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Preliminary Ecological Appraisal and Roost Assessment

Survey site:

Penley Mill, Sandy Lane, Wrexham, LL13 0LY

Client:

GH Engineering

Survey date:

20th December 2024

Project:

This report is prepared to inform a planning application with the Wrexham County Borough Council. The proposal is described as: 'A proposed new industrial unit'

PEA survey methodology and legislation can be found in the Arbtech Supplement: **PEA Methodology and Legislation - 2024.**

The survey results and recommendations contained within this report are valid for 18 months. An updated site visit may be required if the report is to be used any longer than 18 months after completion.

Site Location and Context

The survey site is centred on National Grid Reference SJ 40394 39854 and has an area of approximately 0.19ha.

The site comprises unsealed surfaces and other neutral grassland. It is situated adjacent to two garages, in the town Wrexham but on the border of England and Wales. There is a non-native hedgerow directly adjacent to the south of the site which provides connectivity to scattered trees in the vicinity which in turn extend to larger areas of deciduous and ancient woodland to the southwest. Aerial imagery shows the area to have a rural landscape characterised by small copses and hedge/tree lined fields. Water bodies can be found nearby, such as a river located ~0.04km to the east and a linked section of river ~0.05km south to the site along with numerous ponds to the southeast, west and northwest (closest being ~0.09km southeast).

Survey Details

The site survey was undertaken by Katie Whitfield BSc (Hons) MSc, Graduate Ecologist.

Date of survey	Temperature (°C)	Humidity (%)	Cloud Cover (%)	Wind (km/h)	Rain
20/12/2024	5	84	60	5	Light rain

Executive Summary

- A Green Infrastructure Statement is required to ensure the biodiversity at site is not lost and maintained during and post construction.
- Precautionary working methods for birds, reptiles, amphibians, badgers, and hedgehogs are necessary during construction.
- A CEMP will be required to detail measures required to minimise potential pollution to the non-statutory designated site (Redhall Grassland) and the off-site river and ponds of elevated ecological value.
- A low impact lighting strategy will be required to minimise disturbance to foraging and commuting bats.
- Enhancements are outlined in the relevant tables below.

Survey limitations

It should be noted that whilst every effort has been made to describe the baseline conditions within the survey area, and evaluate these features, this report does not provide a complete characterisation of the site. This assessment provides a preliminary view of the likelihood of protected species being present. This is based on suitability of the habitats on the site and in the wider landscape, the ecology and biology of species as currently understood, and the known distribution of species as recovered during the searches of historical biological records.

The PEA survey was completed outside of the optimal survey period (April to October) limiting the identification of ground flora species, however, an adequate judgement could be made from the vegetation visible.

Ecological Survey Factor **Conclusion, Impact or Recommendations**	**Detailed using desk study and site survey (carried out under good weather conditions). Any specific limitations noted within relevant section. This table may include further work you will need to commission (if any) to obtain planning permission or comply with legislation for other consent. All clients are expected to read and understand this section, or to contact the lead surveyor for advice.**
Habitats and plants (see habitat map in appendix 1, location plan in appendix 2, pond map in appendix 3, proposal plan in appendix 4 and photos in appendix 5). **Botanical species are described with reference to the DAFOR scale (D = Dominant; A = Abundant, F = Frequent, O = Occasional, R = Rare).**	
Summary of Survey Findings **(***UKHab codes used)*	The site does not contain any habitats listed as a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). However, the site is in close proximity to an off-site river and ponds which could be of elevated value to local wildlife populations (as detailed in subsequent sections of this table). Other habitats within the site are common and widespread and have low ecological value. Notable habitats are present within 2km. **On-site habitat descriptions** **u1c** - Artificial unsealed surface (figure 1 and 2) Areas of unsealed surfaces are found within the majority of the site. A large area is dominated by steel reinforcements as part of ground works to create a building foundation. **u1f** - Sparsely vegetated land (figure 3) Sparsely vegetated land is found to the south of the site, with vegetation encompassing ~50% of the area. Species assemblage includes ragwort *Jacobaea spp.*, spear thistle *Cirsium vulgare*, common yarrow *Achillea millefolium*, common mugwort *Artemisia vulgaris*, bittercress *Cardamine spp.*, and white clover *Trifolium repens*. Vegetation structure within the habitat was not varied with only a single structural habitat component present. Species indicative of suboptimal condition make up <5% of vegetated ground cover. No invasive plant species were observed. The habitat is assessed to be in moderate condition. **g3c**, 81 – Other neutral grassland (figure 4 and 5) Other neutral grassland was found to the south and west of the site. Species assemblage includes **abundant** orchard grass *Dactylis glomerata***, frequent** common bent *Agrostis capillaris*, cow parsley *Anthriscus sylvestris*, **occasional** perennial ryegrass *Lolium perenne*, common dandelion *Taraxacum officinale*, white clover *Trifolium repens*, hogweed sp., *Heracleum*, ribwort plantain *Plantago lanceolata*, bramble sp., *Rubus*, common nettle *Urtica dioica*, and **rare** common rush *Juncus effusus*. The sward height >15cm for ~60% and <7cm for ~50% of the area. Cover of bare ground, bracken and scrub was <5%. Physical damage accounted for ~20% of total area due to construction materials placed on the habitat. No invasive species were present. There was not a consistently high proportion of indicator species, and thus the habitat is assessed as poor. Further other neutral grassland habitat was found to the west of the site on a steep bank with tall ruderal herb species present. Species assemblage includes **dominant** common nipplewort *Lapsana communis* and lamb quarters *Chenopodium album*, **frequent** bramble sp.,

