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Preliminary Ecological Appraisal

River Mease Catchment Area:
Upper Mease & Pessall Brook

on Behalf of:
Trent Rivers Trust

Date: 14/05/2024

PEG500-01B

River Mease Catchment Area – Upper Mease & Pessall Brook



Document Control

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1.0 Non-technical Summary

Background
In April 2024, Pioneer Environment Group Ltd. received instructions to conduct a Preliminary Ecological Appraisal at two survey Sites within the River Mease Catchment Area: - Site 1 – Upper Mease, Culloden Farm (centered on grid reference SK 33731 08259, Figure 1) - Site 2 – Pessall Brook (centered on grid reference SK 21838 13363, Figure 2) The survey comprised a UK Habitat Classification Survey including initial observations of any suitable habitats for, or evidence of protected species.
Site Description
Site 1 is situated approximately 1.3km southwest of Snarestone, whilst Site 2 is located approximately 1.4km northeast of Edingale. - Site 1 – Upper Mease, Culloden Farm - o Watercourse 1 – 454m - o Watercourse 2 – 507m - o Watercourse 3 – 834m - Site 2 – Pessall Brook - o Watercourse 1 – 721m
Development Proposal
The project aims to deliver on objectives set out in the river restoration plan of 2012. The river restoration works aim to improve river channel and riparian habitat, enhance the habitat for the designated features and species along the river, and work to improve water quality. Site 1 - SK 33591 07954 (upstream) to SK 34029 08090 (downstream), and SK 34113 08524 (upstream) to SK 33690 08980 (downstream) Site 1 comprises a river restoration scheme on a small dairy farm on the Upper Mease. This will include wetland creation and the creation of scallops along Field 1. Bank reprofiling, buffer strip enhancement and set-back outfalls are planned for Field 2 and Field 3. Site 2 - SK 22138 13696 (upstream) to SK 21742 13071 (downstream) Site 2 is a river restoration scheme at the downstream end of Pessall Brook. Across all fields there will be secondary channel creation, wetland creation, leaky barrier installation and bank reprofiling. A small bund for the purposes of natural flood management may also be installed in Field 4.
Purpose
The purpose of the surveys was to: • Record and map habitats on the site, including dominant botanical species and invasive species. • Assess the presence, potential presence, or likely absence of protected/Natural Environment and Rural Communities (NERC) species. • Evaluate, where appropriate, the ecological features recorded. • Assess which ecological features may be subject to impact and advise on the need for additional or more detailed surveys to further establish the level of impacts.

Background

- Make recommendations regarding precautions, mitigation, enhancements and/or management to ensure compliance with statutory and non-statutory nature conservation legislation and policy.

Results and Recommendations

Designations

It is recommended that pollution good practice guidelines and silt prevention measures are implemented to reduce potential impacts to the River Mease SAC/SSSI. Details are outlined in the full report.

All non-statutory designations are considered sufficiently distant that the proposed restoration scheme will have no adverse impact on their conservation status.

Habitats

The river restoration scheme will directly impact areas of riparian habitat, grassland, tall herb vegetation, scrub, trees and the riverbed. The habitats were considered common and widespread with no rare or notable plants being identified.

Impacts will be short-term and only for the duration of the works. Habitats post-development will be allowed to re-establish, with additional, beneficial habitats created, and species will re-colonise the area rapidly. In addition, the watercourses will be of better quality to wildlife following completion of the project.

Site 1:

The diversion of the watercourses within Field 1 should carefully consider the avoidance of any impact on mature trees, or trees with bat potential, and hedgerows. In addition, the creation of scallops and set-back outfalls should also avoid impacting mature trees, or trees with bat potential, and hedgerows.

Site 2:

The addition of leaky barriers should carefully consider the avoidance of any impact on mature trees, or trees with bat potential, and hedgerows. In addition, the creation of wetland, secondary channels and bank reprofiling should also avoid impacting mature trees, or trees with bat potential, and hedgerows.

Badgers

No records of badgers were recorded on either Site.

Badgers are transient in nature, and although no setts were identified during the initial visit, a pre-works survey should be conducted prior to commencement.

The pre-construction survey will check for newly constructed setts and identify potential risks and impacts that activities might pose to badgers.

Bats

Several trees across both sites have the potential to support roosting bats, and without further assessment, the possibility that bats are present cannot be ruled out. It is recommended that if trees must be removed or impacted in any way (including disturbance), further surveys will be necessary. In such cases, Pioneer Environment Group Ltd will offer specific guidance in accordance with BCT and CIEEM protocols.

Birds

Background

Any clearance of vegetation suitable for breeding birds, such as trees, grassland, scrub, riparian zones, and tall herb vegetation should be implemented outside of the bird nesting season i.e., between September and February. If this is not possible then the habitats should be checked by a suitably qualified Ecologist prior to starting works. If nesting is taking place, then they should be sufficiently buffered until the chicks have fledged.

Water vole

Site 1

The southern watercourse within Field 1 and the watercourse running parallel to Fields 2 & 3 comprised suitable habitat for water voles. The northern watercourse within Field 1 was not surveyed and therefore presence of water voles here cannot be discounted. As LRERC also returned two water vole records nearby, it is recommended that further surveys be conducted along the three watercourses to provide an accurate picture of whether water voles are using them.

Site 2

Despite both DBRC and SER returning no records of water voles within 1km of the site, the watercourse was considered suitable to support a water vole population due to comprising appropriate bank structure, vegetation, accessibility, and limited disturbance being on private land. Fresh water vole prints were also discovered along the nearside bank of the watercourse within Field 2. No other signs were identified during the survey.

Water vole surveys are typically conducted between April to September when water voles are most active and easily detectable. The timing of the surveys is important to ensure accurate and reliable data collection.

Otter

Site 1

Although LRERC returned only one otter record nearby, suitable foraging habitat was found along the entire extent of the watercourse parallel to Fields 2 & 3, as well as the southern watercourse within Field 1. The northern watercourse within Field 1 was not surveyed and therefore the presence of otters here cannot be discounted. It is therefore recommended that further surveys be conducted along the three watercourses to provide an accurate picture of whether otters are using them.

Site 2

Despite both DBRC and SER returning no records of otters within 1km of the site, the watercourse had potential for use by otters for foraging and commuting purposes. One fresh otter print was discovered on the nearside bank of the watercourse within Field 2. A potential otter rest was also identified on the nearside bank of the watercourse within Field 2. No additional evidence was discovered.

Otter surveys should be undertaken between May – September when water levels are less variable. Surveys should not be carried out during periods of heavy rain and ideally there should be a period of at least five days without rain before surveying.

Amphibians and Reptiles

Site 2 sits within both the 'GCN Risk' Green and Amber Zones, with the Amber Zone suggesting the potential presence of newts. Of the two ponds present within 250m of the site, one was inaccessible and the other returned a 'Below Average' HSI score located approximately 240m west of the site.

Background

The location of the accessible pond, however, was amongst sheep-grazed grassland and there are no GCN records within 500m of this pond. Due to this, it is unlikely that terrestrial phase GCN would disperse to the works areas, if they were present. Therefore, no further surveys are required.

Due to the nature of the proposals, areas of suitable terrestrial habitat for amphibians and reptiles will be disturbed across the site, but this disruption will be temporary. Furthermore, the habitats will undergo restoration as part of the restoration scheme, resulting in an improved quality of habitat for all species after the development. As a result, the need for additional surveys is deemed unnecessary, and the implementation of a Precautionary Working Method Statement (PWMS) is recommended to initiate the scheme. This PWMS is designed to guarantee that the activities minimise impact on suitable habitat and prevent harm to protected species during the course of the work.

Other Species

All other species have been considered and do not present a constraint to the planned works.

2.0 Introduction

- 2.1 Pioneer Environment Group Ltd was instructed by Trent Rivers Trust to undertake a Preliminary Ecological Appraisal (PEA) at two sites within the River Mease Catchment Area: Site 1 – Upper Mease, Culloden Farm and Site 2 – Pessall Brook.
- 2.2 The survey was undertaken over two days between the 24th and 25th April 2024 and comprised a UK Habitat Classification Survey including initial observations of any suitable habitats for, or evidence of protected species.

Survey Location

- 2.3 The survey area comprised three stretches of the river Mease, located approximately 1.3km southwest of Snarestone (Site 1) and approximately 1.4km northeast of Edingale (Site 2).
- Site 1 – Upper Mease, Culloden Farm
 - Watercourse 1 – 454m
 - Watercourse 2 – 507m
 - Watercourse 3 – 834m
 - Site 2 – Pessall Brook
 - Watercourse 1 – 721m

Project Overview

- 2.4 The project aims to deliver on objectives set out in the river restoration plan of 2012. The river restoration works aim to improve river channel and riparian habitat, enhance the habitat for the designated features and species along the river, and work to improve water quality.

