian species were seen and/or heard on/flying over the site: kestrel, woodpigeon,
Active nests	No nests were observed.
Other	The following, green-listed avian species were seen and/or heard on/flying over the site:, robin, blackbird, pheasant, crow, buzzard.
Comments on ornithology	Owl pellets were observed at the edge of the first field. Install six bird boxes on a south-easterly facing aspect across the retained trees and any temporary buildings.

[8] Please also see www.rspb.org.uk/wildlife/birdguide/status_explained.aspx and www.bto.org/sites/default/files/u38/downloads/home-news/2011-11/SUKB%202011%20final.pdf for red and amber lists *etc.*, and explanations.

ITEM	OBSERVATIONS
Herpetofauna (*NB.* The grass snake, slow-worm, viviparous (common) lizard and adder (viper) are all protected from intentional killing and injury under Schedule 5, Section 9(1), of the Wildlife and Countryside Act as amended/reinforced by the CROW Act 2000. They are also protected under Schedule 5, Section 9(5) which prohibits selling, offering for sale, possessing or transporting for the purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from the species. Other rarer species and their habitats have stricter protection.)	
Adder *Vipera berus*	None observed.
Barred grass snake *Natrix helvetica*	None observed, and no field signs observed but could possibly use the site. A Public Records Search revealed one record of grass within the 2km search radius. The record is from 2005.
Slow-worm *Anguis fragilis*	As above. A Public Records Search revealed no records of slow worm within the 2km search radius.
Common lizard *Zootoca vivipara*	As above. A Public Records Search revealed no records of common lizard within the 2km search radius.
Rarer reptiles	No suitable habitat. Not found in this area.
Great crested newt *Triturus cristatus*	Four ponds were observed within a 500m radius, largely as features maintained at the edge of or within nearby agricultural fields. Refer to the section below for Habitat Suitability Index (HSI) results. The development is not expected to cause a significant loss of suitable habitat for great crested newts, with scheduled works affecting primarily the central, arable crop portions of the site of little value to great crested newts. All hedgerows are currently scheduled to be retained. Adjacent portions of tall-growing field margin vegetation should be similarly retained along the boundaries to further enhance their effectiveness as biodiverse green corridors. A Public Records Search revealed eleven records of great crested newt within the 2km search radius. The most recent record is from 2013.
Natterjack toad *Epidalea calamita*	N/A. No suitable habitat.
Other amphibia	Suitable refugia were overturned in a general search for reptiles and amphibians, but none were found. As addressed above, a pre-clearance check of both the spoil heaps and tall field-edge vegetation to be cleared is recommended prior to the commencement of works to confirm the absence of any reptiles or amphibians.

ITEM	OBSERVATIONS
	A Public Records Search revealed eleven records of common frog, seven of common toad, two of palmate newt and twenty-nine of smooth newt within the 2km search radius. The most recent records are from 2010, 2008, 2004 and twenty-nine respectively.
Fish (*NB.* Various levels of legal protection.)	
Significant fishery	No suitable habitat.
Bullhead *Cottus gobio*	As above.
Shads *Alosa alosa, A. fallax*	As above.
Lampreys **Petromyzontidae**	As above.
Salmonids **Salmonidae**	As above.
Other notable fish	As above.

Macro-invertebrates

Historically, macro-invertebrates have received relatively sparse attention in habitat surveys. Recent alarming declines in insect and other invertebrate populations coupled with the realisation of the great ecological importance of these taxa mean more detailed appraisal is required[9]. Several species enjoy legal protection.

Ref.	Habitat	Designations A-E (list all) if habitat present on site*
1	Decaying wood (all types, standing and lying, snags, sap runs, brash, debris, *etc.*)	D (Minor value)
2	Rotational management (may be planned or incidental; for nature conservation or other reasons)	C (Moderate)
3	Nectar/pollen resources (estimate from site's botany)	C (Moderate)
4	Wet & mesic substrata (riparian, marsh, fen, bog, mud, flushes, springs, seasonally inundated, *etc.*)	C (Moderate)
5	Open water (rivers, lakes, streams, ponds, ditches, *etc.*)	E (Absent)
6	Habitat mosaics and patchworks (include those on brownfield/formerly developed sites)	D (Minor value)
7	Still air with insolation (suntraps and still-air microclimates in open situations)	C (Moderate)
8	Still humid air (humid still-air microclimates in sheltered and shaded situations)	C (Moderate)
9	Connectivity/corridors (ecological connectivity between the site and external habitats - see also note below about adjacent habitats)	D (Minor value)
10	Ecoclines (graded transition between two or more broad habitats)	E (Absent)
11	Bare Earth (unshaded bare/sparsely vegetated well-drained substratum, irrespective of soil type	C (Moderate)
	Are there any examples of A, B or C adjacent to the survey site or near enough that they will require protection during and after development?	No

