



Cottam Parkway Railway Station

Extended Phase 1 Habitat Survey Report

B2327FEF-JAC-EBD-00-RP-ENV-001 | P01.3

03 November 2020

Lancashire County Council



Cottam Parkway Railway Station

Project No: B2327FEF
Document Title: Extended Phase 1 Habitat Survey Report
Document No.: B2327FEF-JAC-EBD-00-RP-ENV-001
Revision: P01.3
Document Status: final
Date: Lancashire County Council
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Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
P01.1	29/07/2020	Extended Phase 1 Habitat Survey Report. First draft – submitted for client comment	Joel Giordano	Jack Kellett	Jack Kellett	Tom McClure
P01.2	16/09/2020	Extended Phase 1 Habitat Survey Report. Second draft – addressing client comment	Joel Giordano	Kris Long	Kris Long	Tom McClure
P01.3	03/11/2020	Extended Phase 1 Habitat Survey Report. Third revision to address final comments	Kris Long	Ryan Knight	Ryan Knight	Katarzyna Skibinska

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Executive Summary

Jacobs UK Ltd (Jacobs) was commissioned by Lancashire County Council (LCC) to undertake a range of ecological surveys to inform the Cottam Parkway Railway Station scheme (hereafter referred to as the 'scheme'). The scheme will serve the North West Preston Strategic Housing Location. It will comprise a new road to the proposed railway station connecting from Cottam Link Road with a bridge over the Lancaster Canal and a car park to serve the railway station.

As part of the ecological support to inform the scheme, Jacobs have completed an Extended Phase 1 Habitat Survey (EP1HS). The purpose of the survey was to establish an initial ecological baseline for designated sites, habitats, and potential protected and notable species. This will inform an options assessment and Environmental Impact Assessment (EIA) for the development of the Cottam Parkway Railway Station scheme, which will be presented for planning within an Environmental Statement (ES). The ES will be submitted for planning consideration in the summer of 2021.

A desk study exercise was undertaken in March 2020. This included a request to Lancashire Environmental Records Network (LERN) for non-statutory designated wildlife sites and protected / notable species records within a 1km radius of the scheme. A search for statutory designated wildlife sites, European Protected Species Mitigation Licences (EPSML), Habitats and Species of Principle Importance, Natural England Impact Risk Zones was also undertaken.

One statutory designated wildlife site was identified within 2km of the scheme, Haslam Park Preston LNR located approximately 1.9km east of the scheme. The site falls within Natural England Impact Risk Zones (IRZ) for Newton Marsh SSSI (located 3km south-west) and Ribble Estuary SSSI (located 3.7km south-west).

LERN revealed three non-statutory (locally) designated sites, known as Biological Heritage Sites (BHS), within 1km of the scheme. One of the BHS falls within the scheme; Lancaster Canal (whole length in Lancashire including Glasson Branch) BHS. In addition, LCC revealed the presence of an additional non-statutory designated wildlife site, Dobcroft Nature Reserve, which has recently been designated. This site is located just over 1km from the scheme.

A review of the ES and preconstruction protected / notable species reports for the adjacent Preston Western Distributor / East West Link Road, which is currently under construction, was also undertaken for protected / notable species records within 1km of the scheme.

An EP1HS was undertaken for the scheme and a 500m buffer in February 2020 with an update survey undertaken in July 2020. The majority of this survey area was characterised as improved grassland which was utilised as grazing pasture. A network of hedgerows separated each field with mature infield trees scattered throughout the scheme. Semi-natural broad-leaved woodland was present in small areas predominantly within University of Central Lancashire (UCLAN) land. To the south of the study area, Aston and Lea Golf Club occupied the majority of the land with ornamental waterbodies and plantation woodland screening present throughout. Several watercourses were present within the study area. These were predominately outflows / tributaries flowing south from the Lancaster Canal to Savick Brook.

This study identified the requirement for further species and habitat specific surveys to be undertaken to establish an accurate baseline, against which the options appraisal and impacts of the scheme can be assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for Ecological Impact Assessment (EclA). The proposed scope of these additional surveys was determined based on the existing ecological information on the survey area, consultation with the LCC and professional judgement of the likely important ecological features susceptible to significant effects as a result of the proposed scheme.

A robust assessment of the potential impacts on ecological features associated with the scheme will be detailed within the ecology chapter (Chapter 6) of the ES, along with any prescribed avoidance, mitigation and compensation measures, opportunities for enhancement, requirements for pre and / or post construction monitoring and an assessment of residual impacts (where appropriate).

1. Introduction

1.1 Background

Jacobs UK Ltd. (Jacobs) was commissioned by Lancashire County Council (LCC) to provide ecological services to inform the proposed Cottam Parkway Railway Station scheme (hereafter referred to as the 'scheme').

The scheme comprises (but not exhaustively): a road connecting to Cottam Link Road at the Sidgreaves junction roundabout; a bridge over the Lancaster Canal connecting to the railway station; station platforms; buildings and associated structures; a footbridge over the railway; a 250/500 space car park; bridge approach embankments and earthworks. This development is related to the permitted road schemes of Preston Western Distributor (PWD) and the East West Link Road (EWLR) including Cottam Link Road.

A suite of ecological surveys was required to establish an accurate baseline against scheme options and impacts of the scheme (both temporary and permanent) could be assessed in line with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for Ecological Impact Assessment (CIEEM, 2018). This report presents the results of the Extended Phase 1 Habitat Survey (EP1HS) undertaken by Jacobs' ecologists in February and July 2020.

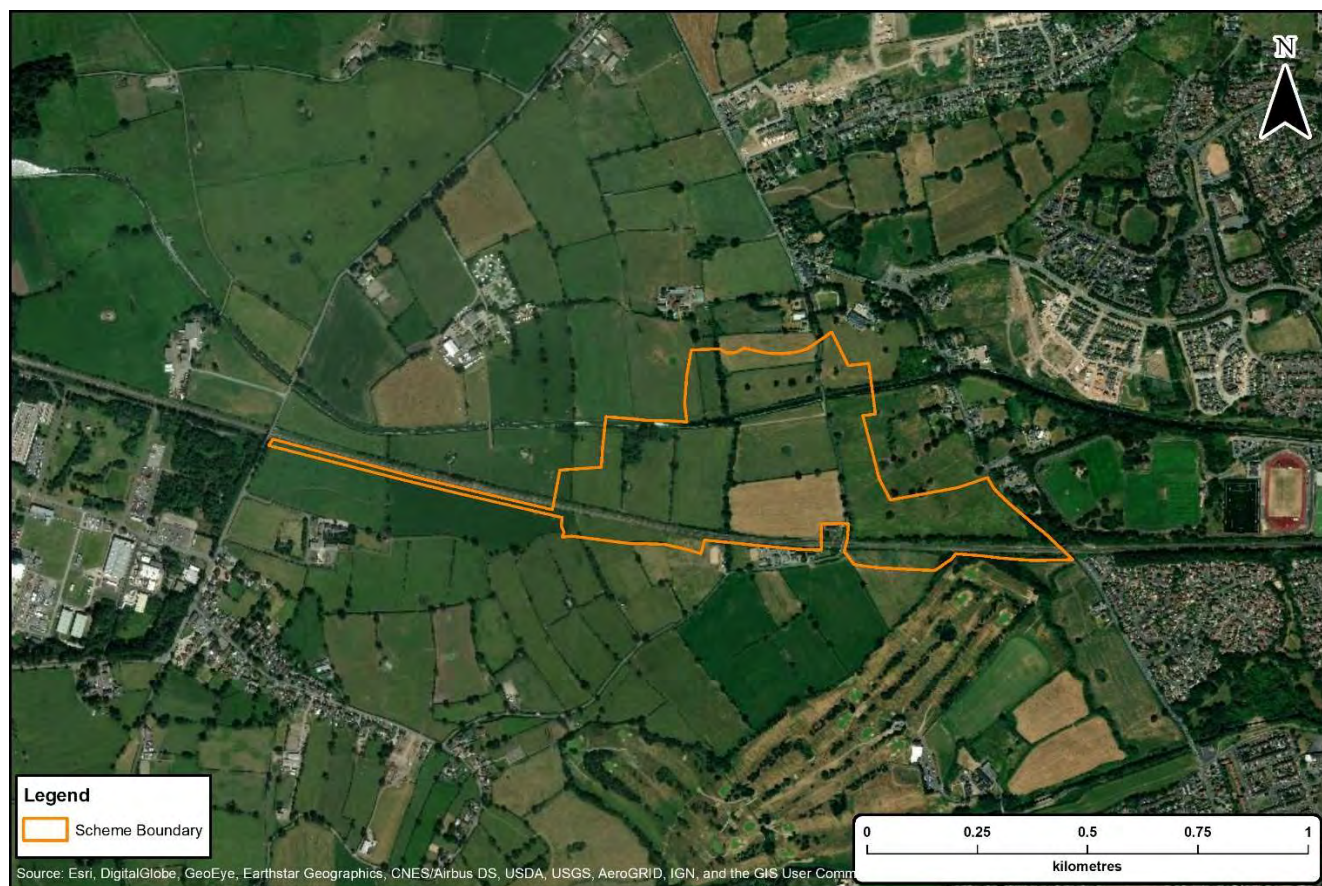
The surveys were undertaken in consideration of the proposed construction site area provided by LCC (LCC Drawing CLM07-DEV-010-01; Dated 10-01-2020) and the walkover notice area / survey exclusion area drawing provided by LCC (LCC Drawing CLM07-DEV-010-03; Dated 16-12-2019). Justification for the survey area exclusion zones can be found in section 2.2.1 below. Further information on the scheme design was not available at the time of survey / writing. The surveys were conducted within the scheme boundary and a 500m buffer area from the scheme boundary (i.e. the survey area). The survey area is shown in Figures 1 in Appendix A.

1.2 Site Context

An aerial image of the location of the scheme is provided in Plate 1.2 below. The scheme is located within a semi-rural area approximately 4km north-west of central Preston and to the immediate south-west of the largely residential area of Cottam. The central grid reference for the site is SD 48714 31645^[1]. Land use within the scheme and wider survey area largely comprised pasture land used for grazing and / or fodder production. This land was bound by a network of hedgerows and tree lines with occasional woodlands, small watercourses, waterbodies, farmsteads and dwellings. Both the Lancaster Canal and the Preston to Blackpool rail line run east to west through the scheme. Sidgreaves Lane leading to Darkinson Lane runs north to south through the centre of the scheme.

Pasture land dominated much of the wider area, particularly to the west of the scheme. The east boundary of the scheme was bordered by Lea Road with Westleigh Conference Centre and sports pitches further eastwards; to the south was further pasture land and Aston and Lea Golf Club. To the north was pasture land with both existing and new housing developments. In addition, the construction of the PWD scheme was also underway along the west and north boundaries of the main scheme area at the time of survey (February and July 2020).

^[1] Ordnance Survey National Grid reference system used throughout the report.

Plate 1.2. Overview of scheme location

1.3 Aims and Objectives

The primary aim of the EP1HS is to provide an initial assessment of the baseline ecological conditions within the survey area. Specifically, the key objectives of this report are:

- Identify all statutory and non-statutory designated sites of nature conservation within the survey area and its surroundings.
- Record and categorise habitat types within the survey area in accordance with Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Survey methodology, including the identification of Habitats of Principal Importance (HoPI) (Natural Environment and Rural Communities (NERC) Act, 2006), and Lancashire Biodiversity Action Plan (BAP) habitats.
- Identify the potential for protected species or other species of conservation interest within the survey area, including European Protected Species (EPS), Species of Principal Importance (SoPI) (NERC Act, 2006), Birds of Conservation Concern 4 (Eaton et al., 2015) and Lancashire BAP species; and
- Provide sufficient ecological baseline information (including likely protected species presence / habitat suitability) to assess the scheme options and impacts on broad habitat types and to inform the scoping process for further ecological survey required for the Environmental Impact Assessment (EIA).

1.4 Legislative, Planning Policy and Biodiversity Framework Background

1.4.1 Legislation

Many UK wildlife species and their habitats are protected by legislation. The key articles of relevance to this scheme are listed below. References to these pieces of legislation are provided Section 6. References.

- Conservation of Habitats and Species Regulations 2017 (as amended)¹ (often abbreviated to Habs Regs 2017 (as amended)).
- Wildlife and Countryside Act (WCA) 1981 (as amended).
- Countryside and Rights of Way (CROW) Act 2000.
- Natural Environment and Rural Communities (NERC) Act 2006.
- Protection of Badgers Act 1992.
- The Hedgerows Regulations 1997.
- Wild Mammals Protection Act (1996).
- The Environment Act 1995.
- The Eels (England and Wales) Regulations 2009.

A summary of all pertinent legislation in respect of ecology and biodiversity is provided within Appendix B.

1.4.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF, 2019) set out the Government's planning policies for England and how these should be applied. Paragraph 170 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by:

- Recognising the wider benefits of ecosystem services;
- Minimising impacts on biodiversity; and
- Providing net gains to biodiversity where possible.

This will contribute to the Government's commitment to halt the overall decline in biodiversity, including the establishment of coherent ecological networks that are more resilient to current and future issues.

1.4.3 Local Planning Policy

The Central Lancashire Adopted Core Strategy Local Development Framework is a document prepared by Preston City Council, South Ribble Borough Council and Chorley Council with assistance from Lancashire County Council and was adopted in July 2012. It identifies three policies that are pertinent to biodiversity.

