



Carr Lane, Prescott

Ecological Assessment Report

October 2023

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Executive Summary

This report presents the findings of an Ecological Assessment of land at Carr Lane, Prescott, which was commissioned by United Living to inform the proposed planning application for a residential development and construction of 88 houses.

It is based on information collected from a desk study and an Extended UK Habitat Classification Survey carried out in July 2023. It also includes a provisional analysis of Biodiversity Net Gain. Relevant legislation and planning guidance are also taken into account.

Key ecological features, potential impacts, further survey requirements and outline mitigation measures are summarised in the table below.

Key findings and Recommendations
Designated Sites 1.1. Consultation with Natural England required if any discharge of water or liquid waste of more than 20m³/day to ground (i.e. to seep away) or to surface water, such as a beck or stream. 1.2. Proposals should demonstrate how increased recreational pressure to the Mersey Estuary European Designated site will be avoided or mitigated through production of a bespoke mitigation package.
Pollution control measures 2. Ensure best practice measures are applied to minimise possibility of pollution to Prescott Brook, nearby designated sites, habitats of importance and areas of open water (outlined in section 5.4)
Woodland, pond, willow/mixed/bramble scrub, grassland and urban trees 3.1. Avoid losses/retain woodland, pond, scrub and grassland habitats wherever possible. 3.2. Compensate for any losses on-site through habitat creation/enhancement wherever possible and off-site where necessary. 3.3. Safeguard retained trees with Root Protection Areas. 3.4. Avoid spreading of invasive non-native species in soil and translocate individual plant specimens of less commonly occurring species. 3.5. Planting of trees is incorporated into the landscaping designs mitigating for the loss of UT1.
Bats 4.1. Retention of identified potential bat roost trees (BTG1). 4.2. Use of appropriate arboriculture methods during removal of UT1/BT1 4.3. Compensate for loss of foraging and commuting habitat. 4.4. Design working and development lighting in accordance with the appropriate guidance. 4.5. Disturbance to foraging bats during active bat season will be minimised through only working during daylight hours.

4.6. Install additional enhancement measures, e.g. bat boxes/roost features.
Badgers, small mammals, amphibians and reptiles
5. Adherence to the RAMs listed in section 5.16.
Birds 6.1. Any vegetation removal works should take place outside the breeding bird season which runs from March until August inclusive. 6.2. Any tree/scrub clearance that must be carried out within the bird breeding season will be subject to a pre-clearance bird survey. 6.3. No works will be carried out within 5 m of an identified nest. 6.4. Bird boxes should be installed where possible within the development site.
Otter, water vole, eel 7.1. Any works undertaken within 10 m of Prescott Brook will be undertaken during the day. 7.2. No direct illumination of Prescott Brook and the surrounding habitat; and all excavations that may entrap animals will be covered or a means of escape. 7.3. Pollution prevention measures will also be followed throughout the duration of the works.
Invertebrates 8. Post development grassland habitats should be suitably managed and feature a high botanical diversity offering a wide range of suitable native nectar rich flowers and shrubs.
Invasive Non-Native Species 9.1. RAMs will be adhered to throughout the duration of the works as outlined in section 5.24. 9.2. Biosecurity measures outlined in section 5.27. 9.3. The creation of a 10 m stand-off from the top of the brook bank.
Biodiversity Net Gain 10. It is anticipated that the development will result in a significant loss of habitat resulting in a decline in biodiversity on-site. A more informed analysis of habitat retention, loss and creation should be undertaken to ensure that the development results in Biodiversity Net Gain once retention of on-site biodiversity has been maximised and appropriate off-site compensation agreed with the local planning authority.

1. Introduction

- 1.1 Bowland Ecology Ltd was commissioned by United Living to undertake an ecological assessment of a site located off Carr Lane, Prescott, Merseyside (NGR:SJ 46109 92026) formerly Prescott Wastewater Treatment Works (WwTW). This is in relation to an outline planning application for a residential development and construction of 88 houses.
- 1.2 The site, located to the south-west of Prescott, Merseyside is bordered to the north-east by Carr Lane and roundabout; to the south-east by a recently constructed housing estate; and the south-west by the M57 motorway. Mature broad-leaved woodland and Prescott Brook run along the north-western site boundary, in close proximity to Carr Lane Lake Local Wildlife Site (LWS). Within the site, a history of mining and water treatment infrastructure formerly existed; all related structures have been removed (sometime prior to the year 2000) and habitats have developed over the disturbed ground. These habitats include semi-natural broad-leaved woodland, mixed scrub, willow scrub, bramble scrub other neutral grassland, tall ruderal vegetation, and a pond.
- 1.3 The assessment follows the Guidelines for Preliminary Ecological Appraisal and the Guidelines for Ecological Report Writing (CIEEM 2017a; 2017b), and is in line with the British Standard BS42020:2013 'Biodiversity – Code of practice for planning and development'. It is based on information from a desk study, an Extended UK Habitat Classification Survey, and a provisional analysis of Biodiversity Net Gain.
- 1.4 The aim of the assessment is to:
 - 1) identify designated sites and important habitats occurring within the area;
 - 2) identify the presence of or potential for important species, including legally protected species; and
 - 3) assess likely impacts and recommend suitable mitigation measures and opportunities for Biodiversity Net Gain.
- 1.5 The report includes a description of the methods used, habitats and species identified, and recommendations to protect and enhance biodiversity and address legal requirements.

2. Methodology

Desk Study

- 2.1 The aim of the desk study was to identify the presence of statutory and non-statutory designated wildlife sites, legally protected species, and Habitats and Species of Principal Importance (HPI & SPI) for the conservation of biodiversity (Section 41 NERC Act 2006) within the search area.
- 2.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed for information on locally, nationally and internationally designated sites of nature conservation importance (statutory sites only) and areas identified as HPI within 2 km of the site boundary.
- 2.3 Local records of protected sites and species within 2 km of the site were obtained in January 2022 from a data search with Merseyside BioBank as part of an Ecological Appraisal undertaken relating to the north-eastern section of the site (Bowland Ecology, 2022). These records are considered suitable for consideration under this Ecological Assessment.
- 2.4 Ordnance Survey (OS) maps and aerial photographs were reviewed to help identify the presence of water bodies and notable habitats, such as hedgerows and woodland, within 0.25 km of the site, which may provide aquatic or terrestrial habitat for great crested newt (*Triturus cristatus*; GCN).
- 2.5 It is recommended¹ that, for developments resulting in permanent or temporary habitat loss at distances over 0.25 km from the nearest pond, careful consideration should be given as to whether a GCN survey is appropriate. Although this species may use suitable terrestrial habitat up to 0.5 km from a breeding pond, in this instance a 0.25 km search radius was considered appropriate due to the use of eDNA survey techniques and historic absence of the species in the area.
- 2.6 Bowland Ecology has been appointed to undertake previous ecological surveys of Carr Lane conducted in 2014, 2017, 2020 and 2022. Survey data recorded during these appointments has been used to inform the ecological assessment in this report.

Great crested newt Habitat Suitability Index Assessments and Environmental DNA Survey

- 2.7 Waterbodies on site and within 0.25 km were subject to Habitat Suitability Index (HSI) (Oldham *et al.*, 2000) assessments in order to assess the suitability of the habitat to support the protected GCN.
- 2.8 Environmental DNA analysis of water at P1 and P4 was undertaken to determine presence of GCN. Sampling methods followed those outlined in 'Analytical and Methodological Development for Improved Surveillance of the Great Crested Newt' (Biggs *et al.*, 2015). Pond water samples were taken and sent to Surescreen Scientifics, a Natural England accredited laboratory for DNA analysis to determine the presence/absence of GCN.

¹ see the Natural England 'Method statement template for great crested newt mitigation licence', <https://www.gov.uk/government/publications/great-crested-newts-apply-for-a-mitigation-licence>

Breeding Bird Survey and Breeding Bird Habitat Assessment

- 2.9 Given the time available, a comprehensive suite of breeding bird surveys could not be undertaken with the 2023 nesting season. Therefore, an assessment has been made using historic survey data related to the site (breeding bird surveys undertaken by Bowland Ecology) and a breeding bird survey and overall assessment of the site's current habitat for use by breeding birds. The Breeding bird survey was undertaken on the 11th July 2023 by Mark Breaks BSc, *Ornithologist*. The weather was suitable for the survey with periodic light rain, 90% cloud cover, a gentle breeze (Beaufort scale 3) and air temperature of 18°C.

Bat Activity Survey + Static Detector and Analysis

- 2.10 To date two bat activity surveys have been undertaken within the bat active season of 2023. These surveys involve a walkover of the site for 2 hours following sunset with handheld bat detectors (Wildlife Acoustics: EM Touch 2 + Batbox Duet) periodically stopping at listening stops and recording/mapping any bat activity. Survey data relating to these visits is provided in Table 1 below. Two further bat activity surveys are scheduled for the bat active season 2023 (September and October). Additionally, 3x static bat detectors (Anabat Express) were deployed for the duration of 3 weeks in July 2023 (with further deployments scheduled). Analysis of the static data is ongoing.

Table 1: Bat activity survey information

Date	Surveyors	Weather conditions
12.07.23	Sam Robinson BA (Hons), QCIEEM Felicity Davies BSc (Hons)	Suitable – 16°C, dry, light air (Beaufort scale 1) 75% cloud cover.
02.08.23	Sam Robinson Esther Kitching BSc (Hons)	Suitable – 16°C, dry, occasional light rain, gentle breeze (Beaufort scale 3), 100% overcast.
13.09.23	Sam Robinson Gemma McMullen	Suitable – 15°C, dry, light air (Beaufort scale 1), 60% cloud cover.
04.09.23	Sam Robinson Gemma McMullen	Suitable – 15°C, dry, gentle breeze (Beaufort scale 3), 65% Cloud cover.

UK Habitat Classification Survey (UKHab)

- 2.11 An assessment was made of all areas of vegetation within the site boundaries, based on the standardised UKHab survey methodology (Butcher *et al.* 2020a). This involved a walkover survey to identify vegetation types, which were then classified against those the types set out in UKHab classification system (Butcher *et al.* 2020b). All habitats within and adjacent to the site boundary were mapped and described.
- 2.12 In addition, evidence of and potential for legally protected and notable species was noted, in particular:
- Potential roosting sites for bats within trees (identification of suitable cracks and crevices - survey undertaken externally and from ground level only); an

assessment of the suitability of bat roosting, foraging and commuting habitat was undertaken based on Collins (2016) (see Appendix A);

- Habitats utilised by other notable and protected species, including amphibians (particularly GCN, water vole (*Arvicola amphibius*), otter (*Lutra lutra*), badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), invertebrates (e.g. butterflies), nesting birds (including any active or disused bird nests) and reptiles; and
- The presence of the most common invasive plant species subject to strict legal control including: Japanese knotweed (*Fallopia japonica*), giant knotweed (*F. sachalinensis*), hybrid knotweed (*F. x bohemica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron ponticum*, *R. ponticum* x *R. maximum* and *R. luteum*), and Himalayan balsam (*Impatiens glandulifera*).

- 2.13 The survey was carried out by Sam Robinson BA (Hons), QCIEEM on 10th July 2023. The weather was suitable for the survey with periodic light rain, 90% cloud cover, with a gentle breeze (Beaufort scale 3) and air temperature of 18°C.

Biodiversity Net Gain

- 2.14 A provisional analysis of Biodiversity Net Gain was carried out using version 4 of the Biodiversity Metric (Natural England, 2023)². The Biodiversity Metric calculation spreadsheet was populated based on the extent and characteristics of the habitats recorded during the UKHab survey. The Technical Guidance was referred to as regards conversion of habitat types and determination of habitat condition scores (See Appendix J). The option for strategic significance was set as low and it was assumed that there would be no delay in habitat creation. Likely changes to habitats were deduced based on an interpretation of outline information on the proposed development.

Limitations

- 2.15 The habitat survey focused on the most prominent and important species within the time available, rather than aiming to identify all species that might present within site. Ecological surveys are also limited by factors that affect the presence of plants and animals, such as the time of year, migration patterns and behaviour. Therefore, the survey of the study area has not produced a complete list of plants and animals.
- 2.16 A comprehensive inspection of some densely vegetated areas of the site was not possible due to restricted access. Some trees were not fully accessible to assess bat roost potential due to dense foliage. These factors have been considered when making assessments and recommendations below.
- 2.17 Desk study data should not be treated as a comprehensive list of species present within a search area. Habitat inventories shown on MAGIC vary in terms of their completeness, precision and reliability. Many species are under-recorded and low numbers of records can indicate a lack of survey effort in some areas, rather than confirm the absence of a species.

² See <http://publications.naturalengland.org.uk/publication/6049804846366720>; this includes a calculation spreadsheet that determines number and % change in habitat, hedgerow and river units before and post development

- 2.18 The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats, including aquatic habitats. The Extended UKHab survey checked, in particular, for the presence of Japanese knotweed, giant knotweed, hybrid knotweed, giant hogweed, rhododendron and Himalayan balsam. There may be other invasive plant species present on the site which were not recorded, but it is considered that the survey was sufficient to identify any significant constraints posed by invasive plants.
- 2.19 The information used to populate the Biodiversity Metric calculation spreadsheet was provisional and based on certain assumptions (see above); the outcome should therefore be treated as approximate and provisional.

3. Results

Desk Study

- 3.1 The desk study identified the following designated wildlife sites within 10 km and non-statutory designated sites within 2 km of the site boundary:

Table 2: Statutory designated sites

Site Name	Designation*	Distance from site boundary	Key features
Mersey Estuary	SSSI / Ramsar / SPA	9 km south	The site falls within the IRZ* for Mersey Estuary SSSI / Ramsar (located approximately 9 km south). Consultation with Natural England is required if any discharge of water or liquid waste of more than 20m ³ /day to ground (i.e. to seep away) or to surface water, such as a beck or stream.

*Site of Special Scientific Interest (SSSI). A Ramsar Site is a wetland of international importance. Special protection area (SPA). Impact Risk Zone (IRZ)

Table 3: Non-statutory designated sites

Site Name	Designation*	Distance from site boundary	Key features
Carr Lane Lake Prescott	LWS	~5 m west	A wetland with a large area of open water which is unusual in Knowsley. Water is fished.
Huyton and Prescott Golf Club	LWS	0.23 km west	A well-managed golf course with woodland, ponds and wetlands. Prescott Brook forms the eastern boundary, with water voles present (<i>Date of Last Revision: July 2003</i>). Plants typical of ancient semi-natural woodland are found in the woodland areas.
Knowsley Park	LWS	0.75 km north-west	Ancient parkland and estate on a mix of acidic (peat) and neutral soils with sandstone exposures along the brooks. Much coniferous planting has taken place although several of the woodlands contain plants indicative of ancient semi-natural woodland. Other habitats include dams with open water, acidic grassland, remnant heath and mire. The Park also has populations of bats and other protected species.
Stadt Moers Q2 and Visitor Centre, Whiston	LWS	1 km south	A small area of dense woodland with neutral grassland areas re-colonised on bare substrate.

Stadt Moers Q4, Whiston	LWS	1 km south	A large area of semi-improved neutral grassland with areas of scrub and developing broadleaf woodland.
Stadt Moers Q3, Huyton	LWS	1.2 km south-west	A mix of grassland, scrub and woodland habitats forming part of the Country Park at Stadt Moers.
Copse, south of A58 Prescott	LWS	1.2 km north-east	A lightly wooded area with neutral grassland and a small pond. Good regeneration of oak and birch is occurring.
Huyton Lane Wetland	LWS	1.4 km south-west	A large area of predominantly neutral marsh with a smaller area of acidic marsh. Other habitats present include: ditch; the River Alt; tree and shrub planting; dry neutral grassland.
Prescot Reservoirs No.s 3 & 4	LWS	1.5 km north-east	This site comprises of two reservoirs and a disused dry reservoir. The disused reservoir and areas surrounding reservoirs 3 & 4 have now been colonised by a diverse and species rich grassland including species such as, Northern Marsh orchid and Common Spotted orchid.
Tushingham's Quarry Pond, Stadt Moers Q4	LWS	1.7 km south	A large open pond with varied habitats around its edges, from marsh to alkaline grassland to scrub and woodland.
Lickers Lane Wood	LWS	1.8 km south-east	A long, narrow broadleaf woodland with a dense canopy and associated neutral grassland.
Woodland, Sandfield Park	LWS	2 km south-east	A mature, predominantly broadleaf woodland with a pond, acidic grassland and scrub.

*Local Wildlife Site

Potential areas of Habitat of Principal Importance

- 3.2 The desk study also identified the following areas of habitat within 2 km of the site which potentially qualify as HPI.

