



# **PRELIMINARY ECOLOGICAL APPRAISAL REPORT**

## **SITE LOCATION**

Okell Drive,  
Knowsley  
L26 7XX

## **ISSUE DATE**

23<sup>rd</sup> August 2023

## **SEED REF**

1649-PEA-V1-A

## **CLIENT**

Enabl

**ARBORICULTURAL CONSULTANCY**

**SEED-ARB.CO.UK**

## DOCUMENT CONTROL

| Date       | Author     | Checked | Revision |
|------------|------------|---------|----------|
| 23.08.2023 | Katie Bird | OC      | R1       |
|            |            |         |          |

### NOTE:

Ecological Surveys & Reports provided in association with Collington Winter Environmental Ltd.



## COPYRIGHT ©

This report, all plans, illustrations, and other associated material remains the property of SEED Arboriculture Ltd until paid for in full. Copyright and intellectual property rights remain with SEED Arboriculture Ltd.

## LIMITATIONS

The contents of this report are valid at the time of writing. SEED Arboriculture Ltd shall not be liable for any use of this report other than for the purposes for which it was produced.

Any alteration to the application site or development proposals could change the current circumstances and may invalidate this report and any recommendations made.

The contents of this report are valid at the time of writing. As the ecological value of a site is constantly evolving and changing, if more than twelve months have elapsed since the date of this report, further advice must be taken before reliance upon on the contents. Notwithstanding any provision of the SEED Arboriculture Ltd Terms & Conditions, SEED Arboriculture Ltd shall not be liable for any losses (howsoever incurred) arising as a result of reliance by the client or any third party on this report more than twelve months after the report date.

## EXECUTIVE SUMMARY

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site Address</b>                                  | Okell Drive, Knowsley, L26 7XX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Grid Reference</b>                                | SJ 44083 86105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Approximate Site Area</b>                         | 0.28ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Current Site Use</b>                              | The site is currently vacant and has appeared to have been for some time.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Designated Sites within Zone of Influence</b>     | The site partially falls within the Impact Risk Zone of a number of Sites of Special Scientific Interest, and a series of non-statutory sites were identified within 1km of the site, the closest of which related to Halewood Triangle Site of Biological Interest.                                                                                                                                                                                                                                                              |
| <b>Notable Habitat Features</b>                      | No notable habitats were located onsite, however it is surrounded by deciduous woodland.                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Notable species applicable to this assessment</b> | <ul style="list-style-type: none"> <li>• Bats (potentially roosting, foraging and commuting)</li> <li>• Breeding birds</li> <li>• Common amphibians (including great crested newts)</li> <li>• Reptiles</li> <li>• Badger</li> <li>• Hedgehog</li> </ul>                                                                                                                                                                                                                                                                          |
| <b>Mitigation Recommendations</b>                    | <ul style="list-style-type: none"> <li>• A nesting bird check should be undertaken if any trees or buildings are to be removed/refurbished within the nesting bird season (March – September inclusive).</li> <li>• A sensitive lighting strategy should be adopted.</li> <li>• A pre commencement check for badger setts should be undertaken.</li> <li>• Reasonable avoidance measures reptiles, amphibians, bats, badgers and hedgehog.</li> <li>• Mitigation relating to the adjacent and nearby designated sites.</li> </ul> |
| <b>Recommended further surveys</b>                   | Two Emergence/re-entry Bat Surveys on the building due to being assessed as having moderate bat roosting potential. Seasonally constrained May to September with one survey in August.                                                                                                                                                                                                                                                                                                                                            |

### **Recommended Ecological Enhancements**

The National Planning Policy Framework (2021) highlights the requirement for planning policies and decisions to conserve and enhance the natural environment. The proposed development provides the opportunity to enhance the site and ecological enhancements have been recommended

## Contents

|                                      |   |
|--------------------------------------|---|
| 1. Introduction.....                 | 2 |
| 2. Methodology.....                  | 4 |
| 3. Survey Results .....              | 8 |
| 4. Mitigation Recommendations .....  | 1 |
| 5. Further Surveys & Conclusion..... | 7 |
| 6. Bibliography.....                 | 8 |

## Appendices

**Appendix 1**     Site Photographs

**Appendix 2**     Habitat Plan

# 1. Introduction

## Scope & Purpose

- 1.1.1. Seed Arboriculture Ltd were commissioned by Enabl Limited to undertake a Preliminary Ecological Appraisal (PEA) at Okell Drive, Knowsley L26 7XX. This report has been prepared to inform a planning application at the site relating to the demolition of the building and a residential development.
- 1.1.2. The author of this report is Katie Bird MEnvSci, ACIEEM Principal Ecologist at Collington Winter Environmental Ltd. Katie is highly experienced managing schemes and has produced many ecological reports to inform planning management plans.

## Location

- 1.1.3. Please refer to Figure 1.1 for the site location.



Figure 1 - Site Location Plan

## Objectives

- 1.1.4. The objectives of the Preliminary Ecological Appraisal are as follows:
  - Identify the major habitats present.

- Ascertain the presence or potential presence of any legally protected or notable species or habitats.
- Identify any mitigation required and opportunities for strategic wildlife enhancements.

## 2. Methodology

### Desk Study

- 2.1.1. An initial desk-based assessment of the site was undertaken to collate baseline data. The desk study included:
- A 1km local data search of notable flora and fauna, and locally designated sites obtained from BioBank Merseyside.
  - Review of Magic.gov.uk website for details of any designated sites, notable habitats and presence of European Protected Species Licences.
  - Review of aerial and OS maps for habitat information, as well as determining locations of potential waterbodies to be considered in the assessment.
  - Review of potential habitat links on and off site, to determine the potential zone of influence of the proposed development.
  - On site consultation with the landowner which provided valuable information regarding historic land use and known species and habitats present within the site.

### Vegetation & Habitat Assessment

- 2.1.2. An Ecological Appraisal of the site was undertaken by Katie Bird, Principal Ecologist at Collington Winter. The survey was undertaken on the 16<sup>th</sup> August 2023. The weather was clear (0/8 oktas), with no precipitation, wind speed and 20°C.
- 2.1.3. The walkover survey was undertaken broadly in line with standard UK HAB Methodology. The assessment is undertaken with consideration of methodology as per “Preliminary Ecological Appraisal” (CIEEM, 2018).
- 2.1.4. A UK HAB Plan has been produced and is presented in the Appendix of this report. Standard methodology has been used, though adjustments have been made based on judgement to demonstrate habitats in a clearer manner, or where standard guidance does not fit the conditions found on site.