- Policy 18: Green Infrastructure;

¹ Until Implementation Period Completion day (31st December 2020) the Conservation of Habitats and Species Regulations 2017 (as amended) will remain in force without any of the amendments relating to Brexit made by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

- Policy 20: Countryside Management and Access; and
- Policy 22: Biodiversity and Geodiversity.

All three policies are given due consideration within the context of the Extended Phase 1 Habitat Survey and within the subsequent EIA.

1.4.4 Biodiversity Framework

a) Habitats and Species of Principal Importance

Section 41 (S41) of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. There are 56 habitats and 943 species of principal importance which were initially identified as requiring conservation action under the UK Biodiversity Action Plan (BAP) and which continue to be regarded as priorities under the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012). The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities Act 2006 “to have regard” to the conservation of biodiversity in England, when carrying out their normal functions.

b) Lancashire Biodiversity Action Plan

Lancashire Biodiversity Action Plan (BAP) was devised as the means by which national biodiversity targets for priority species under the UK Biodiversity Action Plan (UKBAP) would be met locally. The Lancashire BAP contains 11 habitat and 39 species action plans (Lancashire Biodiversity Partnership, undated).

2. Methodology

2.1 Desk Study

A desk study was undertaken to obtain background ecological information for the survey area and the surrounding landscape up to 2km in March 2020. The desk study included the identification of statutory and non-statutory designated sites as well as protected and notable species.

2.1.1 Statutory Designated Sites

A search was carried out using the Multi-Agency Geographic Information for the Countryside (MAGIC) website (accessed 16th March 2020) to identify the presence of the following statutory designated sites for nature conservation:

- Statutory sites of European and international designation within 2km of the of the scheme boundary including: Special Areas of Conservation (SAC); Special Protection Areas (SPAs); and Ramsar sites (consideration was also given to sites identified as potential and candidate sites for these designations); and,
- Statutory sites of national or regional designation within 2km of the scheme, including Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), and Local Nature Reserves (LNR).

2.1.2 Non-statutory Designated Sites

Lancashire Environmental Record Network (LERN) provided records of non-statutory designated sites, known as Biological Heritage Sites (BHS), within 1km of the scheme.

2.1.3 Protected and Notable Species and Habitats

Records of legally protected species and other species and habitats of notable conservation interest within 1km of the scheme were obtained from LERN (data received 31st March 2020). These records included European Protected Species (EPS), certain species protected under the WCA 1981, species listed in Section 41 of the NERC Act (2006) SoPI, Birds of Conservation Concern Red List species (Eaton *et al*, 2015); Lancashire BAP species and Habitats of Principle Importance. The pertinent legal context for the species and habitats subject to this data search is included within Appendix B.

Generally, records received from LERN that were over 10 years old were considered historical and were not included within the assessment. However, records older than this time period were included for assessment if they were considered to have a significant bearing on the conclusions and recommendations made within this report. This includes for example historical records of bat roosts and badger setts.

Although the data provided by LERN is the most complete set of species data available, the absence of records does not necessarily relate to an absence of species.

The following online resources were also used to identify ecological data of relevance to the scheme (i.e. within the anticipated zone of influence) including HoPI (NERC Act, 2006):

- MAGIC website² – accessed 16th March 2020. For statutory designated sites and ancient woodland within 2km and 1km, respectively, and to identify if the site falls within any of Impact Risk Zones for SSSI³. This website was also used to identify recorded HoPI within the EP1HS survey area.

² <https://magic.defra.gov.uk/home.htm>

³ These have been identified by Natural England for use by Local Planning Authorities to assess planning applications for likely impacts on SSSIs / SACs / SPAs and Ramsar sites and to determine when to consult Natural England

- Google Maps⁴ for aerial imagery – accessed 16th March 2020. To identify potential habitats and species present within the proposed scheme and wider area including a search for ponds which may support amphibians up to 500m from the scheme.

The MAGIC database was also used to search for European Protected Species Mitigation Licenses (EPSML) which have been granted within 1km of the proposed scheme. Typically, EPSML are granted for development works affecting protected species such as bats (Chiroptera) and great crested newt (GCN) (*Triturus cristatus*). This search was completed on 16th March 2020.

A review of the *Preston Western Distributor and East West Link Road Environmental Statement*. Volume 2, Chapter 6 and appendices (Jacobs, 2017) was undertaken and includes a full suite of ecological surveys which were completed between 2014 and 2016. The PWD / EWL scheme is located adjacent to and within the Cottam Parkway scheme. Update / pre-construction survey reports for the PWD / EWL scheme were also reviewed including the Update Extended Phase 1 Habitat Survey Report (Jacobs 2018a), Update Great Crested Newt Survey Report (Jacobs, 2018b), Non-Native Invasive (Plant) Species Survey Report (2018c), Bat Roost Survey Report (Jacobs, 2019a) and Update Otter and Water Vole Survey Report (Jacobs, 2019b).

2.2 Field Survey

An EP1HS was undertaken by experienced surveyors for the site area / scheme and a 500m buffer on 26th – 28th February 2020 with an update survey of key areas undertaken on 16th and 17th July 2020. The names, experience and qualifications of survey personnel are provided in Appendix C. All habitats were mapped according to the Handbook for Phase 1 Survey: A Technique for Environmental Audit (JNCC, 2010) and further developed in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995).

Habitats were described using the alphanumeric code consistent with early habitat classification systems. The use of this code indicates that identified habitats have been defined in accordance with the approved methodology. This approach for EP1HS is also consistent with the Guidelines for Ecological Impact Assessment produced by CIEEM (CIEEM, 2018).

Dominant and notable plant species were recorded, plant abundance was expressed using the DAFOR scale; Dominant / (D), Abundant / (A), Frequent / (F), Occasional / (O) and Rare / (R). Botanical taxonomic nomenclature follows that of the New Flora of the British Isles; Fourth Edition (Stace, 2019).

Specific points of notable conservation interest within each survey area were identified as numbered “Target Notes” (TN).

The “extended” element of this survey was undertaken in accordance with that set out in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) which enhances the standard methodology by looking for evidence of or habitats which may support legally protected and notable species. This includes:

- Waterbodies with suitable habitat to support GCN and other amphibians including common toad (*Bufo bufo*).
- Watercourses (ditches, rivers, ponds) with suitable habitat for white-clawed crayfish (*Austropotamobius pallipes*), water vole (*Arvicola amphibius*) and otter.
- Presence of features within trees and structures suitable for bat roosts.

⁴ maps.google.co.uk

- Signs of badger (*Meles meles*) activity, for example setts, latrines, runs, guard hairs and footprints.
- Suitable habitat for breeding and wintering birds.
- Trees and structures suitable for barn owl (*Tyto alba*).
- Habitats suitable for reptiles.
- Habitats likely to support protected / notable invertebrates.
- Presence of non-native plant species.

Habitat details and condition assessments were also collected in July 2020 to allow survey results to be converted to the UK Habitat Classification system found in The UK Habitat Classification User Manual (The UK Habitat Classification Working Group, 2018 as amended). This data has not been provided within this report and will be converted to UK Habitat Classification at a later date.

2.2.1 Survey Area

A 500m survey buffer was established around the scheme as provided and instructed by LCC. The 500m survey buffer was considered sufficient to cover the likely potential zone of influence for the scheme in relation to the majority of habitats and species that may be present. At the time of survey, construction of the PWD scheme had commenced to the west of the site and construction of a known Homes England / Rowland Homes development had commenced to the north east. Both construction sites were present within 500m of the scheme and access was not permitted in these areas, it was agreed through discussions with the LCC ecologist that these areas would be excluded due to impacts from construction.

2.2.2 Evaluation

Ecological Impact Assessment (EclA) uses a hierarchical geographic framework to assign importance to ecological features. This is based on an understanding of how the ecological feature may contribute to the conservation status or distribution of the species or habitat at a particular geographic scale. It involves an assessment of the biodiversity importance of ecological features and also involves consideration of other factors that can be attached to ecological features including ecosystem services and natural capital (CIEEM, 2018). The evaluation is based on professional judgement⁵ using up-to-date survey information, local knowledge and available data sources. The Lancashire BHS selection criteria (Lancashire County Planning Department, 1998) provides criteria to indicate habitats (and some species populations) of **County** importance for biodiversity and this document has been used to inform the evaluation process. Opinions may differ slightly between professionals as to the value of ecological features / biodiversity resources; therefore, a clear explanation is provided to justify how the evaluation category has been assigned.

The new Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity (formerly Volume 11, Section 3, Part 4 Ecology and Nature Conservation and IAN 130 / 10) guidance (Highways England, 2020) and the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine version 1.1 (CIEEM, 2018) recommends that the value / importance of a biodiversity resource / ecological feature be considered within a defined geographical context. The geographic categories stated in the two sets of guidance differ slightly but are largely comparable (see below). Therefore, the value / importance of biodiversity resources within the survey area was assessed according to the following defined geographical framework as per current CIEEM (2018) and Highways England (2020) guidance⁶.

⁵ Professional judgement requires a trained and appropriately experienced individual to apply their skills and knowledge to reach an informed decision, as per British Standard 42020:2013. Biodiversity - Code of practice for planning and development (The British Standards Institution, 2013).

⁶ The CIEEM (2018) value is given first with the corresponding Highways England (2020) value given in brackets where applicable.

- International and European (International or European).
- National (UK or National).
- Regional (Regional) e.g. North-West England.
- Metropolitan, County, Vice County or other local authority-wide area (County or equivalent authority) e.g. Lancashire.
- River Basin District (CIEEM only). District is used herein as a geographic frame of reference e.g. Preston.
- Estuary System / Coastal cell (CIEEM only).
- Local (Local) (e.g. within 2km of the scheme).
- Less than local.

2.3 Limitations

The initial survey was conducted in February 2020, which is outside of the optimum season (April-October) to accurately identify habitats present across the scheme (JNCC, 2010). An update survey of key areas was conducted in July 2020 to gather more robust habitat data and highlight any changes required to the original baseline data.

In addition, the surveys were undertaken at single periods of time when some botanical species (e.g. vernal plant species) and specific protected / notable species and evidence of protected / notable species may not be present (e.g. nesting birds). In such cases, sufficient habitat and background data was gathered in order to evaluate the potential for such species to be present. Overall, there were no significant limitations to achieving the aim of the assessment.

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document. Should there be a delay in the proposed EIA programme and ES submission, it is considered prudent that the survey findings be reviewed and updated as required for subsequent planning application(s) so that the assessment of ecological impacts is undertaken against an accurate baseline.

3. Results

3.1 Desk Study

3.1.1 Statutory Designated Sites

There is one statutory designated site within 2km of the scheme (refer to Figure 2).

- **Haslam Park Preston LNR** - located approximately 1.9km east at its closest point. Designated for its aquatic and meadow habitats with notable woodland and hedgerows.

The site also falls within Natural England Impact Risk Zones (IRZ) which appear to relate to Newton Marsh SSSI (located 3km south-west) and Ribble Estuary SSSI and associated Ramsar site, SPA and SAC designations (located 3.7km south-west).

3.1.2 Non-Statutory Designated Sites

The LERN data search request revealed the presence of three BHS within 1km of the scheme (see Figure 2):

- **Lancaster Canal Whole Length in Lancashire Including Glasson Branch BHS** – Lancaster Canal runs through the scheme area. The canal is the largest and most species rich waterbody in the county, supporting a large assemblage of plant and animals associated with slow flowing water.
- **BNFL Springfields Works Ponds BHS** – 25m west of the scheme area. The site comprises an area of undeveloped land, the main feature is a narrow 'L-shaped' water-filled trench that supports a large number of frogs, toads, smooth newts and GCN. The site is also of botanical interest.
- **Deepdale Wood BHS** – 580m west of the scheme area. The site comprises two neighbouring parcels of semi-natural broad-leaved woodland.

In addition, LCC have revealed the presence of a newly designated non-statutory designated wildlife site known as Dobcroft Nature Reserve. This site is located just over 1km east of the scheme.

3.1.3 Habitats of Principal Importance

Habitats of Principal Importance identified within 1km of the scheme identified using MAGIC included:

- **Coastal and floodplain grazing marsh** - several areas with the nearest approximately 720m south along Savick Brook (SD48950 30520).
- **Deciduous Woodland** - numerous areas with the nearest approximately 15m north-east of the scheme, adjacent to Lea Road (SD49440 31450). No ancient woodland was identified within 1km.
- **Traditional orchard** - One area was identified within the survey area, this was within an improved grassland field to the south of Lancaster Canal at the western extent of the schemes (SD48661 31542). However, surveys of this area confirmed that this is a small area of wet woodland dominated by willow and is not an orchard.

3.1.4 Protected and Notable Species

Protected and notable species records within 1km of the scheme provided by LERN and revealed by the review of the ecology chapter of the PWD / EWLR the ES (Jacobs, 2017) and various update / preconstruction survey reports (Jacobs, 2018a, 2018b, 2018c, 2019a and 2019b) are provided in Table 3.1 below.