Table 4: Potential areas of HPI

Description
Five areas of open mosaic habitat (draft), the closest of which is located within the south-western half of the site.
Over two hundred separate parcels of deciduous woodland, the closest of which is located approximately 100 m west of the site, beyond Carr Lane Lake LWS.
A single area of wood pasture and parkland which is located approximately 1.1 km north of the site, within Knowsley Park LWS
Seven areas of lowland meadows, the closest of which is located approximately 1.2 km south of the site.
Four areas of good quality semi-improved grassland, the closest of which is located approximately 1.7 km south-west of the site, beyond the M57.

- Three areas of lowland fens, the closest of which is located approximately 1.7 km south of the site.

- 3.3 A review of OS maps, aerial imagery and ground survey revealed five ponds within 0.25 km of the site boundary. One pond, Pond 1 (P1) is located on-site to the southeast. P1 does not meet criteria to be considered a priority habitat (HPI) under UK BAP priority habitat classification. Four further ponds are located within 0.25 km of the site boundary. Pond 2 (P2) is located off-site 10 m to the south, Pond 3 (P3) is located approximately 24 m to the north, Pond 4 (P4) is located 50 m to the west, and Pond 5 (P5) is located 85 m to the northwest. A plan displaying pond locations is provided in Appendix D.

Habitats

- 3.4 The location of habitats recorded during the Extended UKHab survey is mapped in Appendix C. The habitat compartments and Target Notes (TNs) describing each habitat and key interest features for wildlife along with photos are set out in Appendix F. Each habitat type is described below. Plant species nomenclature follows Stace (2010).

g4: Modified Grassland

- 3.5 A small area of modified grassland is located to the northeast of the site (MG1) This grassland habitat is well maintained and frequently mown. The grassland is separated from adjacent unmanaged habitats by a panelled wooden fence. The diversity in ground flora is low at the habitat's northern section with a slightly higher diversity to the south. Botanical species noted within the habitat comprise: White clover (*Trifolium repens*), selfheal (*Prunella vulgaris*), black medic (*Medicago lupulina*), common bistort (*Bistorta officinalis*), common daisy (*Bellis perennis*), common vetch (*Vicia sativa*), Cat's-ear (*Hypochaeris radicata*), small-flowered cranesbill (*Geranium pusillum*), red fescue (*Festuca rubra*) and ragwort (*Senecio jacobaea*).

g3c: Other neutral grassland

- 3.6 Other neutral grassland habitat occurs at three locations across the site. This includes GL1 and GL2 which are open areas of grassland located to the north and centrally on-site. These habitats feature a higher diversity of flora species including perforate St John's wort (*Hypericum perforatum*), smooth hawkbeard (*Crepis capillaris*), evening primrose (*Oenothera biennis*), silverweed (*Argentina anserina*), lady's mantle (*Alchemilla vulgaris*), creeping thistle (*Cirsium arvense*), bramble (*Rubus fruticosus*), great willowherb (*Epilobium hirsutum*), curled dock (*Rumex crispus*), hard rush (*Juncus inflexus*), lesser burdock (*Arctium minus*), great mullein (*Verbascum Thapsus*), red campion (*Silene dioica*), creeping cinquefoil (*Potentilla reptans*), teasel (*Dipsacus fullonum*), selfheal, false oat grass (*Arrhenatherum elatius*), white clover, Common figwort (*Scrophularia nodosa*), creeping thistle (*Cirsium arvense*), ragwort, broad-leaved dock (*Rumex obtusifolius*), common nettle (*Urtica dioica*), creeping buttercup (*Ranunculus repens*), purple loosestrife (*Lythrum salicaria*), and wood dock (*Rumex sanguineus*). The non-native invasive species Himalayan balsam was noted within these habitats. These grassland habitats feature a short sward subject to high rabbit browsing pressure and are widely encroached on by surrounding bramble and willow scrub habitats.
- 3.7 A long linear other neutral grassland habitat is located on a 45° slope, off-site along the site's southern boundary (GL3). This habitat is unmanaged and comprised of

silverweed, colt's foot (*Tussilago farfara*), trailing tormentil (*Potentilla anglica*), teasel, common knapweed (*Centaurea nigra*), great willowherb, ribwort plantain (*Plantago lanceolata*), bramble, common nettle, creeping thistle, sycamore (*Acer pseudoplatanus*) sapling, willow saplings, cleavers (*Galium aparine*), rosebay willowherb (*Chamaenerion angustifolium*), hard rush, bird-foot trefoil (*Lotus corniculatus*), yellow sweet clover (*Melilotus officinalis*), hoary willowherb, ragwort, Buddleia (*Buddleia davidii*), yarrow (*Achillea millefolium*) and broad-leaved dock. Two invasive non-native plant species were noted with the habitat; Himalayan Balsam and Japanese knotweed.

Tall herbs (g3c: Other neutral grassland)

- 3.8 A large area of tall herb vegetation is located on-site at the north (GL4). This habitat features a uniform sward height and densely occurring vegetation of low species diversity. The habitat is dominated rosebay willowherb, with occasional common nettle, hedge bindweed (*Calystegia sepium*), creeping thistle, hedge woundwort (*Stachys sylvatica*), common hogweed (*Heracleum sphondylium*) and tufted vetch (*Vicia cracca*).

h3d Bramble scrub

- 3.9 Bramble scrub occurs at four locations on site and occurs most frequently centrally. This habitat is characterised by densely vegetated stands of bramble. Additional species noted within the bramble scrub habitat include, silverweed, creeping thistle, common nettle, broad-leaved dock, cleavers, cock's foot (*Dactylus glomerata*), hedge bindweed, ragwort, false oat grass, annual meadow grass (*Poa annua*) and tufted vetch. The invasive non-native species Himalayan balsam is present within bramble scrub habitats on-site.

h3h Mixed Scrub

- 3.10 Mixed scrub habitat occurs at three locations on-site at the south (MS1, MS2, MS3). These habitats are characterised by a dense mix of scrub species with no one species being dominant and feature mature and semi mature tree species. Species noted across mixed scrub compartment on-site include: yellow sweet clover, teasel, hoary willowherb (*Epilobium parviflorum*), ragwort, creeping thistle, wild carrot (*Daucus carota*), broad-leaved helleborine (*Epipactis helleborine*), common toadflax (*Linaria vulgaris*), black medic (*Medicago lupulina*), smooth hawkweed, mugwort (*Artemisia vulgaris*), perennial sow thistle (*Sonchus arvensis*), spear thistle (*Cirsium vulgare*), common hogweed, wood avens (*Geum urbanum*), selfheal, tufted vetch, Yorkshire fog, *Holcus lanatus*, common knapweed, nipplewort (*Lapsana communis*), white clover, willow species, elder (*Sambucus nigra*), hard rush, common centaury (*Centaureum erythraea*), common daisy, common bent (*Agrostis capillaris*), wild raspberry (*Rubus moluccanus*) and rowan (*Sorbus aucuparia*). Two invasive non-native species were noted within the mixed scrub habitats including Himalayan balsam and Japanese knotweed.

h3j Willow scrub

- 3.11 The dominant habitat on-site is Willow Scrub. This habitat occurs across the north and south. These habitats are characterised by dense stands of semi-mature willow species. Dominant willow species occur with occasional common nettle, creeping thistle,

silverweed, rosebay willowherb, broad-leaved dock, broad-leaved helleborine, selfheal, soft rush, bramble, cinquefoil, dog rose (*Rosa canina*), yellow loosestrife (*Lysimachia vulgaris*), rough meadow grass (*Poa trivialis*), germander speedwell (*Veronica chamaedrys*), bird-foot trefoil, spear thistle, and rare bee orchid (*Ophrys apifera*).

w1g Other woodland: Broad-leaved

- 3.12 Broad-leaved woodland occurs in two habitat compartments located along the northern and north-eastern site boundaries (W1, W2). Woodland 1 (W1) is located along the northern boundary and encompasses the narrow channel of Preston Brook. This woodland is dominated by willow species and includes a group of large mature willow trees. The woodland canopy is also composed of occasional elder, sycamore and silver birch (*Betula pendula*) with ground flora composed of cleavers, great willowherb, spear thistle, wood forget-me-not (*Myosotis sylvatica*), common nettle, sycamore sapling, male fern (*Dryopteris filix-mas*), wood avens, creeping buttercup, common polypody (*Polypodium vulgare*), ragwort, harts tongue fern (*Asplenium scolopendrium*), broad buckler fern (*Dryopteris dilatata*), wood dock, hedge bindweed, colt's-foot, hoary willowherb, field maple (*Acer campestre*), herb Robert (*Geranium robertianum*) remote sedge (*Carex remota*), alder (*Alnus glutinosa*), red campion, common hogweed, and bramble. There is much deadwood on the habitat floor and small clearings where tree regeneration is taking place.
- 3.13 Woodland 2 (W2) is located on site at the north, the woodland differs in character from W1 by its dryer ground conditions and tree composition featuring less willow species. Canopy species include abundant hybrid black poplar (*Populus x canadensis*), with occasional birch, goat willow (*Salix caprea*), Scot's pine (*Pinus sylvestris*), sycamore and English oak (*Quercus robur*), with a dense understory of elder, hawthorn (*Crataegus monogyna*), buddleia, guelder rose (*Viburnum opulus*), hazel (*Corylus avellana*) and wild cherry (*Prunus avium*). Ground flora is sparse with frequent man-made litter, ground flora species include cock's foot, hedge mustard (*Sisymbrium officinale*), bramble, common nettle, creeping thistle, and hedge bindweed.

r1 Standing open water and canals - Pond

- 3.14 Pond 1 is located on site at the southeast measuring approximately 75 x 5 m. The water body is shallow with an approximate depth of 10 – 20 cm. The water has a chalky / turbid appearance in parts with much leaf litter from over hanging trees. The pond's shallow basin is situated beneath a disused utilities pipe excavated during historic works to locate the pipe. The pond is deepest at its northern extent with a much shallower depth at its southern extent. Water levels at the ponds southern extent during summer months are very shallow and during warmer summers may recede significantly. At the south the pond is dominated by reedmace (*Typha latifolia*) and features shallow areas holding willow trees. The pond is surrounded by dense willow scrub which greatly shades the ponds north-eastern section. Species diversity within the pond is limited, species noted include reed canary grass (*Phalaris arundinacea*) and pendulous sedge (*Carex pendula*).

r2 Rivers and streams – Prescott Brook

- 3.15 The survey area encompasses a small section of Prescott Brook (Watercourse 1, WC1) and the north-western site boundary is formed by the water course which follows the channels route. This area of running water flows from north-east to south-west and is

shaded by the surrounding broadleaved woodland. Prescott Brook is, on average, approximately 1-2 metres wide, with a depth of 20-30 cm and has a silt and cobble substrate. The flow was slow to moderate at the time of survey and no aquatic vegetation was present within the watercourse. The banks are low and vertical, comprising bare earth, which is eroded in some areas. Himalayan balsam occurs frequently on the watercourse peripheries.

Species

Bats

Data search

- 3.16 The data search returned activity records for the following bat species; myotis (*Myotis* sp.), Daubenton's (*Myotis 13uratus13niid*), Whiskered (*Myotis mystacinus*), Whiskered/Brandt's (*Myotis mystacinus/brandtii*), Natterer's (*Myotis nattereri*), noctule (*Nyctalus 13uratus*), Nathusius's pipistrelle (*Pipistrellus nathusii*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus 13uratus*). The closest bat activity record is for common pipistrelle, located approximately 0.5 km east of the site. Records of two common pipistrelle and single soprano pipistrelle roosts were also returned, located approximately 1.2 km north-west, 1.2 km south-east and 1.4 km north, respectively.

Roosting bats.

- 3.17 A group of mature willow trees is present on site at the north (BTG1). This group of trees presents multiple potential bat roosting features (PRFs) including wounds, transverse snaps, hazard beams and frost cracks. Overall, this group of trees is considered to have 'Moderate'/'High' potential to be utilised by roosting bats. A mature hybrid black poplar tree is located on the site's north-eastern boundary (UT1/BT1). This mature tree has a visible PRF in the form of a tear out feature on its main stem and is considered to provide 'Low' potential to be use by roosting bats. Within the site the majority of the scrub habitats have not developed PRFs due to the younger age of these habitats.

Commuting and foraging bats

- 3.18 The site's habitats, including woodland, willow scrub, mixed scrub, and grassland provide foraging and commuting opportunities for bats. The woodland and scrub's developed edges provide linear features to be potentially used by bat species known to favour 'edge' habitats, such as common/soprano pipistrelle and whiskered bats, which are flexible in their foraging habitat. The woodland, provides foraging habitat for those species showing preference for more 'closed' habitats, including brown long eared and Natterer's bats. The grassland areas on site are considered to offer foraging opportunities to more common species however to be too small to be of significant importance to those species favouring more open habitats such as noctule. Further suitable commuting and foraging habitats are present beyond the site boundary to the west and north-west. Therefore, habitats on-site have been assessed as providing moderate potential to support commuting and foraging bats.
- 3.19 Bat activity surveys undertaken by Bowland Ecology in 2014 identified common pipistrelle, soprano pipistrelle and noctule using the site for foraging and commuting. Results from a bat activity survey carried out in July 2023 show similar results with a

low number of common and soprano pipistrelles using the site for foraging and commuting particularly utilising the central and southern sections of the site, with the first bat activity recorded on-site 29 minutes after sunset. Noctule species have not yet been recorded on-site. During the activity survey of August 2023, the same two commonly occurring species were recorded (common/soprano pipistrelle) in low numbers with higher foraging activity recorded within GL1 on-site at the north. During the activity survey of August 2023, the first bat activity was recorded 38 minutes after sunset. During the bat activity survey undertaken in October, no bat activity was noted on-site despite suitable weather conditions. Four Bat activity surveys on-site have been undertaken during the bat active season 2023.

Badgers

- 3.20 The data search returned a single record for badger within 2 km of the site, located approximately 1.8 km east of the site.
- 3.21 No evidence of badger in the form of setts, latrines, footprints, or hairs etc was noted on site during the walkover survey or during historic surveys undertaken by Bowland Ecology (2022, 2017, 2014). Significant barriers are considered to further lessen the likelihood of badger presence and badger commuting through the site. These barriers include Prescott Brook to the north, Carr Lane and Prescott Park way to the east, residential housing to the south and M57 to the West. Additionally, frequent disturbance from pedestrians and dogs within the adjacent Carr Lane Lake LWS is likely to further deter the species.

Birds

- 3.22 The data search returned a single kingfisher (*Alcedo atthis*) record, located approximately 1.8 km south of the site and identifying the presence of a breeding pair.
- 3.23 Given the time available a comprehensive set of nesting bird surveys could not be undertaken. However, historic survey data and a walkover of the site and surrounding habitat to the north found 22 species of bird present of which ten species were confirmed breeding, four probable and five possible, leaving three considered non-breeding species. As assessed by Bowland Ecology previously in 2022 and following surveys in 2014 the site is still considered to deliver woodland and scrub habitats (including low growing scrub, such as bramble) that provide optimal nesting and foraging habitat for a range of tree and scrub nesting bird species. A Similar array of species were observed to those confirmed in 2014 (See Appendix G for the species encountered/breeding status/plan).

Otter, water vole, eel

- 3.24 No records for otter, water vole or eel (*Anguilla anguilla*) within the past 10 years were returned by the data search. Prescott Brook, which flows adjacent to the site's north-western boundary does offer suitable commuting and foraging potential for otter. As determined during previous surveys of Carr Lane conducted in 2014, 2017, 2020, 2022 some areas along the eastern bank of Prescott Brook do offer potential for otter holts and lay-up sites, however disturbance from dogs and pedestrians within Carr Lane Lake LWS is likely to decrease its suitability. No evidence of the presence of otter was recorded during the walkover survey of July 2023.

- 3.25 Prescott Brook has low eroded earth banks, supports no aquatic/marginal vegetation, and the surrounding vegetation lacks species diversity due to the presence of invasive species and shading by surrounding trees. Furthermore, previous water vole surveys for Carr Lane, together with the walkover survey of 2023, found no evidence of water vole. Due to the aforementioned points, together with the presence of disturbance from dogs and pedestrians, Prescott Brook is considered to be sub-optimal for use by water vole.
- 3.26 No records relating to eel were returned by the data search within the last 10 years. However, the species was noted to have been historically recorded within Prescott Brook. Prescott Brook is considered to provide limited suitable foraging/sheltering habitat for eel as its occasional submerged root systems and over hanging trees which create woody debris, provide physical structures that eels may use as refuges or ambush points. However, the watercourse lacks aquatic plants and undercut banks which are also used by eel for foraging/sheltering purposes. Prescott Brook is also considered to provide potential commuting habitat for eels and the species therefore may potentially be present within the water course.