### Protected & Notable Species Assessment

- 2.1.5. A search for signs of protected and notable species of fauna was undertaken during the site walkover. This included both field signs of species, as well as potential for species to be present based on habitat availability.
- 2.1.6. The searches broadly included the following:
- Assessment of waterbodies on site and within 250m of the site boundary, and terrestrial habitats for suitability to support notable amphibians.
  - Searches for field signs of, and habitat suitability for bats.
  - Suitability of habitats to support reptiles, and searches for incidental field signs.

- Searches for field signs of badger (*Meles meles*), including setts, mammal paths, snuffle holes, badger hair and latrines to indicate activity.
- Assessment of the suitability of the site to support notable bird species and recording any field sightings of birds during the walkover.
- Assessment of the sites ability to support notable invertebrates and flora.
- Searches for non-native invasive species.

## Preliminary Roost Assessment

- 2.1.7. A Preliminary Bat Roost Assessment (PRA) of the site was undertaken by Katie Bird who holds a Class 2 Bat Survey Licence from Natural England (Reference 2020-48950-CLS-CLS).
- 2.1.8. The survey was undertaken following guidance set out in Collins (2016). This includes undertaking a detailed internal and external inspection of any features to compile information on potential and actual bat entry/ exit points, roosting locations and evidence of bats.
- 2.1.9. The building and trees were assessed as per categories listed in Table 4.1 Collins (2016) and reproduced in Table 1.

**Table 1 – Preliminary Roost Assessment**

| Bat Roosting Potential | Description                                                                                                                                                                                                                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Negligible</b>      | Negligible features on site likely to be used by roosting bats.                                                                                                                                                                                                                                                          |
| <b>Low</b>             | A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/ or suitable surrounding habitats to be used on a regular basis by larger numbers of bats. |
| <b>Moderate</b>        | A structure or tree with one or more potential roost sites that could be used by bats, but unlikely to support a roost of high conservation status.                                                                                                                                                                      |
| <b>High</b>            | A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and for longer periods of time.                                                                                                                                         |

## Bat Activity Assessment

- 2.1.10. The commuting and foraging assessment methodology is based on information contained within the Bat Conservation Trust guidelines 3rd edition (Collins, 2016). The categorisation within this report is based on that set out in Table 2, which is used as a basis for determining the requirement for further surveys and/or mitigation.

**Table 2 – Bat Activity Assessment**

| Bat Roosting Potential | Description                                                                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negligible             | No features on site suitable for use by commuting and foraging bats.                                                                                                                                                                                                           |
| Low                    | Habitat that could be used by small number of commuting bats such as; defunct hedgerow, isolated features not well connected to surrounding habitat or Isolated habitat that could be used by a small number of foraging bats such as a lone tree or patch of scrub.           |
| Moderate               | Continuous habitat connected to the wider landscape that could be used by commuting bats such as lines of trees, scrub or linked back gardens. Habitat connected to wider landscape that could be used for bats for foraging such as; trees, scrub, grassland or water.        |
| High                   | Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting or foraging bats such as; river valleys, streams, hedgerows, lines of trees or woodland edge.<br>Site is close to or connected to known roosts. |

### Habitat Suitability Index

- 2.1.11. Four offsite ponds underwent a Habitat Suitability Index (HSI) assessment following the methodology set out in ARG UK Advice Notice 5 (Oldham et al., 2010). Ten habitat suitability indices were assessed and inputted into the HSI equation, which generates a score between 0 and 1. The calculated score corresponds to the estimated pond suitability for great crested newt.

### Survey Limitations

- 2.1.12. This survey does not constitute a full botanical survey. Key species for each habitat type have been identified to give a broad representation of habitats present within the site.
- 2.1.13. It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation of the natural environment. This survey does not constitute a full botanical survey. Plant species may have been under-recorded, unidentifiable or not visible due to a number of factors including the time of year the survey was carried out.
- 2.1.14. The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site. This is based on the suitability of the habitat, known distribution of the species in the local area (provided by data searches) and any direct evidence within the survey area.

- 2.1.15. The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited within this document.
- 2.1.16. Internal access to the building was not carried out. This constraint has been considered as part of the assessment.

### 3. Survey Results

#### Site Context

- 3.1.1. The site was located within the town of Knowsley within a predominantly urban area though it is surrounded by parkland habitat to the west, north and south, in association with Halewood Park Triangle Site of Biological Interest (SBI). It is anticipated flora and fauna associated with woodland and parkland habitats will be within the local area.

#### Designated Sites

- 3.1.2. The following statutory sites were located within 5km from the site boundary:
- Murdishaw Wood and Valley Local Nature Reserve (LNR) located approximately 700m southeast of the site.
  - Flood Brook Clough Site of Scientific Interest (SSSI) located approximately 1.3km west of the site comprising lowland woodland. It is a mixed broadleaved woodland in a long deep steep-sided clough with Flood Brook running through the bottom. It has been relatively undisturbed due to the steep slopes and is one of the best examples in Cheshire of clough woodland on keuper marl.
  - Dorchester LNR located approximately 2.6km north of the site.
  - Daresbury Firs LNR located approximately 2.9km north east of the site.
  - Wigg Island LNR located approximately 3.1km north west of the site.
  - Oxmoor LNR located approximately 3.3km north of the site.
  - Frodsham Railway and Road Cuttings SSSI located approximately 3.9km south west of the site.
  - Beechmill Wood and Pasture SSSI located approximately 3.9km south of the site comprising lowland woodland.
  - Hatton's Hey Wood, Whittle's Corner and Bank Rough SSSI located approximately 4km south of the site comprising lowland woodland.
  - Runcorn Hill LNR located approximately 4.1km north west of the site.
  - Warburton's Wood and Well Wood SSSI located approximately 4.2km south of the site comprising lowland woodland.
  - Mersey Estuary located approximately 4km south of the site. It is designated as a SSSI, Ramsar Site and Special Protection Area (SPA). The site falls within the impact risk zone of The Mersey Estuary SSSI. This site is internationally important for wildfowl and consisted of large areas of intertidal sand and mudflats. The pools and the Hale Harsh are important roosting sites for wildfowl and waders at high tide. The site also supports a large number of species throughout the winter. The birds feed on the rich invertebrate fauna and the plants and seeds located within the site. The site has also been found to be of value for migrating birds in the spring and Autumn. Areas of salt marshes present which provide roosting sites for birds such as glasswort (*Salicornia spp*). On the north side of the estuary, part of the coastline is formed by boulder clay cliffs. Portions of the cliff have become exposed by slumping, and in these areas a number of unusual species occur including yellow-wort

(*Blackstonia perfoliate*) and bristly oxtongue (*Picris echioides*), both of which are at the northern limits of their distribution.