Table 3.1 Protected / notable species records within 1km of Cottam Parkway Railway Station scheme

Species	Details	Distance from the Scheme
Bats	75 records were provided by LERN, 56 were for roosts, 11 for field records and eight for possible roosts.	Nearest record, for a possible tree roost (assumed PWD T36), falls within the scheme area (SD4895 3165).
	Three suspected tree roosts within 1km of the scheme were identified during surveys between October 2014 and February 2016 (Jacobs, 2017).	Within the scheme area - PWD T36 (SD48992 31661). 25m north - PWD T39 (SD49052 31781). 115m north-east - PWD T41 (SD49168 31856).
	13 confirmed buildings roosts and three suspected / precautionary roosts within 1km of the scheme were identified during surveys undertaken between October 2014 - February 2016 (Jacobs, 2017).	45m north east - Clock House Farm (SD49145 31803). 75m north - Quakers Lodge (precautionary) (SD49007 31812). 90m north - Earls Farm (SD48749 31828). All other roost records were >100m from the scheme.
	One additional record was provided by South Lancashire Bat Group (Jacobs, 2017).	115m south (or up to 100m) of the scheme area (SD478 314) in a field adjacent to BNFL Springfields Works Ponds BHS.
	Single record for a female pipistrelle species provided by the local bat group (Jacobs, 2017).	810m south-east of the scheme at Savick Way (SD50400 31000).
	Roosts identified during 2014-2016 surveys were again confirmed at Foxfield's, Crow Lady Farm and Clock House Farm during 2018 update surveys (Jacobs, 2019a). One additional roost was identified.	900m north-west - Fir Tree Cottages (SD48180 32404).
Otter	Possible otter footprints were recorded at Savick Brook in 2014 (Jacobs, 2017).	Footprint located 950m south of the scheme (SD48510 30362).
	Multiple otter spraints during otter and water vole update surveys in 2018 (Jacobs 2019b)	Four records along Lancaster Canal. The closet is within the scheme area at Lancaster Canal Bridge 4 (SD49063 31631). One record along the tributary of Savick Brook, 675m south to the west of Ashton and Lea golf club (SD48664 30622 - SD48711 30450). One record along Savick Brook, 805m south of the scheme (SD48713 30440 - SD48967 30543). Otter prints were also present.
Brown hare (<i>Lepus europaeus</i>)	29 records for brown hare were provided by LERN.	Nearest within the scheme area in an improved grassland field near an area of wet woodland (SD48649 31511).
	25 of the 45 incidental brown hare records across PWD / EWLR between 2014-2-15 (Jacobs, 2017) fall within 1km of the scheme.	Nearest within the scheme area inside the wet woodland to the north of the railway line (SD48649 31511).

Species	Details	Distance from the Scheme
Hedgehog (<i>Erinaceus europaeus</i>)	11 records for hedgehog were provided by LERN.	Nearest 120m north at Earls Farm (SD48753 31850).
	Four records at three properties: Earls Farm (two records), Foxfield Children's Home and Clock House. All records were near Sidgreaves Lane near the proposed Cottam Link Road (Jacobs, 2017).	Nearest 120m north at Earls Farm (SD48753 31850).
Other mammals	Ten records for American mink (<i>Neovision vison</i>) were provided by LERN.	Nearest within the scheme area along Lancaster Canal (SD4906 3162).
	Nine records for grey squirrel (<i>Sciurus carolinensis</i>) were provided by LERN.	Nearest 245m (or up to 1km) north adjacent to Sidgreaves Lane (SD49 32).
	Mammal holes identified as fox (<i>Vulpes vulpes</i>) recorded during EP1HS (Jacobs, 2018a).	745m south of the scheme, within a scrub filled borrow pit (SD48432 30567).
	Evidence of American mink was recorded in several locations along Lancaster Canal and Savick Brook during otter and water vole surveys in 2014, including locations along the canal within the scheme (Jacobs, 2017).	
	A mustelid scat (either a polecat (polecat-ferret) (<i>Mustela putorius</i>) or American mink) was recorded during otter and water vole surveys (Jacobs, 2019b).	1km south at a ditch leading up to Savick Brook (SD48254 30327).
Birds	668 records for 44 species of bird were provided by LERN, many of which fall within the scheme area including: <ul style="list-style-type: none"> • Five species listed in Annex 1 of the Birds Directive • Six species listed in Schedule 1 of the WCA 1981; • Five species listed in the NERC Act (2006); • 15 species listed in the Birds of Conservation Concern (Eaton et al., 2015); • 29 species from the Lancashire BAP; • Three species considered to be Non-Native Invasive Species (INNS). 	
	74 bird species recorded across PWD / EWLR in 2015 during breeding bird surveys (Jacobs, 2017), 27 species were considered likely to be breeding within the study area including 16 species of conservation importance. It is likely these species may be present within 1km of the scheme.	
	A total of 76 wintering bird species were recorded within the PWD / EWLR study area between 2014-2015 (Jacobs, 2017). It is likely these species may be present within 1km of the scheme.	
	Two possible breeding lapwing (<i>Vanellus vanellus</i>) were observed during the Update Extended Phase 1 Habitat Survey (Jacobs 2018a).	140m north of the scheme within an arable field (SD48005 31623).
Barn owl	Three likely breeding sites, one regular roost and one occasional roost identified during barn owl	145m south - Mason Fold Farm (likely breeding site - SD4794 31308).

Species	Details	Distance from the Scheme
	surveys between 2014-2015 (Jacobs, 2017) fall within 1 km of the scheme.	630m south - Harrison House Farm (likely breeding site - SD48112 30831). 700m north-west - Highfield Farm (regular roost - SD48548 32427). 880m north-west - Fir Tree Farm (likely breeding site - SD48029 32411). 985m north - Crow Lady Farm (occasional roost - SD48752 32715).
	One record from breeding bird surveys between 2014-2015 (Jacobs, 2017) within 1km of the scheme.	135m south, at the southern extent of Ashton and Lea Golf Course hunting along the margins of Savick Brook (SD48737 30472).
Reptiles	Six records for slow worm (<i>Anguis fragilis</i>) provided by LERN.	Immediately adjacent to the scheme boundary to the south of the railway line (SD48387 31391).
	One slow worm was recorded during reptile surveys in 2015 (Jacobs, 2017) under artificial refuge E262 in Tile Group E.	Immediately adjacent to the scheme boundary to the south of the railway line (SD48387 31391).
Great crested newt	105 records for GCN were provided by LERN.	Nearest record 20m (or up to 100m) to the south of the railway line (SD482 314).
	One planning application (including supporting ecology reports) reviewed during GCN surveys in 2015 (Jacobs, 2017) identified the presence of GCN.	The Environment Partnership (2011) survey area - 140m north-east of the scheme within the Homes and Communities Agency development at Cottam Hall.
	Two ponds (PWD pond 91 and 95) had indeterminate eDNA results during update GCN surveys in 2018 (Jacobs, 2018b). Surveys in 2018 envelop 2015 results (Jacobs, 2017).	PWD pond 91 - 275m south of the scheme, north of Lea (SD48386 31044). PWD pond 95 - 540m south of the scheme within Ashton and Lea Golf course.
	Four ponds (PWD pond 72, 94, 96 and 97) had GCN present during update GCN presence / absence surveys in 2018 (Jacobs, 2018b). Surveys in 2018 envelop 2015 results (Jacobs, 2017).	PWD pond 72 - 305m north of the scheme, along Sidgreaves Lane (SD48954 32048). PWD pond 94 - 500m south of the scheme within Ashton and Lea Golf Course (SD 48705 30770). PWD pond 96 - 435m south of the scheme within Ashton and Lea Golf Course (SD 49010 30838). PWD pond 97 - 455m south of the scheme within Ashton and Lea Golf Course (49028 30820).
Other amphibians	175 records for other amphibians were provided by LERN: 137 for common toad, 34 for smooth newt (<i>Lissotriton vulgaris</i>) and four for common frog (<i>Rana temporaria</i>).	Numerous records for common toad fall within the western extent of the survey area, adjacent to the railway line (central grid reference SD48461 31371) and Lancaster Canal (central grid reference SD48561 31550).
	Six ponds (PWD pond 53, 75, 81 and 99 and EWLR pond 11 and 13) were confirmed to support common toad during toad surveys (Jacobs, 2017).	Nearest pond (PWD pond 81) was located 30m west of the scheme, north of Lancaster Canal.

Species	Details	Distance from the Scheme
	Common toad was also recorded in an additional pond (PWD pond 91) during update GCN surveys in 2018 (Jacobs, 2018b).	PWD pond 91 - 275m south of the scheme, north of Lea (SD48386 31044).
Fish	Protected European eel (<i>Anguilla anguilla</i>) was identified in high abundances (using desk and field data) in Lancaster Canal, Savick Brook and the tributary of Savick Brook (Jacobs, 2017). Other fish species recorded (desk and field data) included chub (<i>Leuciscus cephalus</i>) and dace (<i>Leuciscus leuciscus</i>), roach (<i>Rutilus rutilus</i>), perch (<i>Perca fluviatilis</i>), bream (<i>Abramis brama</i>) and three-spined stickleback (<i>Gasterosteus aculeatus</i>).	
Aquatic Invertebrates	Lancaster Canal, Savick Brook, a tributary of Savick Brook and further smaller watercourses within 1km of the scheme were identified as holding a total five aquatic invertebrates of conservation importance during aquatic ecology surveys (Jacobs, 2017). Species comprised leech (<i>Erpobdella Testacea</i>), aquatic snail (<i>Bithynia leachii</i>), water boatman (<i>Callicorixa wollastoni</i>), mayfly (<i>Procladius pennulatus</i>) and Flatworm (<i>Planaria torva</i>) (Darkinson Lane Ditch only).	
Terrestrial Invertebrates	39 records for terrestrial invertebrates were provided by LERN (23 for moth, 13 for butterfly, six for beetle and three for true fly) including: white-letter hairstreak (<i>Satyrus w-album</i>), NERC Act (2006) - 16 species and Lancashire BAP - three species. All records were >150m from the scheme area. Eighteen records for two beetles and two moth INNS were provided by LERN, the nearest record was for harlequin ladybird (<i>Harmonia axyridis</i>), 70m west.	
Flowering plants	26 records for flowering plants were provided by LERN for 16 species including WCA 1981 Schedule 8 species bluebell (<i>Hyacinthoides non-scripta</i>). Other species include upright spurge (<i>Euphorbia serrulate</i>), welsh poppy (<i>Meconopsis cambrica</i>) and northern yellow-cress (<i>Rorippa islandica</i>). All records are >150m from the scheme area.	
	Bluebell was recorded in woodland and hedgerows throughout the PWD / EWL scheme during the EP1HS (Jacobs 2018a). Surveys in 2018 envelop 2015 results (Jacobs, 2017).	n/a for bluebell. Nearest woodland is within the scheme boundary to the south of Lancaster Canal (SD48644 31530). Multiple hedgerows are present within the scheme area.
	One record for giant hogweed (<i>Heracleum mantegazzianum</i>) provided by the Environment Agency during the 2015 desk study.	870m (or up to 100m) south of the scheme, to the south of Savick Brook (SD 487 304).
Invasive non-native plant species.	Japanese knotweed (<i>Reynoutria japonica</i>), Himalayan balsam (<i>Impatiens glandulifera</i>) and variegated yellow archangel (<i>Lamium galeobdolon subsp. Argentatum</i>) was recorded during non-native invasive plant species surveys (Jacobs 2018c). Surveys in 2018 envelop 2014 - 2015 results (Jacobs, 2017).	Nearest record was within the scheme area for individual shoots of Himalayan balsam along Lancaster Canal (SD48538 31569 to SD49061 31642). All other records were >500m from the scheme.
	154 records for 46 INNS plants species were provided by LERN including: Himalayan balsam, Japanese knotweed and Japanese rose (<i>Rosa rugosa</i>).	Nearest 100m north along Lancaster Canal for Himalayan balsam. All other records were >100m from the scheme area.

3.1.5 European Protected Species Licences

Results for mitigation licences for EPS within 1km of the scheme are displayed in Table 3.2 below.

Table 3.2. EPSML within 1km of Cottam Parkway Railway Station Scheme

Licence reference and start / end date	Species	Grid reference	Approximate distance from scheme	Approved impact of licence
EPSM2011-3334 04/10/2011 - 30/03/2013	Great crested newt	SD4949 3137	Within the schemes working area	Destruction of a resting place
EPSM2012-4629 08/02/2013 - 30/04/2014	Great crested newt	SD4780 3151	50m south	Destruction of a resting place
EPSM2009-955 23/09/2009 - 22/09/2011	Great crested newt	SD4949 3151	115m north-east	Destruction of a resting place
2015-12159-EPS-MIT-3 (Revision 3) 05/05/2017 - 30/06/2021	Great crested newt	SD4949 3170	250m north	Damage of a resting place Destruction of a resting place
2015-8392-EPS-MIT-2 (Revision 2) 13/06/2017 - 30/06/2023	Great crested newt	SD4989 3171	520m north-east	Damage of a resting place Destruction of a resting place
EPSA2013-5638 18/09/2013 - 30/06/2023	Great crested newt	SD4989 3171	520m north-east	Destruction of a resting place
2017-28432-EPS-MIT-5 (Revision 5) 28/09/2017 - 30/06/2028	Great crested newt	SD4959 3220	675m north-east	Impact on a breeding site Damage of a resting place Destruction of a breeding site Destruction of a resting place
EPSM2011-3800 09/12/2011 - 31/08/2017	Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	SD4700 3129	880m south-west	Impact on breeding site Destruction of breeding site

3.2 Field Survey

The following section describes all habitats identified within the 500m of the scheme (refer to Figure 3 in Appendix A). Corresponding target notes and photographs are given in Appendix D.