[9] Adapted from **Dobson, J. & Fairclough, J. (2021).** Rapid Assessments of the Potential Value of Invertebrate Habitats. *In Practice*, **112**, pp 44-48.

	The site has limited value for macro-invertebrates other than common and widespread 'generalist' species able to adapt to a wide variety of conditions and crop field specialists. There are no nearby sites requiring special protection during or after development.	

Macro-invertebrate Species	
White-clawed crayfish *Austropotamobius pallipes*	N/A. No suitable habitat.
Roman snail *Helix pomatia*	None observed on site.
Other molluscs	None observed on site.
Lesser silver water-beetle *Hydrochara caraboides*	No suitable habitat, out of area.
Stag beetle *Lucanus cervus*	None observed on site.
Other notable beetles	None observed on site.
Butterflies/moths	
Bees, wasps, flies, *etc.*	A range of common species of solitary bees, common wasps and honeybees were observed.
Dragonflies/damselflies	None observed on site
Other notable entomological spp or groups	None observed on site.
Notable invertebrate habitat	The arable field margins and species-rich hedgerows provide a range of important habitats and sources of nectar for a range of common invertebrates.
Overall assessment for macro-invertebrates	The site has limited value for macro-invertebrates other than common and widespread 'generalist' species able to adapt to a wide variety of conditions. Install six invertebrate boxes on a south facing aspect in conjunction with species-rich grassland areas and hedgerows.
Invasive Alien Species (IAS)[10] and pathogens (There are an increasing number of these being listed by authorities. More and more are becoming subject to regulatory control within criminal law that carries significant sanctions.)	

[10] Sometimes referred to as "non-native species".

IAS (plants) (Wildlife & Countryside Act Article14, Schedule 9.)	None observed on site.
Weeds Act natives (common ragwort *Jacobaea vulgaris*, creeping and spear thistles *Cirsium arvense*, *C. vulgare*, curled and broad-leaved docks *Rumex crispus, R. obtusifolius*)	Spear and creeping thistle, broad-leaved dock and common ragwort were observed on site.
Other exotic plants that may cause problems.	None observed on site.
Invasive animals (signal crayfish *Pacifastacus leniusculus* and other invasive spp, killer shrimp *Dikerogammarus villosus*, oak processionary moth *Thaumetopoea processionea*, harlequin ladybird *Harmonia axyridis*, zebra mussel *Dreissena polymorpha*, grey squirrel *Sciurus carolinensis, etc.*)	Harlequin ladybirds and grey squirrels are highly likely to use the site at times.
Sudden oak death *Phytophthora ramorum* and other serious plant diseases/pathogens (ash dieback *Hymenoscyphus fraxineus, etc.*)	None observed on site.
Policy[11]	
Are there any known conflicts with local planning biodiversity policy (if so, please describe)?	No known conflicts.

[11] It is important that projects incorporate relevant elements of Green Infrastructure Planning (please see www.naturalengland.org.uk/ourwork/planningdevelopment/greeninfrastructure/default.aspx)
"Green Infrastructure (GI) is a strategically planned and delivered network of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering a wide range of environmental and quality of life benefits for local communities. Green Infrastructure includes parks, open spaces, playing fields, woodlands, allotments and private gardens."

Are there any known conflicts with national planning biodiversity policy (if so, please describe)?	No known conflicts.
Are there any known conflicts with international biodiversity policy (if so, please describe)?	No known conflicts.