	Rubus, creeping buttercup *Ranunculus repens*, orchard grass *Dactylis glomerata*, white clover *Trifolium repens*, and **rare** common rush *Juncus effesus.* This area was unmanaged reaching sward heights >80cm for ~80% and <7cm for ~30% of the area. Cover of bare ground and bracken were <5%, whilst cover of scrub accounted for ~10% of the area. Physical damage accounts for <5% of area. There was not a consistently high proportion of indicator species, and thus the habitat is assessed as poor. **Off-site habitat descriptions** **r1g** – Other standing water (ponds) Numerous ponds are found off-site with the closest being ~0.09km southeast. Six are situated behind a fast-flowing river to the southeast, with the closest being ~0.09km, and a further 4 are found within arable land to the northwest, with the closest being ~0.36km. These were not accessible. **r2b** – Other river and streams (figure 6) A fast-flowing river is located ~0.04km east along with and a linked section of river ~0.05km south of the site. The banksides comprised of numerous trees with dense vegetation within. **Local notable habitats** Patches of lowland mixed deciduous woodland (LMDW) are present within 2km of the site. The closest is located ~0.39km to the southwest. Ancient woodland is also found within this habitat ~0.64km southwest. The trees directly adjacent to the site likely have functional connectivity to these areas of woodland, given their proximity to the site and the numerous trees extending to this woodland. LMDW is classed as a priority habitat under Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006. **Biological records data** The following are records returned from the local environment record centre (COFNOD) for notable habitats within 2km of the site: Several other patches of ancient woodland are present within 2km of the site, the closest being ~0.46km south. Other priority habitats noted include lowland fens, closest being ~0.16km southwest and lowland meadows, closest being ~0.27km west.
Foreseen Impacts	**On-site habitats** The habitats on-site are widespread and not notable, however the proposed development will result in the loss of ~3m^2 (0.0003ha) other neutral grassland habitat and ~550m^2 (0.055ha) of artificial unsealed surfaces. This is likely to have a minimal impact on biodiversity due to the low ecological value of this habitat. **Off-site habitats** Due to the close proximity of the site to the off-site river (~0.04km east and ~0.05km south) and off-site ponds (closest being ~0.09km southeast) indirect effects (e.g. pollution, dust, litter, surface run off etc.,) could occur during construction. **Notable habitats** No impacts to any notable habitats are anticipated due to the small scale and distance of the proposed development from such habitats as well as the urban location of the site with surrounding physical barriers.