3.1.3. The site falls within the Impact Risk Zones of the SSSI sites.

3.1.4. The following non-statutory sites were located within 2km of the site boundary:

- Halewood Triangle Site of Biological Interest (SBI) located adjacent on the northern and western aspect. It is a large site containing many different habitats including broadleaf woodland, wet and dry grasslands, ponds and ditches with breeding amphibians, all of which add to the site's interest.
- Cartbridge Lane Wood, Halewood SBI located approximately 1.3km east of the site boundary. It comprises a predominantly broadleaved woodland which has been used as a garden. Many interesting species are present as a result.
- Ditton Brook SBI located approximately 1.6km east of the site boundary. It comprises an open water course providing good water vole habitats.
- Lee Park Golf Course Local Wildlife Site (LWS) is located approximately 1.4km north of the site boundary. It comprises a golf course containing a mosaic of habitats which provides important wetland habitats. Ponds on site provide habitat for Great crested newt (*Triturus cristatus*), smooth newt (*Lissotriton vulgaris*), common toad (*Bufo bufo*). Ponds support an assemblage of ten dragonfly species as well as the nationally scarce species galingale together with other wetland species. English bluebell (*Hyacinthoides non-scripta*) is present within woodlands on site.
- Netherley Brook, tributary SBI is located approximately 1.4km north east of the site boundary. It comprises an open water course providing good water vole habitats.
- Netherley Brook and Woods LWS is located approximately 1.55km north east of the site boundary. The site is a mosaic of woodland, grassland and running water. It is the most isolated of Liverpool's Local Wildlife Sites but is close to farmland around Tarbock which is of interest for a range of principally farmland birds.
- Netherley Brook and Woods SBI is located approximately 1.55km north east of the site boundary. It comprises a diverse range of aquatic, emergent and grassland vegetation along the course of the brook.
- Loop Line & adjacent sites (A and B) LWS is located approximately 1.6km north of the site boundary. The Loop line stretches for 11 kilometres across Liverpool and is the longest unbroken wildlife corridor in the city, containing a diverse mosaic of habitats on the banks and floor of a disused railway cutting.
- Woolton Woods, manor and Camp Hill LWS is located approximately 1.7km west of the site boundary. Woolton Wood and Camp Hill form a large park, comprising of mature woodland and trees, semi-improved grassland, amenity grassland and a number of small ponds. Woolton Manor is now a nursing home, however the grounds contain mature woodland which is contiguous with Woolton Woods. The site supports a diverse flora and is important for breeding birds and butterfly assemblage.
- Green's Bridge Plantation SBI located approximately 1.75km east of the site boundary. it comprises predominantly deciduous woodland with a variety of other habitats including ditches, ponds and acidic grasslands.
- Allerton Cemetery LWS located approximately 1.9km south west of the site. It comprises a large cemetery comprising semi-improved and improved grassland and mature semi-natural and

plantation woodland. The site has a diverse flora with 118 species recorded. The site supports breeding barn owl (*Tyto alba*), kestrel (*Falco tinnunculus*) and swallow (*Hirundo rustica*).

### Priority Habitats

- 3.1.5. Consultation with Magic.gov.uk highlighted the presence of the following Priority Habitats within 1km of the site boundary:
- Deciduous woodland is in various blocks within 1km from the site boundary with the closest located adjacent to the site in relation to Halewood Park Triangle.

### Habitats

- 3.1.6. Please refer to **Appendix 2** for the UK HAB Map for the site, and photographs are located within **Appendix 1**. The survey included all habitats within the red line boundary on the Map, however, the development relates to the renovation of the barn only.

#### *Developed Land; Sealed Surface*

- 3.1.7. One building was located within the site boundary and is detailed as part of the PRA, and parcels of hardstanding present, making up developed land; sealed surface. The eastern developed land sealed; surface was made up of flags whilst the car park was concrete/gravel. Vegetation had colonised some aspects of this habitats.
- 3.1.8. A wall along the western boundary was dominated by common ivy (*Hedra helix*), separating the site and the adjacent woodland.

#### *Modified Grassland*

- 3.1.9. Two parcels of modified grassland were present within the surveyed area.
- 3.1.10. The northern grassland parcel has been left unmanaged since the site has been vacated. Rough meadow grass dominated, with the addition of common nettle (*Urtica dioica*), bramble (*Rubus fruticosus* agg.), ragwort (*Jacobaea vulgaris*), common knapweed (*Centaurea nigra*), yarrow (*Achillea millefolium*), broadleaf dock (*Rumex obtusifolius*), rosebay willowherb (*Chamaenerion angustifolium*), creeping buttercup (*Ranunculus repens*), selfheal (*Prunella vulgaris*), ribwort plantain (*Plantago lanceolata*), red clover (*Trifolium pratense*), cock's foot (*Dactylis glomerata*), common dandelion (*Taraxacum* agg.), rough hawkbit (*Leontodon hispidus*), perennial sow thistle (*Sonchus arvensis*), hedge bindweed (*Calystegia sepium*), false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), and common ivy.
- 3.1.11. The south western parcel comprised a former play area which has now become vegetated. No dominated species were recorded, with less grassland presence. Species included colt's foot (*Tussilago farfara*), horse tail (*Equisetum* sp.), common daisy (*Bellis perennis*), tree saplings, greater plantain (*Plantago major*), common chickweed (*Stellaria media*), rough hawkbit, creeping thistle (*Cirsium arvense*), broadleaved willowherb (*Epilobium montanum*), fox and cubs (*Pilosella aurantiaca*), drooping sedge (*Carex pendula*), herb Robert (*Geranium robertianum*) and butterfly bush (*Buddleja davidii*).