Proposals

- 2.5 The restoration works will take place in three areas:
- Site 1 - SK 33591 07954 (upstream) to SK 34029 08090 (downstream), and SK 34113 08524 (upstream) to SK 33690 08980 (downstream).
 - Site 2 - SK 22138 13696 (upstream) to SK 21742 13071 (downstream).
- 2.6 Site 1 comprises a river restoration scheme on a small dairy farm on the Upper Mease. This will include wetland creation and the creation of scallops along Field 1 (Figure 3). Bank reprofiling, buffer strip enhancement and set-back outfalls are planned for Field 2 and Field 3 (Figure 3).
- 2.7 Site 2 is a river restoration scheme at the downstream end of Pessall Brook. Across all fields (Figure 4) there will be secondary channel creation, wetland creation, leaky barrier installation and bank reprofiling. A small bund for the purposes of natural flood management may also be installed in Field 4 (Figure 4).

Survey Purpose

- 2.8 The purpose of the survey was to:
- Record and map habitats on the site, including dominant botanical species and invasive species.

- Assess the presence, potential presence or likely absence of protected/ Natural Environment and Rural Communities (NERC) species.
- Evaluate, where appropriate, the ecological features recorded.
- Assess which ecological features may be subject to impact and advise on the need for additional or more detailed surveys to further establish the level of impacts.
- Identify ecology constraints which may impact the proposed flood management design.
- Make recommendations regarding precautions, mitigation, enhancements and/or management to ensure compliance with statutory and non-statutory nature conservation legislation and policy.

2.9 This report aims to provide general advice on ecological constraints identified applicable to the river catchment restoration proposals and includes recommendations for further survey work, where necessary.

3.0 Legislation and Planning Policies

- 3.1 Several UK and European policies and legislation control the conservation of biodiversity. This section briefly outlines the legal and policy protection afforded to species and habitats scoped into this survey and described within the report.

Protected habitats & species

- 3.2 The Wildlife and Countryside Act 1981 (as amended by the Countryside Rights of Way Act 2000) is the primary legislation that protects animals, plants, and habitats in the UK. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 additionally lists European Protected Species.
- 3.3 Bats and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. In summary it is an offence to damage, destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure, or take a bat. Seven bat species including noctule (*Nyctalus noctule*) (but not common pipistrelle (*Pipistrellus pipistrellus*)) are listed as Species of Principal Importance under the provisions of the NERC Act 2006.
- 3.4 Common reptiles (grass snake (*Natrix helvetica*), adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*)) are listed under Schedule 5 of the Wildlife and Countryside Act (as amended) and are protected from killing and injury.
- 3.5 Common frog (*Rana temporaria*), common toad (*Bufo bufo*), common newt (*Lissotriton vulgaris*), and palmate newt (*Lissotriton helveticus*) receive limited protection under the Wildlife and Countryside Act 1981 (as amended), making it illegal to sell or trade them. Great Crested Newt (*Triturus cristatus*) and Natterjack Toad (*Epidalea calamita*) are fully protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 as European Protected Species. It is illegal to:
- Deliberately capture, injure, kill, or disturb either species,
 - Intentionally or recklessly obstruct access to any structure/place used for shelter or protection, or
 - Damage or destroy a breeding site or resting place.
- 3.6 The Wildlife and Countryside Act 1981 (as amended) provides protection to all species of wild bird and their nests. Under Section 1 it is an offence to intentionally or recklessly take, damage, destroy, or otherwise interfere with nests or eggs, or to obstruct or prevent any wild bird from using its nest.
- 3.7 Water voles (*Arvicola amphibius*) are fully protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended). This legal protection makes it an offence to:
- Intentionally kill, injure (capture) a water vole.
 - Possess or control a live or dead water vole, or any part of a water vole.
 - Intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place.

- Sell, offer for sale, or advertise for sale live or dead water voles.
- 3.8 Otters (*Lutra lutra*) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and receive full protection under Section 9. This species is also listed as European Protected Species on Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 which gives it full protection under Regulation 41. Protection was extended by the Countryside and Rights of Way Act 2000 (the CROW Act).
- 3.9 Under the above legislation it is an offence to:
- kill, injure, or take an individual of such a species.
 - possess any part of such species either alive or dead.
 - intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection, or breeding.
 - intentionally or recklessly disturb such a species whilst using any place of shelter or protection; or
 - sell or attempt to sell any such species.
- 3.10 Otters are also included as Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under Section 74 of the CROW Act.
- 3.11 Under the Protection of Badgers Act 1992 it is an offence to disturb, kill, injure, or take a badger or to disturb, damage, obstruct access to, allow a dog to access or destroy a sett.

Priority Habitats & Species

- 3.12 The NERC Act 2006 places a duty on public authorities to conserve biodiversity. Additionally, this Act states that a list of priority species and actions must be drawn up and published, to contain species and habitats of principal importance for the purpose of conserving biodiversity. These lists of Priority Species and Priority Habitats, which encompass the previous UK Biodiversity Action Plan (BAP) habitats and species, are those identified as being the most threatened and requiring conservation action. Priority habitats and species were chosen based on international importance, rapid decline, and high risk. The list contains over 1000 habitats and species in total. Some of the most pertinent in this area include lowland meadow, hedgerows, bats, yellowhammer (*Emberiza citrinella*), house sparrow (*Passer domesticus*), song thrush (*Turdus philomelos*), hedgehog (*Erinaceus europaeus*), common toad, grass snake and adder.

Invasive species

- 3.13 Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) contains introduced species which have been identified as having a severe economic and ecological impact through their introduction. It is an offence to release or allow to escape into the wild any species which is listed under Part I or Part II of Schedule 9, or any species which is not native.

4.0 Methodology

Desk Study

- 4.1 In order to compile existing baseline information, relevant ecological information within a 1km radius was reviewed, and includes:
- Landscape structure using Ordnance Survey base maps (www.bing.com) and aerial photographs from Google Earth (www.maps.google.co.uk).
 - Designated sites and priority habitat held on <http://magic.defra.gov.uk/>. International statutory designations within 5km and National statutory designations within 2km.
 - Derbyshire Biological Records Centre (DBRC), Leicestershire and Rutland Environmental Records Centre (LRERC) and Staffordshire Ecological Records (SER)_search for protected species and designated sites within 1km of the proposals.
- 4.2 It is considered that the search buffers are sufficient to cover the potential zone of influence of the proposed development. The reasons for the sites designations of protected habitats have been considered during subsequent analysis into whether the proposed development will have any impacts upon the biological integrity of such sites.

Habitat Survey

- 4.3 The habitat surveys followed the standard UK Habitat Classification Survey (UKHab Ltd) and were conducted on the 24th of April 2024 for Site 1 and 25th April 2024 for Site 2; both surveys were carried out by Steph Robertson (Qualifying Member of CIEEM). The surveys covered all accessible parts of the survey areas, including boundary features. The habitats were mapped, described, and where applicable, a list of plant species was compiled. The abundance of species was estimated using the DAFOR scale (D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare). Features such as trees and invasive species were mapped, and habitats were considered with regards to their ecological value and potential to support protected species.
- 4.4 It is important to note that the UK Habitat Classification Survey does not encompass a complete botanical survey or a Phase 2 pre-construction survey that would involve accurate GIS mapping for invasive or protected plant species.

Protected Species Assessment

- 4.5 Throughout the UK Habitat Classification Survey, the survey sections were assessed through field observations for the potential to support protected species. Consideration was given to the actual or potential presence of protected species including those protected under the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992, and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Consideration was also given to the existence and use of each reach by other notable fauna such as Local Biodiversity Action Plan (LBAP) or Red Data Book (RDB) species.
- 4.6 The survey area was inspected for protected species and signs of, as follows:

Bats

- 4.7 The presence of features in, and on trees, indicating potential for roosting bats such as fissures, holes, loose bark, and ivy. Direct evidence such as the presence of bats, staining, droppings and feeding remains were sought. The number, size and condition of these features was then used to give a quantified assessment of potential for bat occupation (Table 1). 'Bat potential' is a non-quantifiable measure of suitability for bats and is determined by surveyor subjectivity, however the table below classifies the potential categories as accurately as possible.