3.2.1 Habitats

The majority of the scheme is to be located within farmland almost exclusively characterised by grazing fields, separated by an extensive hedgerow network. Waterbodies within the scheme include several clusters of ponds, watercourses, a canal and drainage ditches. The habitats present within the study area included the following:

a) Woodland and Scrub

- Broad-leaved semi-natural woodland (A1.1.1)
- Broad-leaved plantation woodland (A1.1.2)
- Dense / continuous scrub (A2.1)
- Scattered scrub (A2.2)

b) Parkland and Scattered Trees

- Scattered broad-leaved trees (A3.1)

c) Grassland and Marsh

- Improved grassland (B4)
- Marshy Grassland (B5)
- Poor semi-improved grassland (B6)

d) Tall Herb and Fern

- Tall ruderal (C3.1)

e) Swamp, Marginal and Inundation

- Swamp (F1)

f) Open Water

- Standing water (G1)
- Running water (G2)

g) Miscellaneous

- Arable land (J1.1)
- Amenity grassland (J1.2)
- Species-rich intact hedge (J2.1.1)
- Species-poor intact hedge (J2.1.2)
- Species-poor defunct hedge (J2.2.2)
- Species-rich hedge and trees (J2.3.1)
- Species-poor hedge and trees (J2.3.2)
- Fence (J2.3.4)
- Wall (J2.3.5)
- Dry ditch (J2.3.6)
- Buildings (J3.6)
- Bare ground (J4)

- Other Habitat (including temporary wet depressions, extinct ponds and hard standing)

3.2.2 Habitat Descriptions

a) Woodland and Scrub

i. Broad-leaved semi-natural woodland (A1.1.1)

The study area includes a total of four relatively small areas of broad-leaved semi-natural woodland. These include an area of woodland to the north of the UCLAN land bordering the south of the canal (2.3ha); an area of woodland to the south of the UCLAN land bordering the north of the railway line (0.85ha); a small woodland on the western aspect of Lea Road (0.25ha) and a small area of wet woodland (HoPI) (0.45ha) to the south of the Lancaster Canal.

The woodland located within UCLAN land on the southern margin following the railway embankment, is a well-established woodland dominated by horse chestnut (*Aesculus Hippocastanum*), with occasional lime (*Tillia sp.*) and pedunculate oak (*Quercus robur*) scattered within the canopy. The understorey is sparse with holly (*Ilex aquifolium*) located in isolated patches throughout. The ground layer is predominantly ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg.) and native bluebell (*Hyacinthoides Non-scripta*) dominated, with occasional lesser celandine (*Ficaria verna*) and herb-Robert (*Geranium robertianum*).

The woodland fringing the northern margin of the playing fields is larger and more diverse than the southern woodland section. The canopy is dominated by pedunculate oak, beech (*Fagus sylvatica*), Canadian poplar (*Populus x canadensis*), grey poplar (*P. canescens*) and scots pine (*Pinus sylvestris*). The understorey is well established and diverse with holly, wych elm (*Ulmus glabra*), garden privet (*Ligustrum ovalifolium*), field maple (*Acer campestre*) and occasional non-native invasive *Rhododendron ponticum*. Within the ground layer ivy is dominant with occasional ancient woodland indicator species wood melic (*Melica uniflora*), native bluebell and herb-Robert.

A small area of woodland encompassed by a stone wall and a young hawthorn (*Crataegus monogyna*) hedgerow is located within a field corner where it meets Lea Road. The canopy is dominated by sycamore (*Acer pseudoplatanus*) with occasional common beech, ash (*Fraxinus excelsior*) and pedunculate oak. The understorey comprises locally abundant holly, occasional yew (*Taxa baccata*) and secondary woodland stems of sycamore. The ground layer is dominated by native bluebell, ivy and bramble.

There is also a small area of wet woodland (HoPI) within the scheme footprint, bordering the Lancaster Canal. The woodland canopy is dominated by crack willow (*Salix fragilis*) with rare occurrence of goat willow (*Salix caprea*) and osier (*Salix viminalis*) within the understorey. The ground layer dominated by common nettle (*Urtica dioica*) with occasional stands of common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*) and hart's tongue fern (*Asplenium scolopendrium*) present on the margins of the woodland.

ii. Broad-leaved plantation woodland (A1.1.2)

Plantation woodland is found within Aston and Lea Golf Club and UCLAN land. The majority of this woodland type is used as screening within the grounds of the Ashton and Lea Golf Course and sports field where in parts, better represents scattered trees due to the lack of canopy cover. Within these screening areas, the dominant canopy species include pedunculate oak, silver birch (*Betula pendula*), rowan (*Sorbus aucuparia*) and wild cherry (*Prunus Avium*).

A slightly more established and diverse woodland is present on the northern margin of the Golf Course where the woodland follows the railway embankment. The most dominant canopy species include alder (*Alnus glutinosa*), silver birch, larch (*Larix decidua*) and pedunculate oak. The understorey includes scattered hawthorn with the ground layer including species such as wood avens (*Geum urbanum*), bramble, red campion (*Silene dioica*), lesser celandine and non-native bluebell (*Hyacinthoides hispanica*).

iii. Dense / continuous scrub (A2.1)

Several areas of dense continuous scrub are present across the study area. These generally occur around ponds / watercourses and along linear features such as the railway line, roadsides and field boundaries. The continuous scrub in the study area include thickets of bramble and other shrub species such as hawthorn, blackthorn (*Prunus spinosa*) and elder (*Sambucus nigra*).

iv. Scattered scrub (A2.2)

This habitat type predominantly occurred around ponds or watercourses within the study area. Typical species included holly, hawthorn and blackthorn.

b) Parkland and Scattered Trees - Scattered broad-leaved trees (A3.1)

Mature standard trees are present throughout the study area, often marking the locations of former hedgerows when present in open fields and on the banks of watercourses / ponds. Species most commonly recorded included pedunculate oak, sycamore and ash. Alder and willow were also recorded in damper areas of the scheme such as on the banks of watercourses.

c) Grassland and Marsh**i. Improved grassland (B4)**

Improved grassland is the predominant habitat type within the study area and the grassland was either intensively grazed and / or managed for silage production. The fields were dominated by perennial rye-grass (*Lolium perenne*) and meadow foxtail (*Alopecurus pratensis*) with frequent meadow grass species including rough meadow-grass (*Poa trivialis*) and creeping bent (*Agrostis Stolonifera*). The herb content in this habitat was low and restricted to species tolerant of agricultural improvement such as white clover (*Trifolium repens*), dandelion (*Taraxacum officinalis* agg.), creeping buttercup (*Ranunculus repens*) and common mouse ear (*Cerastium fontanum*).

ii. Marshy Grassland

Marshy grassland is located in one isolated area within a field depression and categorised due the dominance of hard rush (*Juncus inflexus*). Other species present include reed canary-grass and floating sweet grass (*Glyceria fluitans*).

iii. Poor-semi-improved grassland (B6)

Across the study area several small isolated species-poor semi-improved grassland fields were recorded. The species composition was similar across the sites with the dominant grass species including abundant perennial rye-grass, Yorkshire fog (*Holcus lanatus*), creeping bent, meadow foxtail, occasional marsh foxtail (*Alopecurus geniculatus*) and red fescue (*Festuca rubra*). The herb layer is indicative of more nutrient enriched grassland habitat with species such as occasional broad-leaved dock (*Rumex obtusifolius*), common sorrel (*R. acetosa*), lesser spearwort (*Ranunculus flammula*), creeping buttercup and meadow buttercup (*Ranunculus acris*).

d) Tall Herb and Fern**i. Tall ruderal (C3.1)**

This habitat is common across the study area and is characterised by tall, unmanaged vegetation usually resulting from some degree of ground disturbance. This comprised common species such as common nettle, great willowherb (*Epilobium hirsutum*), broad-leaved dock and common hogweed (*Heracleum sphondylium*).

e) Swamp (F1)

One small (<0.1ha) area of reedbed (HoPI) is located in close proximity to Lancaster Canal where it transitions from wet woodland to swamp habitat. The area is overwhelmingly dominated by common reed with scattered young willow trees throughout.

f) Open Water**i. Open standing water (G1)**

Ponds are frequent throughout the study area (See figure 3). Due to recent, prolonged wet weather a number of temporary wet depressions filled with floodwater are recorded. These features are distributed intermittently across the scheme within improved grassland grazing / silage fields. Little to no aquatic vegetation was recorded within these temporary water bodies with occasional tussocks of rushes fringing the margins. Also, due to the recent wet weather, once separated ponds were now joined by higher than usual water levels. Both temporary and joined waterbodies are likely to dry in warmer months and either dry completely or become separated waterbodies, thus likely to alter the overall waterbody count.

More permanent waterbodies are also frequent throughout the study area; across improved grassland grazing / silage fields, within Aston and Lea Golf Club and UCLAN Sports Arena. The majority of these waterbodies are present within grazing fields and have little aquatic vegetation with species including occasional yellow flag iris (*Iris pseudacorus*) and reedmace (*Typha latifolia*). The margins are sparsely vegetated with occasional rushes and some cattle poaching. One pond located south of the wet woodland area was observably more botanically diverse compared to the rest of the surrounding waterbodies; with species comprising branched bur-reed (*Sparganium erectum*), water plantain (*Alisma plantago-aquatica*), common water crowfoot (*Ranunculus aquatilis*), marsh bedstraw (*Galium palustre*) soft rush (*Juncus effuses*) and celery leaved buttercup (*Ranunculus sceleratus*).

Waterbodies found at Ashton and Lea Golf Course are ornamental ponds with little to no surrounding vegetation. One waterbody within the Golf Course held slightly higher ecological value with aquatic vegetation including yellow flag iris, marsh marigold (*Caltha palustris*), reedmace and willowherb (*Epilobium* sp.). The banking of the water body has willow and hawthorn scrub margins with a small (5mx5m) patch of Japanese knotweed (*Reynoutria japonica*) in a single localised area. Six waterbodies are found within the UCLAN Sports Arena ground and are predominantly located within wooded areas.

Three standing water, seasonally wet ditches were recorded along field boundaries. The ditches held varied levels of water and range from approximately one to two meters wide.

The Lancaster Canal passes through the centre of the study area. The canal has a low earth bank, mainly present on the north side. There was a good diversity of marginal vegetation throughout, including hemlock water dropwort (*Oenanthe crocata*), yellow flag-iris (*Iris pseudacorus*), lesser pond sedge (*Carex acutiformis*) hard rush, water mint (*Mentha aquatica*), reed canary-grass, brooklime (*Veronica beccabunga*), water forget-me-not (*Myosotis aquatica*), common skull cap (*Scutellaria galericulata*), meadow sweet (*Filipendula ulmaria*), reedmace and localised stands of common reed. Aquatic vegetation present includes greater duckweed (*Spirodela polyrhiza*), common duckweed (*Lemna minor*), common arrowhead (*Sagittaria sagittifolia*) and fringed water lily (*Nymphoides peltata*).

ii. Running water (G2)

Running water was mostly limited to heavily-shaded, small streams and ditches. The banks of the watercourses contained woodland flora such as red campion, native bluebell, lesser celandine, common male fern (*Dryopteris filix-mas*) and broad buckler-fern (*Dryopteris dilatata*), herb-Robert, common nettle and hemlock water-dropwort. Water depth was typically very shallow (less than 15cm) with steep narrow (less than 1m) embankments. In parts, particularly for the watercourse following the western margin of the Golf Course was dominated by Himalayan balsam (*Impatiens glandulifera*).

g) Miscellaneous**i. Arable land (J1.1)**

One area of arable land was recorded within the area of study. A very thin field margin containing nutrient favouring species such as cock-foot, cow parsley (*Anthriscus sylvestris*) common nettle and common cleaver (*Galium aparine*) bordered the field.

ii. Amenity grassland (J1.2)

The majority of this habitat was found within Aston and Lea Golf Club and UCLAN Sports Arena. This grassland is maintained (short, compact turf) for amenity purposes and contained very limited botanical diversity. The predominant grass species was perennial rye-grass and Yorkshire fog with occasional forbs including white clover, dandelion, creeping buttercup as well as a covering of springy turf moss (*Rhytidiadelphus squarrosus*).

An update survey conducted in July recorded the areas of amenity grassland within UCLAN land has become unmanaged and holds a higher species diversity. This area is better represented as species poor semi-improved grassland, however is likely to return to managed amenity grassland in the future.

iii. Hard standing (non-standard addition)

This feature was principally associated with roads, houses and farm buildings and was typically either a tarmac or concrete surface.

iv. Species-rich intact hedgerow (J2.1.1)

Species-rich hedgerows accounts for a large majority of boundary habitat within the study area. These observably well-established hedgerows contained at least four woody species including a combination of hawthorn, hazel (*Corylus avellana*), holly, elder, pedunculate oak, ash, native rose species (*Rosa* sp.), wych elm (*Ulmus glabra*) and blackthorn. The ground flora comprises predominantly nutrient enriched ruderal species with occasional native bluebell coverage.

v. Species-poor intact hedgerow (J2.1.2)

This habitat was common within the study area and consisted of often heavily trimmed hedges composed of hawthorn and blackthorn. The ground flora was generally species-poor and restricted to common grass and herbaceous species. Typical species included Yorkshire fog, common cock's-foot, false oat-grass and cleavers.

vi. Species-poor defunct hedgerow (J2.2.2)

There are a small number of species-poor defunct hedgerows present in the study area. These hedgerows contained significant gaps, leggy in parts and were no longer stock proof. Most of these hedgerows were dominated by hawthorn with little to no ground flora.

vii. Species-rich hedgerow with trees (J2.3.1)

There are also several species-rich hedgerows with trees present within the study area which were similar in composition to the species-rich intact hedge but incorporate mature trees species such as pedunculate oak, ash and sycamore.