Ecosystem Services

ECOSYSTEM SERVICES		
Has the survey revealed, in the context of the proposed project, any significant adverse impacts on the following Ecosystem Services?	**NO**	**COMMENT/ACTION REQUIRED IF "YES"**
Provisioning		There will be a minor impact on nutrient recycling and soil formation due to loss of vegetation.
Regulating		There will be a minor impact on the sequestration of CO_2 due to limited clearing of existing vegetation.
Cultural		There will be a minor impact to cultural services due to the changes to familiar environments and scenery. Visual impact will be lessened by the planting and enhancement of existing hedgerows for an overall taller and denser cover.
Supporting		Supporting services will not be affected.

Geological Conservation

GEOLOGICAL CONSERVATION (Geodiversity is a material planning consideration)	**YES/NO**	**ACTION REQUIRED IF "YES"**
Are there any features of geological importance on the development site?	NO	N/A
Are there any features of geological importance adjacent to the development site or that might be affected by the development (during or post construction)?	NO	N/A

PUBLIC RECORDS SEARCH RESULTS

PUBLIC RECORDS SEARCH (SUMMARY)		
Source	**Data/Response**	***Betts* comment**
Herefordshire Biological Records Centre (HBRC).	Amphibians	The search revealed eleven records of common frog within the 2km search radius. The most recent is from 2010. The search revealed seven records of common toad within the 2km search radius. The most recent is from 2008. The search revealed eleven records of great crested newt within the 2km search radius. The most recent is from 2013. The search revealed twenty-nine records of smooth newt within the 2km search radius. The most recent is from 2008. The search revealed two records of palmate newt within the 2km search radius. The most recent is from 2004. The common frog and common toad have protective status under the Wildlife & Countryside Act (WACA). The great crested newt has protective status under the following legislation and agreements; Priority species-2007, Bern A2, England Natural Environment & Rural Communities (NERC) Act S.41, HabDir-A2, HabDir-A4, Habitat Regulations (HabReg) Act-Sch2, Wildlife & Countryside Act (WACA)-Sch5-sect9. 4b, WACA-

PUBLIC RECORDS SEARCH (SUMMARY)		
Source	**Data/Response**	***Betts* comment**
		Sch5-sect9. 5a, WACA-Sch5-sect9. 5b. Both the smooth, palmate and great crested newt are BAP species in Herefordshire.
	Bats	The search revealed five records of unspecified bat species within the 2km search radius. The record is from 2014. The search revealed thirteen records of common pipistrelle bats within the 2km search radius. The most recent is from 2017. The search revealed nine records of soprano pipistrelle bats within the 2km search radius. The most recent is from 2017. The search revealed eight records of unspecified pipistrelle species within the 2km search radius. The most recent is from 2014. The search revealed four records of noctule bat within the 2km search radius. The most recent is from 2014. The search revealed two records of unspecified Myotis within the 2km search radius. The most recent record is from 2014. The search revealed one record of lesser horseshoe bat within the 2km search radius. The record is from 2014. All bats have protective status under the following legislation and agreements; Cons Regs 2010 Sch2, HabDir-A4, HabReg-Sch2, WACA-Sch5-sect9. 4b, WACA-

PUBLIC RECORDS SEARCH (SUMMARY)		
Source	**Data/Response**	***Betts* comment**
		Sch5-sect9. 5a, WACA-Sch5-sect9. 5b, WACA-Sch5-sect9. 4c. All bat species are listed as BAP Priority in Herefordshire.
	[redacted]	[redacted]
	Harvest mouse	The search revealed one record of harvest mouse within the 2km search radius. The record is from 2017. Harvest mice are listed as BAP Priority in Herefordshire.
	Water vole	The search revealed one record of a water vole within the 2km search radius. The record is from 2004. Water voles have protective status under the following legislation and agreements; WACA-Sch5 sect9.4b, WACA-Sch5 sect 9.5a, WACA-Sch5Sect9.4c, Priority species-2007 and UK BAP.
	Hedgehog	The search revealed two records of hedgehog within the 2km search radius. The most recent record is from 2012. Hedgehogs have protective status under the following legislation and agreements; Priority species-2007, Bern A2, England NERC S.41.
	Brown hare	The search revealed three records of brown hare within the

PUBLIC RECORDS SEARCH (SUMMARY)		
Source	**Data/Response**	***Betts* comment**
		2km search radius. The most recent record is from 2017. Brown hares have protective status under the following legislation and agreements; England NERC S.41, UKBAP
	Polecat	The search revealed two records of a polecat within the 2km search radius. The most recent record is from 2016. Polecats have protective status under the following legislation and agreements; England NERC S.41, UKBAP
	Reptiles	The search revealed one record of barred grass snake within the 2km search radius. The record is from 2005. Barred grass snakes have protective status under the following legislation and agreements; England NERC S.41, UKBAP Barred grass snakes are listed as BAP Priority in Herefordshire.