Table 1: Classification of Bat Potential in Trees

Tree Suitability	Description
None	Either no PRF's in the tree or highly unlikely to be and. For young, small trees and trees with relatively clear, open canopy, it may be possible to conclude from ground level that no features are present or likely to be present.
FAR	Further assessment required to establish if PRF's are present in a tree. For large trees, and trees with dense canopies (particularly in full summer leaf), it will often not be possible to ensure that no features are present from a ground assessment alone. Further, 'close/aerial' assessment will be required to make a conclusive assessment.
PRF	A tree with at least one PRF present. For trees with one or more clearly visible PRF's, further survey work will be required.

Birds

- 4.8 The presence of nesting habitat for breeding birds, such as buildings, mature trees, dense scrub, hedgerows and/or field margins suitable for ground nesting birds; and evidence of bird nesting including bird song, old nests, faecal marks etc.

Badger

- 4.9 Cover and topography suitable for badger sett construction, as well as evidence of badger including runs, push-throughs, setts, hair, and latrines (Harris, Creswell, & Jefferies, 1989). All suitable habitats within the proposed areas and accessible land within 30m were searched for evidence of badger activity.

Great Crested Newts (*Triturus cristatus*) and Other Amphibians

- 4.10 The assessment aims to evaluate the potential of on-site water bodies to support breeding amphibians, specifically Great Crested Newts (*Triturus cristatus*), as well as the suitability of surrounding terrestrial habitats including rough grassland, scrub, hedgerows, woodland, and refuges such as logs and rubble piles. The assessment follows the Habitat Suitability Index (HSI) methodology developed by Oldham et al (2000).
- 4.11 The HSI methodology incorporates the evaluation of ten attributes to determine the suitability of water bodies for Great Crested Newts:
- Location (Area A, B or C within the UK);

- Pond Area (size in metres²);
- Permanence (how many times it may dry out in a decade);
- Water quality (invertebrate diversity);
- Shade (percentage of a water bodies perimeter shaded);
- Fowl (impact of waterfowl if present);
- Fish (impact of fish if present);
- Pond Count (density of ponds within 1km)
- Terrestrial Habitat (quality of surrounding habitat); and
- Macrophytes (percentage of surface area occupied).

4.12 To assess pond suitability, a score is assigned based on the most appropriate criteria level within each attribute. A total score ranging from 0 to 1 is then calculated. The following scale is used to determine pond suitability:

Table 2: HSI Score Scale

HSI Score	Pond Suitability
>0.8	Excellent
0.7 – 0.79	Good
0.6 – 0.69	Average
0.5 0.59	Below Average
<0.5	Poor

Reptiles

4.13 Each site was searched for areas that could be used for insolation, shelter, foraging and breeding (Froglife, 1999).

Otter

4.14 Habitats were assessed on their potential to support otters according to subjective criteria (Chanin, 2003), which were then used to categorise the habitat according to suitability for the species. The following habitat factors are taken into consideration:

- water quality.
- water-level regime.
- channel dimensions.
- bank type and material.
- vegetation for cover and food sources.
- shading.
- predation and competition; and
- habitat management.

Water Vole

- 4.15 The watercourses were assessed for its potential as suitable habitat for water voles. Preliminary surveys broadly followed standard methodology of The Water Vole Mitigation Handbook (Dean, Strachan, Gow, & Andrews, 2016):
- Assessment of habitat suitability was made, including:
 - Degree of bank side and emergent vegetation.
 - Bank shape and angle.
 - Size and flow of the water course.

Notable Mammals

- 4.16 The survey sites were searched for evidence and suitable habitat for BAP/Priority Species mammals.

Invasive Species

- 4.17 The survey sites were searched for evidence of species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Omissions

- 4.18 All other protected and notable species were scoped out of the survey work due the lack of suitable habitat within and adjacent to the survey area.

Appraisal Methodology

- 4.19 The overall ecological appraisal is based on the standard best practice methodology provided by the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017). The assessment is a systematic approach used to assess the ecological value of a site or area prior to development or land use change. The appraisal aims to identify ecological features, sites, habitats, and species of value based on various factors, including legal protection, local or statutory site designations such as Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS), and inclusion on Red Data Book Lists or Biodiversity Action Plans. The ecological value of the identified features is assessed in the context of different geographical scales, such as international, national, regional, or local, and potential constraints to development are identified based on this assessment. In cases where further investigation is needed, more detailed surveys may be recommended, such as to fully investigate the botanical value or confirm the presence or likely absence of a protected species.
- 4.20 The assessment also considers relevant planning policy guidance, such as the NPPF (2021), to relate the ecological value of the site to the planning process. This helps to identify any constraints and opportunities for ecological enhancement in line with both national and local policy. By considering ecological factors in the context of legal protections, site designations, and planning policy guidance, the assessment ensures that any potential impacts of development on ecological features are properly assessed and managed in an environmentally responsible manner.

Limitations

- 4.21 It should be noted that whilst every effort has been made to describe the features on site as accurately as possible, this report reflects the habitat conditions noted at the time the ecology survey was undertaken only.
- 4.22 The accuracy of habitat area measurements is limited to baseline data collection and quality of available mapping resources.

5.0 Results

Designated Sites (Figure 1)

Statutory Designated Sites

- 5.1 The River Mease is located within 2km of the proposed scheme. Both Sites comprise upstream tributaries of this watercourse, which is designated as a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). The designation incorporates the Gilwiskaw Brook downstream of Packington village, and the River Mease from its confluence with the Gilwiskaw Brook to its confluence with the River Trent. It is designated for its internationally important habitats and species, which are collectively referred to as its 'interest features'.
- 5.2 The primary reason for selection of the site includes the presence of Annex II species:
- Bullhead (*Cottus gobio*) - The Mease exhibits bullhead populations typical of those found in the rivers of central England. Although bed sediments in the Mease are generally not as coarse as other sites where bullhead is found, it has suitable patches of habitat because of the sinuosity of the river. The patchy cover from submerged macrophytes is also important for the species.
 - Spined loach (*Cobitis taenia*) - The River Mease is a good example of a riverine population of spined loach. It is a small tributary of the River Trent and has retained a reasonable degree of channel diversity compared to other similar rivers containing spined loach populations. It has extensive beds of submerged plants along much of its length which, together with its relatively sandy sediments (as opposed to cohesive mud) provides good habitat opportunities for the species.
- 5.3 Annex II species present as a qualifying feature, but not a primary reason for site selection include:
- White-clawed crayfish (*Austropotamobius pallipes*)
 - Otter
- 5.4 Ashby Canal is located within 200m of Site 1 and comprises 6 miles of SSSI designation between Carlton Bridge 44 and Snarestone. It is designated for its communities of aquatic and emergent plants that are representative of eutrophic standing water bodies in the English lowlands.
- 5.5 The primary reason for selection of the site includes the presence, and diversity, of aquatic plants and invertebrates that makes this one of the most important water bodies of its type in the East Midlands, including:
- Submerged plant community - Mare's-tail (*Hippuris vulgaris*), spiked water-milfoil (*Myriophyllum spicatum*) and perfoliate pondweed (*Potamogeton perfoliatus*) are locally abundant. Eight other species of pondweed have been recorded including grass-wrack pondweed (*P. compressus*) and flat-stalked pondweed (*P. friesii*) which are nationally uncommon. Where the canal bed is stony the scarce needle spike-rush (*Eleocharis acicularis*) may be found.
 - Floating plant community – This community is well developed. Yellow water-lily (*Nuphar lutea*), broad-leaved pondweed (*P. natans*), arrowhead (*Sagittaria sagittifolia*) and unbranched bur-reed (*Sparganium emersum*) are all locally abundant.

- Emergent fringe plant community - The emergent fringe is variously dominated by greater pond-sedge (*Carex riparia*), reed sweet-grass (*Glyceria maxima*) and branched bur-reed (*Sparganium erectum*). Associated species include lesser water-parsnip (*Berula erecta*), flowering rush (*Butomus umbellatus*), tubular water-dropwort (*Oenanthe fistulosa*), water dock (*Rumex hydrolapathum*) and skullcap (*Scutellaria galericulata*).
- Invertebrate communities - The Ashby Canal retains one of the richest invertebrate communities of eutrophic standing water still to be found in Leicestershire. Nine species of dragonfly have been recorded, including the locally scarce red-eyed damselfly (*Erythroma najas*). The water beetle fauna is diverse and it includes the nationally rare (*Haliphus mucronatus*).

5.6 Annex II species present as a qualifying feature, but not a primary reason for site selection include:

- White-clawed crayfish (*Austropotamobius pallipes*)
- Water shrew (*Neomys fodiens*)

Non-statutory Designated Sites

5.7 No Non-Statutory Designated Sites were located within 1km of boundary of Site 1. Site 2 had one Local Wildlife Site (LWS) and one Biodiversity Alert Site (BAS) within 1km of the Site boundary. Table 3 summaries the sites and provides a brief description of their designations. The locations of the designations in relation to the survey area are annotated on Figure 2.