A potential veteran tree (oak) is located at the end of a hedgerow where it meets an outflow of the Lancaster Canal (Grid Ref- SD 4884 3142).

viii. Dry ditch (J2.6)

Many of the field drains along the field boundaries in the study area were dry. These ditches were typically up to one metre wide and one metre deep depending on topography. The bank flora also supported hedgerow species, as most ditches were associated with hedgerows.

3.2.3 Protected and Notable Species

The following section describes the potential for and / or the presence of protected / notable species.

a) Badger

Although no evidence of badger was noted during the survey, woodland and mature hedgerows were recorded within the scheme and are considered to provide suitable sett building habitat for badgers. The extensive grassland habitats across the survey area were considered to provide suitable foraging and commuting habitat.

b) Bats

There are numerous semi-mature and mature trees within the survey area that contain potential roost features for bats and the hedgerows, woodland, woodland edges and watercourses provide suitable foraging and commuting habitats.

As well as mature trees, numerous buildings are recorded across the scheme that have the potential to support roosting bats.

c) Water Vole

Limited suitable habitat was present within the survey area for water vole. The Lancaster Canal has potential to support water vole and three small watercourses, including an outflow of the Lancaster canal, a tributary of the Savick Brook and Lady Head Runnel also provide opportunities for this species if present in the local area.

d) Otter

Limited potential for otter was identified across the scheme. The Lancaster Canal has the potential to provide suitable foraging and lay up sites for otter. Similar to water vole, potential for otters away from the Lancaster canal is restricted to the three small watercourses described in the above section. These watercourses could be considered as potential commuting corridors between Savick Brook and the Lancaster Canal.

e) Other mammals

The extensive areas of agricultural land were considered to provide optimal habitats for brown hare with multiple sightings recorded during the 2020 surveys across the scheme with concentrations in the central areas in close proximity to the Lancaster Canal. The woodland and hedgerow network were considered to provide suitable habitat for hedgehogs, three hedgehogs were observed on two separate occasions during GCN surveys within land at UCLAN Sports Arena.

f) Birds (excluding barn owl)

Notable bird sightings recorded during the survey include a large (approximately 20) congregation of lapwing (*Vanellus vanellus*) within the arable land west of Bryars Farm. In addition, snipe (*Gallinago gallinago*) and woodcock (*Scolopax rusticola*) were identified across the survey area during the initial visit in February.

An extensive network of hedgerows, watercourses, waterbodies, woodland and areas of scrub provide suitable breeding habitat for numerous bird species. The Lancaster Canal provides suitable habitat for a large array of bird species including kingfisher (*Alcedo atthis*). In addition, mature woodland and buildings have the potential to support nesting birds including Schedule 1 species such as a barn owl (see below).

g) Barn Owl

No barn owl were recorded during the habitat survey but some farm buildings were noted to provide suitable potential breeding and roosting habitat. The extensive network of hedgerows and unmanaged field margins were considered to provide suitable foraging habitat for this species.

h) Reptiles

No reptiles or secondary evidence of reptiles were noted during the surveys. However, less managed marginal grassland, hedgerow, woodland edge and tall ruderal habitats across the site were considered to provide moderate potential for widespread reptile species. Areas along the railway line were of particular note with areas providing optimal habitat and allowing good commuting routes through the landscape.

i) Great Crested Newts

A total of 35 waterbodies are present within the survey area (up to 500m from the scheme) (See Figure 3), three of which can be categorised as temporary waterbodies as a direct result of prolonged heavy rainfall. These features were shallow and contained only terrestrial vegetation. In addition, the three wet ditches identified are generally narrow and shaded by adjacent hedgerows, therefore providing limited opportunities for GCN.

The remaining waterbodies are more established with observable emerging aquatic vegetation and a higher overall water level, reducing the likelihood of drying in warmer months. Waterbodies identified within Aston and Lea Golf Club are predominately ornamental and utilised by waterfowl. Apart from one waterbody described within the above habitat section, the waterbodies here provide limited opportunities for GCN. Within UCLAN land, although the majority are observably man-made, they do support suitable aquatic habitat and sufficient connectivity. The two waterbodies identified within the northern margin of woodland are considered to hold higher potential for GCN due to increased connectivity and good quality surrounding habitat.

The majority of waterbodies scattered within grazing / silage fields have the potential to support GCN. Although a large number of waterbodies within the scheme lack diversity of aquatic vegetation, a network of hedgerows and watercourses provides suitable connectivity providing opportunities for GCN populations.

j) Other amphibians

The network of waterbodies present within the survey area are considered to provide suitable habitat for breeding and terrestrial phase common and widespread amphibian species including common toad (*Bufo bufo*), common frog (*Rana temporaria*), palmate newt (*Lissotriton helveticus*) and smooth newt (*Lissotriton vulgaris*).

k) Fish

The majority of aquatic onsite habitats were considered to provide limited potential for any protected fish species apart from European eel with populations considered to be limited mainly to common coarse species within ponds and Lancaster Canal.

Savick Brook is located to the south of the survey area and is considered to be tidal throughout the lengths that bound the site to Haslam Park to the east. Detailed surveys of the watercourse were not undertaken but it is considered likely the watercourse does provide some breeding / nursery habitat for migratory species.

l) Invertebrates

Suitable habitat is present within the survey area for a range of invertebrate species. Specific areas include; mature woodland habitats with areas of deadwood associated with UCLAN land and scattered mature trees across the survey area, aquatic habitats specifically Lancaster Canal and some of the more florally diverse ponds and hedgerow network with associated field margins. Overall the dominating improved agricultural land reduces the potential for notable assemblages of invertebrate species.

m) Invasive plant species

A total of four invasive legally controlled plant species were recorded within the study area. Himalayan balsam was recorded predominantly on the banking of watercourses and on the edges of damper field margins. Rhododendron was identified within the northern linear woodland within UCLAN land. Also, Japanese knotweed was identified in two isolated patches. One area was recorded surrounding a waterbody within the Ashton and Lea

Golf Course with the second area within a disused area of land south of the golf course were variegated archangel (*Lamium galeobdolon* ssp. *argentatum* *Variegatum*) was also recorded.

4. Evaluation

4.1 Designated Sites for Nature Conservation

4.1.1 Statutory Designated Sites

There is one statutory designated site within 2km of the scheme, Haslam Park Preston LNR, located approximately 1.9km east of the scheme. The LNR sites is considered to be of **Regional** Importance.

4.1.2 Non-Statutory Designated Sites

There are three non-statutory designated sites within 1km of the scheme; these are all designated by a partnership comprising LCC, Natural England, and the Lancashire Wildlife Trust as BHS. All are considered to be of at least **County** importance for biodiversity. A newly designated non-statutory wildlife site known as Dobcroft Nature Reserve has been identified by LCC and is located just over 1km from the scheme. All four non-statutory designated sites are considered to be of at least **County** importance for biodiversity.

4.2 Habitats

The majority of the survey area is dominated by habitats of limited botanical / ecological value (e.g. agriculturally improved grassland) and these habitats are considered to fall short of the criteria for ecological features of importance for biodiversity.

Four areas of semi-natural broad-leaved woodland are present within the survey area. Out of the four woodlands identified within the survey area, two fall within the scheme footprint. The two areas of woodland beyond the scheme contain a large proportion of non-native canopy species and do not meet the criteria for HoPI or Lancashire BHS selection criteria (Lancashire County Planning Department, 1998). It is noted that woodland is a rare habitat type within the Lancashire Coastal Plain character area (1.4% cover in 2006). Therefore, these two woodlands (totalling 3.15ha) are collectively considered to be of **Local** importance for biodiversity. The two areas of woodland within the scheme also do not meet the Lancashire BHS selection criteria. However, the area of woodland located adjacent to Lea Road (SD49551 31320) is a small (0.25ha) established woodland that meets the criteria for "Lowland mixed deciduous woodland" (HoPI).

A small (0.45ha) area of woodland adjacent to the Lancaster Canal also falls within the scheme and comprises solely of willow species. This area meets the criteria for "wet woodland" (HoPI). Wet woodland combines elements of many other ecosystems and as such is important for many taxa. Moderate to large wet woods are extremely scarce throughout Lancashire, with most examples being under 2ha in extent.

Due to the size of both woodlands (under 0.5ha) recorded within the scheme, they are considered to be of **Local** importance for biodiversity. Collectively all four areas of woodland within the survey area are considered to be of **District** importance for biodiversity.

All hedgerows within the survey area meet the criteria for HoPI. There is no specific hedgerow assessment criteria provided within the Lancashire BHS selection criteria and the hedgerow network within the survey area is unlikely to be considered to be part of the County's "critical environmental capital" (Lancashire County Planning Department, 1998). The collective hedgerow network within the survey area is considered to be of **District** importance for biodiversity. The potential veteran oak tree, located at the end of a species rich hedgerow, adjacent to a watercourse (Grid Ref- SD 4884 3142), is considered to be of **County** importance for biodiversity. Veteran trees are regarded as "irreplaceable" habitat under the NPPF (2019) and may meet the Lancashire BHS selection criteria.

Mature scattered broad-leaved trees (outside of woodland and hedgerow habitats) are present throughout the study area. Mature trees represent a local and national declining resource and collectively are considered to be of **District** importance for biodiversity. With the possible exception of the potential veteran trees discussed above, mature scattered trees within the survey area are unlikely to meet the Lancashire BHS selection criteria.

Ponds also represent a local and national declining resource and some ponds within the survey area, including those which are used by species of principal importance (NERC Act, 2006) such as GCN and common toad and the more botanically diverse ponds may meet the criteria for HoPI in England. Individual ponds have not been assessed against Lancashire BHS selection criteria although it is unlikely that ponds within the scheme would meet the criteria. Ponds are not listed as a priority habitat in the Lancashire BAP. Whilst some poor-quality ponds are of no more than site importance, the better quality ponds (in terms of water quality and botanical / faunal diversity) are generally of **Local** importance for biodiversity. The collective pond network within the survey area is considered to be of **District** importance for biodiversity.

4.3 Species

The survey area offers potential for protected / notable species (refer to section 3.2.3) such as bats, badger, water vole, otter, wintering and breeding birds, barn owl, great crested newt, common toad and invasive plant species. These protected / notable species may be impacted by the proposed scheme and therefore further assessment and / or surveys are required and will be reported separately.

5. Conclusions and Recommendations

One statutory designated site, Haslam Park Preston LNR falls within 2km of the scheme (1.9km east of the scheme). This LNR is highly unlikely to be functionally connected to the land within the scheme due to the distance and reasons for designation. Therefore, no impacts are predicted on this LNR. The scheme falls within Natural England Impact Risk Zones which appear to relate to Newton Marsh SSSI (located 3km south-west) and Ribble Estuary SSSI and associated Ramsar site, SPA and SAC designations (located 3.7km south-west). A Report to Inform a Habitats Regulations Assessment (HRA) Screening is currently being prepared which will consider the potential for impacts to such sites.

Three BHS are present within 1km of the scheme including; Lancashire Canal Including Glasson Branch BHS which runs through the scheme, BNFL Springfields Works Ponds BHS located 25m west of the scheme and Deepdale Wood BHS located 580m west of the scheme. In addition, a non-statutory designated nature reserve, Dobcroft Nature Reserve, is located just over 1km from the scheme. All four sites are considered to be of at least **County** importance. Potential impacts to these sites and appropriate avoidance and mitigation measures (if required) will need to be fully considered in the development of the scheme options / design and throughout the EIA process.

The majority of habitats within the survey area were of limited ecological value; however, the collective semi-natural broad-leaved woodland resource, the pond network, the hedgerow network and mature scattered trees were considered to be of **District** importance and a veteran tree within a species rich hedgerow is considered to be of **County** importance.

It is recommended that a suite of specific habitat and protected species surveys / assessments are undertaken to inform development proposals and to allow for a robust assessment of the potential effects on habitats and species associated with the scheme. Such surveys / assessments are listed below. This will be detailed within the ecology chapter (Chapter 6) of the ES, along with any prescribed avoidance, mitigation and compensation measures, opportunities for enhancement, requirements for pre and / or post construction monitoring and an assessment of residual impacts (where appropriate).

The following surveys / assessments are recommended:

- HRA Screening Assessment.
- Hedgerows survey and assessments.
- Bat surveys including bat roost potential surveys, bat emergence / re-entry surveys and bat activity surveys
- Badger survey.
- Water vole and otter surveys.
- Breeding bird surveys.
- Wintering bird surveys.
- Barn owl roost surveys.
- Great crested newt surveys.
- Common toad assessment (primarily based on 2015 pre-construction survey data collected as part of the PWD / EWL scheme and supported by targeted ongoing common toad monitoring data for PWD where available).
- Riverine invertebrate survey.
- Fish assessment (canal only).
- River Habitat Survey (canal only).
- Pond and Canal Biodiversity Survey.