Recommendations	**On-site habitats** None required. **Off-site habitats** Best practice measures to minimise the possibility of pollution affecting the nearby river and pond must be implemented during construction. A Construction Environment Management Plan (CEMP) may be required for this. **Notable habitats** None required. **Green Infrastructure Assessment** Planning Policy Wales (2024) requires all developments within Wales to conduct a Green Infrastructure Assessment to deliver Net Biodiversity Benefit and maintain biodiversity during development. Therefore, the planning application must be accompanied by a Green Infrastructure Statement to detail how the site is maintaining biodiversity and include recommendations to further enhance the site biodiversity.
Locality and Designated Sites	
Summary of Survey Findings	**On-site designations** The site is not subject to any designation. **Statutory designated sites (within 2km)** The site lies within the impact risk zone for the River Dee and Well Rough and Long Plantation in England. **Non-statutory designated sites** The following are records returned from the local environment record centre (COFNOD) for non-statutory sites within 2km of the site: - Redhall Grassland; Local Wildlife Site (LWS), located ~0.1km south - Black Wood; LWS, located ~0.59km north - Llanerch Panna and Penley Bank; LWS, located ~0.71km southeast - Crossmill Wood; LWS, located ~1.07km north - Penley Wood and Lees wood; LWS, located ~1.1km east - Nantclimbers Grassland and The Dukes; LWS, located ~1.18km southwest - Coed Cae Howell; LWS, located ~1.25km northeast - Brook Mill Grassland; LWS, located ~1.62km southeast - Lightwood and Queensbridge Dingle; LWS, located ~1.84km west - Cae Drinions Grassland; LWS, located ~1.87km north - Caerowlin Wood and Meadows; LWS, located ~1.89km northwest

	- New Gorse Covert; LWS, located ~1.98km east
Foreseen Impacts	**On-site designations** No impacts foreseen. **Statutory and non-statutory designated sites** The site lies within the impact risk zone for River Dee and Well Rough and Long Plantation. The proposed development type is not listed as a possible high risk for this designation. No direct impacts to designated sites will occur as a result of the proposed development. However, due to the proximity of the site to Redhall Grassland (LWS), indirect effects such as pollution could occur during construction.
Recommendations	**On-site designations** None required. **Statutory and non-statutory designated sites** Best practice measures to minimise the possibility of pollution affecting the nearby non-statutory designated site must be implemented during construction. A construction Environment Management Plan (CEMP) may be required for this.
Invasive / Non-native species	
Summary of Survey Findings	No problematic invasive and non-native species recorded on site. **Biological records data** Historical records of Japanese knotweed and cotoneaster were found within 2km of the site.
Foreseen Impacts	N/A
Recommendations	No further surveys but remain vigilant.
Invertebrates	
Summary of Survey Findings	The habitats present on-site, including other neutral grassland, likely provide common invertebrates with opportunities to forage and shelter. The site contains no further notable habitats which may provide niches for specialised or protected invertebrates, however the off-site river ~0.04km east and ~0.05km south along with the off-site pond ~0.09km southeast may provide suitable niches. **Biological records data** The following are records returned from the local environment record centre (COFNOD) for invertebrates within 2km of the site: - One record of white-letter hairstreak located ~1.14km northeast - One record of harlequin ladybird located ~1.29km east
Foreseen Impacts	None foreseen.
Recommendations	No further surveys.

<table>
<tr><td></td><td>Suggested biodiversity enhancements
The provision of an invertebrate hotel to provide sheltering opportunities for pollinators. The site could be further enhanced via the provision of native wildflowers, which would provide foraging opportunities for invertebrates.</td></tr>
<tr><td colspan="2">Bats</td></tr>
<tr><td>Summary of Survey Findings</td><td>EPSL data
A search of the magic.gov.uk database for granted EPSLs within a 2km radius of the site has been completed within England. Displaced bats from licensed sites <2km away from the survey site will find alternative habitat either within the mitigation measures implemented as part of the licence or will relocate to other known roosts sites in close proximity to the licensed site. There is 1 EPSL within a 2km radius of site as detailed below:

<table>
<tr><th>EPSL reference</th><th>Bat species affected</th><th>Distance from site</th><th>Impacts allowed by licence</th></tr>
<tr><td>2019-44253-EPS-MIT</td><td>Brown long-eared bat</td><td>~1.63km southeast</td><td>Destruction of a breeding site</td></tr>
</table>

There are no Special Areas of Conservation designated for bats within 10km of the site.