A public records search revealed no Statutory Designated Site within a 2km search area.
A public records search revealed six Non-Statutory Designated Sites within a 2km search area.
A search using www.bto.org revealed the latest information regarding birds of conservation concern.

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX RESULTS

There are four ponds present within 500 metres of the development site. Of these, only the small, seasonally wet dip was physically accessible at the time of the survey for assessing its suitability to support great crested newts according to the Habitat

Suitability Index (*sensu* Oldham *et alii* 2000). The Habitat Suitability Index (HSI) incorporates ten suitability indices (SIs), all of which are factors believed to affect this species. It is a numerical score where 0 indicates unsuitable habitat and 1 represents optimal habitat.

Categorisation of HSI Scores[12]:

HSI		Pond Suitability
<0.5	=	poor
0.5 - 0.59	=	below average
0.6 - 0.69	=	average
0.7 - 0.79	=	good
>0.8	=	excellent

NOTE: HSI = $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$

Great Crested Newt Habitat Suitability Index

The Habitat Suitability Index (*sensu* Oldham *et al.* 2000) for great crested newts was calculated for the single accessible water body within 500m and is given below. The water body is a shallow dip at the bottom an arable field's slope, in an area used for storing manure. The calculation of the water body resulted in a HSI for great crested newts of 0.31 (see Table 1). A score below 0.5 is classified as a **'poor'** index score.

[12] Taken from: *Habitat Suitability Index - guidance note* - produced by National Amphibian and Reptile Recording Scheme (NARRS).

Table 1: Habitat Suitability Index for a pond at the centre of the site.

HSI Factor	Pond	Notes
SI 1 - Location	1	The geographic location is optimal.
SI 2 - Pond area	0.1	152m^2.
SI 3 - Pond drying	0.1	Dries annually.
SI 4 - Water quality	0.01	Heavily polluted, with only pollution-tolerant invertebrates and larvae present.
SI 5 - Shade (to 1m from edge)	1	30% shade cover from overhanging tree cover
SI 6 - Fowl	1	No significant waterfowl impact observed, unlikely to use the area to any significant extent.
SI 7 - Fish	1	None observed.
SI 8 - Ponds	0.82	Six suitable ponds within 1 km of the surveyed pond.
SI 9 - Terrestrial habitat	0.33	The pond is surrounded by manure heaps and arable grassland, but is otherwise close to a network of interconnected hedgerows.
SI 10 - Macrophytes	0.3	0% macrophyte cover.
HSI Score	**0.31**	
Pond Suitability	**Poor**	

CONCLUSION

The overall impact of the proposed development would be minor, with most of the works taking place on arable crop land of little ecological value. The largest ecologically significant features, the hedgerows, are scheduled to be retained, extended and enhanced across the entire site, without compromising their function as green corridors for local fauna.

Of the scheduled works, the construction of a reservoir to the north of the site will be the most significant, with a mitigation-oriented approach being strongly recommended; banks leading into the reservoir or the rain-catchment channels should be developed with a rough-surfaced, sloping design to allow potential exits for any animals that may fall in, or otherwise have designated ramps present at set distances.

Subsoils are currently scheduled to be reused in the development of the new flower beds, with any remaining reservoir material being instead used to create embankments along the site's boundaries. The latter should only be constructed on the northern and eastern boundaries of the site, at a height and distance from the existing hedges where they would not cover or obscure them. This will aid with water retention, given the sloping nature of the site, while also retaining the arable field margins on the southern and western boundaries, the most ecologically valuable and least likely to be negatively affected by run-off from the nursery. Assuming the recommendations outlined in this document are met, the proposed scheme can proceed with a **green** indication.