Specific surveys / detailed further assessments for species / species groups such as reptiles, brown hare, hedgehog and polecat have been scoped out. Sufficient information with regards to their presence, abundance, evaluation and an assessment of likely impacts and avoidance, mitigation and / or compensation requirements can be obtained by a review of current data search information, habitat assessments and incidental sightings. This

will be documented in the ecology chapter (Chapter 6) of the ES and a precautionary approach will be applied to the evaluation and impact assessment.

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Appendix A. Figures

Figure 1 – Cottam Parkway Railway Station Survey Area

Figure 2 - Designated Site Locations

Figure 3 - Extended Phase 1 Habitat Survey

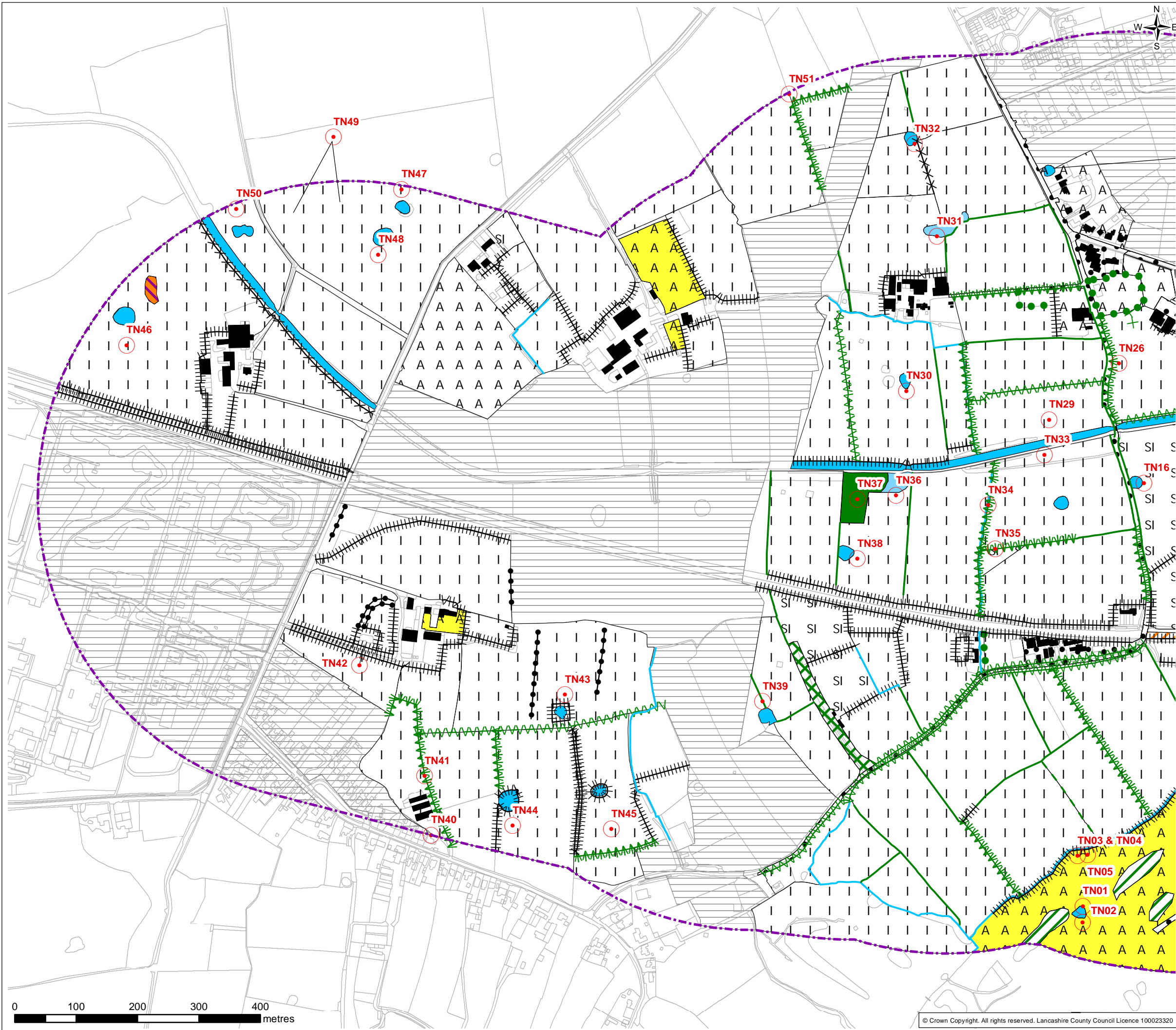
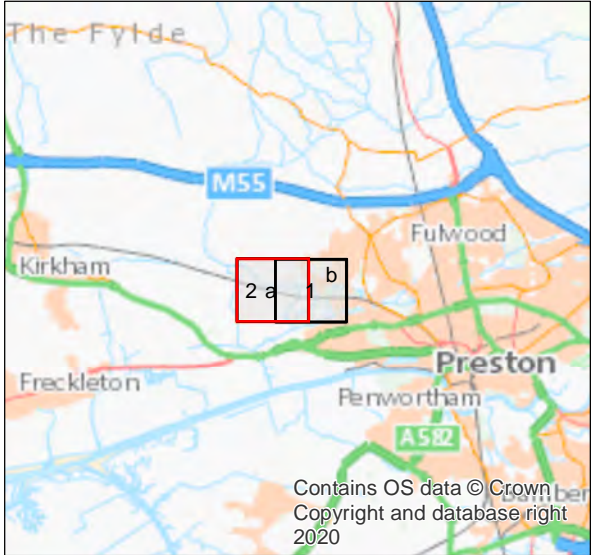



FIGURE 3

- Legend
- 500m Survey Area and Buffer from Known Site Area (January 2020)
- HABITAT**
- A2.2 - Scrub - scattered
 - A3.1 - Broadleaved Parkland/scattered trees
 - A3.2 - Coniferous Parkland/scattered trees
 - HB - Himalayan Balsam
 - Target note
 - G2 - Running water
 - J2.1.1 - Intact hedge - native species-rich
 - J2.1.2 - Intact hedge - species-poor
 - J2.2.1 - Defunct hedge - native species-rich
 - J2.2.2 - Defunct hedge - species-poor
 - J2.3.1 - Hedge with trees - native species-rich
 - J2.4 - Fence
 - J2.5 - Wall
 - J2.7 - Boundary removed
 - J2.8 - Earth bank
 - A1.1.1 - Broadleaved woodland - semi-natural
 - A1.1.2 - Broadleaved woodland - plantation
 - A1.2.2 - Coniferous woodland - plantation
 - A2.1 - Scrub - dense/continuous
 - A3.1 - Broadleaved Parkland/scattered trees
 - B1.1 - Acid grassland - unimproved
 - B4 - Improved grassland
 - B5 - Marsh/marshy grassland
 - B6 - Poor semi-improved grassland
 - C3.1 - Other tall herb and fern - ruderal
 - F1 - Swamp
 - G1 - Standing water
 - G2 - Running water
 - J1.1 - Cultivated/disturbed land - arable
 - J1.2 - Cultivated/disturbed land - amenity grassland
 - J3.6 - Buildings
 - J4 - Bare ground
 - Excluded areas



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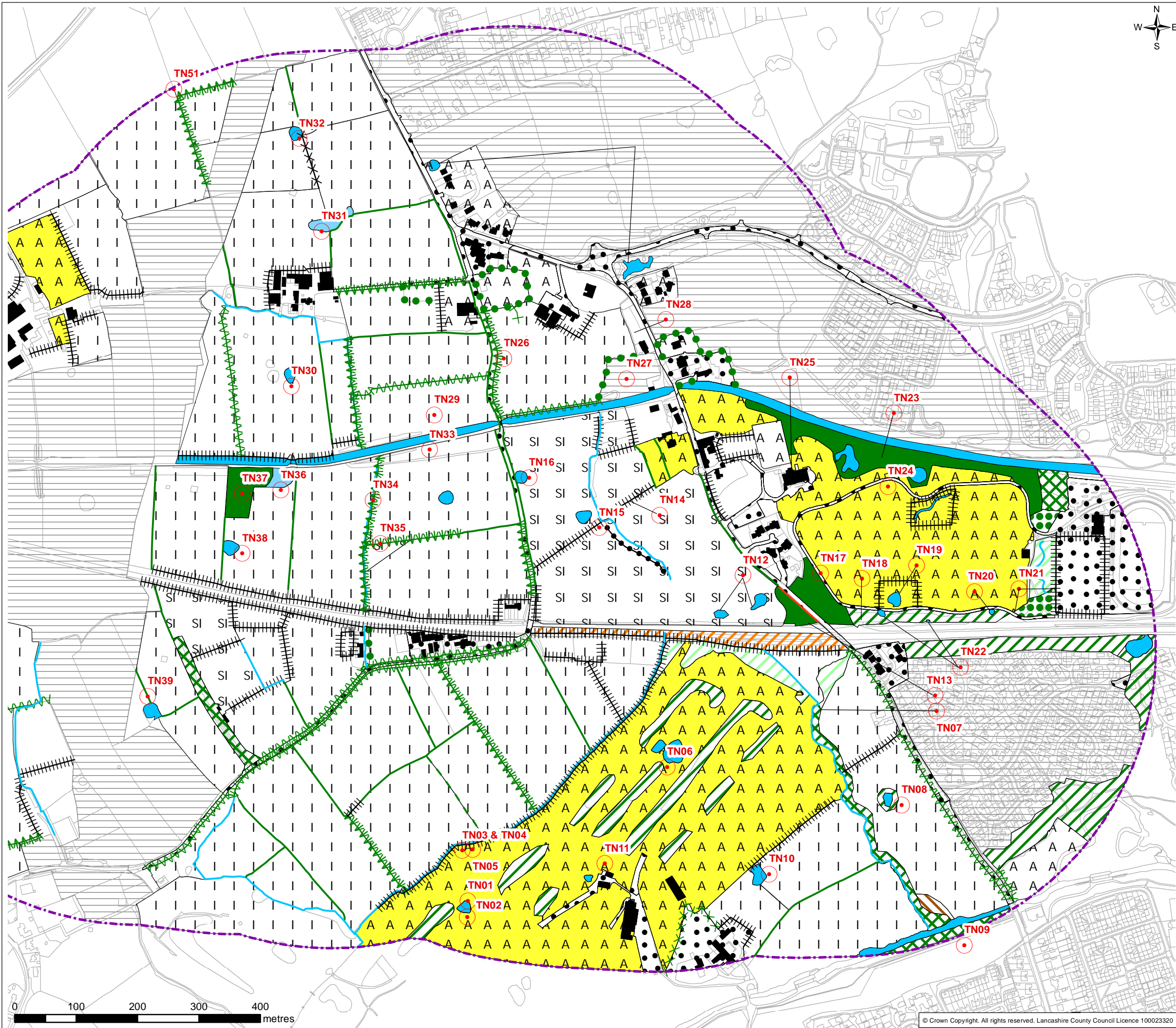
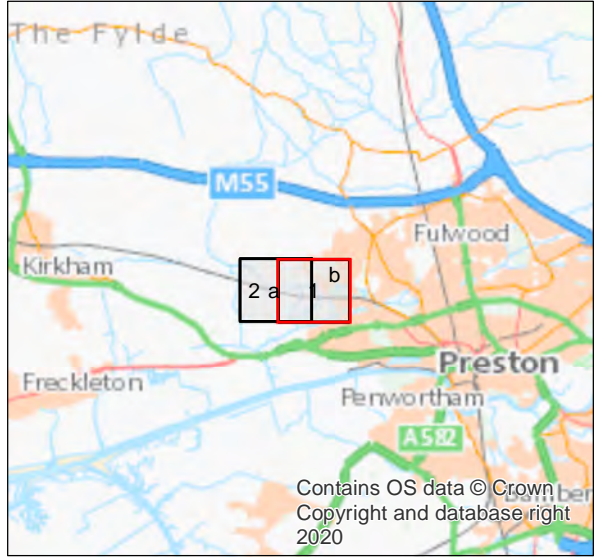


FIGURE 3

- Legend
- 500m Survey Area and Buffer from Known Site Area (January 2020)
- HABITAT**
- A2.2 - Scrub - scattered
 - A3.1 - Broadleaved Parkland/scattered trees
 - A3.2 - Coniferous Parkland/scattered trees
 - HB Himalayan Balsam
 - Target note
 - G2 - Running water
 - J2.1.1 - Intact hedge - native species-rich
 - J2.1.2 - Intact hedge - species-poor
 - J2.2.1 - Defunct hedge - native species-rich
 - J2.2.2 - Defunct hedge - species-poor
 - J2.3.1 - Hedge with trees - native species-rich
 - J2.4 - Fence
 - J2.5 - Wall
 - J2.7 - Boundary removed
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 - B4 - Improved grassland
 - B5 - Marsh/marshy grassland
 - B6 - Poor semi-improved grassland
 - C3.1 - Other tall herb and fern - ruderal
 - F1 - Swamp
 - G1 - Standing water
 - G2 - Running water
 - J1.1 - Cultivated/disturbed land - arable
 - J1.2 - Cultivated/disturbed land - amenity grassland
 - J3.6 - Buildings
 - J4 - Bare ground
 - Excluded areas