Table 3: Non-statutory Designations Within 1km

Site Name	Site Reference	Site Name	Habitat Type	Designation	Summary
Pessall Brook	21-22-08	Raddle Lane (Hedge 2)	Hedgerow	LWS	A hedge valued, in particular for its large number of species (14spp.) in the hedge canopy and its good structure. The hedge has 10 standard trees along its length, a small bank and a grass verge of over 2m on one side.
	21-23-10	Raddle Lane (Hedge 3)	Hedgerow	Retained BAS	A hedge valued, in particular for its large number of species (11spp.) in the hedge canopy and its good structure. The hedge has 5 standard trees along its length and 3 young trees. There is a small ditch and a grass verge of over 2m on one side.

Habitats: Site 1 (Culloden Farm)

5.8 The survey area was located within a small dairy farm and comprised three watercourses that flowed within three separate fields (Figure 3). The first survey area, Field 1, had two watercourses, one flowing along the northern boundary (Figure 3, WC1) and one flowing along the southern boundary (Figure 3, WC2).

Habitats – Field 1

- 5.9 Field 1 comprised species indicative of 'Modified Grassland' habitat, with perennial ryegrass (*Lolium perenne*) dominating the field (Photograph 1). Yorkshire fog (*Holcus lanatus*), dandelion (*Taraxacum officinale* agg.) and meadow foxtail (*Alopecurus pratensis*) were also in abundance. Frequently identified species included creeping buttercup (*Ranunculus repens*), common mouse-ear chickweed (*Cerastium fontanum*), cocksfoot (*Dactylis glomerata*) and timothy (*Phleum pratense*), whilst there were occasional occurrences of curled dock (*Rumex crispus*) and white clover (*Trifolium repens*). Additionally, ribwort plantain (*Plantago lanceolata*), creeping thistle (*Cirsium arvense*), lesser celandine (*Ficaria verna*), cut-leaved cranesbill (*Geranium dissectum*), meadow buttercup (*Ranunculus acris*), common sorrel (*Rumex acetosa*) and common field-speedwell (*Veronica persica*) were rarely present.



Photograph 1 – Field 1 'Modified Grassland' habitat.

Watercourses – Field 1

- 5.10 The northern watercourse measured 453m and flowed west to east. Due to the presence of a dense hedgerow, the watercourse wasn't visible from Field 1 for assessment. Cattle were present in the fields to the north of the watercourse, and under advice from the landowner, these fields were inaccessible for surveying both the watercourse and the access route for this site.
- 5.11 The southern watercourse measured 502m and also flowed west to east. The watercourse had a slow flow, with shallow riffles in some places and measured approximately 1.5m in width, with a depth of around 0.5-0.8m (Photograph 2).



Photograph 2 – Watercourse WC2.

- 5.12 Generally, the banks were obscured by tall herbs on both sides, however, they both appeared to sit at 45° angles throughout, with small plateaus of vegetation just above the waterline and sediment where vegetation met the water. The bank tops flattened out to join the arable fields on either side.
- 5.13 A number of individual hawthorn trees were scattered along the bank (Photograph 3), whilst one young ash and one crack willow (*Salix fragilis*) were also present. Modifications to this watercourse included a culvert at the downstream end (Photograph 4, Figure 3 – TN1), where it passed under the road, and another culverted section upstream for access to neighbouring fields (Photograph 5, Figure 3 – TN2).



Photograph 3 – Scattered Hawthorn Trees along Watercourse (WC2).



Photograph 4 – Culvert at Downstream End of Watercourse (WC2).



Photograph 5 – Culverted access point across WC2.

- 5.14 In-channel vegetation comprised frequent clusters of reed sweet-grass (*Glyceria maxima*) and occasional instances of fool's watercress (*Helosciadium nodiflorum*) and common bulrush (*Typha latifolia*). Within the riparian zone, tall herb species such as meadowsweet (*Filipendula ulmaria*) dominated the bank, whilst cow parsley (*Anthriscus sylvestris*) was in abundance; common nettle (*Urtica dioica*) was also frequently identified. Willowherb (*Epilobium sp.*), curled dock and hemlock (*Conium maculatum*) were occasionally present. Rarely recorded species included bramble (*Rubus agg.*), cleavers (*Galium aparine*), crack willow, hogweed (*Heracleum sphondylium*) and soft rush (*Juncus effusus*). Timothy (*Phleum pratens*) was frequently recorded and was the most commonly occurring grass species present.

Hedgerows – Field 1

- 5.15 Field 1 had three hedgerows running along the eastern, western and northern boundaries (Figure 3 – H1, H2 & H3).

- 5.16 Hedgerow H1 spanned the eastern boundary of Field 1 and sat 2m wide and 2m in height; it had been subjected to winter flailing. The hedgerow was dominated by hawthorn, with rare occurrences of hazel (*Corylus avellana*) and elder also present (Photograph 6). The herbaceous ground flora comprised cow parsley, garlic mustard (*Alliaria petiolata*), ivy (*Helix hedera*), cleavers, broad-leaved dock (*Rumex obtusifolius*), white dead-nettle (*Lamium album*) and spear thistle (*Cirsium vulgare*). Yorkshire fog was the dominant grass species.



Photograph 6 – Hedgerow H1.

- 5.17 Hedgerow H2 spanned the western boundary of Field 1, it was 0.5-1m in width and 1.5m in height (Photograph 7). This was a single-species hedgerow dominated by hawthorn. The surrounding ground flora included cow parsley, white dead-nettle, curled dock, cleavers, Yorkshire fog and perennial ryegrass.



Photograph 7 – Hedgerow H2.

- 5.18 Hedgerow H3 was a dense hedgerow comprising both hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*), spanning the entirety of the northern boundary, with small parcels of trees also present (Photograph 8, Figure 3 – H3). The hedgerow was approximately 1.5m wide and 1.5m in height, with evidence of winter flailing. Tree species included ash (*Fraxinus excelsior*), elder (*Sambucus nigra*), sycamore (*Acer pseudoplatanus*) and oak (*Quercus sp.*).



Photograph 8 – Hedgerow H3

- 5.19 The third watercourse passed along the northeastern boundaries of both Field 2 and Field 3 (Figure 3).

Habitats – Field 2 & 3

- 5.20 Field 2 had recently been ploughed and was due to be planted with corn the week of the survey (Photograph 9). However, 1m wide margins had been left along the southeastern hedgeline and 2-3m wide margins had been left within the riparian zone of the watercourse (Photograph 10).



Photograph 9 – Field 2 Wider Habitat.



Photograph 10 – Field Margins by Watercourse.

- 5.21 At the time of the survey, Field 3 was being sown with broad beans (Photograph 11). Margins had also been left here, with 0.5 – 1m width margins left along hedgerows H5 & H6 (Figure 3), and 2-3m wide margins were present along the riparian zone of the watercourse.



Photograph 11 – Field 3 Habitat.

Watercourse – Field 2 & 3

- 5.22 The watercourse meandered for 846m along the northeastern boundaries of both Field 2 and Field 3, with a relatively slow flow throughout; some areas contained riffles where the water became shallow and fast. Width varied between 1.5 – 3m throughout, and the depth ranged from 0.5 – 1m. The banks varied in angle, in some areas it was steep with 90° drops to the water, whilst other areas were 45°. In some places there was a lot of sediment build up that created a flat part of the bank, this would likely be submerged in periods of heavy rain.
- 5.23 Some silt was present within the watercourse and upon inspection, the substrate was mostly sediment with some gravel present.

- 5.24 No in-channel vegetation was present for the entirety of the surveyed section of watercourse.
- 5.25 Within Field 2, a number of trees traversed the length of the bank top, with species including: goat willow (*Salix caprea*), holly, ash, elder, dogwood (*Cornus sanguinea*), oak, hawthorn, crack willow, and basket willow (*Salix viminalis*).
- 5.26 Riparian vegetation within Field 2 consisted of predominantly tall herbs/forbs such as common nettle and cow parsley. Other species included frequent occurrences of ivy, giant cranesbill (*Geranium pratense*), creeping buttercup, creeping thistle, willowherb, hogweed, Yorkshire fog and meadowsweet. Perennial ryegrass, annual meadow-grass (*Poa annua*), lesser celandine, meadow buttercup, garlic mustard and curled dock were occasionally recorded. Rare occurrences of water figwort (*Scrophularia umbrosa*), timothy, wood speedwell (*Veronica montana*) and red campion (*Silene dioica*).
- 5.27 Trees were also present along sections of the watercourse in Field 3, species here included an abundance of goat willow and hawthorn, whilst elder and white willow (*Salix alba*) were rarely present.
- 5.28 The riparian habitat within Field 3 mainly comprised tall forbs, with common nettle, willowherb, meadowsweet all dominant, whilst cow parsley was in abundance. Meadow buttercup was frequently present, with occasional occurrence of curled dock, hogweed, white dead-nettle and lesser celandine. Creeping cinquefoil (*Potentilla reptans*), common sorrel and garlic mustard were rarely observed.
- 5.29 A small parcel of riparian habitat within the northeastern section of Field 3 comprised species indicative of 'Other Neutral Grassland' with false oat-grass (*Arrhenatherum elatius*) and soft brome (*Bromus hordeaceus*) in abundance. Frequently observed species included cocksfoot (*Dactylis glomerata*), willowherb, common nettle and curled dock. Dandelion, meadowsweet, cut-leaved cranesbill (*Geranium dissectum*), cow parsley, hogweed and white dead-nettle were all occasionally recorded. Forget-me-not (*Myosotis sp.*) and cleavers had rare occurrences.