Other mammals (brown hare, European hedgehog etc)

- 3.27 The data search returned seven records of red squirrel (*Sciurus vulgaris*) located to the north of the site; the closest of which is located approximately 1 km north-west of the site. Two records of brown hare (*Lepus europaeus*) and four records of harvest mouse (*Micromys minutus*) were returned for approximately 1.3 km and 1.6 km north of the site, respectively, all from within Knowsley Safari Park. A total of sixty-one records of hedgehog were returned within the search area, the closest of which is located approximately 35 m west of the site, along Carr Lane.
- 3.28 The areas of woodland, willow/mixed/bramble scrub, tall ruderal vegetation together with the more open areas of neutral grasslands and noted log/brush piles (TN2, TN4, TN6) on-site provide foraging, sheltering and hibernation habitat for a variety of small mammals, specifically European hedgehog, as well as and other non-SPI species, including wood mouse (*Apodemus sylvaticus*), field vole (*Microtus agrestis*) and common shrew (*Sorex araneus*). It is considered likely that European hedgehog is present within the area due to the abundance of residential properties with grassland gardens and pockets of woodland habitat which provide suitable habitat for the species.
- 3.29 Harvest mouse, also an SPI, prefer habitats with long grass and are typically associated with grassland, farmland and wetland. Due to the absence of such habitat on site, it is considered highly unlikely that this species is present on site. Likewise, due to the lack of suitable habitats and the urban nature of the surrounding area, the site is considered unsuitable for use by brown hare.
- 3.30 Grazing rabbits were noted consistently and frequently within the more open grassland habitats on site. The areas of willow/mixed/bramble scrub, which are considered suitable for use by burrowing rabbits, could not be searched thoroughly for the presence of burrows due to the dense vegetation. However, it is considered highly likely that rabbit burrows are present on site.
- 3.31 A fox was recorded on-site on two occasions. On both occasions the fox was noted in the vicinity of Pond 1. It is possible, therefore that foxes are sheltering and foraging on-site.

Amphibians

- 3.32 The data search returned several records of common frog (*Rana temporaria*), common toad (*Bufo bufo*; an SPI) and smooth newt (*Lissotriton vulgaris*) within the search area. The closest of which is for common frog, located approximately 90 m west of the site, along the perimeter of Carr Lane Lake; the record states that this species was recorded to be breeding within the pond / lake, with hundreds of frogs recorded. No records for GCN were returned. The MAGIC website returned two granted European Protected Species for GCN within 2 km of the site, both of which are located approximately 1.5 km north-east.
- 3.33 GCN surveys were undertaken by Bowland Ecology in 2014 of ponds on-site and within 0.25 km of the site's boundary. During these surveys no ponds were found to contain GCN. The following common amphibians were recorded; common frog (Pond 1); common toad (Ponds 3 and 4); and a maximum count of 27 smooth/palmate newts (Pond 4). Common newts were also found to be breeding in Pond 4. Updating amphibian surveys in 2017 confirmed a historic presence of common amphibians and absence of GCN. Surveys in 2017 recorded the following: No amphibians present in Pond 1, Smooth and palmate newt present in Pond 4, and smooth newt present in pond 5.
- 3.34 The habitat survey in 2023 identified one pond within the site and the review of aerial photos and OS maps identified four ponds within 0.25 km (See Appendix E for pond locations). Pond numbering remains as those previously surveyed by Bowland Ecology, with the exception of formerly identified on-site ephemeral Pond 2. This pond no longer exists, and Pond 2 now refers to a large mitigation pond created to the south of site around the year 2017.
- 3.35 Table 5 provides a pond habitat description, photograph, UKHab condition score (On-site Pond 1 only, see Appendix J) and HSI assessment result for P1 – P5. Table 6 presents the details of HSI assessment scores.

Table 5: Pond descriptions, photographs and HSI scores.

Pond No.	Description	Photograph
P1	An area of standing water extending along a shallow excavation located on-site at the southeast. The standing water is a result of enabling excavation works associated with works to find a redundant sewer pipe that is to be removed to facilitate development, it is not a naturally occurring pond but stranding water associated with earthworks to recover utility infrastructure. The standing pond is situated beneath the disused utilities pipe and measures approximately 75 x 5 m in size and has a shallow depth of 10 – 20 cm. The water is surrounded by dense willow (<i>Salix</i> sp.) and is therefore heavily shaded. Vegetation is dominated by reedmace, reed canary grass and occasional pendulous sedge. The water body is considered to be in 'Poor' condition under UKHab condition assessment criteria for ponds. The pond is a result of man-made excavation works only and did not occur due to natural processes.	
		HSI score : Average

P2	Pond 2 is located 10 m to the south of site. Measuring approximately 450 m², with a depth of 15 cm. The pond appears to have been created around the year 2017 as part of housing development proposals at the south. The Pond is dominated by reedmace with a species rich grassland on its margins.	 HSI score: Good
P3	Large fishing pond located approximately 20 m west of the site, within Carr Lane Lake LWS. The pond is approximately 150 x 50 m and has a depth of at least 1 m. Due to the size and depth of the pond, it likely never dries. Trees from the adjacent areas of woodland provide some shade. An accumulation of leaf litter is present within the water, furthermore the water is turbid and of poor quality. The pond, which is used by anglers, has both fish and fowl present. Marginal vegetation is present along parts of the pond's perimeters; however, a public footpath and amenity grassland immediately surrounds the majority of the pond. Marginal vegetation comprises reed canary grass, soft rush and yellow-flag iris (<i>Iris pseudacorus</i>). No aquatic vegetation recorded during the survey.	 HSI score: Poor
P4	A small circular pond located approximately 130 m west of the site. The pond is approximately 8 m in diameter and shallow with estimated depth of 15 cm. The pond is considered likely to sometimes dry. An accumulation of leaf litter is present within the water. Adjacent scrub and young trees provide some shade to the pond. Aquatic and marginal vegetation appears to have been subject to removal works. Former identified species included marsh marigold (<i>Caltha palustris</i>), common duckweed (<i>Lemna minor</i>),	

	water mint (<i>Mentha aquatica</i>) and yellow-flag iris.	HSI score: Below Average
P5	Small pond located approximately 90 m northwest. The pond is approximately 10 x 5 m in size and shallow (approximately 5 cm deep); due to its shallow nature it is considered likely that this pond sometimes dries. The pond sits adjacent to an area of woodland and is therefore moderately shaded and has an accumulation of leaf litter along its banks. Dense reed canary grass is present within and surrounding the water.	
		HSI Score: Below Average

Table 6: HSI assessment details

Pond ref	SI1 – Location	SI2 – Pond area	SI3 – Pond drying	SI4 – Water quality	SI5 – Shade	SI6 – Fowl	SI7 – Fish	SI8 – Ponds	SI9 – Terr Habitat	SI10 – Macrophytes	HSI score	Pond suitability
P1	1	0.75	0.5	0.33	0.8	0.67	0.7	0.72	0.67	0.9	0.6738	Average
P2	1	0.9	1	0.67	1	0.67	0.7	0.72	0.33	0.9	0.7521	Good
P3	1	0.8	0.9	0.33	1	0.67	0	0.74	0.67	0.55	0.4598	Poor
P4	1	0.1	0.5	0.33	1	0.67	0.7	0.65	1	0.35	0.528	Below Average
P5	1	0.1	0.5	0.67	0.6	0.67	0.7	0.72	0.67	1	0.5806	Below Average

3.36 P4 and P5 were subject to GCN eDNA survey in 2017 with both ponds returning negative results. P1 and P4 were subject to GCN eDNA sampling and analysis in July 2023. Both ponds returned negative results (see Appendix I). Additionally, significant barriers to GCN movement from one pond to another, such as the M57, Prescott Brook, Carr Lane and residential housing development, as well as increased predator pressure from domestic cats further reduce the likelihood of GCN presence on-site. Therefore, it is considered that GCN is highly unlikely present on-site or in the immediate surrounding area.

Reptiles

3.37 The data search returned no records for reptiles within 2 km of the site and no evidence of reptiles was recorded on site during walkover surveys. No evidence of reptiles was identified during previous presence/absence surveys undertaken by Bowland Ecology in 2014. However, it was noted that the Prescott Brook corridor has potential to be used by grass snake, as historical records exist for this species.

3.38 The site's abundant scrub habitats are considered to provide suitable refuge and hibernation habitat for common reptile species. Adjacent areas of neutral grassland may be used by basking common reptile species; However, this habitat is fragmented/disconnected from further suitable habitat by significant barriers such as housing development to the south, motorway network and roads to the west and north

and Prescott Brook to the north. Additionally, historic frequent disturbance from dog walkers and likely increased predatory pressures from domestic cats from the housing development to the south further decrease the site's likelihood to support a reptile population. Although, reptile presence on-site is unlikely, the presence of more commonly occurring reptiles (such as grass snake) cannot be fully ruled out.

Invertebrates

- 3.39 795 records of invertebrates within 2 km of the site were returned by the data search. Of these records, 6 species were identified as NERC Section 41 species including one beetle, two butterfly and three moth species. SPI Species recorded in the last 25 years include moth species, wall (*Lasiommata megera*) recorded approximately 650 m to the north in 2019, and butterfly species buff Ermine (*Spilosoma lutea*), and Shoulder-striped Wainscot (*Leucania comma*) both recorded approximately 900 m to the north (within Knowsley Safari Park) in 2014.
- 3.40 The site features abundant suitable habitat for more common and SPI invertebrates. These habitats include, bramble scrub, mixed scrub, willow scrub, other neutral grassland, pond and woodland.

Invasive Non-Native Species (INNS)

- 3.41 The data search returned records of multiple species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended). A single record of Canada goose (*Branta canadensis*) was returned from approximately 91 m west of the site, within Carr Lane Lake LWS. Two records of American mink (*Neovison vison*) were returned, both from approximately 0.5 km south-west of the site. A single record for Turkish crayfish (*Astacus leptodactylus*) was returned from 0.8 km west of the site.
- 3.42 No evidence of the aforementioned species was noted during survey. Pond 1 is considered unsuitable for use by Canada goose due to its shallow depth and the dense nature of the surrounding scrub, and therefore lack of open space. Pond 1 is also considered unsuitable for use by American mink and Turkish crayfish due to its short length and of lack of ecological connectivity to neighbouring suitable habitat. Prescott Brook is considered to offer some suitable habitat for use by American Mink however, the brook is considered sub-optimal for use by Turkish crayfish as this species prefer still water. The likelihood of encountering these species during the development is considered highly unlikely and they are not considered further within this report.
- 3.43 Himalayan balsam, which is listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended), was recorded frequently on-site. This non-native invasive species was noted: on the northern periphery of GL1 along the banks of Prescott Brook in W1, within bramble scrub habitat at the north of site (BS2), on the southwestern site boundary within WS2, at the south on the peripheries of GL3, and adjacent to bramble scrub parcels 3 and 4. The further presence of this species on site and particularly within densely vegetated areas cannot be ruled out.
- 3.44 Japanese knotweed also listed as a schedule 9 species was noted at several locations on-site at the south, including within MS1, BS4 and WS2 and WS3. A plan indicating the approximate location of Invasive non-native plant species Himalayan balsam and Japanese knotweed is provided in Appendix D.

Biodiversity Net Gain

- 3.45 Following the site's UKHab mapping and condition assessment (see Appendix C & J) a provisional Biodiversity Net Gain calculation was made. The calculation revealed that the number of habitat units provided by the site is currently **22.77**. This could fall to **11.23** units as a result of the proposed development (see table 7 below) unless appropriate compensation is provided.

Table 7: Summary of baseline and post development habitat units

Habitat type	Existing value (habitat units)	Value after development (habitat units)
Grassland	4.84	3.74
Heathland and shrub (Scrub)	12.70	0.43
Lakes (Ponds)	0.14	0
Urban	0.00	1.12
Woodland and forest	4.56	4.54
Individual trees (Urban tree)	0.54	1.40
All habitats	22.77	11.23

- 3.46 Hedgerows and lines of trees are treated separately in the Biodiversity Metric. However, there are no identified hedgerows or lines of trees on-site.
- 3.47 Streams and rivers are also treated separately in the Biodiversity Metric. A section of Prescott Brook is located on-site at the west (WC1). The number of biodiversity units provided by this watercourse is currently 0.7. No impacts to the river units on-site are anticipated as a result of the proposed development.

Table 8: Summary of watercourse units on-site

Watercourse type	Existing value (river units)	Value after development (river units)
Other rivers and streams (WC1 - Prescott Brook)	0.7	0.7
All watercourses	0.7	0.7

4. Evaluation and Assessment of Constraints

- 4.1 An assessment of potential impacts on (constraints) designated sites, habitats, species and Biodiversity Net Gain is presented below. This is based on the information available on the proposed development (see below) and the professional judgement of the ecologists that prepared this report. It considers legal requirements (see Appendix M) and relevant national and local planning policies. If the proposals are changed significantly, the assessment will need to be reviewed.

Development Proposals

- 4.2 The proposed development includes the construction of 88 houses and associated gardens, road access and parking facilities. It is anticipated that most of the site will be cleared of willow scrub, mixed scrub, bramble scrub, grassland, and a pond habitat. Woodland and boundary scrub and grassland habitats along the sites northern, western and southern boundaries will be fully/partially retained.

Designated Sites

- 4.3 The Mersey Estuary SSSI / Ramsar / SPA site is located 9 km to the south. No direct adverse impacts to the Mersey Estuary are anticipated during the construction phase as a result of the proposals (provided appropriate avoidance/mitigation measures are followed). However, the proposed development site falls within the Impact Risk Zone of the Mersey Estuary, and consultation with Natural England is required if any discharge of water or liquid waste of more than 20m³/day to ground (i.e. to seep away) or to surface water, such as a beck or stream.
- 4.4 The Mersey Estuary may be adversely impacted following completion of the housing development which may lead to increased recreational pressure on the Mersey Estuary designated site. The increased visits may result in significant effects on habitats and species for which the site has been designated. Recreational pressure is recognised in the formal statutory Conservation Advice Package and Site improvement Plans as medium risk to qualifying feature of the national and international sites. During the operational phase of the housing development waste discharges will be tied into existing sewerage network and therefore, no adverse impacts to the Mersey Estuary are anticipated as a result of this. Given the application site's location 9 km north of the Mersey Estuary the likelihood of the estuary being regularly used by residents of the development for recreation, dog walking, sports etc is diminished.
- 4.5 The Mersey Estuary features the passage/overwintering/foraging of waterbird species, e.g. whooper swans, pink footed geese and waders which generally use open wetland/arable land for foraging. The site and adjacent land are generally lacking in these habitats and offer negligible/low suitability for use by such species. During Natural England Commissioned Report NECR361 – '*Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England*' - completed in association with Bowland Ecology in October 2021, one area of functionally linked land was identified within 10 km of the application site. This identified site, Simonswood Moss is considered to offer moderate suitability for use by bird species associated with the Mersey Estuary. However, given that this site is located 7.9 km to the north of the application site no adverse impacts are anticipated during the construction phase and adverse impacts resulting from the operational phase of the development are considered unlikely.

- 4.6 The Carr Lane Lake LWS is located adjacent to the site. It is anticipated that the LWS will receive increased visitor pressure resulting from the development; however, the area is already a well-used public space and has appropriate facilities to deal with increased visitor levels. Site clearance and construction works have the potential to indirectly impact Carr Lane Lake LWS through pollution (fuel spillages incidents, runoff and dust) and potentially vibration disturbance. Dust pollution can have a variety of negative impacts, including reducing the availability of light for photosynthesis and altering the pH of soils which can affect the long-term success of plants.

HPI and North Merseyside Biodiversity Action Plan Habitats

- 4.7 The Magic website identified the potential presence of open mosaic habitats on previously developed land (HPI draft) towards the south-west of the site. However, following the Extended UKHab survey, the site is not considered to meet the criteria for Open Mosaic Habitats on Previously Developed Land HPI as outlined within UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions (JNCC, 2010). As such, this HPI is not considered further within this report.

Pond

- 4.8 One pond (standing water from excavation) is located on-site, P1. P1 does not meet UK BAP priority habitat classification criteria to be classed as a priority habitat. Ponds are also listed on the Habitat Action Plans of the North Merseyside BAP. P1 which is in 'Poor' condition will be entirely removed to accommodate the construction of houses and associated road access resulting in a small scale, local negative ecological impact.