#### *Willow Scrub*



- 3.1.12. Willow scrub was located to the northwest of the site. Species included goat willow (*Salix caprea*) dominated with the addition of rosebay willowherb, bramble, hedge bindweed and common nettle.

#### ***Vacant/ Derelict Land***

- 3.1.13. A parcel of derelict land was located within the north eastern aspect, where a large pile of fly tipping was present. It was gated off from the remainder of the site. Species recorded included; common daisy, rough meadow grass, rockspray cotoneaster (grid reference: SJ 44060 86113), greater plantain, colt's foot, yarrow, common dandelion, rosebay willowherb, ragwort, bramble, perennial sow thistle and common nettle.

#### ***Scattered Trees***

- 3.1.14. Leyland cypress (*Cupressus x leylandii*) and willow were observed scattered within the modified grassland habitat.

### **Species**

#### ***Flora***

- 3.1.15. The data search returned 495 records of flora and related to nearby locally designated sites. The majority of which related to non-native invasive flora.
- 3.1.16. No notable flora was observed during the survey, which is an optimal survey period for flora identification. Based on the limited floristic diversity and no notable species observed, notable flora is considered absent from site.

#### ***Invertebrates***

- 3.1.17. The data search returned 530 records of notable invertebrates within the local area. Species included (but not limited to) common darter (*Sympetrum striolatum*), large red damselfly (*Pyrrosoma nymphula*), ruddy darter (*Sympetrum sanguineum*) and emperor dragonfly (*Anax imperator*). Numerous records related to Halewood Triangle SBI located adjacent to the site.
- 3.1.18. Flowering species were observed within modified grassland area and within the developed land; sealed surface. Butterflies were noted during the survey, mainly in relation to the modified grassland parcel. The adjacent woodland is anticipated to be of importance for woodland invertebrates and may also utilise the site for foraging. However, the site is not considered to be of significant value due to the limited vegetation onsite.

#### ***Amphibians***

- 3.1.19. The data search returned 1736 of amphibians within 1km of the site boundary, of which, 74 records related to great crested newt (*Triturus cristatus*), some of which relates to Halewood Triangle 'ducky pond' and 'polio pond'. Based on the grid references, some records related to ponds found within 250m of the site boundary. Additional amphibian records included common frog (*Rana temporaria*), common toad (*Bufo bufo*) and smooth newt (*Lissotriton vulgaris*).
- 3.1.20. No Granted European Protected Species Licences found within 1km of the site boundary relating to great crested newt based on Magic.gov.uk. No records of absence or presence of great crested newt from class survey licence returns or pond surveys were identified within 1km based on Magic.gov.uk.

3.1.21. No ponds were located onsite. Based on OS mapping, four ponds were located within 250 m of the site boundary and appeared to be connect via drainage ditches within the adjacent woodland. Great crested newts' upper dispersal limit is generally considered to be up to 250 m from a waterbody (though occurrence of greater distances does exist). Please refer to Figure 4 for the location of the ponds.

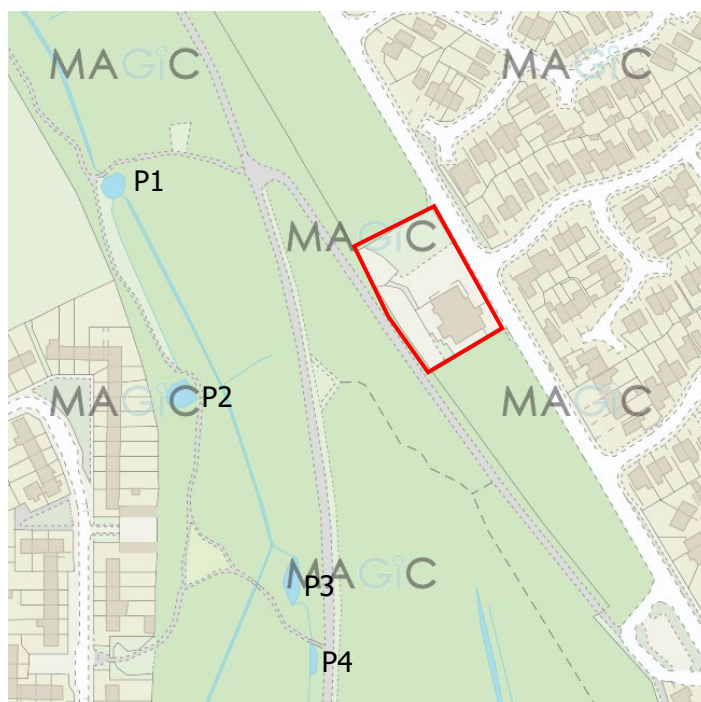


Figure 4 – Pond locations and site indicated in red

3.1.22. An inspection of the ponds was completed, and they were subject to an HSI as detailed in Table 3 to demonstrate the current condition of the ponds. A poor assessment does not indicate absence.

Table 3 – HSI Assessment

| Index                             | Results     |      |             |      |                 |      |                 |      |
|-----------------------------------|-------------|------|-------------|------|-----------------|------|-----------------|------|
| Pond Ref                          | Pond 1      |      | Pond 2      |      | Pond 3          |      | Pond 4          |      |
| SI1 – Location                    | A           | 1    | A           | 1    | A               | 1    | A               | 1    |
| SI2 – Pond Area (m <sup>2</sup> ) | 125         | 0.3  | 150         | 0.3  | 120             | 0.2  | 35              | 0.1  |
| SI3 – Pond Drying                 | Never dries | 0.9  | Never dries | 0.9  | Sometimes dries | 0.5  | Sometimes dries | 0.5  |
| SI4 – Water Quality               | Poor        | 0.33 | Poor        | 0.33 | Poor            | 0.33 | Poor            | 0.33 |
| SI5 – Shade                       | 100%        | 0.2  | 100%        | 0.2  | 100%            | 0.2  | 100%            | 0.2  |
| SI6 – Fowl                        | Minor       | 0.67 | Minor       | 0.67 | Minor           | 0.67 | Minor           | 0.67 |
| SI7 – Fish                        | Possible    | 0.67 | Possible    | 0.67 | Possible        | 0.67 | Possible        | 0.67 |
| SI8 – Ponds                       | 6           | 0.85 | 6           | 0.85 | 6               | 0.85 | 6               | 0.85 |

|                      |                             |     |                             |     |                            |     |                            |     |
|----------------------|-----------------------------|-----|-----------------------------|-----|----------------------------|-----|----------------------------|-----|
| SI9 – Terr’l Habitat | Good                        | 1   | Good                        | 1   | Good                       | 1   | Good                       | 1   |
| SI10 - Macrophytes   | 10%                         | 0.4 | 10%                         | 0.4 | 10%                        | 0.4 | 90%                        | 0.9 |
| <b>Score</b>         | <b>0.55 – below average</b> |     | <b>0.55 – below average</b> |     | <b>0.5 – below average</b> |     | <b>0.5 – below average</b> |     |