Hedgerows – Field 2 & 3

- 5.30 The hedgerow (Photograph 12, Figure 3 - H4) along the southeastern boundary comprised several species: hawthorn, holly, blackthorn, elder, hazel, rose (*Rosa sp.*), bramble along with rare occurrences of ash and oak trees. The hedgerow was approximately 1.5m wide and 2m in height, with evidence of historical flailing. The ground flora, including the field margin, was dominated by Yorkshire fog, whilst within the hedgerow, ivy was dominant. Common nettle and cow parsley were in abundance, whilst hogweed was frequently observed. Occasional records of cocksfoot, timothy, curled dock and cleavers were noted. White dead-nettle, lesser celandine, herb robert (*Geranium robertianum*) and creeping thistle were rarely recorded.



Photograph 12 – Hedgerow H4.

- 5.31 Hedgerow H5 (Photograph 13, Figure 3 – H5) ran along the northwestern boundary of Field 3; it was approximately 2m wide and stood approximately 2.5m tall, with a line of trees also present. Woody species present included hawthorn, crack willow, ash, blackthorn and holly, with bramble intertwined throughout. Ground flora was minimal, with the field margin only measuring 0.5m at its widest point, and comprised garlic mustard, cleavers, cut-leaved cranesbill, ivy, common nettle, cocksfoot and Yorkshire fog.



Photograph 13 – Hedgerow H5.

- 5.32 Hedgerow H6 (Photograph 14, Figure 3 – H6) was a fragmented hedgerow that was situated between Field 2 and Field 3, running parallel to a drainage ditch that had an outfall into the main watercourse. The hedgerow was approximately 1.5m wide and 1.5m in height and finished short of 55m from the watercourse. It also showed signs of recent flailing.



Photograph 14 – Hedgerow H6.

- 5.33 Fragmented sections of the hedgerow comprised different dominant species. Blackthorn dominated the section closest to the watercourse, the second section was dominated by hazel, whilst the third was dominated with hawthorn. Elder was rarely present throughout all the sections. Herbaceous species present along the margin comprised common nettle, hogweed, curled dock, cow parsley, Yorkshire fog, willowherb, hedge woundwort (*Stachys sylvatica*) and a bittercress species (*Cardamine sp.*). Yorkshire fog was the only grass species present.

Access Routes

- 5.34 Due to accessibility issues, the access route to Field 1 was not surveyed, but at the time of survey, cattle were grazing, so it is reasonably presumed the habitat would fall under cattle-grazed 'Modified Grassland' pasture.
- 5.35 The access route to Field 2 included a fourth field. Species present within were indicative of 'Modified Grassland' and included perennial ryegrass as the dominant grass species, whilst annual meadow-grass was rarely observed. White clover was also in abundance, whilst dandelions were occasionally observed, and curled dock, broad-leaved dock, common nettle and spear thistle had rare occurrences.
- 5.36 Due to accessibility issues, part of the access route to Field 3 was not surveyed, but at the time of survey, cattle were grazing, so it would likely fall under cattle-grazed 'Modified Grassland' pasture. The bit that was accessible included part of Field 2, the habitats of which have already been described, and the wider area of Field 3, which has also already been described.

Invasive Species

- 5.37 No invasive species were identified during the survey.

Habitats: Site 2 (Pessall Brook)

Habitats – Fields 1 & 2

- 5.38 The wider habitats within Field 1 and Field 2 comprised species indicative of 'Modified Grassland' habitat, with perennial ryegrass dominating the fields (Photograph 15), whilst dandelion was in abundance. Creeping buttercup, meadow foxtail, meadow buttercup, and white clover were frequently observed. Cleavers, timothy, mouse-ear chickweed, spear thistle, white dead-nettle, hedge woundwort, Yorkshire fog, cuckooflower (*Cardamine pratensis*) and cow parsley were occasional in occurrence. Daisy, ribwort plantain, meadow buttercup, meadow cranesbill (*Geranium pratense*) and germander speedwell (*Veronica chamaedrys*) were rarely observed. At the time of survey, sheep were able to access these fields for grazing.
- 5.39 Along the northwestern boundary of Field 1, and to the right of the access point, large patches of blackthorn and bramble scrub were present.



Photograph 15 – Wider habitat of Field 1 & Field 2.

Habitats – Field 3

- 5.40 Field 3 comprised species indicative of 'Modified Grassland' yet also had an abundance of wheat (*Triticum sp.*) plants present throughout, indicating former use as a cereal crop field (Photograph 16). Other species present included Yorkshire fog, perennial ryegrass, white clover, dandelion, curled dock, greater plantain (*Plantago major*), timothy broad-leaved dock and creeping buttercup.



Photograph 16 – Wider habitat of Field 3.

Habitats – Field 4

- 5.41 Within Field 4, perennial ryegrass dominated, whilst cocksfoot, dandelion and annual meadow-grass were in abundance. Frequent occurrences of curled dock, white clover and meadow buttercup were also present. Meadow foxtail, mouse-ear chickweed, creeping buttercup and broad-leaved dock were occasionally observed; cow parsley had rare occurrences. These species present were indicative of 'Modified Grassland' habitat (Photograph 17).



Photograph 17 – Wider habitat of Field 4.

Watercourse

- 5.42 The watercourse meandered along the east-southeastern boundaries of all four Field parcels for approximately 900m, with a steady flow throughout. The substrate comprised sediment and the depth ranged between 0.5 – 1m. The bank top varied throughout from 1 – 2m; the angles of the

bank also ranged from fairly shallow (20°) to steep drops (90°) into the watercourse (Photograph 18). In-channel vegetation was very limited, with some water-cress (*Rorippa nasturtium-aquaticum*) and reed canary-grass (*Phalaris arundinacea*) present in places; elsewhere, woody debris occurred in several locations.



Photograph 18 – Watercourse Habitat.

- 5.43 Within Fields 1 & 2, the riparian zone contained several tree species, comprising crack willow, alder, hazel, elder, blackthorn and hawthorn. The understory was dominated by tall forbs such as nettle, willowherb and hogweed. Additional species included Yorkshire fog, ivy, bramble, red campion, ground ivy, cuckoopint, garlic mustard, cleavers, creeping thistle and curled dock.
- 5.44 Field 3 had dense patches of blackthorn and hawthorn lining the bank, with tall forbs throughout the understory, which made access to the watercourse and riparian zone difficult (Photograph 19).



Photograph 19 – Field 3 Riparian Habitat.

- 5.45 The banks of the watercourse within Field 4 comprised patches of blackthorn scrub and was dominated by willow trees. Elder and bramble were also present. Herbaceous vegetation within the riparian zone included an abundance of lesser celandine and common nettle; frequent

occurrences of cuckoopint, red campion and cleavers, and occasional records of willowherb and burdock (*Arctium minus*) (Photograph 20).



Photograph 20 – Field 4 Riparian Habitat.

Hedgerows

- 5.46 Hedgerow H1 was situated between Field 2 and Field 3 and ran perpendicular to the watercourse (Figure 4 - H1). It was located above a drainage ditch, measured 2m in height and 2-3m in width. Hawthorn was the dominant species, and bramble scrub ran along the edge within Field 2 (Photograph 21). Blackthorn was in abundance, whilst oak rarely occurred. Herbaceous species frequently present included cow parsley, common nettle, cleavers and hogweed. Perennial ryegrass and Yorkshire fog were in abundance.



Photograph 21 – Hedgerow H1.

- 5.47 Hedgerow H2 ran along the northwestern boundary of Field 1 & Field 2, up to the access point within Field 1, and had a mixture of hawthorn and blackthorn in abundance (Figure 4 – H2). The hedgerow stood approximately 3m tall and measured 4-5m in width. Oak and elder trees were also present (Photograph 22).