Other Neutral Grassland - 'Urban Grassland'

- 4.9 Other neutral grassland habitats on-site (GL1, GL2 and GL3) represent a locally valuable habitat, considered to meet criteria for the 'Urban Grasslands' under the North Merseyside BAP habitat. It is anticipated that 0.2ha of grassland habitat will be lost on-site. This loss should be compensated for by the creation of similar habitat in appropriate areas either on and/or off-site. Translocation of the existing turf would be an option, however Himalayan balsam is now abundant throughout the site, and attempts to relocate the existing habitat would carry a high risk of spreading the invasive species.

Prescot Brook

- 4.10 Section 41 HPI (NERC Act, 2006) are present on site, comprising Prescot Brook and the surrounding broadleaved woodland along the north-western site boundary. No direct impacts to these habitats are anticipated as these habitats will be retained as part of the scheme. These habitats may be indirectly adversely impacted by the development through pollution (e.g accidental spillage/leakage of hydrocarbons) and dust.

Urban trees

- 4.11 Urban trees are listed on Habitat Action Plans of the North Merseyside BAP. One Urban tree, UT1/BT1, is present on the site's eastern boundary. The tree is measured as being of medium size under Metric 4 criteria. Within the site associated arboriculture report (Bowland Tree Consultancy) UT1 is advised to be removed due to health and safety concerns. The loss of UT1 will equate to a small-scale loss of valuable established habitat.

Other Habitats

Other woodland: Broad-leaved

- 4.12 Broad-leaved woodland occurs in two habitat compartments located along the northern and north-eastern site boundaries (W1, W2). It is anticipated that these habitats will be retained and that they will not be subject to direct adverse impacts. However, the proximity of these habitats to the development means they may be subject to indirect adverse impacts such as pollution (e.g accidental spillage/leakage of hydrocarbons) or dust.

Willow scrub

- 4.13 The dominant habitat on-site is willow scrub which occurs across the north and south and measures 1.7 ha. These habitats are characterised by dense stands of semi-mature willow species. It is anticipated that the majority of the willow scrub habitats will be removed to accommodate the development. The loss of these habitats of medium distinctiveness will represent considerable scale habitat loss and reduction in established and establishing habitat on site. Additionally, less common plant species are present within this habitat such as bee orchid which will be removed under current proposals.

Mixed scrub

- 4.14 Mixed scrub habitat occurs at three locations on-site at the south (MS1, MS2, MS3) and measures approximately 0.249 ha. These habitats are characterised by mix dense mixed scrub species with no one species being dominant. It is anticipated that the majority of the mixed scrub habitats will be removed to accommodate the development. The loss of these habitats of medium distinctiveness will represent a significant scale habitat loss.

Bramble Scrub

- 4.15 Bramble scrub occurs at four locations on site and occurs most frequently centrally covering 0.175ha. It is anticipated that this habitat will be entirely removed to accommodate the development. This will represent the loss of suitable sheltering and foraging habitat for a wide range of wildlife.

Species

Bats

- 4.16 A group of mature willow trees is present on site at the north (BTG1) within Woodland 1. This group of trees presents multiple potential bat roosting features and is considered to have 'Moderate'/'High' potential to be utilised by roosting bats. Under current proposals no direct adverse impacts are anticipated to affect the trees which will be retained and the direct risk to bats is considered low. However, indirect adverse effects such as illumination of PRFs at night may adversely impact potentially roosting bats.

- 4.17 Overall, the habitats on-site offer 'Moderate' suitability for use by foraging and commuting bats. Recent and historic survey data shows bats frequently using the site for foraging and commuting. Therefore, foraging and commuting bats will be indirectly adversely impacted by the widescale loss of invertebrate prey supporting habitats such as willow scrub, mixed scrub, bramble scrub, neutral grassland and Pond 1. Loss of these habitats will lead to a considerable reduction in foraging opportunities on-site. Additionally, the loss of established scrub edges will reduce the availability of linear foraging features favoured by 'edge' foraging species. Impacts to foraging bats will be reduced by the retention of the woodland habitat and Prescott Brook corridor that will maintain connectivity to suitable bat foraging habitats in the wider area such as Carr Lane Lake (LWS) at the north.
- 4.18 Urban tree 1 (UT1/BT1) of medium size and featuring PRFs is present on the site's eastern boundary. This tree is considered to offer 'Low' potential for use by roosting bats. The loss of UT1/BT1 has the low potential to result in injury/mortality to bats if undertaken without mitigation and following relevant recommendations. The loss of UT1/BT1 will also lead to a small loss of potential bat roosting habitat on-site.

Badgers

- 4.19 No records of badger were returned within 1 km of the site and no evidence of badger was noted on site during the walkover survey of 2023 or during historic surveys undertaken by Bowland Ecology. Additionally, significant barriers and disturbance from pedestrians and dogs within the adjacent Carr Lane Lake SBI is likely to deter the species and are considered to further lessen the likelihood of badger presence and badger commuting through the site. Therefore, direct adverse impacts to badger are considered highly unlikely. However, not all areas of the site could be searched thoroughly during the survey of 2023 due to the presence of dense vegetation. Habitats on site, some of which are over sloping ground, are considered suitable for use by badger, both for sett excavating and foraging. Although unlikely, the presence of badger within the works footprint during the development cannot be fully ruled out.

Birds

- 4.20 Historic survey data and a walkover of the site and surround habitat to the north found 22 species of bird present of which ten species were confirmed breeding, four probable and five possible, leaving three considered non-breeding species. The site provides optimal nesting and foraging habitat for a range of tree and scrub nesting bird species. Proposals are anticipated to require the widescale removal of potential nesting bird habitats, as such there is a high risk of direct harm/injury and disturbance to nesting birds if vegetation removal works are undertaken with the active nesting bird season (March to August inclusive)
- 4.21 Additionally, any works that are undertaken within 5 m of retained areas of potential nesting bird habitat risk the disturbance of nesting birds through indirect adverse impacts such as noise, dust, pollution etc.
- 4.22 It is anticipated that 0.175ha of bramble scrub will be removed to accommodate the proposals. The removal of this habitat will reduce the availability of nesting and food resources for birds.

Otter, water vole, eel

- 4.23 No records for otter, water vole or eel (*Anguilla anguilla*) within the past 10 years were returned by the data search, no evidence of otter or water vole was recorded during the site walkover in 2023 or historically by Bowland Ecology (2020, 2014). However, Prescott Brook, which flows adjacent to the site's north-western boundary does offer suitable commuting and foraging potential for otter and some areas along the watercourse's eastern bank do offer potential for otter holts and lay-up sites. Overall, the presence of otter on-site is considered highly unlikely. However, although unlikely the presence of otter cannot be fully ruled out and if present may be subject to direct harm. Commuting/foraging otter if present may be indirectly adversely impacted by disturbance such as pollution and illumination of Prescott Brook during works.
- 4.24 Prescott Brook has low eroded earth banks, supports no aquatic/marginal vegetation, and the surrounding vegetation lacks species diversity due to the presence of invasive species and shading by surrounding trees. Furthermore, previous water vole surveys for Carr Lane, found no evidence of water vole. Due to the aforementioned points, together with the presence of disturbance from dogs and pedestrians, Prescott Brook is considered to be sub-optimal for use by water vole and the presence of the species on-site and within the adjacent watercourse is considered highly unlikely. As the watercourse and associated habitat will be retained, no direct adverse impacts to water vole are anticipated. If present, water vole may be indirectly adversely impacted by disturbance such as pollution and illumination of Prescott Brook during works.
- 4.25 No records were returned for European eel within the last 10 years and no evidence of eel was noted on the walkover survey. However, eels have historically been recorded within Prescott brook, and the watercourse is considered to provide limited potential foraging/sheltering/commuting habitat for eels. The species therefore may potentially be present within Prescott brook. Eels are listed as Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, are Protected under the European Eel Regulation (European Commission) No 1100/2007 and the Eels (England and Wales) Regulations 2009 and are a UK Biodiversity Action Plan Priority Species. No direct adverse impacts are anticipated as a result to eel, however, if present eel may be affected by indirect impacts, such as pollution of the watercourse.

Other mammals (brown hare, European hedgehog etc)

- 4.26 The data search returned seven records of red squirrel located to the north of the site; the closest of which is located approximately 1 km north-west of the site. However, the site is outside of the Lancashire/Merseyside stronghold boundary for red squirrel (Lancashire Wildlife Trust). Additionally, the record location is separate from the site by significant migration barriers such as Liverpool Road, A58 and M57. As such, it is considered highly unlikely that red squirrel is present on site and no direct or indirect adverse impacts are anticipated in relation to red squirrel and the species is not considered further within this report.
- 4.27 A low number of SPI species records for brown hare (two records) and harvest mouse (four records) were returned by the data search. However, harvest mouse, prefer habitats with long grass and are typically associated with grassland, farmland and wetland. Due to the absence of such habitat on site, it is considered highly unlikely that this species is present on site. Likewise, due to the lack of suitable habitats and the urban nature of the surrounding area, the site is considered unsuitable for use by brown hare. As such, these species are not considered further within this report.

- 4.28 Records of hedgehog were returned within the search area, the closest of which is located approximately 35 m west of the site, along Carr Lane. The areas of woodland, willow/mixed/bramble scrub, tall ruderal vegetation together with the more open areas of neutral grasslands and noted log/brash piles on-site provide foraging, sheltering and hibernation habitat for hedgehog and a variety of small mammals, as well as and other non-SPI species, including wood mouse (*Apodemus sylvaticus*), field vole (*Microtus agrestis*) and common shrew (*Sorex araneus*). Further It is considered likely that European hedgehog is present within the area due to the abundance of residential properties with grassland gardens and pockets of woodland habitat which provide suitable habitat for the species. Grazing rabbits were frequently noted within the grassland habitats and highly likely shelter on-site. Fox was also noted on-site. As such there is a risk that small mammals will be present within on-site habitats and subject to direct adverse impacts of harm/injury in the absence of appropriate mitigation.

Amphibians

- 4.29 Historic survey data and records confirm that common amphibians are present in the area. As such the presence of common amphibians on-site and in the local area is highly likely. Therefore, there is a risk of direct harm/injury to common amphibians during the removal of Pond 1 and any suitable amphibian sheltering/commuting/foraging habitat on site if undertaken without appropriate mitigation.
- 4.30 No records for GCN were returned by the data search. Historic surveys onsite by Bowland Ecology found no evidence of GCN and eDNA surveys carried out in 2017 (P4 & P5) and 2023 of Pond 1 and Pond 4 returned negative results. Additionally, significant migration barriers limited potential GCN movement and nearby housing developments are likely to lead to an increase in predator pressure from domestic cats. Therefore, it is considered highly unlikely GCN is present on-site or in the immediate surrounding area.

Reptiles

- 4.31 The data search returned no records for reptiles within 2 km of the site and no evidence of reptiles was recorded on site during walkover surveys. No evidence of reptiles was identified during previous presence/absence surveys undertaken by Bowland Ecology in 2015. However, it was noted that the Prescott brook corridor has potential to be used by grass snake, as historical records exist for this species. The site features suitable refuge/hibernation/basking reptile habitat. However, this habitat is fragmented/disconnected from further suitable habitat by significant barriers such as housing development to the south, motorway network and roads to the west and north and Prescott Brook to the north. Additionally, historic frequent disturbance from dog walkers and likely increased predatory pressures from domestic cats from the housing development to the south further decrease the Site's likelihood to support a reptile population. The risk of reptile presence on-site therefore is very low. However, the presence of more commonly occurring reptiles (such grass snake) cannot be fully ruled out. As such, there is a very low risk of direct harm/injury to reptiles if works are carried out without due care and attention.

Invertebrates

- 4.32 795 records of invertebrates within 2 km of the site were returned by the data search. Of these records, 6 species were identified as NERC Section 41 species including one

beetle, two butterfly and three moth species. The records for these species recorded in the last 25 years were each + 650 m away from the site. However, the site features abundant suitable habitat for more common invertebrates and SPI invertebrates. These habitats include, bramble scrub, mixed scrub, willow scrub, other neutral grassland, and woodland. The widescale loss of these habitat (excluding woodland which will be retained) will lead to a loss of invertebrates and their established habitat.

Invasive Non-Native Species (INNS)

- 4.33 The data search returned records of multiple species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended). A low number of records were returned Canada goose, American mink, and Turkish crayfish which occur >91 m from site.
- 4.34 Pond 1 is considered unsuitable for Canada goose due to its dense in channel and surrounding vegetation creating a lack of open space, as such the species is not considered further within this report. Pond 1 is also considered unsuitable for use by American mink and Turkish crayfish due to its short length and of lack of ecological connectivity to neighbouring suitable habitat.
- 4.35 Himalayan balsam, which is listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended), was recorded frequently on-site. Japanese knotweed also listed as a schedule 9 species was noted at several locations on-site at the south. The further presence of these species on site and particularly within densely vegetated areas cannot be ruled out. Himalayan balsam is known to rapidly spread in the wild, therefore site clearance and construction has the high-risk potential to cause the spread of the species which would result in a negative ecological impact, in the absence of mitigation and management. Further the species may potentially be spread off site in contaminated soils. It is illegal to plant these species or otherwise cause them to grow or spread in the wild. Any contaminated soil or plant material containing Japanese knotweed is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the Environmental Protection Act 1990.

Biodiversity Net Gain

- 4.36 The provisional Biodiversity Net Gain analysis showed that the number of habitat units provided by the site could fall significantly. Most of this is due to the anticipated loss of willow scrub, mixed scrub, bramble scrub, other neutral grasslands and Pond 1. Unavoidable losses can be compensated for by enhancing retained areas of habitat or by creating new areas of habitat. However, under current proposals there is insufficient space on-site to compensate for the high anticipated loss of biodiversity and off-site compensation should be provided. Compensation for certain habitats is constrained under the Biodiversity Metric trading rules:

Table 9: *Summary of habitat loss compensation constraints*

Habitat type	Compensation constraints
Willow scrub	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Mixed scrub	Same broad habitat or a higher distinctiveness habitat required ($\geq$)

Bramble scrub	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Other neutral grassland	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Pond (non-priority habitat)	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Urban tree	Same broad habitat or a higher distinctiveness habitat required ($\geq$)

- 4.37 The are no hedgerows on-site. However, ten sections of hedgerow will be created within the associated development landscaping plans (See Appendix N) and hedgerow units on-site will therefore increase as a result of the development. The combined length of the ten created hedgerows will measure approximately 0.47 km and deliver + **2.76** hedgerow units. A summary of Hedgerow creation is provided in table 10 below:

Table 10: *Summary of hedgerow creation*

Hedgerow reference	Hedgerow length (Km)	Hedgerow units delivered
HR1 – Native species	0.06821	0.46
HR2 – Native species	0.02601	0.09
HR3 – Ornamental	0.02956	0.03
HR4 – Native species	0.0439	0.29
HR5 – Native species	0.055875	0.37
HR6 – Native species	0.177268	1.19
HR7 – Native species	0.008476	0.03
HR8 – Native species	0.014442	0.05
HR9 – Native species	0.031561	0.21
HR10 – Native species	0.013548	0.05
Total	0.47	2.76

- 4.38 The provisional Biodiversity Net Gain analysis showed that the number of river units provided by the site will remain unchanged post development. This is due to the retention of Prescott Brook located along the site's northern boundary. Therefore, no compensation is required in relation to watercourse as a result of the proposal.

5. Mitigation and Opportunities

- 5.1 The recommendations set out below aim to ensure that the proposed development takes account of important ecological features, legal requirements (see Appendix M), and relevant national and local planning policies. The National Planning Policy Framework (2021) specifically states that development should seek to minimise impacts, incorporate improvements, and provide net gains for biodiversity. If the proposals are changed significantly, the recommendations will need to be reviewed. An ecological constraints and opportunities plan is provided in Appendix K.