- 3.1.23. The ponds were all assessed as ‘below average’ under the assessment due to the lack of other ponds within the local area, and limited vegetation for egg laying. However, the HSI assessment does not determine the presence of the species and great crested newt presence within the offsite ponds is unknown. As stated, previous records have confirmed presence of the species within the offsite ponds, which the Halewood Triangle SBI citation references the species. It is deemed that great crested newts are likely present within the offsite ponds.
- 3.1.24. The site is considered to be of limited terrestrial value for amphibians, with much of the site comprising developed land; sealed surface. The derelict land, grassland and scrub habitat however may provide suitable cover for the species, in their terrestrial phase.
- 3.1.25. Common amphibians may occur onsite due to the presence of unmanaged habitats (i.e. grassland and willow scrub).

### **Reptiles**

- 3.1.26. The data search returned no records of reptile species within the local area.
- 3.1.27. Much of the site provides limited value for reptiles, given it comprised developed land which lack the structure and habitat quality to support the species group. However, unmanaged modified grassland and scrub habitats may be of value for the species group and may provide suitable foraging resources and cover. Reptiles may occur onsite but not considered to be of significant value for the species.

### **Birds**

- 3.1.28. A total of 241 records of birds were returned during the 1 km data search, some of which related to the Halewood Triangle SBI. Records included (not limited to); linnet (*Linaria cannabina*), lesser redpoll (*Acanthis cabaret*), reed bunting (*Emberiza schoeniclus*), song thrush (*Turdus philomelos*) and starling (*Sturnus vulgaris*).
- 3.1.29. The site provides potential breeding habitats for birds in association with the scrub and scattered trees. No historic bird nests were observed externally, however, potential access inside the building for pigeons may be present. Notable bird species associated with residential and woodland habitats may utilise these habitats for nesting purposes, however the habitats are common within the local area and not anticipated to be of significance. The adjacent woodland is anticipated to be of greater importance within the local area.
- 3.1.30. Ground nesting birds are not anticipated to be on site due to the sites use and surrounding trees which will be suitable perches for bird of prey and being located within a residential area.

### **Bats**

- 3.1.31. A total of 237 records of bats were returned within 1 km of the site boundary, relating to; unidentified bat, common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), *Pipistrellus* sp., brown long-eared (*Plecotus auritus*), Daubenton’s (*Myotis daubentonii*) and noctule

bat (*Nyctalus noctula*). The majority of records related Millcroft Road, Woolton, Liverpool located approximately 730m west of the site.

- 3.1.32. No Granted European Protected Species Licences found within 1km of the site boundary relating to bats based on Magic.gov.uk.
- 3.1.33. The buildings and trees onsite were subject to a PRA, as detailed in Table 4. No trees were observed as having bat roosting potential within the site, however mature trees in association with the adjacent woodland may have bat roosting value.

**Table 4 – Preliminary Roost Assessment Results**

| Building Ref | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Photograph                                                                          |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Building     | <p><u>External Description</u></p> <p>A single storey red brick building which appears to be vacant for some time. Bare brick work was in good condition across the building, with a mock-Tudor feature on the eastern aspect, which was also in good condition. Windows and doorways were present across the building extent. All doorways were covered with shutters with no potential access points, whilst the majority of windows were flush to the brick work. One boarded up window was present on the southern aspect, where gaps around the board would provide internal access. A gap was located on the western aspect, where the utilities were present which may provide internal access. The roof was multi-pitched and constructed with roman tiles which were generally in good condition. One tile was moved on the western aspect which may provide a PRF or internal access. Lead flashing was also slightly lifted on the eastern aspect, where a smaller annex was present which may provide a PRF. Mortar was also missing on the edge of the roof of this annex which may provide a PRF or internal access. Generally, the ridge tiles appeared in good condition, with one point of missing mortar observed at the ridge which may be a PRF or potential access point. Gaps between the overhanging eaves and fascia boarding across the building was noted. The western board gap was heavily cobwebbed but does not confirm absence of use.</p> |  |

|  |                                                                                                                                                                                                                                         |                                                                                    |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  | <p><b>Internal Description</b><br/>No internal inspection was possible.</p> <p><b>Due to the number of PRFs and potential access points observed across the building, it was assessed as having moderate bat roosting potential</b></p> |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

- 3.1.34. The habitats on site are anticipated to provide value for foraging bats due to comprising grassland which will attract invertebrate prey. The site is partially surrounded by woodland which is anticipated to be utilised for commuting and foraging purposes and is likely of importance for the local bat population.
- 3.1.35. The site has the potential to support roosting bats whilst the habitats were assessed as having moderate value.

#### ***Badger***

- 3.1.36. Two records of badger (*Meles meles*) were returned during the data search. No signs of badger presence were recorded within the site or the surrounding 30 m during the site visit. The site provides suitable conditions for sett building within the scrub and adjacent woodland habitats, and they may be present locally.

#### ***Other Terrestrial Mammals***

- 3.1.37. A total of 608 records of western European hedgehog (*Erinaceus europaeus*) were located within the 1km search area. Given the habitats present within the site including grassland and scrub and being located adjacent to Halewood Triangle SBI, it is anticipated that hedgehog could be present within the site.

#### ***Non-Native Invasive Species***

- 3.1.38. The following non-native invasive species were recorded within 1km of the site; Canadian Waterweed (*Elodea canadensis*), New Zealand pigmyweed (*Crassula helmsii*), Japanese knotweed (*Fallopia japonica*), Himalayan cotoneaster (*Cotoneaster simonsii*), Himalayan balsam (*Impatiens glandulifera*), garden archangel (*Lamium galeobdolon subsp. argentatum*) and rhododendron (*Rhododendron ponticum*).
- 3.1.39. Rockspray cotoneaster was located at the following grid reference SJ 44060 86113.