Foraging and commuting habitat
Habitats recorded on site are assessed to provide foraging and commuting opportunities for bats in the form of other neutral grassland, and off-site non-native hedgerow, albeit limited. These habitats are likely to provide micro-climatic conditions that support invertebrates that will in turn provide foraging opportunities for local bat populations. Furthermore, the off-site non-native hedgerow directly adjacent to the south boundary of the site provides connectivity to scattered trees in the vicinity which in turn extend to larger areas of deciduous and ancient woodland to the southwest. However, the site is dominated by bare ground of limited value to bats. Due to the small extent of habitats recorded and the presence of better-quality habitat locally, the site is not assessed to represent a signficant resource for foraging and commuting bats in the context of the wider landscape.

Roosting habitat
There are no buildings or trees within the site.

Biological records data
The following are records returned from the local environment record centre (COFNOD) for bats within 2km of the site:
- One record of brown long eared bat located ~1.32km east (foraging/commuting)
- One record of common pipistrelle located ~1.32km east (foraging/commuting)
- One record of Myotis bat located ~1.32km east (foraging/commuting)
- One record of soprano pipistrelle located ~1.32km east (foraging/commuting)</td></tr>
<tr><td>Foreseen Impacts</td><td>Foraging and commuting habitat</td></tr>
</table>

	The proposed development will result in the loss of 0.0003ha of other neutral grassland and 0.055ha of unsealed surfaces but given their low value and the presence of more extensive areas of foraging and commuting habitat in the locality, this is likely to be inconsequential for bats. **Artificial lighting** The proposed development may lead to an increase in the amount of current lighting of surrounding habitats or the retained building without mitigation. This may disturb commuting bats.
Recommendations	**Foraging and commuting habitat** No further surveys are required. **Artificial lighting** A low impact lighting strategy will be adopted for the site during post-development which outlines the areas of the site that will be retained as dark corridors. Parameters can be found on the Bat Conservation Trust website: https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting-2 **Suggested biodiversity enhancements** The installation of one bat box at the site will provide additional roosting habitat for bats. The bat boxes will be incorporated into the fabric of the new build or on the existing building in the ownership boundary. They will be suitable for pipistrelles. Suitable bat boxes include Habibat Bat Box, Ibstock Enclosed Bat Box or similar alternative brand. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light.
Birds	
Summary of Survey Findings	**Common species of nesting birds** No bird nests were identified within the habitats on-site, however the tall ruderal herb within other neutral grassland as well as the off-site non-native hedgerow directly adjacent to the site offer nesting opportunities and nest-building resources for birds. **Barn owls** The site does not appear to provide any notable foraging, commuting, or nesting opportunities for barn owls. **Overwintering birds** Due to the small size of the site and the extent and type of the habitats recorded, the site not considered suitable to support a significant assemblage of protected and/or notable birds. **Biological records data** The following are records returned from the local environment record centre (COFNOD) for birds within 2km of the site: - Two records of kestrel closest being ~0.33km north

	- One record of tawny owl closest being ~1.1km southeast - Two records of barn owl closest being ~1.38km northwest - Three records of swallow closest being ~0.96km east - One record of reed bunting located ~1km east - One record of grey wagtail located ~1km east - One record of rook located ~1.2km east - Two records of coal tit closest being ~1.1km southeast - One record of collared dove located~1.1km southeast - One record of dunnock located ~1.1km southeast - Two records of fieldfare closest being ~1.1km southeast - Two records of long-tailed tit closest being ~1.1km southeast - One record of song thrush located ~1.1km southeast - One record of sparrowhawk located ~1.1km southeast - One record of bullfinch located ~1.5km east - One record of goldcrest located ~1.87km northwest - One record of mistle thrush located ~1.87km northwest - One record of teal located ~1.87km northwest Further records of bird species within 2km include woodpigeon, wren, swifts, house sparrow, mallards, Canada goose, moorhen, and mute swan.
Foreseen Impacts	**Vegetation** The proposed development could result in the disturbance and subsequent abandonment of active bird nests. **Barn owls** None foreseen. **Overwintering birds** None foreseen.
Recommendations	**Vegetation** Removal of other neutral grassland should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the vegetation should be undertaken immediately, by a qualified ecologist, prior to the commencement of work. All active nests will need to be retained until the young have fledged. Precautions should be taken with machinery and noise levels when working close to any retained nests so as not to disturb any nearby nesting birds during construction works. At least a 3-5m buffer should be created between any machinery and active nests until the young have fledged.