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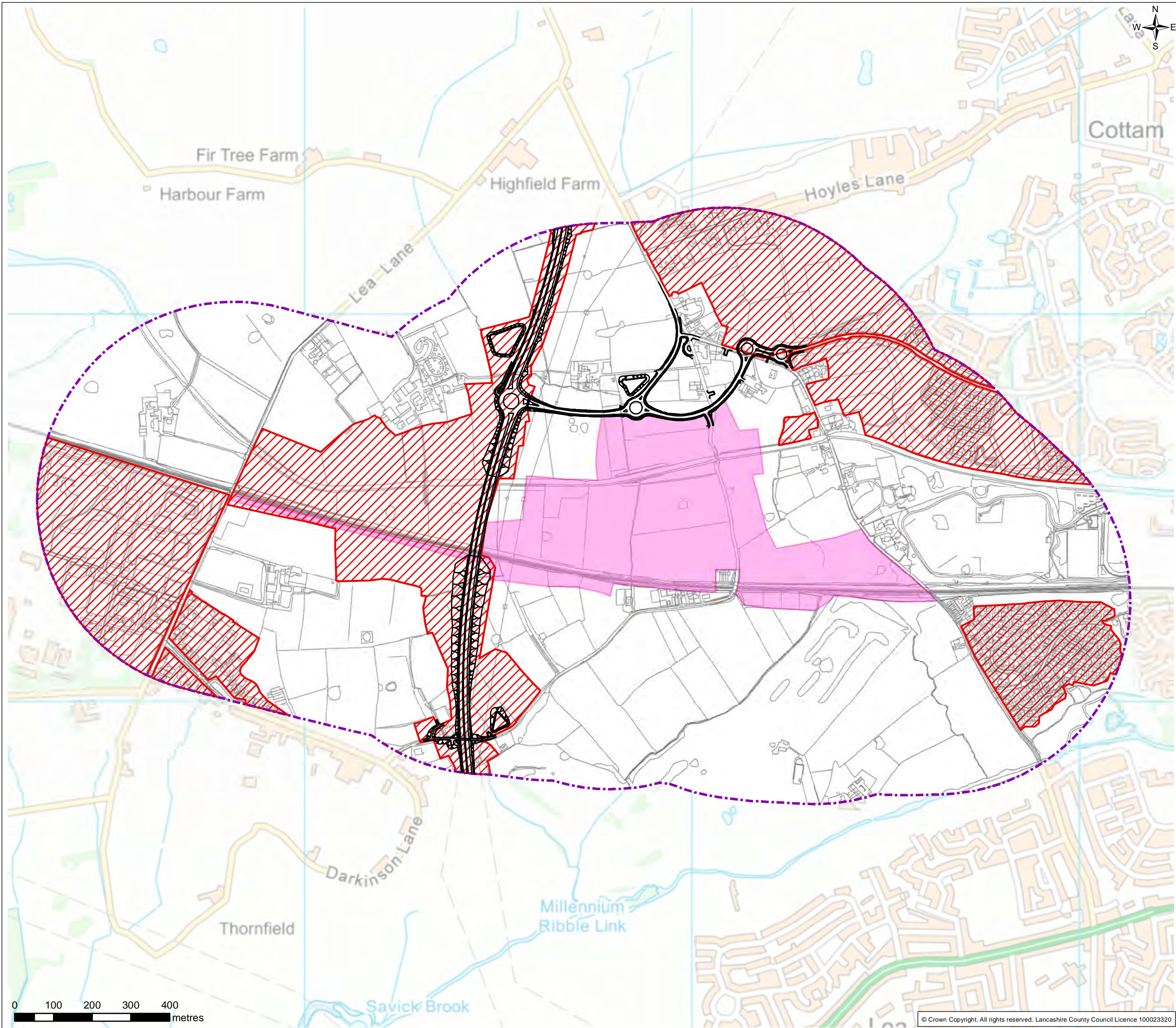



FIGURE 1

- Legend
- Known Cottam Parkway Site Area (January 2020)
 - 500m Survey Area and Buffer from Known Site Area (January 2020)
 - PWD Scheme
 - Exclusion Area January



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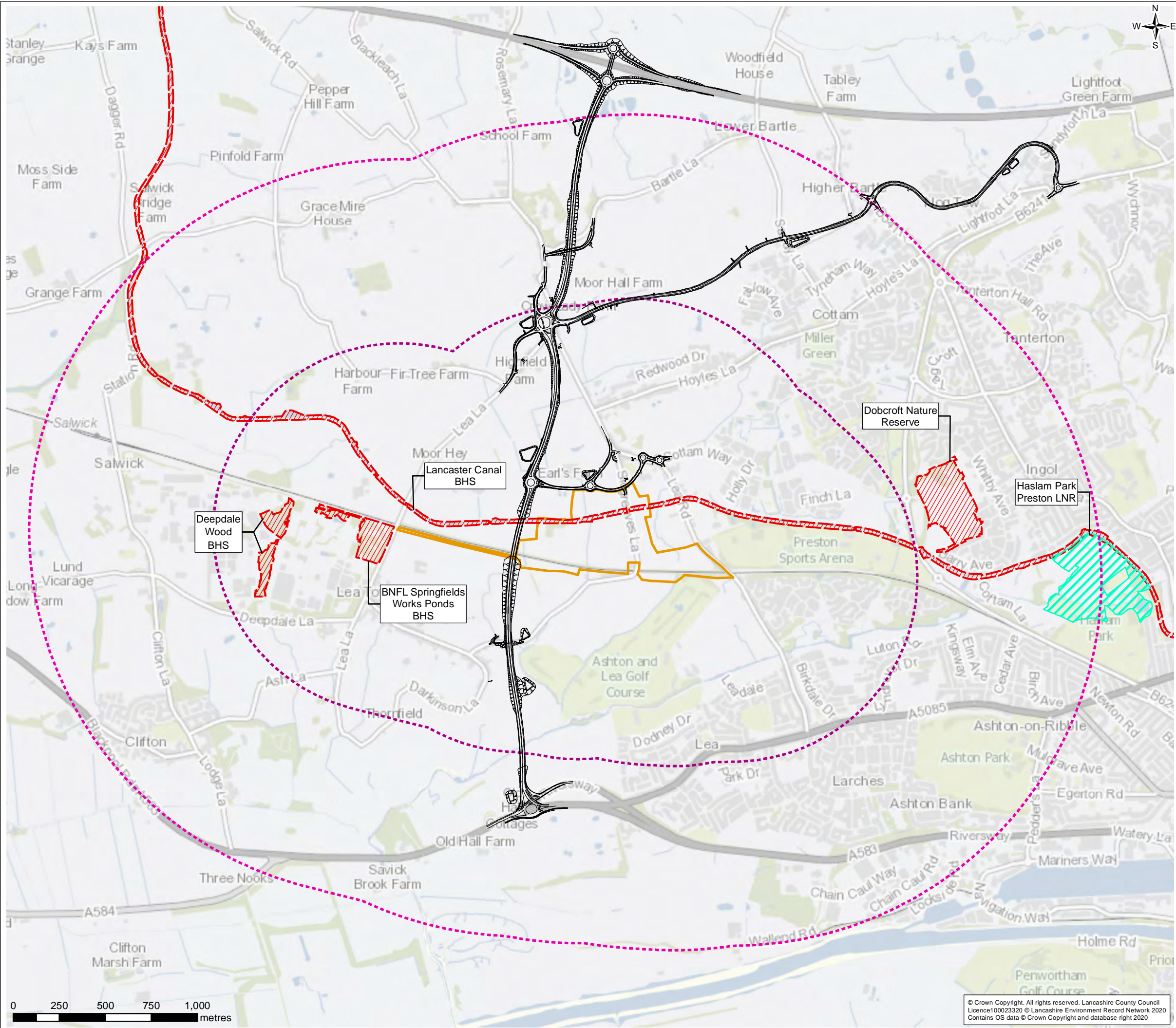



FIGURE 2

- Legend
- PWD Route
 - Site Area
 - Site Area 1km Buffer
 - Site Area 2km Buffer
 - Statutory Designated Sites
 - Non-Statutory Designated Sites



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Appendix B. Wildlife Legislation

Legislation relating to European Protected Species (e.g. bats, otter, great crested newt)

European Protected Species and their resting places (e.g. bat roosts) are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CROW) Act 2000, and the Conservation of Habitats and Species Regulations 2017 (as amended).

The Conservation of Habitats and Species Regulations 2017 (as amended) transpose the European Union 'Habitats Directive' (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended).

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Intentionally kill, injure or take certain animals listed in Schedule 5;
- Intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection;
- Intentionally or recklessly disturb any such animal while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place which any such animal uses for shelter or protection.

In addition, under this legislation there are offences relating to sale, possession and control of wild animals listed in Schedule 5.

Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to:

- Deliberately capture, injure or kill any wild animal listed as a European Protected Species;
- Deliberately disturb wild animals of any such species in such a way as to be likely:
 - 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 a hibernating or migratory species, to hibernate or migrate, or;
 - to affect significantly the local distribution or abundance of the species to which they belong.
- Deliberately take or destroy the eggs of such an animal; or,
- Damage or destroy a breeding site or resting place of such an animal.

In addition, under this legislation there are offences relating to possession, control sale and exchange of an EPS.

Great crested newt, otter and several species of bat are listed as a Species of Principal Importance (SoPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Legislation for eels

The Eels (England and Wales) Regulations 2009 seek to reverse the declines in European eel numbers. The Eel Regulations empower the Environment Agency and Natural Resources Wales to implement recovery measures in all freshwater and estuarine waters in England and Wales. They will do this by aiming to achieve 40 per cent escapement of adult eels relative to escapement levels under pristine conditions, implement measures to reduce fishing pressures, improve access and habitat quality and reduce the impact of entrainment, provide for screening at water intakes and outfalls and ease passage at obstructions to migration

Legislation for amphibians (other than great crested newt)

Under the Wildlife and Countryside Act 1981 (as amended) the four widespread amphibian species, smooth newt (*Triturus vulgaris*), palmate newt (*Triturus helveticus*), common toad (*Bufo bufo*) and common frog (*Rana temporaria*) receive limited protection through section 9(5) only which makes selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative) an offence.

Common toad is listed as a SoPI under Section 41 of the NERC Act 2006.

Legislation relating to reptiles

All native reptile species have some degree of protection in the UK, through section 9(1) and (5) (specified in Schedule 5) of the Wildlife and Countryside Act 1981 (as amended). There are two different levels of protection afforded to reptiles through this legislation according to species and this is described in more detail below.

Full Protection

Sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*) are afforded protection under The Conservation of Habitats and Species Regulations 2010 (are species of European importance) and are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the CRow Act (2000). The Conservation of Habitats and Species Regulations 2010 implements the European Union's 'Habitats Directive' (Council Directive 92/43/EEC (a) on the Conservation of Natural Habitats and of Wild Fauna and Flora) in Great Britain. The relevant sections of this legislation make it an offence to:

- Intentionally kill, injure or capture or take a reptile;
- Possess or control (live or dead animal, part or derivative);
- Deliberately (intentionally) or recklessly damage, destroy or obstruct access to a breeding site or any structure or place used for shelter or protection by a reptile;
- Disturb whilst the reptile is occupying such a structure or place; and,
- Sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative).

Sand lizard and smooth snake are listed as a SoPI under Section 41 of the NERC Act 2006.

Protection against killing, injuring and trade

This level of protection under section 9 (parts 1 and 5) applies to the four widespread species of reptile, namely the common lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*) and adder (*Viper berus*). Only part of sub-section 9(1) applies, which make it an offence to:

- Intentionally kill or injure; and,
- Sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative).

Grass snake, slow-worm and adder are all listed as SoPI under Section 41 of the NERC Act 2006.

Legislation relating to breeding birds

All birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) and it is an offence, with certain exceptions, to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Intentionally take or destroy the egg of any wild bird; and,
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird.

Schedule 1 of the Wildlife and Countryside Act 1981 provides further protection for selected species (including peregrine falcon (*Falco peregrinus*), barn owl (*Tyto alba*), little ringed plover (*Charadrius dubius*) and black redstart (*Phoenicurus ochruros*) during the breeding season. If any person intentionally or recklessly disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturb dependent young of such a bird. That person shall be guilty of an offence.

A number of bird species are listed as SoPI under Section 41 of the NERC Act 2006.

Conservation status - Birds of Conservation Concern (Eaton *et al.* 2015)

The UK's leading bird conservation organisations have worked together on the third quantitative review of the status of the birds that occur regularly in the UK, updating the last review in 2011. The status of birds within the UK have been regularly monitored through a series of surveys, including the national Breeding Bird Survey, Common Bird Census, sea bird monitoring programs and wetland monitoring programs. The result of this review and continued monitoring is The Population Status of Birds in the UK, Birds of Conservation Concern 4: 2015.

Birds are assessed against criteria to place each species on one of three alert lists, red, amber or green. Red list species are considered to be of high conservation concern, being either globally threatened, having historical UK population declines, having a rapid population decline or breeding range contraction of 50% or more in the last 25 years.

Amber list species are considered to be of medium conservation concern as they meet one or more of the following criteria (but none of the red list criteria): Red listed for historical decline in a previous review but with substantial recent recovery (more than doubled in the last 25 years), a UK breeding range contraction of between 25% and 49%, a reduction of breeding or non-breeding population of 25-49% in the last 25 years, a 5-year mean of 1-300 breeding pairs in the UK, an unfavourable European conservation status, at least 50% of the UK breeding population found in 10 or fewer sites, or where the breeding population in the UK represents 20% or more of the European breeding populations.