#### ***Species Discounted from Assessment***

- 3.1.40. Water vole (*Amphibius arvicola*), otter (*Lutra lutra*), and white-clawed crayfish (*Austropotamobius pallipes*) have been discounted from assessment. The closest aquatic habitat is related to the ponds offsite and are not connected to running water, and as such no suitable aquatic habitat is located onsite to support either of these species.

- 3.1.41. Hazel Dormouse (*Muscardinus avellanarius*) mainly occur in southern counties, especially in Devon, Somerset, Sussex and Kent. There are few recorded localities north of the Midlands, though they are present in parts of the Lake District and in scattered Welsh localities (Matthews et al, 2018). The species are not generally known to be present within the Knowsley area (Wembridge et al., 2016). The habitats on site are of limited value due to limited areas of extensive woodland and scrub. As such, the species are reasonably discounted from site.
- 3.1.42. Red squirrel (*Sciurus vulgaris*) has been discounted from the assessment. Red squirrel populations are known to be within the Knowsley area and were returned in the data search. However, extensive records of grey squirrel was also recorded. No mature trees were located onsite, which would be suitable for red squirrel and drey creation. However, the species could be present within the adjacent woodland.

## 4. Mitigation Recommendations

### Designated Sites

- 4.1.1. The site is located within the Impact Risk Zone for the Mersey Estuary SSSI, Ramsar and SPA which is located 4km south from the site boundary and consists of a variety of bird populations. The proposed works are not anticipated to directly impact the designated site. However, indirect impacts through an increase of visitors to the nearby designated site may incur.
- 4.1.2. Liverpool's Local Plan's Habitat Regulations Assessment (HRA) identifies recreational pressure from residential development as a Likely Significant Effect alone and in-combination. Recreational pressure is recognised in the formal statutory Conservation Advice Packages and Site Improvement Plans & as Medium-High risk to qualifying features of the national and international sites.
- 4.1.3. Liverpool City Council has adopted an Information Note on mitigating the impact of recreational pressure within Liverpool. To ensure that recreational pressure effects are adequately mitigated, the applicant can opt-in to both of the following mitigation measures:
- **Commutated sum contribution for each new home** - A commuted sum contribution will be required for each new home (net new home) of:
    - £278.26 per new home in the core zone (closest to the coast as shown on map in Appendix 2 of the Information Note).
    - Appendix 8 of the Liverpool City Region Recreation Management Strategy Evidence Report shows how the contributions were determined.
  - **Leaflets for new householders** - A colour copy of the leaflet setting out information about the Liverpool coastline should be provided by the applicant to all first-time occupiers of new homes. The leaflet has been produced by MEAS and has been approved by Natural England. Applicants may also make this leaflet available in digital form to all first-time occupiers.
- 4.1.4. If the applicant decides not to opt-in to the above mitigation measures, they will need to consider their individual scheme and any 'in combination effects' and provide a bespoke package of mitigation prior to determination in order for the Council to complete an HRA. The client must confirm where they are to adopt or they select to undertake their own bespoke assessment and mitigation.
- 4.1.5. There are numerous LWS and SBIs within the surrounding area of the site based on consultation. The closest of which related to Harewood Triangle SBI. It is recommended that a minimum 5-10m buffer is to be maintained between the designated site and the proposed development throughout the construction and operational phase in order to reduce impacts during this phase. The buffer should be appropriately signed and fenced, and all contractors inducted as to their working limits. If any works are required within the buffer, they should be undertaken under the supervision of a suitably experienced ecologist.
- 4.1.6. There are woodland priority habitats located adjacent to the site. It is recommended that a detailed Construction and Environment Management Plan (CEMP) specific to the proposed development is created (and adhered to throughout the course of construction works) to avoid, minimise and mitigate for negative impacts resulting from construction practices on all habitats surrounding the site.

4.1.7. This plan will detail measures to avoid, minimise or mitigate any potential negative effects caused by construction practices on the environment on and surrounding the site including:

- The control of run-off from areas of arisings to prevent any pollutants/contaminants entering nearby waterbodies.
- Appropriate measures to suppress dust during hot, dry and/or windy conditions.
- Excavations should be sealed overnight or should have at least one shallow-sloping side to allow any animals that may fall in to escape.
- An ecologist should be contacted for advice should any protected species be discovered during construction.

## Habitats

### *Scattered Trees & Hedgerows*

4.1.8. The extent of proposed works mainly relates to the barn. As such, no trees are anticipated to be lost to facilitate development.

## Species

### *Amphibians*

- 4.1.9. Great crested newts' presence within the offsite ponds is deemed likely. The site appears to not be located within a district that is covered under the Natural England District Level Licencing.
- 4.1.10. A Rapid Risk Assessment (RRA) was undertaken following advice from Natural England assessing whether a Mitigation License would be needed. Based on this assessment, without mitigation, there is a possibility of disturbance of terrestrial great crested newts should no mitigation be applied and no consideration of habitat condition and suitability. It should be noted the development is restricted to a site approximately 0.295ha in size.

| Component                                | Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom) | Notional offence probability score    |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Great crested newt breeding pond(s)      | No effect                                                                                                                                           | 0                                     |
| Land within 100m of any breeding pond(s) | No effect                                                                                                                                           | 0                                     |
| Land 100-250m from any breeding pond(s)  | 0.1 - 0.5 ha lost or damaged                                                                                                                        | 0.1                                   |
| Land >250m from any breeding pond(s)     | No effect                                                                                                                                           | 0                                     |
| Individual great crested newts           | No effect                                                                                                                                           | 0                                     |
| Maximum:                                 |                                                                                                                                                     | 0.1                                   |
| Rapid risk assessment result:            |                                                                                                                                                     | <b>GREEN: OFFENCE HIGHLY UNLIKELY</b> |

- 4.1.11. "Green: offence highly unlikely" indicates that the development activities are of such a type, scale, and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see Non-licensed avoidance measures tool) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