	Barn owls None required. **Overwintering birds** None required. **Suggested biodiversity enhancements** The site is not considered suitable for enhancements.
Reptiles	
Summary of Survey Findings	**EPSL data** A review of the MAGIC database returned no granted EPSL records for protected reptiles within 2km of the site in England. Furthermore, no reptiles records were found in Wales via COFNOD. **Habitat suitability** Habitats recorded on site are assessed to provide foraging, commuting, basking and refuge opportunities for reptiles, albeit limited. The tall ruderal herb within other neutral grassland and off-site non-native hedgerow directly adjacent to the site provide elevated value for reptiles as these habitats provide a suitable structure for refuge, whilst also providing foraging and commuting opportunities. However, it is important to note that the hedgerow contains significant gaps which may limit refuge within, moreover the site is dominated by artificial unvegetated, unsealed surfaces, which are of highly limited value to reptiles. The site has good connectivity to further suitable reptile habitat in the wider landscape via woodland to the southwest and riparian vegetation associated with the off-site river ~0.04km east and linked river ~0.05km south of the site. As such, the presence of reptiles on site cannot be discounted, albeit likely limited to low numbers within peripheral scrub only. **Wider landscape** The off-site river and woodland are of elevated ecological value within the wider landscape and may represent important resources for local reptile populations. These adjacent habitats provide optimal foraging, commuting, and refuge opportunities for reptiles and are well connected to further suitable habitat in the wider landscape as well as suitable connectivity to allow reptiles to commute onto site. The presence of reptiles utilising these adjacent habitats cannot be discounted.
Foreseen Impacts	0.0003ha of other neutral grassland and 0.055ha of unsealed surfaces will be removed during construction. The loss of such habitats is likely to be inconsequential to local reptile populations owing to their low value and the presence of more extensive habitat locally. However, construction works could result in the death or injury of reptiles, if present.
Recommendations	A precautionary working method will be implemented for widespread reptiles during construction, including the following measures: • Vegetation will be removed with a staged approach, with the first cut removing tall ruderal herb within other neutral grassland to ~150mm from ground level and the second cut to ground level/bare ground. • Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • Best practice pollution prevention measures will be implemented to minimise impacts to nearby habitats.

	• Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • If any reptiles are found in the working area these should be allowed to disperse of their own accord or, if at immediate risk, should be moved by hand to a sheltered, vegetated area away from disturbance. • **Suggested biodiversity enhancements** The site could be enhanced for reptiles post-development with the inclusion of log piles to provide sheltering opportunities.
Amphibians	
Summary of Survey Findings	**EPSL and survey data** A review of the MAGIC database returned no granted EPSL records for great crested newts in England. However, the MAGIC database did return evidence indicating the presence of great crested newts resulting from historic pond surveys undertaken in 2013. These records are located 1.57km southeast. Great crested newts exist in metapopulations and are known to utilise ponds and their connecting terrestrial habitat during their life cycle; great crested newts are typically found within terrestrial habitats up to 500m from breeding ponds (Langton *et al.* 2001). As such, the great crested newt metapopulation known to be present 1.57km southeast are not suitably connected to the site. **Aquatic habitat suitability (including ponds within 500m)** There are no ponds on the site, but a review of the Magic.gov.uk database and aerial imagery indicates that there is a further nine ponds located within 500m of the site, located 0.09km southeast (P1), 0.1km southeast (P2), 0.14km southeast (P3), 0.18km southeast (P4), 0.23km southeast (P5), 0.23km southeast (P6), 0.35km west (P7), 0.37km west (P8), 0.38km northwest (P9) and 0.46km northwest (P10). Although the ponds to the southeast (P1 – P6) are in close proximity to the site, they are assessed to have limited connectivity due to separation by the fast-flowing off-site river located ~0.04km to the east of the site causing a significant barrier to dispersal. The other ponds to the west and northwest (P7 – P10) have potential terrestrial connectivity to the site due to an absence of definitive barriers to dispersal. A pond map showing approximate pond locations is provided in Appendix 3. **Terrestrial habitat suitability** Habitats recorded on site are assessed to provide foraging, commuting and refuge opportunities for amphibians, albeit limited. The tall ruderal herb within other neutral grassland and off-site non-native hedgerow directly adjacent to the site provide elevated value for amphibians as these habitats provide a suitable structure for refuge, whilst also providing foraging and commuting opportunities. However, it is important to note that the hedgerow contains significant gaps which may limit refuge within, moreover the site is dominated by artificial unvegetated, unsealed surfaces, which are of highly limited value to amphibians. Given that the site is connected to ponds in the wider landscape, the presence of amphibians including GCN during their terrestrial phase cannot be discounted, albeit likely limited to low numbers in tall ruderal herb within other neutral grassland only.