There will be an opportunity to further enhance biodiversity on site, particularly within the proposed embankments. Managing their vegetation as species-rich grasslands, with a bi- or tri-annual cutting regime of autumn and winter cuts will provide an important habitat and shelter for local pollinators, further increasing the biodiversity value of the site. Invertebrate boxes are best-placed in conjunction with these species-rich areas. Flowering seed mixes such as **Emorsgate EM2** are recommended, should these be sown across the newly constructed embankments.

It is essential that the ecological recommendations of this report are securely incorporated as formal Conditions within any planning consent the Local Authority is minded to grant, and that their implementation and ongoing care are verified and monitored.

Notes

Please note that there is complex and strict legislation protecting many species and habitats. Full details are available on the web sites of Defra and the various statutory authorities, some of which

now have direct powers of enforcement. If you are in any doubt about the status of species or habitats on your site, please be sure to contact us before undertaking any site work. You should also make sure that you are aware of, and have allowed for, all national and local planning policies relating to wildlife and nature conservation before proceeding.

This PEA may not be sufficient on its own for planning application purposes where notable habitats/species are present or potentially present, particularly where necessary further studies have been indicated in the text

PHOTOGRAPHS

Photographs were taken on 6 June 2022.

Fig 1. Owl pellets found at the edge of the first field.

Fig 2. Eastern view of the first field. Note the dense hedge line marking the northern and eastern boundaries.

Fig 3. Eastward view of the north-eastern corner of the site, where the reservoir is to be located.

Fig 4. Westward view of the site's northern boundary. Note the distinct separation between the tree main habitats found on site: arable crops, strips of arable field edge vegetation and hedgerows. All are present in a similar layout across all four fields.

Fig 5. Northern view of the first internal field boundary. Note the significantly less dense hedgerow, with distinct gaps across its length.

Fig 6. View of the second and third field's southern boundary. Note the lack of hedges and the orchard to the right.

Fig 7. The mature oak tree between the first and second fields. Note the spoil heaps to the right.

Fig 8. North-eastern view of the second inner boundary hedge. Patches of bramble scrub occupy small sections across the hedge line's structure.

Fig 9. Southern view of the site's western boundary. Note the significantly denser composition of the western hedges compared to that of the southern hedge to the left in the picture.

Fig 10. Eastern view of one of the sections of bracken within the northern boundary. Extensive sections are present within both the northern and southern hedgerows.

Fig 11. The shallow dip to the west of the site, located at the far edge of one of the adjacent arable fields.

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IMPORTANT

Please be aware that, because the natural environment is dynamic, ecological reports generally have a limited period of currency. Many statutory authorities now regard one year as the maximum time that should elapse before a report will need to be updated: occasionally it may be longer, but it may also be less. Where a statutory wildlife licence is to be applied for, a walk-over of the site should be carried out **within three months** of an application being submitted to check that the habitats have not changed significantly since the survey was carried out.

Betts are a scientific practice. Any information relating to legal matters in this report is provided in good faith but does not purport in any way to give any advice on or interpretation of the law whatsoever. Professional legal advice should always be sought. Any designs, specifications, advice, suggestions, or comments written or verbal relating to construction or supervision of building-related work of any kind are provided for consideration only and under no circumstances are to be interpreted as provision of design, management or supervision *sensu* the Construction (Design and Management) Regulations 2007.

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Nicholas Valori BSc MSc – Ecologist
Nicholas holds a Bachelor of Science degree in Zoology and a Masters in Ecological Consultancy from the Russell Group University of Newcastle-upon-Tyne. Modules encompassed Human-Wildlife Conflicts, Botany, Soil Surveys, use of Geographic Information Systems, Environmental Impact Assessment and Wildlife Legislation in theory and practice, plus a full range of other studies including Animal Behaviour, Applied Ecology, Biological Modelling, Ornithology, Entomology and small mammal trapping. Nicholas' field experience includes great crested newt surveying and trapping, bat surveys, habitat management and enhancement work, volunteer training and a variety of other UK, EU and international projects.

Please note that this report is a Preliminary Ecological Assessment of factors and features that may be significant for regulatory compliance and biodiversity policies relating to change of use or other disturbance. Such reports may not, on their own, contain sufficient information for a planning application and may require further more detailed study to assure compliance.

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