- 4.1.12. The RRA does not consider habitat suitability and precautionary methods necessary. As the works will be constrained mainly to habitats of sub-optimal suitability and is limited in size, it is considered the presence of great crested newts within these areas would be limited. The modified grassland, vacant land and scrub is considered to be suitable for the species. As such, it is recommended that Reasonable Avoidance Measures (RAMs) are followed.
- 4.1.13. The following RAMs are to be undertaken under the supervision of a licenced great crested newt ecologist. Pre-commencement works are as follows:
- All site contractors are to be inducted through a Toolbox Talk (please see appendices) hosted by a suitably qualified ecologist on the presence of great crested newts and their legal protection. All contractors are to sign the Toolbox Talk and agree to the proposed RAMs;
  - A designated working area will be maintained to minimise total working area, which will be marked out by the ecologist (where necessary). A fence and/or sign will be situated to mark the working areas to ensure no contractors and vehicles do not enter areas which have not been checked for great crested newts.
  - Any vegetation on site to be cleared should first be strimmed to approximately 15 cm and left overnight, allowing any animals the chance to naturally disperse from site. A fingertip search of any vegetated areas should then be undertaken to check for the presence of great crested newts.
  - Once the ecologist has declared all areas of potential for great crested newts have been checked, the proposed works can continue unsupervised.
  - Storage of materials is to be on pallets i.e. raised off the ground and on areas of hard standing or tarmac. No materials to be stored on vegetation.
  - All working areas are to be maintained as bareground or hardstanding throughout the construction phase.
  - All open pits and pipes are to be covered during the night, with a check for presence of amphibians conducted prior to covering.
  - If excavations are exposed and/or created, a slope will be positioned within the excavation to allow amphibians and mammals to escape should they fall in.
  - Under no circumstances should site contractors attempt to handle great crested newt.
  - Ecologist to undertake a site visit upon completion of works to confirm that the works have been undertaken using the above risk avoidance measures and that habitats have been restored.
- 4.1.14. In the unlikely chance, that any terrestrial great crested newts are located during the RAM's, all works must cease immediately, and Natural England contacted for a Mitigation License. No great crested newt is to be handled and the refugia is to be placed back to provide suitable cover for the species. If any common amphibians are identified, they should be moved by hand to an area away from construction activities.
- 4.1.15. It is also recommended that the consideration for common amphibian's populations during the works. This includes checking any areas by hand which will be impacted by the proposed works, any common amphibians found should be moved carefully by hand outside of the working area.

### ***Reptiles***

- 4.1.16. Suitable habitat for reptiles is present in relation to the modified grassland and scrub. Due to the potential presence of reptiles, it is recommended that RAMs are followed to minimise the likelihood of killing, injuring or disturbing any reptiles present on the site during the construction phase:
- An experienced Ecological Clerk of Works (ECoW) shall be appointed to ensure RAM's are enforced;
  - A walkover of the area should be undertaken by the ECoW to determine any change in status of the habitats/structures on site prior to the initiation of any works;
  - A toolbox talk by the appointed ECoW will be given to the site manager and all contractors working on site with respect to the surrounding habitats and potential for protected/notable species. A copy of species factsheets relating to reptiles and breeding birds will be provided for display within the site office.
  - Suitable vegetation is to be strimmed under ECoW to approximately 15cm in a northern to southern direction. It is to be checked by the ECoW following strimming to identify individuals. If discovered, they will be removed from the working area and covered. Once the areas are deemed reptile free, they are to be strimmed to ground level and maintained at this length for the remaining works.
  - Any excavations will be back-filled on the same day as excavation, or checked by the ECoW immediately prior to backfilling. If not possible, a ramp, will be provided in all excavations that cannot be backfilled on the same day or alternatively, all excavations should be well-covered with plywood;
  - No piles of loose construction materials are to be created during works – all material will be kept on hardstanding, stored on pallets, removed immediately from the site or checked by an ECoW prior to being removed;
  - In the event reptiles are discovered, works will halt immediately and the ECoW will be contacted for advice. Contractors are not to handle reptiles unless informed to do so by the ECoW.
- 4.1.17. The precautionary destructive search work will be undertaken during the summer at a time of year when reptiles are active. The ecologist will be present during the strimming works. Any reptiles found during the destructive search will be relocated to the retained grassland to the south of the site.

### ***Breeding Birds***

- 4.1.18. Any vegetation removal and building works, should be undertaken outside of the breeding bird season (March to September, inclusive). If this is not possible, a suitably qualified ecologist should undertake a nesting bird check no more than 48 hours prior to removal. If nesting activity is observed, the nest(s) should be left in situ until the young have fledged. A suitable buffer will be maintained and determined by the ecologist.
- 4.1.19. Minor areas of dense scrub and trees are to be lost to facilitate development. The recommended buffer will assist in minimising the loss of breeding bird habitat and maintain a buffer from the adjacent Halewood Triangle SBI which is known to support a number of notable bird species.
- 4.1.20. It is recommended, post development bird boxes are installed on the buildings targeting notable species listed under the Merseyside Biodiversity Action Plan such as 'Urban Birds' with examples listed; house sparrow () and starling ().



### ***Bats***

- 4.1.21. The building was assessed as having moderate bat roosting potential. As such, further surveys are recommended and detailed in Section 5. The nocturnal bat surveys were underway on the writing of this report.
- 4.1.22. The habitats of highest potential value for commuting and foraging bats include the adjacent woodland whilst the grassland is anticipated to attract a range of invertebrate prey. The recommended buffer would assist in mitigating bats that may utilise the adjacent Halewood Triangle SBI for commuting and foraging bats, and also potentially roosting bats of mature trees within the designated site. The buffer could be planted with species rich grassland and to be of benefit to the species and will lower risk of light spill.
- 4.1.23. Slow-flying species such as brown long-eared bat (*Plecotus auritus*), which are known to be in the local area, are sensitive to lighting and may be impacted by the proposed development, should no mitigation for lighting be considered.
- 4.1.24. Any proposed lighting/existing lighting should follow the guidance outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Bats and Artificial Lighting in the UK” (2018).
- 4.1.25. An External Lighting Scheme had not been produced on the writing of this report. The following measures should be implemented in the final proposed lighting strategy, following guidance outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s Guidance Note GN08/23 “Bats and Artificial Lighting in the UK” (2023):
- Keep site lighting to minimum level.
  - No illumination of habitats of value eg) shrubs, trees lines, known or possible roosts locations
  - A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component
  - Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
  - Security lights should be set on motion sensors, using short 1-minute timers to minimise light use.
  - Increase dense vegetation and “dark areas” within the site where possible.