Photograph 22 – Hedgerow H2, with Bramble Scrub in the Foreground.

- 5.48 Hedgerow H3 formed the boundary between Field 3 and Field 4, and was dominated by both blackthorn and hawthorn, with bramble intertwining (Figure 4 – H3, Photograph 23). The hedgerow showed evidence of historical management; it stood 2m in height and 2m in width.



Photograph 23 – Hedgerow H3.

- 5.49 Hedgerow H4 ran along the western boundary of Field 4 and contained a range of native species (Figure 4 – H4, Photograph 24). The hedgerow stood 2-2.5m in height, 1-2m in width and had lots of gaps at the base. Hawthorn dominated; blackthorn and elder were frequently observed; a rose (*rosa sp.*) and field maple were occasionally present, whilst crab apple (*Malus sylvestris*) had a rare occurrence. Herbaceous species present included hogweed, hedge woundwort, white dead-nettle, common nettle, cow parsley and creeping thistle. Yorkshire fog was also present.



Photograph 24 – Hedgerow H4.

- 5.50 Hedgerow H5 formed the southern boundary of Field 4 and stood 2-3m tall; its width was approximately 2m (Figure 4 – H5, Photograph 25). The hedgerow was dominated by blackthorn, with hawthorn also in abundance. Bramble entwined throughout, whilst cow parsley and cocksfoot were in abundance beneath. Yorkshire fog was frequently found, whilst hogweed and garlic mustard were occasionally identified.



Photograph 25 – Hedgerow H5.

Access Routes

- 5.51 The majority of the access routes were accessible, with the exception of a small stretch that went through hedgerow H2 and into Field 3 (Figure 4). The field was full of grazing cattle that the landowner advised against entering. It was likely to fall under 'Modified Grassland' as the species visible from the gate included dandelion, perennial ryegrass, meadow foxtail, creeping buttercup and spear thistle.

- 5.52 The access route from the farm gateway down to Field 1 had sheep grazing at the time of survey. Species present here were indicative of 'Modified Grassland', with perennial ryegrass dominating, dandelion and annual meadow-grass were present in abundance. White clover was frequently identified, with meadow foxtail and broad-leaved dock occasionally recorded. Common nettle, cow parsley, mouse-ear chickweed and white dead-nettle were rarely observed.
- 5.53 The remainder of the access routes ran through already surveyed habitats (Field 1, 2, 3 & 4) and are described above.

Invasive Species

- 5.54 No invasive species were identified during the survey.

Protected Species – Site 1 (Culloden Farm)

Bats

- 5.55 The LRERC returned four records of bats, including common pipistrelle, *Myotis sp.*, brown long-eared bat (*Plecotus auritus*) and an unknown bat species, 125m to the northeast of the site (Field 2), dated 2014.
- 5.56 The majority of the habitats within the survey areas provide excellent foraging and commuting habit for bats, especially the watercourse corridors and associated riparian habitats, and hedgerows.
- 5.57 Four trees (Photographs 26 – 29, Figure 3 – TN3 – TN6), were identified as potential roosting sites for bats; potential roosting features (PRF) such as broken limbs, ivy-clad trunks and holes were visible from ground level. It was not possible to comprehensively examine all potential roosting features from ground level and a further survey is required in the form of aerial assessment.



Photograph 26 – (Figure 3, TN3)



Photograph 27 – (Figure 3, TN4)



Photograph 28 – (Figure 2, TN5)



Photograph 29 – (Figure 3, TN6)

Breeding Birds

- 5.58 The site offered the potential for nesting birds in the trees and hedgerows including warblers, red-listed thrush species, yellowhammer and many other species. The riparian habitats where tall herbs and grasses dominated, as well as the wider cropland (subject to when works are undertaken) and grassland habitats, held the potential to support ground nesting birds.
- 5.59 The watercourse parallel to Fields 2 & 3 presented suitable foraging and commuting habitat for kingfishers (*Alcedo atthis*), with several hunting perches. LRERC returned one record of a kingfisher approximately 900m northeast of the site (Field 2), dated in 1998. No suitable nesting habitat or presence of nests were identified during the survey.
- 5.60 Two of the trees flagged for bat potential were also highlighted as having potential for breeding barn owls (*Tyto alba*) (Figure 3 – TN3 & TN6).

Badger

*** All badger information should be kept confidential and remain out of the public domain***

- 5.61 Badgers use a range of habitats (rural and urban); however, they are generally associated with agricultural land, woodland, and hedge banks. A clan of badgers may have a number of setts which they may use at different frequencies at different times of the year.
- 5.62 LRERC did not return any records of badgers within 1km of the site.
- 5.63 No evidence of badger, including the presence of setts, latrines, hairs, prints, and snuffle holes were observed within or close to any of the surveyed areas.

Reptiles

- 5.64 There are six species of reptile which are native in the UK including common lizard, slow worm, grass snake, adder, smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) (with the latter two only being found in the very south of the UK).
- 5.65 No evidence of reptiles was recorded at the time of the surveys. LRERC provided one grass snake record located approximately 300m northwest of the proposals (Field 3).
- 5.66 The wider habitat within Field 1, along with the hedgerows and riparian habitats were considered suitable for reptiles to bask, forage, and shelter. Within Fields 2 & 3, only the riparian habitats and hedgerows were considered suitable for reptiles to bask, forage and shelter.

Great Crested Newts and Other Amphibians

- 5.67 LRERC returned no records of GCN within 1km of the proposals and no ponds were identified within the survey area. No ponds were identified within the survey areas; a large, private pond was observed 20m northeast of the site (Field 2), however due to the presence of the watercourse on the site boundary, it is unlikely any GCN present could cross.
- 5.68 Terrestrial habitats within the grassland, hedgerows and riparian zones were deemed suitable for amphibians.

Water Vole

- 5.69 LRERC returned two records of water voles along the Ashby Canal, which is located 180m northeast of the site (Field 2) at its closest point, with the most recent record dated 2020.
- 5.70 The two watercourses surveyed were considered suitable to support a water vole population due to their appropriate bank structures, vegetation, accessibility, and limited disturbance being on private land. Presence of water voles within the un-surveyed watercourse could not be discounted and further recommendations have been made.

Otters

- 5.71 LRERC supplied one otter spraint record along the Ashby Canal and within a 1km radius, indicating the potential for use of the watercourse parallel to Fields 2 & 3.
- 5.72 The southern watercourse within Field 1 and the watercourse parallel to Field 2 & Field 3 had potential for use by otters for foraging and commuting purposes. Presence of otters within the un-surveyed watercourse could not be discounted and further recommendations have been made.

Other Notable Species

- 5.73 During the survey, four hares were spotted foraging and commuting within Field 1.

Protected Species – Site 2 (Pessall Brook)

Bats

- 5.74 DBRC returned no records of bats within 1km of the site, whilst SER returned one unknown bat species record, dated 1990, 600m south of the site.
- 5.75 The majority of the habitats within the survey areas provide excellent foraging and commuting habit for bats, especially the watercourse corridors and associated riparian habitats, woodland and hedgerows.
- 5.76 Three trees (Photographs 30 – 33, Figure 4 – TN1 – TN3) were identified as potential roosting sites for bats; potential roosting features (PRFs) such as broken limbs, ivy-clad trunks and holes were visible from ground level. It was not possible to comprehensively examine all potential roosting features from ground level and a further survey is required in the form of aerial assessment.



Photograph 30 – (Figure 4, TN1)



Photograph 31 – (Figure 4, TN2)



Photographs 32 & 33 – (Figure 4, TN3)

Breeding Birds

- 5.77 The site offered the potential for nesting birds in the trees, woodland and hedgerows, including warblers, red-listed thrush species, yellowhammer and many other species. The riparian habitats where tall herbs and grasses dominated, as well as the grassland habitats, held the potential to support ground nesting birds.
- 5.78 The watercourse presented suitable foraging and commuting habitat for kingfishers, with several hunting perches. Neither DBRC or SER returned any kingfisher records. No suitable nesting habitat or presence of nests were identified during the survey.

Badger

***** All badger information should be kept confidential and remain out of the public domain*****

- 5.79 Neither DBRC or SER returned any records of badgers within 1km of the site.
- 5.80 No evidence of badger, including the presence of setts, latrines, hairs, prints, and snuffle holes were observed within or close to any of the surveyed areas.