Designated Sites, HPI and Merseyside BAP habitats

- 5.2 The Mersey Estuary may be adversely impacted by the proposal which may lead to increased recreational pressure on the Mersey Estuary designated site and significant effect on habitats and species. Therefore, proposals should demonstrate how increased recreational pressure will be avoided or mitigated. Examples of mitigation measures which could form part of a bespoke mitigation package are listed below. Following the Sweetman ruling², a clear distinction must be made between essential features of the development and additional mitigation measures needed to protect the national and international sites:

- *Provision of public open space within the development boundary;*
- *Improving access to and promoting use of Suitable Alternative Natural Greenspaces (SANG) (including contributions to management);*
- *Provision of information in sales packs or on information boards, informing residents of the importance of the national and international sites, and responsible user code and the location of SANGs; and*
- *Financial contributions to the management of national and international sites and SAMM (Strategic Access Management & Monitoring). Incorporation of these measures may enable the LPA to conclude that there are no adverse effects on the integrity of the SPA and Ramsar sites.*

Further avoidance and mitigation measures are available in Section 8 of the Merseyside Environmental Advisory Service report - 'Towards a Liverpool City Region European Sites Recreation Mitigation & Avoidance Strategy – Evidence Report (Version 24) July 2021'³

- 5.3 Consultation with Natural England with respect to the Mersey Estuary SSSI Impact Risk Zone is required if any discharge of water or liquid waste of more than 20m³/day to ground (i.e. to seep away) or to surface water, such as a beck or stream.
- 5.4 Appropriate pollution prevention and control measures will be applied throughout the construction period to ensure surrounding areas of HPI, Prescott Brook and Carr Lane Lake LWS are not adversely impacted during the works through pollution and dust created during site clearance and construction. The Scottish Environmental Protection Agency (SEPA) and Northern Ireland Environment Agency (NIEA) have published guidance on the NetRegs website (NetRegs, 2018). In the absence of any guidance in England it is advised that the information published on the NetRegs website is adhered to during the works. The information provided is considered recognised good practice

³ [LCR RMS EvidenceReport v24 Optv2.pdf \(meas.org.uk\)](#)

and the most up to date guidance currently provided. Examples of suitable mitigation that will be adopted during site clearance and construction includes;

- Vehicle refuelling in designated compounds/areas at least 10m from any areas of open or running water;
- Any fuel will be stored in double bunded containers at least 10m from any areas of open or running water;
- Drip trays or plant nappies to be used when refuelling and left under stationary machinery;
- Oil spill kits to be kept on site and within all vehicles;
- Enforcing speed limits on site and dampening down working areas and haul roads in dry periods to prevent dust;
- Using covered wagons and skips;
- Keeping roads clean with the use of road sweepers;
- Appropriate secure storage and use of fine materials - all materials such as excavated topsoil and cement powder must be stored in a bunded area, and protected from potential rainfall and runoff;
- Regular site checks to ensure that these control measures are being adhered throughout the duration of the works; and
- An emergency pollution incident response plan will be produced and implemented immediately in the event of a pollution incident.

Prescot Brook and other woodland: Broad-leaved

- 5.5 It is recommended that the woodland corridor on the margins of Prescot Brook be maintained in the long-term as an ecological corridor, linking habitats upstream and downstream and allowing the migration of species, with a 10 m stand off from the top of the brook bank which will be maintained throughout the duration of the works and within the proposed development. Pollution prevention measures outlined in section 5.3 will also be applied to Prescot Brook.
- 5.6 In line with BS 5837:2012, Root Protection Areas (RPA) of trees at risk from indirect impacts will be safeguarded, using vertical barriers or appropriate ground protection to create exclusion zones prior to commencement of works.

Pond 1

- 5.7 Ponds are listed as HPI and identified in the North Merseyside Biodiversity Action Plan. P1 (standing water, 'Poor' condition) will be entirely removed to accommodate the construction of houses and associated road access. The anticipated loss of P1 will result in a small scale, local moderate ecological impact. With the loss of Pond 1 being unavoidable, compensation for this loss through appropriate off-site habitat creation and enhancement will be necessary. The loss of pond 1 on site will be partially mitigated through the creation of a SuDS area at the north of the site. Such wet habitat areas can offer ecological value, and the biodiversity value of the incorporated SuDS area has been maximised in the landscaping strategy submitted.

Other neutral grassland – 'Urban Grassland'

- 5.8 It is anticipated that 0.22ha of grassland habitat will be lost on-site. The loss of this habitat should be compensated for by the creation of similar habitat in appropriate areas either on or off-site. Translocation of the existing turf would be an option, however Himalayan balsam is now abundant throughout the site and attempts to relocate the existing habitat would carry a high risk of spreading the invasive species. Alternatively, the translocation of individual plant specimens (such as bee orchids) is achievable and recommended to ensure notable species are preserved on site. Suitable translocation areas for these species are proposed within post-development grassland habitats at the north of site.

Other Habitats

Willow/Mixed/Bramble scrub

- 5.9 The loss of willow/mixed/bramble scrub should be avoided wherever possible. If avoidance is not possible, the final proposal design should aim to minimise the loss of these habitats. Compensation for the unavoidable loss of any scrub habitats will comprise the planting of locally sourced native tree and scrub species (either on-site which is preferred or if clear evidence provided that on site compensation is not possible, appropriate off-site compensation). The species planted will comprise native species appropriate to the locality and of local provenance where possible.

Urban tree

- 5.10 UT1 is advised to be removed due to health and safety concerns. The loss of UT1 will equate to a loss of established habitat. The loss of UT1 will be compensated for through the planting of 84 native tree species within the associated development landscaping proposals.

Species

Bats

- 5.11 Woodland 1 will be retained along with the group of mature willow trees BTG1 with identified PRFs minimising adverse ecological impacts with respect to roosting bats. However, this potential bat roosting habitat may be subject to indirect adverse effects such as illumination of PRFs at night. As such care should be taken to ensure there is no nocturnal illumination of PRFs within BTG1 during the bat active season (April to October inclusive).
- 5.12 To minimise impacts to roosting/foraging/commuting bats a sensitive lighting scheme will be incorporated into the proposals, in accordance with the appropriate guidance (IPL 2023). The lighting scheme will be adopted during site clearance and construction and will also cover the completed development. Examples of low impact lighting schemes include, but are not limited to:
- Use of sodium lighting or LED lights with a warm colour temperature (<2700 Kelvin) instead of mercury or metal halide lamps;
 - Careful direction/positioning of lighting to where it is needed and to avoid light spillage onto high value bat roosting/foraging habitats (i.e. away from woodland/scrub/tree line);
 - Only working during daylight hours; and

- Turning off any additional site lighting at night or using motion sensors within the active bat season (Applicable May to September).
- 5.13 No impacts with respect to roosting bats are anticipated, however if the mature willow trees located along the Prescott Brook are to be impacted (i.e. pruned and/or felled), further aerial inspection survey of the trees will be undertaken by suitably trained bat ecologists.
- 5.14 Urban tree 1 (UT1/BT1) of medium size and featuring PRFs is present on the site's eastern boundary is considered to have 'Low' potential to support roosting bats and is subject to proposed removal. Therefore, there is a low risk of direct harm to bats if removal works are carried out in the absence of appropriate mitigation. Loss of UT1/BT1 will also lead to a small-scale reduction in the availability of potential bat roosting habitat on-site. Consideration should be given to retaining UT1/BT1. If the loss of the tree is unavoidable any works to the trees should be undertaken in line with appropriate mitigation such as:
- Use of appropriate arboriculture methods to minimise risk to bats, such as soft felling/section felling with tree segments containing potential bat roosting features left on the ground overnight with features unobscured allowing any bats to disperse naturally.)
 - Protocol relating to the possible encounter of bats during works should be established prior to any works. Ideal period for works Sept/Oct would avoid nesting birds and be preferable for bats.
- 5.15 To compensate for the loss in bat roosting habitat on-site, Bat boxes should be installed to suitable retained mature trees on the site's northern boundary. Further advice on suitable bat box location and model is provided in Appendix H.
- 5.16 Recent and historic survey data shows bats frequently using the site for foraging and commuting. Foraging and commuting bats will be indirectly adversely impacted by the widescale loss foraging habitats and established linear habitat structure. Overall, the site is considered to offer 'Moderate' foraging and commuting habitats for bats. Therefore, bats may be disturbed by the proposed works if carried out during the bat active season (April – October inclusive). Disturbance to foraging bats during the works will be minimised through only working during daylight hours and turning off any additional site lighting at night or using motion sensors within the active bat season.

Badgers, small mammals, amphibians and reptiles

- 5.17 Adherence to the following RAMs will eliminate the potential for impacts to badger, European hedgehog, amphibians (including GCN), common reptiles and any other notable species should they be present on site:
- An ECoW will be appointed to oversee the construction activities. Attendance on site will be based on an assessment of the ongoing specific works schedule and level of risk to GCN. Specific ECoW checks such as fingertip searches will be required prior to certain works (see appropriate points below);
 - A toolbox talk will be given to all contractors and others working on site prior to the commencement of works by the ECoW. Toolbox talk to cover GCN

identification (see Appendix L), and the potential for mammals, common amphibians and common reptiles to utilise suitable habitats on site and to be encountered during the works. Legislation, the importance of biosecurity and the procedure to follow if these are encountered during works will also be covered;

- If no works are undertaken on site within 12 months of the UKHab survey, a pre-works site walkover to check for badgers will be undertaken a maximum of two months prior to the commencement of works by a suitably qualified ecologist;
- Any rabbit burrows will be avoided during the works. If avoidance is not possible, any management methods employed will be in accordance with Natural England's Technical [Information Note 003 \(Natural England, 2007\)](#);
- Brash and log piles at TN2, TN4 and TN6 will be dismantled slowly and by hand any small mammals encountered will be left to disperse freely.
- The working footprint will be kept to a minimum;
- No night work or floodlighting (working window: an hour after sunrise until an hour before sunset);
- Where vegetation removal is required, a two-stage cut will be undertaken, under supervision of the ECoW. Vegetation will be strimmed with handheld machinery (i.e. strimmer, brush cutter, chainsaw) to a height of no less than 150 mm. The working area will then be left for a minimum of 48 hours to allow any mammals/amphibians/reptiles that may be present to move out of the immediate area. A fingertip search will then be undertaken by the ECoW prior to a second cut. Following this, the vegetation will be strimmed with handheld machinery to a height of 50 mm. Once the second cut is complete, a fingertip search of the cleared area will be undertaken by the ECoW. Following this, vegetation will be kept to a height of no more than 50 mm by regular mowing through the growing season or until the vegetation is removed, to discourage use by mammals/amphibians/reptiles;
- Any trees or woody shrubs to be removed will be carried out under ECoW supervision. The tree/shrubs will be cut by hand to ground level. The roots will be gradually lifted out of the ground with the ECoW constantly checking the ground, root system and associated soil for the presence of GCN. The removal of any trees/woody shrubs will only be undertaken between March – September;
- All stored equipment / materials which may provide mammals / amphibians / reptiles with suitable refugia will be stored on hard standing/bare ground, or alternatively raised off the ground on pallets;
- Any stockpiled soils or other material will be stored in such a way that does not create potential refugia for mammals/amphibians/reptiles (i.e. on hard standing/raised off the ground and well compacted to ensure no suitable cavities are created);

- Any excavations associated with the works will be backfilled and well compacted or covered before nightfall to prevent mammals / amphibians / reptiles becoming trapped within them. If excavations must be left open, a means of escape, such as an egress board must be provided. Excavations will be carefully inspected in the morning prior to commencement of works;
- No trackway access mats will be used (as these may provide refugia for amphibians). The condition of the ground within vehicular routes will be monitored by the ECoW. Should rutting occur, this will be flattened and compacted before dark on the day caused so as not to provide suitable sheltering habitat for amphibians. Short sections of trackway access mats may be used if absolutely necessary, provided their use has been discussed with the ECoW and they are installed so as to not provide refugia (or can be checked prior to use every day). The frequency of journeys will be kept to a minimum (i.e. only absolutely necessary journeys will be undertaken); and
- In the unlikely event that GCN are encountered during the works (see Appendix L), all works must cease immediately and the ECoW will provide further advice;
- Any small mammals/common amphibians/reptiles encountered at any time during works will be carefully relocated to a safe location, in an area away from the works which will remain undisturbed and placed within an area with plenty of vegetation cover. For example within the woodland to the north-west of the site.

Birds

- 5.18 Any vegetation removal works should take place outside the breeding bird season which runs from March until August inclusive, in order to prevent any impacts upon nesting birds. Any tree/scrub clearance that must be carried out within the bird breeding season will be subject to a pre-clearance bird survey carried out by a suitably experienced ecologist. No works will be carried out within 5 m of an identified nest until the young have fledged and are no longer returning to the nest site. Works will only be undertaken once a scheme ecologist has declared the nest to be no longer in use.
- 5.19 To compensate for the loss of bird nesting habitat, bird boxes should be installed where possible within the development site. (Further information on bird boxes is provided in Appendix H)
- 5.20 It is anticipated that 0.175ha of bramble scrub will be removed to accommodate the proposals. The removal of this habitat will lower the availability of nesting and food resources for birds. As such it is recommended that where possible, summer and winter fruit bearing shrubs and trees should be included in landscaping plans.

Otter, water vole, eel

- 5.21 Overall, the presence of otter and water vole on-site is considered highly unlikely and no direct adverse impacts to either species are anticipated. However, although unlikely the presence of these species within Prescott Brook and adjacent on-site habitat cannot be fully ruled out. Commuting/foraging otter and sheltering water vole if present may therefore be indirectly adversely impacted by disturbance through noise, pollution or illumination of Prescott Brook during works.

- 5.22 In order to avoid disturbance caused by the development to otter and water vole, any works undertaken within 10 m of Prescott Brook will be undertaken during the day (an hour after sunrise until an hour before sunset); there will be no direct illumination of Prescott Brook and the surrounding habitat; and all excavations that may entrap animals will be covered or a means of escape (e.g. earth ramp) provided. Pollution prevention measures will also be followed throughout the duration of the works.
- 5.23 European eel, potentially present within Prescott brook, may be affected by indirect impacts, such as pollution of the watercourse. Pollution prevention measures as outlined in section 5.3 also apply with respect of this species, if present.

Invertebrates

- 5.24 The site features abundant suitable habitat for common and SPI invertebrates. The proposed clearance of large sections of the site will greatly reduce invertebrate supporting habitat and lead to a direct loss of invertebrates and their established habitat. Therefore, it is recommended any post development grassland habitats be suitably managed and feature a high botanical diversity offering a wide range of suitable native nectar rich flowers and shrubs.

Invasive Non-Native Species (INNS)

- 5.25 To reduce the risk of spreading Himalayan balsam and Japanese knotweed, the following RAMs will be adhered to throughout the duration of the works:
- Contractors will be aware of the locations of Himalayan balsam and Japanese knotweed, and how to identify the plants (see Appendix L);
 - A 7 m exclusion zone around all stands of INNS will be demarcated by hi-visibility netlon fencing. If required, access to exclusion zones will be avoided until the INNS have been successfully eradicated from the area;
 - Works during summer months will be preceded by strimming areas of Himalayan balsam in advance of the flowering period (June), the vegetation will then be kept short until completion of works;
 - It is recommended that eradication and ongoing control of Japanese knotweed is carried out by a specialist contractor prior to and during development;
 - Biosecurity protocols will be implemented for works taking place throughout the site, including the cleaning of all footwear and machinery, prior to, and on completion of each working window; and
 - All plant matter and soil considered likely to be contaminated by INNS will be retained on site or disposed of as controlled waste, at a licensed waste facility.
- 5.26 In addition to strict biosecurity protocols, any new materials (e.g. topsoil) introduced to the site will be from a reputable source, where there is no risk of contamination by non-native invasive plants. The production of a method statement for the control of Himalayan balsam is also recommended, with particular focus on removing the species from the Prescott brook area and thereby preventing its spread into the adjacent Carr Lane Lake LWS.
- 5.27 Although the likelihood of encountering American mink or Turkish crayfish is very low, should either species be encountered at any time during works individuals will be

allowed to disperse of their own accord. The best defence against Turkish crayfish is biosecurity, ensuring that individual crayfish are not transported between waterbodies and that the spores from crayfish plague are killed prior to entering another waterbody.

- 5.28 The following measures will be followed to help avoid the spread of non-native species.
- 1 **CHECK** your equipment and clothing for live organisms—particularly in areas that are damp or hard to inspect.
 - 2 **CLEAN** and wash all equipment, footwear and clothes thoroughly. Use hot water when possible. If you do come across any organisms, leave them at the water body where you found them.
 3. **DRY** all equipment and clothing—some species can live for many days in moist conditions. Make sure you don't transfer water elsewhere.
- 5.29 The creation of a 10 m stand-off from the top of the brook bank to be throughout the duration of the works and within the proposed development to help avoid the spread of non-native invasive faunal species.