Biological records data

The following are records returned from the local environment record centre (COFNOD) for great crested newts (GCN) within 2km of the site:

- Three records of GCN located ~0.81km southeast
- Four records of GCN located ~0.81km east
- One record of GCN located ~1.05km northeast (including presence of eggs)
- One record of GCN located ~1.51km southeast
- Three records of GCN located ~1.51km northeast
- Eight records of GCN located ~1.53km northeast
- Three records of GCN located ~1.54km east
- One record of GCN located ~1.56km east (including presence of eggs)
- One record of GCN located ~1.82km east (including presence of eggs)
- 44 records of GCN located ~1.83km east

Foreseen Impacts

When georeferencing the proposed development plans over scaled mapping of the site, it is noted that the development area is likely to result in the loss or significant disturbance of 0.0003ha of other neutral grassland. If great crested newts are present within the ponds noted above, when completing the rapid risk assessment published by Natural England (Natural England 2015), the proposed development produces an **Green risk score**, which states: **Offence Highly Unlikely** (see F**igure 1** below).

Figure 1: Rapid risk assessment for GCN

Component	**Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)**	**Notional offence probability score**
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.05
Land 100-250m from any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.005
Land >250m from any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.0005
Individual great crested newts	No effect	0
	Maximum:	0.05
Rapid risk assessment result:	**GREEN: OFFENCE HIGHLY UNLIKELY**	

Recommendations

Owing to the nature of the proposed development and the low potential for impacts to great crested newts, further surveys are considered to be disproportionate. However, a precautionary working method is considered necessary to be implemented, including the following measures:

	• A staged approach will be adopted for vegetation clearance, whereby the vegetation will be strimmed to 15cm and left overnight to allow any amphibians to disperse. The vegetation can then be cleared to ground level and must be maintained at this level for the duration of construction to deter amphibians from the working area. • Any rubble piles will be dismantled by hand and debris and brash will be stored on pallets or removed from the site to prevent amphibians from utilising these areas. • Best practice pollution prevention measures will be implemented to minimise impacts to nearby aquatic habitats that amphibians could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • If any common amphibians are found in the working area these should be allowed to disperse of their own accord or, if at immediate risk, should be moved by hand to a sheltered, vegetated area away from disturbance. • In the unlikely event that a great crested newt is identified, works must cease and advise must be sought from a suitably qualified ecologist. **Suggested biodiversity enhancements** The site could be enhanced for amphibians post-development through creation of amphibian hibernacula using rubble and logs. Information on how to construct a hibernaculum can be found here: https://www.wiltshirewildlife.org/hibernaculum
Badger	
Summary of Survey Findings	[redacted] **Biological records data** [redacted]
Foreseen Impacts	[redacted]0.0003ha of other neutral grassland will be removed during construction. The loss of such habitats is likely to be inconsequential to local badger populations owing to their low value and the presence of more extensive habitat locally. However, construction activities could result in the death or injury of badgers, if present.