Green list species are considered to be of low conservation concern. They include all regularly occurring species that do not qualify under any of the red or amber criteria are green listed. The green list also includes those species listed as recovering from Historical Decline in the last review that have continued to recover and do not qualify under any of the other criteria.

Legislation relating to badger

Badgers (*Meles meles*) are protected under the Protection of Badgers Act 1992 (as amended) which makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so;
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett; and,
- Disturb a badger when it is occupying a sett.

These provisions have implications for construction or preparation works undertaken in the vicinity of an active sett and may be confounded by distance from the sett entrance. Any works resulting in ground penetration, vibration or noise near an identified badger sett entrance/s have the potential to disturb badgers and advice should be sought from a suitably experienced ecologist under such circumstances. If disturbance to an active sett is probable, then a licence may need to be obtained from Natural England before any works commence.

Legislation relating to water vole

The water vole (*Arvicola amphibius*) is fully protected under Section 9 of the Wildlife & Countryside Act 1981 (as amended) through its inclusion in Schedule 5. The legal protection makes it an offence to:

- Intentionally kill, injure or capture or take a water vole;
- Possess or control (live or dead animal, part or derivative);
- Deliberately (intentionally) or recklessly damage, destroy or obstruct access to a breeding site or any structure or place used for shelter or protection by a water vole;
- Deliberately (intentionally) or recklessly disturb a water vole whilst occupying such as structure or place; and,
- Sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative).

Water vole is listed as a SoPI under Section 41 of the NERC Act 2006.

Legislation relating to invasive plant species

Several non-native invasive plant species such as Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), Japanese rose (*Rosa rugosa*), variegated yellow archangel (*Lamium galeobdolon*), rhododendron (*Rhododendron ponticum*) and Japanese knotweed (*Reynoutria japonica*) are listed under Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended), which makes it an offence to '...plant or otherwise cause the species to grow in the wild'. This includes spreading or transferring contaminated soil from one area to another.

Estate Managers and landowners have a duty to pro-actively treat knotweed outbreaks. Under the Natural Environment and Rural Communities Act 2006 (NERC), subsection 14ZA (1), makes it an offence to sell, offer or expose for sale, or to have in one's possession or transport for the purpose of sale, any Schedule 9 animal or plant or anything from which such an animal or plant can be propagated, including rhizomes of Japanese knotweed. Under subsection 14ZA (2) it is also an offence to publish or cause to be published any advertisement for the purchase or sale of these animals and plants.

The Environmental Protection Act 1990 (EPA 1990) contains a number of legal provisions concerning controlled waste. Any Japanese knotweed contaminated soil or plant material that is intended for discard is likely to be classified as controlled waste.

The Environmental Protection (Duty of Care) regulations 1991 also imposes a 'duty of care' on persons concerned with controlled waste, which includes any materials incorporating Japanese knotweed including soil, grass cuttings, general wastes and ash arising from the burning of knotweed. The duty applies to any person, who produces, imports, carries, keeps, treats or disposes of controlled waste. Failure to appropriately dispose of any material containing Japanese knotweed may lead to prosecution under Section 33 and 34 of the EPA 1990 and Section 14 (2) of the Wildlife & Countryside Act 1981 (as amended).

If knotweed stands are to be treated with herbicides, The Control of Pesticides Regulations (1986) applies. These regulations require any person who uses a pesticide to take all reasonable precautions to protect the health of human beings, creatures and plants, safeguard the environment and in particular avoid the pollution of water. If

pesticides are to be used in or near to a watercourse, the Environment Agency should be contacted, and approval must be sought (application to use herbicides in or near water).

Waste leaving the site must be handled responsibly and in accordance with the law at all stages between its production and final recovery or disposal. Waste must be transferred to an authorised person, who is either a registered waste carrier or exempted from registration by the Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991.

Additional legislation regarding the transport of Japanese knotweed contaminated materials is covered by the Hazardous Waste Regulations 2005 (HWR 2005). This contains provisions about the handling and movement of hazardous waste. Consignment notes must be completed when any hazardous waste is transferred, which includes details about the hazardous waste properties and any handling requirements. Untreated Japanese knotweed is not classed as hazardous waste, but material containing knotweed which has been treated with certain herbicides, may be classified as hazardous waste.

If any waste soil or knotweed is sent for landfill either before or after treatment, it must go to a landfill that is authorised to receive it.

The Hedgerows Regulations 1997

The Hedgerows Regulations 1997 were introduced to protect hedgerows of importance from destruction. However, the legislation does not apply to any hedgerow (even if it is within the list above) which is within or marking the boundary of the curtilage of a dwelling house.

For the Regulations to be applicable, the hedgerow must be at least 20 metres in length or, if less than 20 metres, it must meet another hedgerow at each end. A hedgerow is deemed to be important if it is more than thirty years old and meets at least one of the criteria listed in Part II of Schedule 1 of the Regulations.





If a hedgerow which qualifies under the Regulations is to be removed, the landowner must contact the Local Planning Authority (LPA) in writing by submitting a hedgerow removal notice. The LPA then has a period of 42 days to decide whether or not the hedgerow meets the importance criteria of the regulations.





Appendix C. Survey Personnel Details





The initial Extended Phase 1 Habitat Survey was undertaken on 26th to 28th February 2020 by Jack Kellett and Joel Giordano with an update survey of key areas undertaken on 16th and 17th July 2020 by Ryan Knight and Kris Long.





- Jack Kellett MCIEEM, BSc (Hons). Senior Ecologist with over 10 years' experience as a professional ecological consultant.
- Joel Giordano BSc (Hons). Graduate Ecologist with over three years' experience as a professional ecological consultant.
- Ryan Knight MCIEEM, BSc (Hons). Senior Ecologist with over 10 years' experience as a professional ecological consultant.
- Kris Long CEnv, MCIEEM, BSc (Hons), MSc. Associate Director of Ecology with over 15 years' experience as a professional ecological consultant.





Appendix D. EP1HS Survey Results and Photographs

Target note	Description	Photo
TN01	Water body located within the Ashton and Lea Golf Course. Species present include yellow flag iris (<i>Iris pseudacorus</i>), marsh marigold (<i>Caltha palustris</i>), hard rush (<i>Juncus inflexus</i>), soft rush (<i>Juncus effuses</i>) and reedmace (<i>Typha latifolia</i>). Further great crested newt (GCN) (<i>Triturus cristatus</i>) scoping required.	
TN02	Small area (5x5m) of Japanese knotweed (<i>Reynoutria japonica</i>) in close proximity to waterbody.	
TN03	Small flowing water stream located on the north-west margin of the Ashton and Lea Golf Course. Turbid at time of survey with gravel and silt substrate.	
TN04	Marginal vegetation to stream in TN03 including Himalayan balsam (<i>Impatiens glandulifera</i>).	N/A
TN05	Man-made hibernacula located near watercourse.	





Target note	Description	Photo
TN06	Ashton and Lea Golf Course ornamental pond with very little bankside vegetation. Further GCN scoping required.	
TN07	Watercourse bisecting improved grassland field. Unable to properly assess due to very dense scrub.	
TN08	Waterbody located within improved grassland field. Large areas of inundated vegetation within the shallow waterbody. Further GCN scoping required.	
TN09	Savick Brook (>250m) located on the south-east margin of the scheme.	






Target note	Description	Photo
TN10	Shallow waterbody located on the margin of grazing field. Little aquatic / marginal vegetation present including water horsetail (<i>Equisetum fluviatile</i>) and hard rush. Further GCN scoping required.	
TN11	Small waterbody located in a depression within amenity grassland at Ashton and Lea Golf Course. Likely to dry in summer although some aquatic vegetation has established including reedmace. Further GCN scoping required.	
TN12	Two shallow temporary waterbodies likely to dry in summer. Further GCN scoping required.	
TN13	Small section of broadleaved semi-natural woodland within the footprint of the scheme.	

Target note	Description	Photo
TN14	In field trees with bat roosting potential. Ground level tree inspection required.	
TN15	Small pond within improved grassland field. Further GCN scoping required.	
TN16	In field pond in close proximity to Sidgreaves Lane. Turbid at time of survey and heavily poached by cattle. Watercress (<i>Nasturtium officinale</i>) and soft rush present within the waterbody. Further GCN scoping required.	
TN17	Scattered trees holding bat roosting potential on the western area of the UCLAN sports field.	




Target note	Description	Photo
TN18	Semi natural broadleaved woodland fringing the southern margin of UCLAN Sports Arena. Further ecological assessment may be required for bat roosting potential.	
TN19	Waterbody within sports area. Waterbody largely inaccessible due to fencing, steep banking and dense vegetation. Further GCN scoping required.	
TN20	Small fenced off pond surrounded by willow (<i>Salix</i> sp.) scrub. Further GCN scoping required.	
TN21	Flowing water ditch bisecting playing fields. Dense bank vegetation in parts. With inflow into waterbody. Further ecological inspections required.	




Target note	Description	Photo
TN22	Two temporary ponds within woodland area likely to dry in warmer months.	
TN23	Semi- Natural broadleaved woodland on the northern margin of UCLAN playing fields.	
TN24	Two waterbodies present within the woodland that require further GCN scoping.	
TN25	Large Building (Westleigh Conference Centre) that holds bat roosting potential.	



Target note	Description	Photo
TN26	Hedgerow with mature oak trees. Further ground level inspection required.	 A photograph showing a hedgerow with several mature oak trees. A path or road runs alongside the hedgerow, and a grassy field is visible in the background.
TN27	Scattered ash (<i>Fraxinus excelsior</i>) and sycamore (<i>Acer pseudoplatanus</i>) trees with bat roosting potential. Further inspection may be required.	 A photograph of a wide, grassy field with a line of trees in the background. The sky is overcast.
TN28	Flowing water ditch with steep banking approximately 2.5m high and 1m wide.	Unavailable - private land
TN29	Linear row of mature oak (<i>Quercus</i> sp.) trees with bat roosting potential. Further inspection may be required.	 A photograph of a large, mature oak tree standing in a grassy field. The tree has a thick trunk and a full canopy of green leaves.
TN30	Waterbody within deep depression in improved grassland field. Requires further GCN scoping.	 A photograph of a pond or waterbody situated in a grassy field. The water is calm, and the surrounding area is covered in green grass.



Target note	Description	Photo
TN31	Waterbody located directly north of Earls farm. Further GCN scoping is required.	
TN32	Waterbody located within improved grassland field. Further GCN scoping is required.	
TN33	Section of the Lancaster Canal. Fringed with marginal vegetation and scrub. Further ecological assessments required.	
TN34	Watercourse flowing south from the Lancaster Canal, culverted to the north. Steep (4m) banking leading to watercourse, fringed by mature trees. Further ecological assessment may be required for both the watercourse and mature trees.	
TN35	Potential veteran oak tree within hedgerow corner SD 348856 431430.	

Target note	Description	Photo
TN36	Small (0.1ha) of reed bed habitat dominated by common reed (<i>Phragmites australis</i>) with occasional scattered crack willows (<i>Salix fragilis</i>).	
TN37	Small (<0.5ha) of wet woodland bordering the canal, dominated by crack willow.	N/A see above
TN38	In field waterbody south of woodland area. Some marginal vegetation present and following a hedgerow. Further GCN scoping required.	
TN39	In field waterbody in the corner of grazing field next to PWD exclusion zone. Further GCN scoping required.	
TN40	Three barn buildings with evidence of nesting birds	

Target note	Description	Photo
TN41	Mature trees following fence line all considered to hold bat roosting potential.	
TN42	Fence off waterbody surrounded by scattered trees. Further GCN scoping required.	
TN43	Fenced off circular waterbody surrounded by ruderal vegetation. Further GCN scoping required.	

Target note	Description	Photo
TN44	Large circular fenced off waterbody. Further GCN scoping required.	
TN45	Large circular pond with central island in its centre. Further GCN scoping required.	
TN46	Waterbody within grazing field with steep banking. Further GCN scoping required.	

Target note	Description	Photo
TN47	Circular waterbody within grazing field. Further GCN scoping required.	 A photograph showing a circular pond or waterbody situated within a green, grassy field. The water is calm, reflecting the overcast sky. In the background, there is a line of trees and a fence.
TN48	Circular waterbody with dense common reed on its margin.	 A close-up photograph of a circular waterbody. The water is dark and reflects the sky. Dense, tall, brown reeds are growing along the edge of the water, partially obscuring the view.
TN49	Two mature infield oak trees holding bat roosting potential.	 A photograph of a large, mature oak tree standing in a green field. Several sheep are grazing in the foreground. The sky is blue with scattered white clouds.

Target note	Description	Photo
TN50	Figure of eight shaped waterbody within grazing field. Further GCN scoping required.	 A photograph showing a small, irregularly shaped pond or waterbody in a green field. The waterbody has a figure-eight shape. The surrounding area is a grassy field with some trees in the background under a cloudy sky.
TN51	Shallow section of a tributary of Savick Brook with mature trees following the banks. Further ecological assessment required.	 A photograph showing a shallow section of a tributary of Savick Brook. The water is calm, reflecting the sky and the surrounding green grass. Mature trees are visible along the banks, and the sky is cloudy.