Biodiversity Net Gain

- 5.30 The provisional analysis of Biodiversity Net Gain indicates that the number of habitat units provided by the site could fall significantly. The site is a recognised brownfield site that was a former water treatment plant, however, due to unchecked maintenance the site has self-seeded over an extended period inadvertently increased its bio-diversity baseline to that once it ceased operation. A high loss in on-site biodiversity will necessitate appropriate compensation. It is recommended consideration be given to maximising the retention and enhancement of biodiversity on-site at the design stage. Further consultation with the local planning authority and project ecologist is required to maximise biodiversity on-site and seek agreement on appropriate compensation for losses in biodiversity. A more informed analysis of should be undertaken taking account of the design requirements of the development, constraints imposed on habitat compensation, and the over-riding need to minimise loss of important habitats.
- 5.31 Loss of higher value habitats (i.e. woodland and ponds) should be avoided wherever possible. The proposal seeks to retain all of the existing woodland on the site. This will minimise the need for compensatory measures, which will be required for all habitat loss. Options include enhancing retained areas of habitat or by creating new areas of habitat. If there is insufficient space on-site, off-site compensation can be provided. Willow/mixed/bramble scrub, other neutral grassland, ponds and urban trees need to be replaced with the same broad habitat or habitats of higher distinctiveness.
- 5.32 Under current proposals habitat loss on site has been minimised through the retention of existing woodland vegetation (W1 & W2). Retained woodland habitat where possible will be:
- Improved with Emorsgate EW1 Woodland Mixture.
 - Any invasive species to be removed by specialist contractor prior to landscaping works.
 - New bird boxes to be placed at strategic location along the boundary.

- 5.33 Additional habitat will be created in the form of five sections of native hedgerow measuring a combined length of 0.19 km. Four of these hedgerows will be planted with species of local provenance 'native seed zone 302'. Therefore, hedgerow units on-site will increase as a result of the development.
- 5.34 Landscaping proposals include the creation of areas of lowland meadow at the north-west of site along the retained woodland 1 habitat. These meadows will be seeded with British wildflower and Bee Seed Mixes and incorporate native orchard tree species. Transplanted wildflower species such as 'Bee Orchids' will be incorporated into these wildflower meadows subject to ecologist recommendations.

Further measures

- 5.35 As designs for the site develop, an ecologist can provide site specific advice on ways to enhance the wildlife value of the final development and contribute towards limiting the impact of the development on biodiversity. Simple examples of enhancement measures which could be considered and designed into the proposals include (but are not limited to):
- Additional planting of scrub and scattered trees in and around the margins of the site, that is in excess of mitigation requirements, will improve the diversity of habitats. New planting should comprise native species of local provenance, to include berry bearing shrubs. Planting of such additional native species will benefit many species of wildlife including bats, birds and amphibians;
 - The creation of habitat for invertebrates by excavating small trenches, filling with suitable materials (e.g. rubble and woody debris) and covering with freely draining soils to form a low mound and sown/planted with nectar rich wildflowers/shrubs;
 - Creation of log/brush piles from felled trees/scrub to attract invertebrates and fungi, which will also provide short and long-term refugia for mammals, amphibians and invertebrates; and
 - The installation of additional bat and bird boxes within the neighbouring habitats (with landowner permission).

Re-survey of the Site

- 5.36 If no works are undertaken on site within 12 months of this survey or if any changes to the proposals are made, a further ecological survey may be necessary (because of the mobility of animals and the potential for colonisation of the site)

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Appendix A – Bat Roost Potential and Habitat Suitability Categories

Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape (Collins, 2016).

Table 11: *Bat roost potential suitability categories*

Suitability	Description of Roosting Habitat	Commuting & Foraging Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	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 or by a larger number of bats (i.e. unlikely to be suitable maternity or hibernation). A tree of sufficient size and age to contain potential roosting features but with none seen from the ground, or feature seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging, such as trees, scrub, grassland or water.
High	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 potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close and connected to known roosts.

Appendix B – Plan of Proposed Development/Works



Appendix D – Invasive Species Location Plan



Appendix E – Pond Plan



Appendix F – Habitat Parcel and Target Note Descriptions and Photos

Location of habitats and target notes provided in Appendix C.

Table 12: *Habitat Parcel and Target Note Descriptions and Photos*

No	Description	Photograph
MG1	A small area of modified grassland is located to the northeast of the site. This grassland habitat is well maintained and frequently mown. The grassland is separated from adjacent unmanaged habitats by a panelled wooden fence. The diversity in ground flora is low at the habitat's northern section with a slightly higher diversity to the south. The habitat is considered to be in 'Poor' condition.	
GL1	GL1 is a small open neutral grassland habitat located at the north of site and surrounded by encroaching willow scrub. The habitat features a damaged and rabbit grazed sward with a higher diversity of flora species. Overall, the habitat is considered to be in 'Poor' condition.	
GL2	GL2 is a larger open neutral grassland habitat located centrally on-site surrounded by encroaching willow scrub. The habitat features a short, damaged and rabbit grazed sward with a good diversity of flora species. Overall, the habitat is considered to be in 'Moderate' condition.	

GL3	GL3 is a long linear neutral grassland habitat located at the south of site. Its sward is longer and subject to less rabbit grazing pressure. Overall, the habitat is considered to be in 'Moderate' condition.	
TH1 /GL4	TH1/GL4 is a large area of tall ruderal vegetation (Assessed as grassland in Metric 4 Biodiversity calculation tool) The sward is tall with low diversity of flora species, dominated by rosebay willowherb. Overall, the habitat is considered to be in 'Poor' condition.	
BS1	A small area of bramble scrub at the northeast of site. The scrub is dense and encroaching into adjacent grassland habitat. Under Metric 4 biodiversity calculation tool, condition assessment is not applicable to bramble scrub habitats.	
BS2	A large area of bramble scrub located centrally on-site adjacent to woodland and willow scrub habitats. The dense sward provides a sheltering/foraging/commuting habitat for a range of wildlife.	

BS3	A large area of bramble scrub located centrally on-site adjacent to grassland and willow scrub habitats. The dense sward provides a sheltering/foraging/commuting habitat for a range of wildlife. The non-native invasive species Himalayan balsam is present.	
BS4	A large area of bramble scrub located centrally on-site adjacent to grassland and willow scrub habitats. The dense sward provides a sheltering/foraging/commuting habitat for a range of wildlife. The non-native invasive species Himalayan balsam and Japanese knotweed are present.	
WS1	Willow scrub 1 is a large, dense compartment of willow species located at the north of site. The dense habitat provides sheltering/foraging/commuting habitat to a wide range of wildlife. Overall, the scrub habitat is considered to be in 'Moderate' condition	
WS2	Willow scrub 2 is a large, dense compartment of willow species located at the south of site. The dense habitat provides sheltering/foraging/commuting habitat to a wide range of wildlife and encompasses Pond 1. Overall, the scrub habitat is considered to be in 'Poor' condition	

WS3	Willow scrub 3 is a large, dense compartment of willow species located at the southwest of site. The dense habitat provides sheltering/foraging/commuting habitat to a wide range of wildlife. Overall, the scrub habitat is considered to be in 'Moderate' condition	
MS1	Mixed scrub 1 is located at the south of site and boarded by willow scrub at the east and bramble scrub to the north. The sward is characterised by dense vegetation with no one species being dominant. The non-native invasive species Himalayan balsam and Japanese knotweed are present. Overall, the habitat is considered to be in 'Poor' condition.	
MS2	Mixed scrub 2 is located at the south of site and boarded grassland at the south. The sward is characterised by dense vegetation with no one species being dominant. The non-native invasive species Himalayan balsam is present. Overall, the habitat is considered to be in 'Poor' condition.	
MS3	Mixed scrub 3 is located at the southwest of site. The sward is characterised by a mix of woody and perennial vegetation with no one species being dominant. A higher diversity of less commonly occurring flora species was recorded. Overall, the habitat is considered to be in 'Poor' condition.	

W1	Woodland 1 is located in a long linear compartment along the site's northern boundary and encompasses Prescott Brook. The habitat ground conditions are damp and feature abundant Himalayan balsam. The woodland features large stands of mature willow trees. Overall, the woodland is considered to be in 'Moderate' condition.	
W2	Woodland 2 is located at the northeast of site adjacent to Carr lane. Historic ariels of the habitat suggest the habitat was a hedgerow or tree line which has no self-seeded and widened into woodland. Its canopy is mostly composed of mature hybrid black poplars with dense understory of hawthorn, elder and buddleia. Overall, the habitat is considered to be in 'Moderate' condition.	
WC1 (On-site)	A section of Prescott Brook is located on-site at the west. This area of running water flows from north-east to south-west and is shaded by the surrounding broadleaved woodland. Prescott Brook is, on average, approximately 1-2 metres wide, with a depth of 20-30 cm and has a silt and cobble substrate. No aquatic vegetation was present within the watercourse. The banks are low and vertical, comprising bare earth, which is eroded in some areas. Himalayan balsam occurs frequently on the watercourse peripheries.	

WC2/TN1	Water course 2 is located along the site's northern boundary and is a continuation of WC1, Prescott Brook. Features of the watercourse are described above.	
BTG1	A group of mature willow trees is present on site at the north. This group of trees presents multiple potential bat roosting features (PRFs) including wounds, transverse snaps, hazard beams and frost cracks. Overall, this group of trees is considered to have 'Moderate'/'High' potential to be utilised by roosting bats.	
UT1/BT1	Is a medium sized hybrid Black poplar on the site's eastern boundary meeting criteria of an urban tree. The mature tree is recommended for removal due to H&S concerns by project associated arboriculturist and measures 17.5 m high 750 mm stem width. The tree also features a potential bat roost feature in the form of a tear out on the trunk facing northwest at approximately 5 m high.	

TN2	TN2 is a brash pile located on the peripheries of willow scrub 1. Its structure provides suitable sheltering habitat for range of species.	
TN3	A less commonly occurring species Bee orchid is present on the peripheries of willow scrub 2.	
TN4	TN4 is several log piles located within woodland 1. The log piles structures provide suitable sheltering habitat for range of species.	
TN5	TN5 is related to the presence of less commonly occurring flora species within MS3. Species include centaury and broad-leaved helleborine.	

TN6	TN6 is a brash pile located on the peripheries of willow scrub 3. Its structure provides suitable sheltering habitat for range of species.	
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Appendix G – Nesting Bird Species List/Breeding Status/Plan

Table 13: Nesting bird species list

Species (Code)	Scientific Name	Cons. Status*	Breeding Status
blackbird (B.)	<i>Turdus merula</i>	None	Probable
blackcap (BC)	<i>Sylvia atricapilla</i>	None	Possible
blue tit (BT)	<i>Cyanistes caeruleus</i>	None	Confirmed
Canada goose (CG)	<i>Branta canadensis</i>	None	Confirmed
chaffinch (CH)	<i>Fringilla coelebs</i>	None	Confirmed
chiffchaff (CC)	<i>Phylloscopus collybita</i>	None	Confirmed
cormorant (CA)	<i>Phalacrocorax carbo</i>	None	Non-breeding
dunnock (D.)	<i>Prunella modularis</i>	S41, A	Confirmed
goldcrest (GC)	<i>Regulus regulus</i>	None	Possible
goldfinch (GO)	<i>Carduelis carduelis</i>	None	Confirmed
great tit (GT)	<i>Parus major</i>	None	Confirmed
greenfinch (GR)	<i>Chloris chloris</i>	R	Possible
house martin (HM)	<i>Delichon urbicum</i>	R	Non-breeding
lesser black-backed gull (LB)	<i>Larus fuscus</i>	A	Non-breeding
long-tailed tit (LT)	<i>Aegithalos caudatus</i>	None	Possible
magpie (MG)	<i>Pica pica</i>	None	Confirmed
mallard (MA)	<i>Anas platyrhynchos</i>	A	Confirmed
moorhen (MH)	<i>Gallinula chloropus</i>	A	Confirmed
robin (R.)	<i>Erithacus rubecula</i>	None	Probable
song thrush (ST)	<i>Turdus philomelos</i>	S41, A	Probable
treecreeper (TC)	<i>Certhia familiaris</i>	None	Possible
wren (WR)	<i>Troglodytes troglodytes</i>	A	Probable

*Conservation Status



Appendix H - Bat and Bird Mitigation



Schwegler 2F bat box

Location: At least 3m above ground level, on western or southern elevation

Source: <http://www.nhbs.com/title/172271/2f-schwegler-bat-box-with-double-front-panel>



Schwegler 1N Bird nest box & robin box

Location: 1.5 – 2m above ground level, on western or southern elevation

Source: <http://www.nhbs.com/title/158609/1n-schwegler-deep-nest-box>
<http://www.nhbs.com/title/161277/2h-schwegler-robin-box>

Appendix I – GCN eDNA results



Folio No: E18797
 Report No: 1
 Purchase Order: BOW25
 Client: BOWLAND ECOLOGY
 Contact: Bowland Ecology

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 05/07/2023
Date Reported: 19/07/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3756	Carr Lane, Prescott - P1	SJ 46178 92040	Pass	Pass	Pass	Negative	0
3760	Carr Lane, Prescott - P4	SJ 45965 92063	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth

Approved by: Jennifer Higginbottom



Appendix J – Habitat Parcel Condition Assessment Criteria Tables

Table 14: Low Distinctiveness Grassland Condition Assessment Criteria

Condition Assessment Criteria		Habitat Parcel Reference
<u>Grassland Habitat</u> – Low distinctiveness		MG1
A	There are 6-8 vascular plant species per m ² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m ² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	Yes
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	No
C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	No
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Yes
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	Yes
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	Yes
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	Yes
Condition Assessment Results		
Passes 6 or 7 criteria including passing essential criterion A		
Passes 4 or 5 criteria including passing essential criterion A		5 including essential criteria A
"Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)"		
Overall habitat condition		Moderate

Table 15: Grassland Condition Assessment Criteria

Condition Assessment Criteria GRASSLAND Habitat Type (medium, high and very high distinctiveness)	Habitat Parcel Reference			
	GL1	GL2	GL3	GL4 (TH1)

A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Yes	Yes	Yes	No
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	No	Yes	Yes	No
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	No	No	Yes	Yes
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Yes	Yes	Yes	Yes
E	"Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed."	No	No	No	No
Additional Criterion - must be assessed for all non-acid grassland types					
F	"There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type Note - this criterion is essential for achieving Good condition for non-acid grassland types only."	No	No	No	No
Non-acid grassland types (Result out of 6 criteria)					
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.					
Passes 3 - 5 criteria, including essential criterion A.			3	4	
"Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F."		2			2
Overall Habitat Condition		Poor	Moderate	Moderate	Poor

Table 16: Condition assessment criteria for ponds

Condition Assessment Criteria		Habitat Parcel Reference
Ponds		Pond 1
Core Criteria - applicable to all ponds (woodland¹ and non-woodland):		
A	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	No
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.	Yes
C	Less than 10% of the water surface is covered with duckweed <i>Lemna</i> spp. or filamentous algae.	Yes

D	The pond is not artificially connected to other waterbodies, e.g. agricultural ditches or artificial pipework.	No
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams ² , pumps or pipework.	No
F	There is an absence of listed non-native plant and animal species ³ .	Yes
G	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	No
Additional Criteria - must be assessed for all non-woodland ponds:		
H	Emergent, submerged or floating plants (excluding duckweed) ⁴ cover at least 50% of the pond area which is less than 3 m deep.	Yes
I	The pond surface is no more than 50% shaded by adjacent trees and scrub.	Yes
Results for non-woodland ponds which require assessment of 9 criteria		
Good - Passes 9 criteria		
Moderate – Passes 6 – 8 criteria		
Poor – Passes 5 or fewer		5
Overall Condition Score		Poor