Recommendations	Owing to the nature of the proposed development and the low potential for impacts to badger setts, further badger surveys are considered to be disproportionate. A precautionary working method will be implemented during construction, including the following measures: • Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to retained habitats which badgers could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. In the unlikely event that a badger sett is identified, works must cease and advise must be sought from a suitably qualified ecologist. **Suggested biodiversity enhancements** Due to the small size of the site, enhancements are not deemed suitable.
Riparian animals	
Summary of Survey Findings	A review of the MAGIC database returned no granted EPSL records for otters or water voles within England. There are no water courses or riparian habitats on site. However, there is an off-site river to east and south which provides riparian animals access to the site through areas of developed land. **Otters** The off-site river located ~0.04km to the east and linked river ~0.05km to the south provides suitable foraging and commuting opportunities for otters. However, the site contains no notable holt building opportunities, there are no water bodies for foraging, and the site is unlikely to be utilised by otter whilst travelling between resources. As such, the presence of otters is considered highly unlikely. **Water voles** The river is considered unsuitable to support water voles due to a fast water flow and absence of suitable bankside vegetation for foraging. The off-site ponds to the southeast (closest being ~0.09km) could be suitable to support water voles, however there is no suitable connectivity between the site and ponds for water voles. **Biological records data** The following are records returned from the local environment record centre (COFNOD) for otters and water voles within 2km of the site: - There are 15 historical records of otters, closest being ~0.32km to the north in 2014. - There is one historical record of water vole located ~1.1km northwest.
Foreseen Impacts	**Otters**

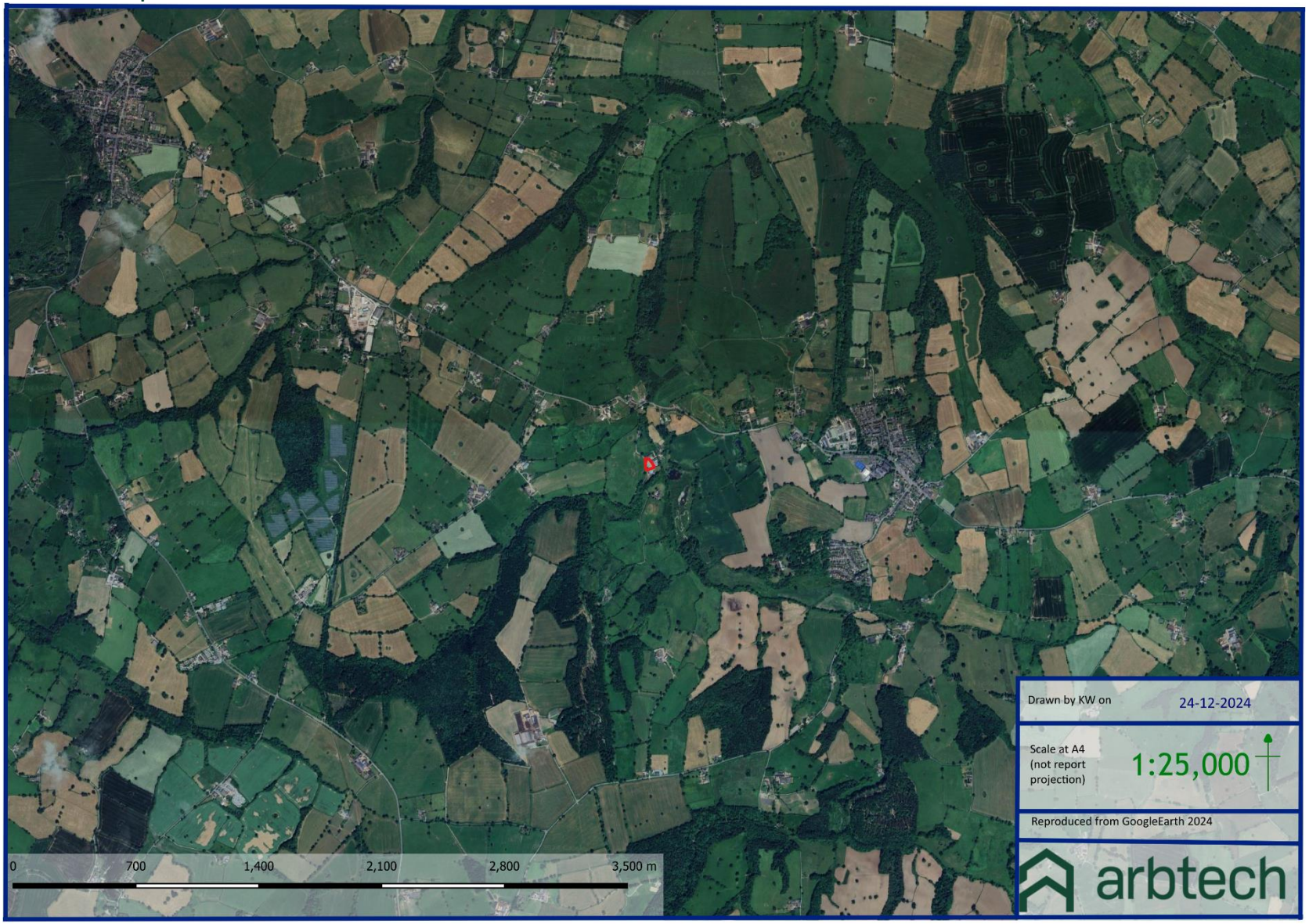
	The proposed development will not result in the loss of any riparian habitats and no works will be undertaken within 8m of the watercourse (as per Environment Agency regulations). However, due to the presence of the watercourse within close proximity of the site, indirect effects such as pollution could occur during construction. **Water voles** The adjacent watercourse is not suitable for water voles so no direct or indirect impacts are anticipated.
Recommendations	**Otters** Best practice measures to minimise the possibility of pollution affecting the off-site river must be implemented during construction. A construction Environment Management Plan (CEMP) may be required for this. **Water voles** None required. **Suggested biodiversity enhancements** Owing to the river and pond being off-site, enhancements are not deemed suitable.
Hazel dormouse	
Summary of Survey Findings	**EPSL data** A review of the MAGIC database returned no granted EPSL records for hazel dormice within England. Moreover, no records were returned within the biological records data from COFNOD. **Habitat suitability** Dormice typically utilise a three-dimensional habitat structure as to commute between feeding and breeding sites whilst avoiding predation. As such habitats on site are considered unsuitable for hazel dormice and therefore the likelihood of this species being present on site is considered acceptably low.
Foreseen Impacts	No impacts are anticipated on hazel dormice as a result of the proposed development.
Recommendations	None foreseen.
Other e.g. hedgehog	
Summary of Survey Findings	The tall ruderal herb within other neutral grassland and directly adjacent, off-site non-native hedgerow directly adjacent to the site may provide foraging, commuting and refuge opportunities for hedgehogs with agricultural fields and woodland habitat nearby. Moreover, the scattered trees adjacent to the site and hedge-lined fields may be utilised for commuting, foraging and sheltering purposes. The rural location of the site also minimises disturbance caused by artificial light. Therefore, it is likely that hedgehogs will utilise the site. **Biological records data** The following are records returned from the local environment record centre (COFNOD) for hedgehogs within 2km of the site: - One record ~1.88km north (live sighting).