Reptiles

- 5.81 No evidence of reptiles was recorded at the time of the surveys. DBRC and SER returned no records of reptiles within 1km of the site.
- 5.82 The wider habitat within Fields 1, 2, 4 & 5, along with the hedgerows and some of the riparian habitats were considered suitable for reptiles to bask, forage, and shelter. Within Field 3, only the riparian habitats and hedgerows were considered suitable for reptiles to bask, forage and shelter, whilst Field 6 only the hedgerows were considered suitable.

Great Crested Newts and Other Amphibians

- 5.83 DBRC and SER returned no records of GCN within 1km of the proposals. No ponds were identified within the survey area, whilst two ponds were identified within 250m of the survey site (Figure 4 – P1 & P2). Pond P1 was located within a sheep-grazed field and returned a HSI score of '0.5' indicating 'Below Average' suitability for GCN (Photograph 34). Pond P2 was inaccessible and not subject to HSI assessment.



Photographs 34 – Pond P1

- 5.84 Terrestrial habitats within the grasslands, hedgerows and riparian zones were deemed suitable for amphibians.

Water Vole

- 5.85 Neither DBRC or SER returned records of water voles within 1km of the site.
- 5.86 The watercourse was considered suitable habitat to support a water vole population due to appropriate bank structure, vegetation, accessibility, and limited disturbance being on private land.
- 5.87 Fresh water vole prints were also discovered along the nearside bank of the watercourse within Field 2 (Photograph 35, Figure 4 – TN4). No other signs were identified during the survey.



Photograph 35 – Water Vole Prints.

Otters

- 5.88 No records of otter were returned by either DBRC or SER, within 1km of the site.
- 5.89 The watercourse throughout the site had potential for use by otters for foraging and commuting purposes.
- 5.90 One fresh otter print was discovered on the nearside bank of the watercourse within Field 2 (Photograph 36, Figure 4 – TN5). A potential otter rest was also identified on the nearside bank of the watercourse within Field 2 (Photograph 37, Figure 4 – TN6). No additional evidence was discovered.



Photograph 36 – Otter Print.



Photograph 37 – Potential Otter Rest.

Other Notable Species

- 5.91 During the survey, four hares were spotted foraging and commuting within Field 1.

6.0 Discussion and Recommendations

Proposals

- 6.1 The River Mease restoration projects aims to improve river channel and riparian habitat, enhance the habitat for the designated features and species along the river, and work to improve water quality.
- 6.2 Works within Site 1 will involve the creation of a wetland within Field 1, whilst bank reprofiling, buffer strip enhancement and set-back outfalls are planned for Field 2 and Field 3.
- 6.3 Site 2 will be subject to secondary channel creation, wetland creation, leaky barrier installation and bank reprofiling across all fields. A small bund for the purposes of natural flood management may also be installed in Field 4.

Designated Sites

Statutory Designations

- 6.4 Site 1 is located within 200m of Ashby Canal, a SSSI designation for its aquatic and emergent plants, and invertebrates. The reason for selection is due to the following qualifying features:
 - Annex I habitats present: submerged plant community, floating plant community, emergent fringe plant community.
 - Invertebrate communities including the locally scarce red-eyed damselfly (*Erythroma najas*) and the nationally rare (*Haliphus mucronatus*).
- 6.1 Annex II species present as a qualifying feature, but not a primary reason for site selection include:
 - White-clawed crayfish (*Austropotamobius pallipes*)
 - Water shrew (*Neomys fodiens*)
- 6.2 The proposed works are not expected to impact the Ashby Canal, as the tributaries subject to the works do not feed into this watercourse.
- 6.3 The proposals are also based within 2km of the River Mease which is a SSSI and SAC. Both Sites comprise upstream tributaries of this watercourse. The reason for selection is due to the following qualifying features:
 - Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site.
 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation.
 - Annex II species that are a primary reason for selection of this site.

Spined loach

- 6.4 The River Mease SAC/SSSI is a good example of a riverine population of spined loach. It is a small tributary of the River Trent and has retained a reasonable degree of channel diversity compared to other similar rivers containing spined loach populations. It has extensive beds of submerged plants along much of its length which, together with its relatively sandy sediments (as opposed to cohesive mud) provides good habitat opportunities for the species.

Bullhead

- 6.5 The Mease is an example of bullhead populations in the rivers of central England. Bed sediments are generally not as coarse as other sites selected for the species, reflecting the nature of many rivers in this geographical area, but are suitable in patches due to the river's retained sinuosity. The patchy cover from submerged macrophytes is also important for the species.
- 6.6 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- White-clawed (or Atlantic stream) crayfish
 - Otter
- 6.7 It is likely that the tributaries of the River Mease SAC/SSSI, and potentially the River Mease itself, will be adversely affected if no pollution mitigation measures are adopted. To remove/reduce the risk of silt pollution during the construction phase it is recommended that 'good practice guidelines' are followed and adhered to.
- 6.8 The risk of silt pollution causing an incident will depend on many factors including:
- the time of year e.g. fish spawning season;
 - likelihood of silt being disturbed and the method/effectiveness of silt containment;
 - what the bed is made of, e.g. silt or gravel;
 - the conditions in which the work is carried out, e.g. working in the dry, weather.
- 6.9 Silt pollution caused by working in and near the water environment can be minimised or prevented by keeping water out of the working area using appropriate isolation techniques, such as coffer dams and by-pass channels. There may be a need for fish rescue prior to in-channel works, stream diversion or coffer dam work. Fish passage must be maintained during in-channel works.
- 6.10 Providing the appropriate permission from the environmental regulator is granted and pollution prevention good practice is followed, then it is considered that the watercourse alterations will not impact the SSSI and SAC designation.

Non-Statutory Designations

- 6.11 There are no Non-Statutory Designated Sites located within 1km of boundary of Site 1. Site 2 had one Local Wildlife Site (LWS) and one Biodiversity Alert Site (BAS) within 1km of the Site boundary.
- 6.12 No impacts are expected to these sites.

Habitats: Site 1 (Culloden Farm)

- 6.13 The proposals will directly impact areas of riparian habitat, tall herb vegetation, trees, grassland and the riverbed. No rare or notable plants were identified during the survey or in any survey area.
- 6.14 The diversion of the watercourses within Field 1 should carefully consider the avoidance of any impact on mature trees, or trees with bat potential, and hedgerows. In addition, the creation of scallops and set-back outfalls should also avoid impacting mature trees, or trees with bat potential, and hedgerows.

- 6.15 All other habitats and plant species were considered common and widespread within the local area and offered good value for wildlife. Consequently, the short-term losses of these habitats have not been identified as a significant ecological constraint and no further assessments are necessary.

Habitats: Site 2 (Pessall Brook)

- 6.16 The proposals will directly impact areas of riparian habitat, tall herb vegetation, trees, grassland and the riverbed. No rare or notable plants were identified during the survey or in any survey area.
- 6.17 The addition of leaky barriers should carefully consider the avoidance of any impact on mature trees, or trees with bat potential, and hedgerows. In addition, the creation of wetland, secondary channels and bank reprofiling should also avoid impacting mature trees, or trees with bat potential, and hedgerows.
- 6.18 All other habitats and plant species were considered common and widespread within the local area and offered good value for wildlife. Consequently, the short-term losses of these habitats have not been identified as a significant ecological constraint and no further assessments are necessary.

Fauna: Site 1 (Culloden Farm)

Bats

- 6.19 Several trees across the site have the potential to support roosting bats, and without further assessment, the possibility that bats are present cannot be ruled out. It is recommended that if trees must be removed or impacted in any way (including disturbance within 30m), further surveys will be necessary. In such cases, Pioneer Environment Group Ltd will offer specific guidance in accordance with BCT and CIEEM protocols.

Breeding Birds

- 6.20 All habitats within the area of impact offered suitability for nesting birds. All birds are protected while nesting by the WCA 1981 (as amended). Specially protected Schedule-1 bird species are afforded additional protection from disturbance while nesting.
- 6.21 Any clearance of vegetation suitable for breeding birds, such as trees, scrub, riparian zones, and tall herb vegetation should be implemented outside of the bird nesting season i.e., between September and February. If this is not possible then the habitats should be checked by a suitably qualified Ecologists prior to starting works. If nesting is taking place, then these should be sufficiently buffered until the chicks have fledged.
- 6.22 Two trees have the potential to support nesting barn owls, and without further assessment, this possibility cannot be ruled out. If the trees must be removed or impacted in any way (including disturbance within 30m), further surveys are recommended. In such cases, Pioneer Environment Group Ltd will offer specific guidance in accordance with CIEEM protocols.

Badgers

- 6.23 Badgers are transient in nature, and although no setts were identified during the initial visit, a pre-work survey should be carried out prior to the commencement of works.