Table 17: Scrub habitat condition assessment criteria

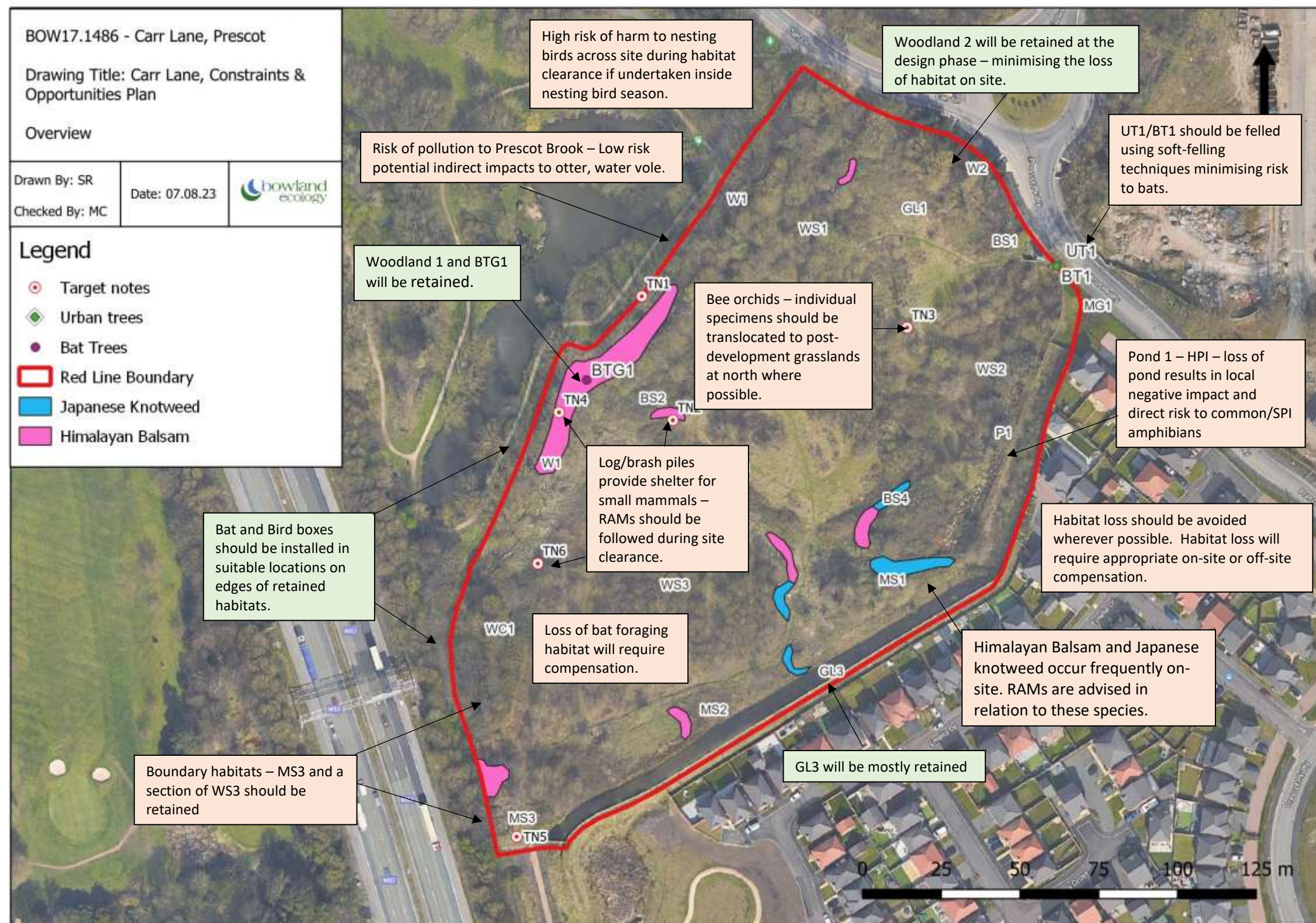
Condition Assessment Criteria Willow Scrub Mixed Scrub		Habitat Parcel Reference					
		WS1	WS2	WS3	MS1	MS2	MS3
A	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species ¹ , with no single species comprising more than 75% of the cover (except hazel <i>Corylus avellana</i> , common juniper <i>Juniperus communis</i> , sea buckthorn <i>Hippophae rhamnoides</i> or box <i>Buxus sempervirens</i> , which can be up to 100% cover).	Yes	Yes	Yes	Yes	Yes	No
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran ²) shrubs are all present.	Yes	Yes	Yes	Yes	No	No
C	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) and species indicative of sub-optimal condition ⁵ make up less than 5% of ground cover.	No	No	No	No	No	Yes
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	Yes	No	Yes	No	No	No
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	No	No	No	No	No	No
Condition Assessment Results							
Good – Passes 5 criteria							
Moderate – Passes 3 to 4 criteria		3		3			
Poor – Passes 2 or fewer criteria			2		2	1	1
Overall Condition Scores		Moderate	Poor	Moderate	Poor	Poor	Poor

Table 18: Woodland condition assessment criteria

Condition Assessment Criteria – Woodlands						
Indicator		Good	Moderate	Poor	Habitat Parcel Reference	
					W1	W2
A	Age distribution of trees	Three age-classes ¹ present.	Two age-classes ¹ present.	One age-class ¹ present.	2	2
B	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland ² .	Evidence of significant browsing pressure is present in 40% or less of whole woodland ² .	Evidence of significant browsing pressure is present in 40% or more of whole woodland ² .	3	3
C	Invasive plant species	No invasive species ³ present in woodland.	<i>Rhododendron ponticum</i> or cherry laurel <i>Prunus laurocerasus</i> not present, other invasive species ³ <10% cover.	<i>Rhododendron</i> or cherry laurel present, or other invasive species ³ >10% cover.	1	2
D	Number of native tree species	Five or more native tree or shrub species ⁴ found across woodland parcel.	Three to four native tree or shrub species ⁴ found across woodland parcel.	Two or less native tree or shrub species ⁴ across woodland parcel.	3	3
E	Cover of native tree and shrub species	>80% of canopy trees and >80% of understory shrubs are native ⁵ .	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native ⁵ .	<50% of canopy trees and <50% of understory shrubs are native ⁵ .	3	3
F	Open space within woodland	10 - 20% of woodland has areas of temporary open space ⁶ . Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted ⁷ .	21 - 40% of woodland has areas of temporary open space ⁶ .	<10% or >40% of woodland has areas of temporary open space ⁶ . But if woodland <10ha has <10% temporary open space, please see Good category ⁷ .	3	3
G	Woodland regeneration	All three classes present in woodland ⁸ ; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland ⁸ .	No classes or coppice regrowth present in woodland ⁸ .	2	2
H	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback ⁹ .	11% to 25% tree mortality and or crown dieback or low-risk pest or disease present ⁹ .	Greater than 25% tree mortality and or any high-risk pest or disease present ⁹ .	3	3
I	Vegetation and ground flora	Recognisable NVC plant community ¹⁰ at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community ¹⁰ at ground layer present.	No recognisable woodland NVC plant community ¹⁰ at ground layer present.	2	1

J	Woodland vertical structure	Three or more storeys across all survey plots, or a complex woodland ¹¹ .	Two storeys across all survey plots ¹¹ .	One or less storey across all survey plots ¹¹ .	2	2
K	Veteran trees	Two or more veteran trees ¹² per hectare.	One veteran tree ¹² per hectare.	No veteran trees ¹² present in woodland.	1	1
L	Amount of deadwood	50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities ¹³ .	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities ¹³ .	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities ¹³ .	2	1
M	Woodland disturbance	No nutrient enrichment or damaged ground evident ¹⁴ .	Less than 1 hectare in total of nutrient enrichment across woodland area and or less than 20% of woodland area has damaged ground ¹⁴ .	More than 1 hectare of nutrient enrichment and or more than 20% of woodland area has damaged ground ¹⁴ .	1	2
Condition Assessment Results						
Total score >32 (33 to 39)						
Total score 26 to 32					28	28
Total score <26 (13 to 25)						
Overall condition score					Moderate	Moderate

Appendix K – Ecological Constraints and Opportunities Plan



Appendix L – Information Sheets for Contractors

Amphibians

Information, legal responsibilities and best practice for the construction industry



Legal Information

In England it is **illegal** to deliberately capture, injure or kill a GCN, deliberately disturb a GCN, deliberately take or destroy GCN eggs, damage or destroy a breeding site or resting place used by a GCN. Penalties on conviction: the maximum fine is £5,000, up to six months in prison, per offence and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery. The following points are defences:

- ✓ Tending/caring for a GCN solely for the purpose of restoring it to health and subsequent release.
- ✓ Mercy killing where there is no reasonable hope of recovery (provided that person did not cause the injury in the first place – in which case the illegal act has already taken place).

Good to know-

- Newts are also carriers of the waterborne fungi- chytrid fungus. This fungus can be spread between water bodies and can cause the disease chytridiomycosis. If any work is being carried out around standing water then disinfection of footwear and equipment is important to prevent the spread of the disease.
- If a great crested newt is found before or after work (for example, pond management work) is commenced, then **work should be immediately postponed** and then started another time or with different methodology. If the newts cannot avoid being harmed then a license must be applied for.

Life cycle and seasonal appearances

April-May= This is when newts undertake courtship displays and mate with females. Certain amphibians can start this process as early as February.

June-August= Larval growth and development of newly hatched juveniles- This event can occur anytime between March and October (depending on pond conditions and other factors such as climatic conditions)

August-October= Metamorphosis and juvenile emigration to terrestrial environments occurs at this stage

November-February= Hibernation on land

February-May= Emergence of adult form newts and dispersal to ponds

Other protected amphibians

The other two species of newts (smooth and palmate) are **protected under Section 9 (5) of the Wildlife & Countryside act 1981**, which prohibits the 'sale, barter, exchange, transporting for sale and advertising to sell or to buy. Common toads and common frogs are also protected under this legislation. **The natterjack toad** (which are smaller than common toads at 6-7cm) are given **full protection** by section 9 of the same act due to the fact they are a threatened and rare species in the UK, being confined to only a couple coastal territories. It is an offence to 'intentionally kill. Injure or take (capture, etc); possession; intentional disturbance whilst occupying a 'place used for shelter or protection' and destruction of these places; sale, barter, exchange, transporting for sale or advertising to sell or buy'.



Common frog (top), common toad (middle), natterjack toad (bottom)

Key ID Features

Smooth Newt (*Lissotriton vulgaris*)

Egg stage- Smooth eggs are indistinguishable against palmate newt eggs, are rounded (not oval) and a grey/brown colour when freshly laid.

Larvae stage- Larvae are up to 3-4cm long (shorter than GCN), and have less obvious speckling and smaller gills.

Adult stage- Adult smooths measure up to 10cm, have a paler body than GCN with an orange belly stripe. Smooths lack some features of palmate newts (notably pink chin, and a cream spot). There is a slight silver/ orange strip along the base of the tail. The crest is wavy along whole back and tail, unlike palmates where it is more of a ridge shape.




Species protected by UK and European law

Great Crested Newt (GCN)- *Triturus cristatus*



GCN eggs are oval shaped with a pale yellow to white colour, these are usually found singly wrapped in folded leaves. Smooth and Palmate eggs are grey/ brown when freshly laid.



Adults are black, and are also covered in bright yellow spots on the underside and irregular blotches.



Larvae (Efts) are up to 5-9cm long and have distinguishable black speckling on the tail and body

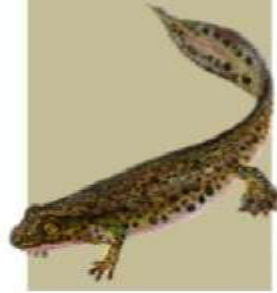
Adults also have a jagged crested tail with a recognisable stripe. Both males and females also have white speckling on the sides.

Palmate Newt (*Lissotriton helveticus*)

Egg stage- Palmate eggs are indistinguishable against smooth newt eggs, are rounded (not oval) and a grey/brown colour when freshly laid.

Larvae stage- Larvae are up to 3-4cm long (shorter than GCN), and have less obvious speckling and smaller gills.

Adult stage- Adult palmates measure up to 10cm, have a paler body than GCN with an orange belly stripe. They also have a pink chin with no spots/ speckles and a cream spot on both hind feet.




References:

Acknowledgements:

Version 10 December 2018

Reptiles

Information, legal responsibilities and best practice for the construction industry



Legal Information

All of the UK's native reptiles are protected (to varying levels) under the Wildlife and Countryside act 1981 (as amended in 1988 and 1991). The reptiles summarised in this information poster are all natives. FULL protection is granted only to the sand lizard, which means that **'the intentional killing, injuring or taking (capture, etc); possession; intentional disturbance whilst occupying a 'place used for shelter or protection' and destruction of these places; sale, barter, exchange, transporting for sale and advertising to sell or to buy.'** Is strictly prohibited. Protection against killing, injuring and the sale of... applies to the four other 'widespread' species of reptiles- namely slow worm, adder, grass snake and the common lizard.

Exceptions to this legislation include allowing things to happen that are reasonable, unavoidable and unpredictable, such as running over a reptile.

Life cycle

April/May- reptiles emerge from hibernation, shortly after which males compete for mating

June/July- Female grass snakes lay/ give birth (however smooth snakes tend not to give birth every year!)

July/August- Lizards give birth to live young

September- smooth snakes give birth to live young

August-October- reptiles prepare for winter by feeding (lizards eat invertebrates and snakes)

November-March- reptiles hibernate over winter (lizards often amongst groups around rocks and dead wood).

Other reptiles



Sand Lizard (*Lacerta agilis*)- Strictly protected by UK and European law. A license is required in order to carry out work in their vicinity. They reach up to 20cm in length and require both undisturbed sand and mature sunny habitats on dunes.



Common Lizard (*Lacerta vivipara*)- Protected under UK law. Most common reptile in Britain. Found in various habitats such as heathland, moorland and woodland. Variable in colour but usually brownish-grey with rows of darker spots and stripes.

Smooth snake (*Coronella austriaca*)

Like the sand lizard this species is fully protected by UK and European law. It looks similar to an adder, however does not have the distinctive adder zig zag pattern across its back, and has a more slender appearance. The smooth snake is a rarity in the UK and can only be found in a few places (usually similar habitats to the sand lizard). As with other snakes, the smooth basks in the sun.

Slow worm- *Anguis fragilis*



Identifiable features

- Up to 50cm long
- Leg-less lizard (not a worm or a snake!)
- Shiny
- Golden brown

Conservation status and other information

Protected in the UK under the Wildlife and Countryside Act 1981. Also a priority species under the UK Post-2010 biodiversity framework.

The slow worm is distinguishable from snakes due to its ability to blink with its eyes. They can be found on habitats such as heathland, woodland edges and tussocky grassland. Snakes are much larger than slow worms, and females of the latter can sport a dark stripe down their backs whilst being larger than their male counterparts. Slow worms can live up to 20 years in the wild.



Grass Snake- *Natrix natrix* (*Natrix helvetica*)

Identifiable features

- Length can range from 90-150cm
- Yellow collar
- Black bars on flanks
- Grey/green in colour



Conservation status and other information

Protected in the UK under the Wildlife and Countryside act 1981. Also a priority species under the UK Post-2010 biodiversity framework.

The grass snake is our largest snake in the UK, and can weigh more than double the amount of an adder. They can be found in wetland habitats, and dry grasslands and gardens with ponds. Females are



bigger than males, and lay up to 40 eggs in rotting vegetation; in order to incubate them until prime hatching time in early autumn. These snakes can be seen from April to October. Females often seek out places of warmth such as manure heaps and rotting reeds.

Adder- *Vipera berus*



Identifiable features

- **Venomous species**
- Dark zig-zag pattern down back
- Length- 60-80cm
- Grey to brown in colour but males tend to be more silvery-grey

Conservation status and other information

Protected in the UK under the Wildlife and Countryside act 1981. Also a priority species under the UK Post-2010 biodiversity framework. Adders are a relatively small species of snake, and prefer to nest in heathland, moorland and woodland habitats. Females give birth to up to 20 live young. The first warm days of March is the most likely time adders can be found in the warm cover underneath rocks and logs. Adder bites are rare and are usually only dangerous towards the young or elderly. However they can be very painful and **medical attention should be sought immediately.**



References:

Acknowledgements:

Version 1 December 2018

BATS



Information, legal responsibilities and best practice for the construction industry

Legal Protection

All UK Bat species are protected by European and UK law, in practical terms this means it is an offence to:

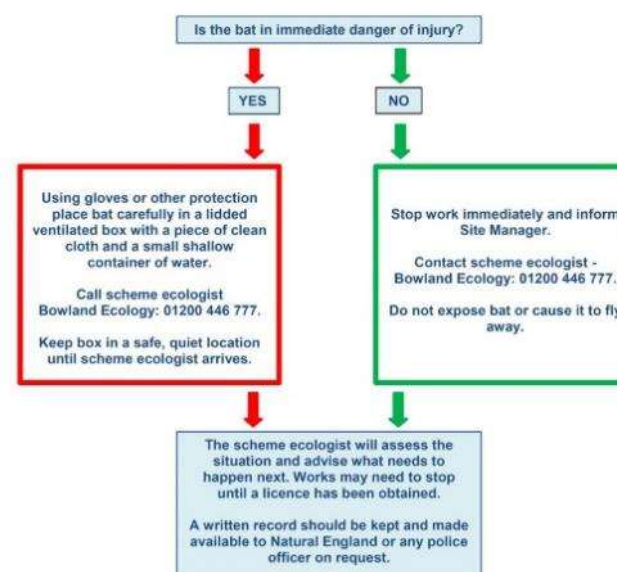
- Deliberately capture, injure or kill a bat;
- Deliberately disturb bats;
- Damage or destroy a breeding site or resting place (even if bats are not occupying the roost at the time);
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place;
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.

Penalties on conviction: the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

Defences include:

1. Tending/caring for a bat solely for the purpose of restoring it to health and subsequent release.
2. Mercy killing where there is no reasonable hope of recovery (provided that person did not cause the injury in the first place – in which case the illegal act has already taken place).