### ***Badgers***

- 4.1.26. No badger setts were identified during the survey; however, they may be within the local area. The following Precautionary Working Methods will be adhered to during the construction phase to ensure that no badgers are impacted by the proposed development:
- Updated badger walkover to be completed immediately prior to the construction phase to confirm presence or absence of badgers.
  - All site operatives will be inducted to the potential presence of the species and the species legal protection.
  - All site operatives will be inducted as to identifying potential badger setts and should be vigilant if they suspect they locate a new sett during works and inform the site manager immediately. A minimum 20m buffer will be maintained from the potential sett until an ecologist has been to site.
  - All excavations will be battered at a 45 degree angle or ramps to be positioned to allow escape should animals become trapped.

- All site machinery and materials will be appropriately stored to avoid harm to the species, notably between July and November each year when extra care is needed to avoid potential impacts on pregnant females.

#### ***Terrestrial Mammals***

- 4.1.27. European Hedgehog are anticipated to be present within the site and are a Species of Principal Importance. During habitat removal, any areas of dense vegetation should first be carefully hand searched to check for the species. If identified during management, should be relocated carefully by hand to a location away from the working area. If any injured either species are located, they should be taken to a local vets.

#### ***Non-native Invasive Species***

- 4.1.28. Rockspray cotoneaster was located onsite. It is recommended that it is eradicated from site by a competent contractor.

## 5. Further Surveys & Conclusion

### Bat Survey

- 5.1.1. The building was assessed as having moderate bat roosting potential, and therefore, in accordance with Best Practice guidance (Collins, 2016) further nocturnal emergence/ re- entry surveys are currently being undertaken between May-September (inclusive) to determine usage by roosting bats (depending on the extent of development works). **The results of the bat surveys are to be detailed within a separate report.**
- 5.1.2. The results of the further surveys will determine if any mitigation is required for roosting bats. If roosting bats are located within any of the buildings, a Natural England Mitigation Licence may be required for development to proceed. The Licence can only be obtained once planning permission has been granted and all wildlife conditions discharged. However, the bat emergence surveys must be undertaken prior to planning permission being applied for as they are a material consideration.
- 5.1.3. Please note, bat emergence surveys are typically valid for 12 months. If a Mitigation Licence is required, survey results from the most recent bat survey season are required.

### Conclusion

- 5.1.4. The site was found to predominantly comprised a building with associated developed land; sealed surface, with the addition of modified grassland scrub. The unmanaged habitats are anticipated to provide a range of habitats for local notable flora and fauna. The site was found to have value or potential value for bats, birds, amphibians, and terrestrial mammals.
- 5.1.5. Specific enhancement recommendations for the site include the following:
  - Bat and bird boxes could be placed on the new buildings / retained trees. A plan to show the locations of these boxes and the specifications should be produced by a suitably qualified ecologist once the layout is finalised.
  - Planting of linear features such as hedgerows and trees where possible, to add commuting features within the site.

## 6. Bibliography

- Bat Conservation Trust and Institute of Lighting Professionals (2018). Bats and artificial lighting in the UK – Bats and the Built Environment Series.
- British Hedgehog Preservation Society / People's Trust for Endangered Species (2019). Hedgehogs and Development. BHPS / PTES.
- Chanin P (2003). Ecology of the European Otter. Conserving Natura 2000
- CIEEM (2019). Advice Note on the Lifespan of Ecological Reports and Surveys. CIEEM.
- CIEEM (2019). Guidelines for Preliminary Ecological Appraisal. CIEEM.
- Collins (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (Third Edition). The Bat Conservation Trust, London.
- Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746. Available online at [britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf](http://britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf)
- IEA (1995). Guidelines for Baseline Ecological Assessment. E & F Spon.
- English Nature (2004). Bat Mitigation Guidelines. English Nature, Peterborough.
- Froglife (1999) Reptile Survey: An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation. Froglife Advice Sheet 10. Froglife, Halesworth.
- Gent, A.H & Gibson, S.D. (2003) Herpetofauna Workers' Manual. Joint Nature Conservation Committee, Peterborough.
- Harris S., Cresswell P., Jefferies D. (1989). Surveying Badgers. The Mammal Society.
- IEA (1995). Guidelines for Baseline Ecological Assessment. E & F Spon.
- JNCC (2004). Bat Workers Manual. JNCC, Peterborough.
- JNCC (2010). Handbook for Phase One Habitat Survey – 2010 Edition. England Field Unit, Nature Conservancy Council. Reprinted JNCC.
- Liles, G. (2003). Otter Breeding Sites. Conservation and Management. Conserving Natura 2000 Rivers Conservation Techniques Series No. 5. English Nature, Peterborough.
- Maddock, A. (2008). UK biodiversity action plan; priority habitat descriptions. UK Biodiversity Action Plan.
- Mathews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C.A., McDonald, R.A., and Shore, R.F. (2018). A review of the population and conservation status of British mammals.
- Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great crested newt conservation handbook, Froglife, Halesworth.
- Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetology Journal 10 (4), 143-155.



## Appendix 1 – Site Photographs

| Feature                       | Photograph                                                                           |  |
|-------------------------------|--------------------------------------------------------------------------------------|--|
| Modified grassland (northern) |    |  |
| Modified grassland (western)  |   |  |
| Willow scrub                  |  |  |
| Vacant / derelict land        |  |  |

|                                |                                                                                   |                                                                                      |  |
|--------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--|
| Rockspray cotoneaster          |                                                                                   |    |  |
| Developed land; sealed surface |  |    |  |
| Scattered trees                |                                                                                   |   |  |
| Pond 1                         |                                                                                   |  |  |

|        |  |                                                                                     |  |
|--------|--|-------------------------------------------------------------------------------------|--|
| Pond 2 |  |   |  |
| Pond 3 |  |   |  |
| Pond 4 |  |  |  |

## Appendix 2 – Habitat Map





Drawing Title : UK HAB Plan -  
Okell Drive, Knowsley  
Date: 23.08.23

-  Developed Land
-  Willow Scrub
-  Vacant, Derelict land
-  Modified Grassland
-  Site Boundary

|                 |
|-----------------|
| Scale: 1:800    |
| Drawn By: CW    |
| Checked By: OC  |
| Approved By: OC |



|                             |          |
|-----------------------------|----------|
| Client: Enabl               |          |
| Site: Okell Drive, Knowsley |          |
| Project Number: 20- 1187    | Rev: 1.0 |
| © Seed Arboriculture Ltd    |          |