Foreseen Impacts	0.0003ha of other neutral grassland will be removed during construction. The loss of such habitats is likely to be inconsequential to local hedgehog populations owing to their low value and the presence of more extensive habitat locally. However, construction activities could result in the death or injury of hedgehogs, if present.
Recommendations	Similar to the badgers, a precautionary working method will be implemented during construction, including the following measures: • Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to retained habitats which hedgehogs could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • If any hedgehogs are found in the working area these should be allowed to disperse of their own accord or, if at immediate risk, should be moved by hand to a sheltered, vegetated area away from disturbance. **Suggested biodiversity enhancements** The following habitat creation and enhancement opportunities could be incorporated into the proposed development or within the ownership boundary which would be beneficial for hedgehogs: • Creation of brash piles or installation of hedgehog houses in shady areas.

Appendix 1: Survey/Habitat map



Appendix 2: Location map



`Appendix 3: Pond Map



Appendix 4: Proposal plan



Appendix 5: Habitat Photos

Artificial unsealed surface	
Photograph	**Description**
	Figure 1: Steel reinforcements as part of ground works found within the majority of the site.
	Figure 2: Artificial unsealed surfaces within the site.
Sparsely vegetated land	
Photograph	**Description**

	Figure 3: Sparsely vegetated land to the south of the site.
Other neutral grassland	
Photograph	**Description**
	Figure 4: Other neutral grassland to the west of the site, with construction materials within.

	Figure 5: Tall, unmanaged ruderal herb within other neutral grassland within other neutral grassland to the west of the site.
Other river and streams	
Photograph	**Description**



Figure 6: Off-site river to the east of the site with a woodland character on the banksides.

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