Found a bat during unsupervised works?



Field signs of bat presence:

- Live or dead bats: the smallest UK bat species, the pipistrelle is only 3.5–4.5cm long.
- Droppings: bat droppings look like mouse droppings but will crumble between your fingers (they are dry and made entirely of insects).
- Feeding remains: piles of butterfly/moth wings are often left below bat feeding perches.



Places that bats may use in buildings



Schematic from www.bats.org.uk

Bats can roost in the following places:

- The top of gable end or dividing wall;
- The top of chimney breasts;
- Ridge and hip beams and other roof beams;
- Mortise and tension joints;
- All beams/ceilings/pipework (free hanging bats);
- The junction of roof timbers, especially where ridge and hip beams meet;
- Behind purlins;
- Between tiles and the roof lining;
- Under flat felt roofs;
- Under barge boards;
- In cavity walls;
- In cracks in stone or concrete;
- Behind peeling paint/wall coverings;
- Gaps behind window and door frames;
- Between window panes and timber boarding.
- In trees (cracks/holes/ivy cladding).

Why wear gloves?

There is a small risk that some bats carry a rabies virus – European Bat Lyssavirus. The purpose of wearing gloves is to reduce the chance of being bitten, as the virus is transmitted via bat saliva. Thick leather gloves are appropriate for removing a bat from imminent danger but these should be clean.

In the event that you are bitten, wash the wound, gently but thoroughly, with soap and water. Speak to a health professional immediately, advising them that you have been bitten by a bat.



References:

Bat Conservation Trust. August 2016. Why wear gloves when handling bats?
BCT Bat Surveys for Professional Ecologists, Good Practice Guidelines, 3rd Edition, 2016

version 1 August 2017

Himalayan Balsam

Information, legal responsibilities and best practice for the construction industry



Legal Information

In England it is illegal to plant or cause the spread of Himalayan balsam in the wild. If Himalayan balsam is taken away from the site of origin, the plant and its associated materials, e.g. soil, become classed as controlled waste and must be disposed of at an authorised landfill site. Furthermore, powers are given to environmental authorities to enter into control agreements and orders with landowners, in order to ensure action is taken to control non-native invasive species on their land.

Legislation governing the movement and spread of Himalayan balsam in England includes the following:

- Wildlife and Countryside Act 1981 (as amended) Section 14;
- Environmental Protection Act 1990 S33 & 44; and
- Infrastructure Act 2015 Sections 23 to 25.

Impacts

Himalayan balsam is a non-native, rapidly colonising plant. It negatively impacts the growth and success of native plants, as dense stands grow quickly and prevent other plants from successively germinating and producing flowers. The species rapidly dominates an area, creating dense monoculture stands, commonly observed on river banks, but also within woodland and other habitats with damp ground.

Management of Himalayan balsam

- Prior to commencement of any works on site all staff on site should be made aware of the presence and location of Himalayan balsam on site and all stands of Himalayan balsam, including a 7 m buffer zone should be marked out with hi-visibility fencing;
- Prior to the plant setting seed in June it should be strimmed to the ground to prevent the dispersal of seeds;
- The use of mechanical plant over infected areas should be kept to a minimum;
- Biosecurity measures should be implemented whilst on site to prevent cross contamination. This includes the cleaning of footwear and machinery, prior to, and on completion of each working window to ensure that Himalayan balsam is not taken off or spread around the site.
- Himalayan balsam is classed as controlled waste. As such, all arisings and potentially contaminated soil from the plant must be disposed of in an appropriate manner to ensure that the waste does not cause pollution of the environment.

Distribution & Spread

Himalayan balsam is widely distributed across most of lowland England and Wales and many parts of Scotland and Ireland.

Each plant produces approximately 2,500 seeds and when mature the seeds open 'explosively if disturbed' and can project several meters from the parent plant. Furthermore, the seeds also float, making watercourses a perfect vector for their dispersal.



Useful references & guides:

GB non-native species secretariat
<http://www.nonnativespecies.org/home/index.cfm>
 Prevent harmful weeds and invasive non-native plants spreading
<https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants>

Key ID Features



Identifying Himalayan balsam

Himalayan balsam, also referred to as Indian balsam (*Impatiens glandulifera*) is a tall, annual plant. As a mature plant it can grow up to 3 m in height and is easily recognisable with pink/purple flowers, a fleshy stem, turning more pink/red in the summer, with lanceolate shaped, long, green leaves tinged with pink. In summer, the plant forms dense stands, commonly along watercourses and other damp habitats.

In late July/August exploding seed pods appear. The pods enable the plant to disperse seeds up to distance of 7 m from the mature plant, enabling the effective spread of the plant in the wild.

As an immature plant it is more difficult to identify. Seedlings begin to appear in March, and in winter, when the plant dies back it can resemble the remains of hay.

References: Botanical Society of Britain & Ireland, 2017, GB non-native species secretariat, RPS group Plc.
 Bowland Ecology Ltd. 2 York Street, Clitheroe, Lancashire, BB7 2DL

Version 1 November 2017

Japanese knotweed

Information, legal responsibilities and best practice for the construction industry



Legal Information

In England it is illegal to plant or cause the spread of Japanese knotweed in the wild. If Japanese knotweed is taken away from the site of origin, the plant and its associated materials, e.g. soil, become classed as controlled waste and must be disposed of at an authorised landfill site. Furthermore, powers are given to environmental authorities to enter into control agreements and orders with landowners, in order to ensure action is taken to control the plant on their land.

Legislation governing the movement and spread of Japanese knotweed in England includes the following;

- Wildlife and Countryside Act 1981 (as amended) Section 14;
- Environmental Protection Act 1990 S33 & 44; and
- Infrastructure Act 2015 Sections 23 to 25.

Impacts

Japanese knotweed is a non-native species that when established forms dense stands, commonly found in riparian habitats. However, the plant can establish in other habitats where the ground has become disturbed. The dense, monoculture stands reduce biodiversity and dominate the landscape, outcompeting native species. The plant can also grow through tarmac and concrete causing damage to buildings and roads.

Management of Japanese knotweed

- Prior to commencement of any works on site all staff on site should be made aware of the presence and location of Japanese knotweed and all stands of the plant, including a 7 m buffer zone should be marked out with hi-visibility fencing;
- The use of mechanical plant over infected areas should be kept to a minimum, and biosecurity measures should be implemented whilst on site to prevent cross contamination. This includes the cleaning of footwear and machinery, prior to, and on completion of each working window to ensure that the plant is not taken off or spread around the site;
- Japanese knotweed is classed as controlled waste. Therefore, all arisings and potentially contaminated soil from the plant must be disposed of in an appropriate manner to ensure that the waste does not cause pollution of the environment;
- The plant can be managed several ways;
 - Spraying with approved herbicides, over a three year period to ensure rhizomes become dormant;
 - Burying, further guidance should be sought beforehand from the EA; and
 - Burning, guidance should be sought beforehand from the EA and LPA.

Distribution & spread

Japanese knotweed is widely distributed across most of lowland England and Wales and many parts of Scotland and Ireland. All Japanese knotweed plants in the UK are clones, as such, their seeds are sterile. The plant contains rhizomes (underground root system) which enables the effective spread of the plant. Soil can be contaminated up to 3 m deep and within a 7 m radius of the parent plant.



Useful references & guides:

GB non-native species secretariat

<http://www.nonnativespecies.org/home/index.cfm>

Preventing Japanese knotweed from spreading

<https://www.gov.uk/guidance/prevent-japanese-knotweed-from-spreading>

Key ID Features



Identifying Japanese knotweed

There are three species of Japanese knotweed in England; Japanese knotweed (*Fallopia japonica*) the most widespread species; giant knotweed (*Fallopia sachalinensis*); and a hybrid Knotweed (*Fallopia x bohemica*).

Japanese knotweed is a herbaceous perennial that produces green/reddish shoots in early spring. The plant can reach to heights of 3 m before dying back in autumn. The stem, is green with red and/or purple specks and forms dense cane-like clumps. The plant's shoots and leaves, which can be up to 120 mm long, densely cover the ground and are arrow shaped.

The plant spreads underground by means of rhizomes which can extend 7 metres outwards and reach up to 2 metres deep. Rhizome fragments as small as 10 mm can produce new plants, seeds produced by the plant are sterile. The outer surface of the rhizome is dark brown, when broken the inside is orange. When the rhizomes become older they become woody with a hollow centre.

References: Botanical Society of Britain & Ireland, 2017, GB non-native species secretariat
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Version 1 November 2017

Appendix M – Legal Information

This report provides guidance of potential offences as part of the impact assessment. This report does not provide detailed legal advice and for full details of potential offences against protected species the relevant acts should be consulted in their original forms i.e. The Wildlife and Countryside Act, 1981, as amended, The Countryside and Rights of Way Act 2000, The Natural Environment and Rural Communities Act, 2006 and The Conservation of Habitats and Species Regulations 2017.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Species that are protected by European and national legislation			
Badger	Protection of Badgers Act 1992	Wilfully kill, injure or take a badger; Intentionally or recklessly damage, destroy or obstruct access to a badger sett; Disturb a badger in its sett. It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied.	Where required, licences for development activities involving sett loss, damage or disturbance are issued by Natural England (NE). Licences for activities involving watercourse maintenance, drainage works or flood defences are issued under a separate process. Licences are normally not granted from December to June inclusive because cubs may be present within setts. https://www.gov.uk/badgers-protection-surveys-and-licences
Bats <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 Reg 41	Deliberately ¹ capture, injure or kill a bat; Deliberate disturbance ² of bats; Damage or destroy a breeding site or resting place used by a bat. The protection of bat roosts is considered to apply regardless of whether bats are present.	An NE licence in respect of development is required in England. https://www.gov.uk/bats-protection-surveys-and-licences <i>European Protected Species: Mitigation Licensing- How to get a licence</i> (NE 2010) <i>Bat Mitigation Guidelines</i> (English Nature 2004) <i>Bat Workers Manual</i> (JNCC 2004) <i>BS8596:2015 Surveying for bats in trees and woodland</i> (BSI, 2015)
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9	Intentionally or recklessly ³ obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Birds	Conservation of Habitats and Species (Amendment) Regulations 2012	N/A	Authorities are required to take steps to ensure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat. This includes activities in relation to town and country planning functions.
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.1	Intentionally kill, injure or take any wild bird; Intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; Intentionally take or destroy the nest or eggs of any wild bird. Schedule 1 species Special penalties are liable for these offences involving birds on Schedule 1 (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover). Intentionally or recklessly ³ disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety. https://www.gov.uk/wild-birds-protection-surveys-and-licences https://www.gov.uk/prevent-wild-birds-damaging-your-land-farm-or-business
Great crested newt <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 Reg 41	Deliberately ¹ capture, injure or kill a great crested newt; Deliberate disturbance ² of a great crested newt; Deliberately take or destroy its eggs; Damage or destroy a breeding site or resting place used by a great crested newt.	Licences issued for development by NE. https://www.gov.uk/great-crested-newts-protection-surveys-and-licences <i>European Protected Species: Mitigation Licensing - How to get a licence</i> (NE 2010) <i>Great Crested Newt Mitigation Guidelines</i> (English Nature 2001)
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9	Intentionally or recklessly ³ obstruct access to any structure or place used for shelter or protection or disturb a great crested newt in such a place.	Licences issued for science (survey), education and conservation by NE.
Otter <i>European protected species</i>	Conservation of Habitats and Species Regulations 2017 Reg 41	Deliberately ¹ capture, injure or kill an otter; Deliberate disturbance ² of otters; Damage or destroy a breeding site or resting place used by an otter.	Licences issued for development by NE. https://www.gov.uk/otters-protection-surveys-and-licences <i>European Protected Species: Mitigation Licensing- How to get a licence</i> (NE 2010)

Species	Legislation	Offences	Notes on licensing procedures and further advice
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9	Intentionally or recklessly ³ obstruct access to any structure or place used for shelter or protection or disturb an otter in such a place.	No licence is required for survey in England. However, a licence would be required if the survey methodology involved disturbance.
Reptiles (species that are not European protected): Adder Common lizard Grass snake Slow worm	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9(1) (part); S.9(5)	Intentionally kill or injure any common reptile species.	No licence is required in England. However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals. https://www.gov.uk/reptiles-protection-surveys-and-licences
Water vole	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9 & S16	Intentionally kill, injure or take water voles; Intentionally or recklessly ³ damage, destroy or obstruct access to any structure or place used for shelter or protection; Disturb a water vole in such a place.	No licence is required for survey in England, unless you are likely to commit an action that is otherwise illegal. There are currently no licensing purposes that explicitly cover development activities or activities associated with the improvement or maintenance of waterways. However when a proposed lawful activity has no opportunity to retain water voles within a development site and their translocation would result in a conservation benefit then a licence from NE may be obtained. <i>The Water Vole Conservation Handbook</i> (R. Strachan, T. Moorhouse & M. Gelling, Wildlife Conservation Research Unit (WildCRU), 3rd Edition 2011). https://www.gov.uk/water-voles-protection-surveys-and-licences Water voles and development licensing policy - NE Technical Information Note TIN042 2008
Other species			
Rabbits, foxes and other wild mammals For BAP species and	Wild Mammals (Protection) Act 1996	Intentionally inflict unnecessary suffering to any wild mammal.	Natural England provides guidance in relation to rabbits (Technical Information note TIN003, Rabbits- management options for preventing damage, July 2007) and foxes (which are also protected under the Wildlife and Countryside Act 1981 from live baits and decoys, see Species Information notes SIN003 (2011), <i>Urban foxes</i> and SIN004 (2011) <i>The red fox in rural areas</i> as well as other wild mammals.

Species	Legislation	Offences	Notes on licensing procedures and further advice
Species of Principal Importance, see below			Lawful and humane pest control of these species is permitted.

¹ Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing ² Deliberate disturbance of animals includes in particular any disturbance which is likely a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of hibernating or migratory species, to hibernate or migrate; or b) to affect significantly the local distribution or abundance of the species to which they belong. Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 remain an offence under the Wildlife and Countryside Act 1981 although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided. Thus deliberate disturbance that does not result in either (a) or (b) above would be classed as a lower level of disturbance. ³ The term ‘reckless’ is defined by the case of Regina versus Caldwell 1982. The prosecution has to show that a person deliberately took an unacceptable risk, or failed to notice or consider an obvious risk. ⁴ The Wildlife and Countryside Act (1981) has been updated by various amendments, including the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006. A full list of amendments can be found at <https://jncc.gov.uk/our-work/wildlife-countryside-act/>

Site Designation	Legislation	Protection	Guidance
Local Sites	There is no statutory designation for Local Sites	Local Sites are given protection through policies in the Local Development Plan.	Development proposals that would potentially affect a Local Site would need to provide a detailed justification for the work, an assessment of likely impacts, together with proposals for mitigation and restoration of habitats lost or damaged. Further guidance can be found in the National Planning Policy Framework and the accompanying joint Circular (ODPM Circular 6/2005 & Defra Circular 01/2005), which is still valid.

Habitats & Species	Legislation	Guidance
Species and Habitats of Principal Importance for the Conservation of Biodiversity	Natural Environment & Rural Communities Act 2006 S.40 (which superseded S.74 of the Countryside & Rights of Way Act 2000).	S.40 of the NERC Act 2006 sets out the duty for public authorities to conserve biodiversity in England. Habitats and species of principal importance for the conservation of biodiversity in England (identified by the Secretary of State in consultation with NE) are referred to in S.41 of the NERC Act: http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habitatsandspeciesimportance.aspx The list of habitats and species was updated in 2007 to ensure that it remained focussed on the correct priorities: https://jncc.gov.uk/our-work/uk-bap/ . The criteria for selection included international threat, responsibility and importance, rate of decline/risk, importance of habitats for key species, and other important factors. Ecological impact assessments should include an assessment of the likely impacts to these habitats and species.
Japanese knotweed, hybrid knotweed, giant knotweed Giant hogweed Rhododendron Himalayan balsam	Wildlife and Countryside Act 1981 (as amended) S.14	It is illegal to plant these species or otherwise cause them to grow or spread in the wild. Any contaminated soil or plant material containing Japanese knotweed or giant hogweed is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the Environmental Protection Act 1990. <i>The Knotweed Code of Practice</i> (Environment Agency, 2013) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/536762/LIT_2695.pdf <i>Managing and controlling invasive rhododendron</i> (Forestry Commission, 2006) https://www.forestryresearch.gov.uk/documents/2557/fcp017.pdf https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants https://www.gov.uk/guidance/prevent-japanese-knotweed-from-spreading