- 6.24 The pre-construction survey will check for newly constructed setts and identify potential risks and impacts that work activities might pose to badgers.
- 6.25 If badgers or their setts are identified within the works area, the survey will inform appropriate mitigation strategies, which may include adjusting work timelines, creating exclusion zones, or implementing alternative methods to minimise disturbance.
- 6.26 The creation of features which could be by badgers to excavate setts should be avoided. Temporary soil heaps arising from construction works should be sited upon hardstanding, left uncompacted and not allowed to grass over. Any piles that have been left without the above mitigation will require a pre-work check by a suitably qualified ecologist to ensure no badger setts are present.

Amphibians and Reptiles

- 6.27 Due to the nature of the proposals, areas of suitable terrestrial habitat for amphibians and reptiles will be disturbed across the site, but this disruption will be temporary. Furthermore, the habitats will undergo restoration as part of the restoration scheme, resulting in an improved quality of habitat for all species after the development. As a result, the need for additional surveys is deemed unnecessary, and the implementation of a Precautionary Working Method Statement (PWMS) is recommended to initiate the scheme. This PWMS is designed to guarantee that the activities minimise any impact on the suitable habitat and prevent harm to protected species during the course of the work.

PWMS

- 6.28 Reasonable avoidance measures will be employed to avoid death or injury to amphibians and reptiles during the works, and include:
- A receptor area to the west of the Site (Field 1) should be established and left undisturbed throughout construction. Vehicles should not pass over this area.
 - Vegetation within the site boundary should be strimmed using hand tools, during the active season (March – October) when temperatures are >10°C; initially, to 150mm, then to ground level. The strimming process will be undertaken in a directional manner towards the receptor area (east to west) to encourage the dispersal of any species into the wider environment.
 - Any piles of debris/wood that may form potential hibernacula should be avoided if work is undertaken in winter months. Any removal of such piles outside of the hibernation period must be done by hand and under ecologist supervision.
 - If reptiles or GCN are identified during works, then works should cease and Pioneer Environment contacted.

Water Vole

- 6.29 The southern watercourse within Field 1 and the watercourse running parallel to Fields 2 & 3 comprised suitable habitat for water voles. The northern watercourse within Field 1 was not surveyed and therefore presence of water voles here cannot be discounted.
- 6.30 As LRERC also returned two water vole records nearby, it is recommended that further surveys be conducted along the three watercourses to provide an accurate picture of whether water voles are using them. Water vole surveys are typically conducted between April to September when

water voles are most active and easily detectable. The timing of the surveys is important to ensure accurate and reliable data collection.

Otter

- 6.31 Although LRERC returned only one otter record nearby, suitable foraging habitat was found along the entire extent of the watercourse parallel to Fields 2 & 3, as well as the southern watercourse within Field 1. The northern watercourse within Field 1 was not surveyed and therefore presence of otters here cannot be discounted. It is therefore recommended that further surveys be conducted along the three watercourses to provide an accurate picture of whether otters are using them. Otter surveys should be undertaken between May – September when water levels are less variable. Surveys should not be carried out during periods of heavy rain and ideally there should be a period of at least five days without rain before surveying.

Other Species

- 6.32 All other species have been considered and do not present a constraint to the planned works.

General Recommendations

- 6.33 To minimise disturbance, all work should ideally be undertaken by hand where possible, and machinery use limited. This will lessen the impact on any wildlife present.
- 6.34 Where possible, work should be carried out in the winter months to limit disturbance to all wildlife.
- 6.35 Any deep excavations which must be left open overnight must have sloping boards installed to ensure that any animals such as badgers, hedgehogs, hares, or amphibians that fall in are able to escape.
- 6.36 Should any non-protected species such as hedgehog, frog, smooth newt, or toad be found during works they should be moved carefully by hand to an area to be left undisturbed by works.
- 6.37 Should evidence of protected species, such as nesting birds, great crested newts, badgers, or reptiles, be discovered during works, works should temporarily stop while Pioneer Environment Group Ltd or the local office of Natural England are contacted for advice on the best way to proceed.

Fauna: Site 2 (Pessall Brook)

Bats

- 6.38 Several trees across the site have the potential to support roosting bats, and without further assessment, the possibility that bats are present cannot be ruled out. It is recommended that if trees must be removed or impacted in any way (including disturbance within 30m), further surveys will be necessary. In such cases, Pioneer Environment Group Ltd will offer specific guidance in accordance with BCT and CIEEM protocols.

Breeding Birds

- 6.39 All habitats within the area of impact offered suitability for nesting birds. All birds are protected while nesting by the WCA 1981 (as amended). Specially protected Schedule-1 bird species are afforded additional protection from disturbance while nesting.

- 6.40 Any clearance of vegetation suitable for breeding birds, such as trees, scrub, riparian zones, and tall herb vegetation should be implemented outside of the bird nesting season i.e., between September and February. If this is not possible then the habitats should be checked by a suitably qualified Ecologists prior to starting works. If nesting is taking place, then these should be sufficiently buffered until the chicks have fledged.

Badgers

- 6.41 Badgers are transient in nature, and although no setts were identified during the initial visit, a pre-work survey should be carried out prior to the commencement of works.
- 6.42 The pre-construction survey will check for newly constructed setts and identify potential risks and impacts that work activities might pose to badgers.
- 6.43 If badgers or their setts are identified within the works area, the survey will inform appropriate mitigation strategies, which may include adjusting work timelines, creating exclusion zones, or implementing alternative methods to minimise disturbance.

Amphibians and Reptiles

- 6.44 The Site sits within both the 'GCN Risk' Green and Amber Zones, with the Amber Zone suggesting the potential presence of newts. Of the two ponds present within 250m of the site, one was inaccessible and the other returned a 'Below Average' HSI score located approximately 240m west of the site.
- 6.45 The location of the above pond, however, was amongst sheep-grazed grassland and there are no GCN records within 500m of this pond. Due to this, it is unlikely that terrestrial phase GCN would disperse to the works areas, if they were present. Therefore, no further surveys are required.
- 6.46 Due to the nature of the proposals, areas of suitable terrestrial habitat for amphibians and reptiles will be disturbed across the site, but this disruption will be temporary. Furthermore, the habitats will undergo restoration as part of the restoration scheme, resulting in an improved quality of habitat for all species after the development. As a result, the need for additional surveys is deemed unnecessary, and the implementation of a Precautionary Working Method Statement (PWMS) is recommended to initiate the scheme. This PWMS is designed to guarantee that the activities minimise any impact on the suitable habitat and prevent harm to protected species during the course of the work.

PWMS

- 6.47 Reasonable avoidance measures will be employed to avoid death or injury to reptiles and GCN during the works, and include:
- A receptor area to the west of the Site (within all Field Parcels) should be established and left undisturbed throughout construction. Vehicles should not pass over this area.
 - Vegetation within the site boundary should be strimmed using hand tools, during the active season (March – October) when temperatures are >10°C; initially, to 150mm, then to ground level. The strimming process will be undertaken in a directional manner towards the receptor area (east to west) to encourage the dispersal of any species into the wider environment.

- Any piles of debris/wood that may form potential hibernacula should be avoided if work is undertaken in winter months. Any removal of such piles outside of the hibernation period must be done by hand and under ecologist supervision.
- If reptiles or GCN are identified during works, then works should cease and Pioneer Environment contacted.

Water Vole

- 6.48 Despite both DBRC and SER returning no records of water voles within 1km of the site, the watercourse was considered suitable to support a water vole population due to comprising appropriate bank structure, vegetation, accessibility, and limited disturbance being on private land.
- 6.49 Fresh water vole prints were also discovered along the nearside bank of the watercourse within Field 2. No other signs were identified during the survey.
- 6.50 Due to the presence of the above, a further water vole survey it is recommended along the watercourse to provide an accurate picture of how water voles are using it. Water vole surveys are typically conducted between April to September when water voles are most active and easily detectable. The timing of the surveys is important to ensure accurate and reliable data collection.

Otter

- 6.51 Despite both DBRC and SER returning no records of otters within 1km of the site, the watercourse had potential for use by otters for foraging and commuting purposes.
- 6.52 One fresh otter print was discovered on the nearside bank of the watercourse within Field 2. A potential otter rest was also identified on the nearside bank of the watercourse within Field 2. No additional evidence was discovered.
- 6.53 Based on the above evidence, it is therefore recommended that further surveys be conducted along the watercourse to provide an accurate picture of how otters are using it. Otter surveys should be undertaken between May – September when water levels are less variable. Surveys should not be carried out during periods of heavy rain and ideally there should be a period of at least five days without rain before surveying.

Other Species

- 6.54 All other species have been considered and do not present a constraint to the planned works.

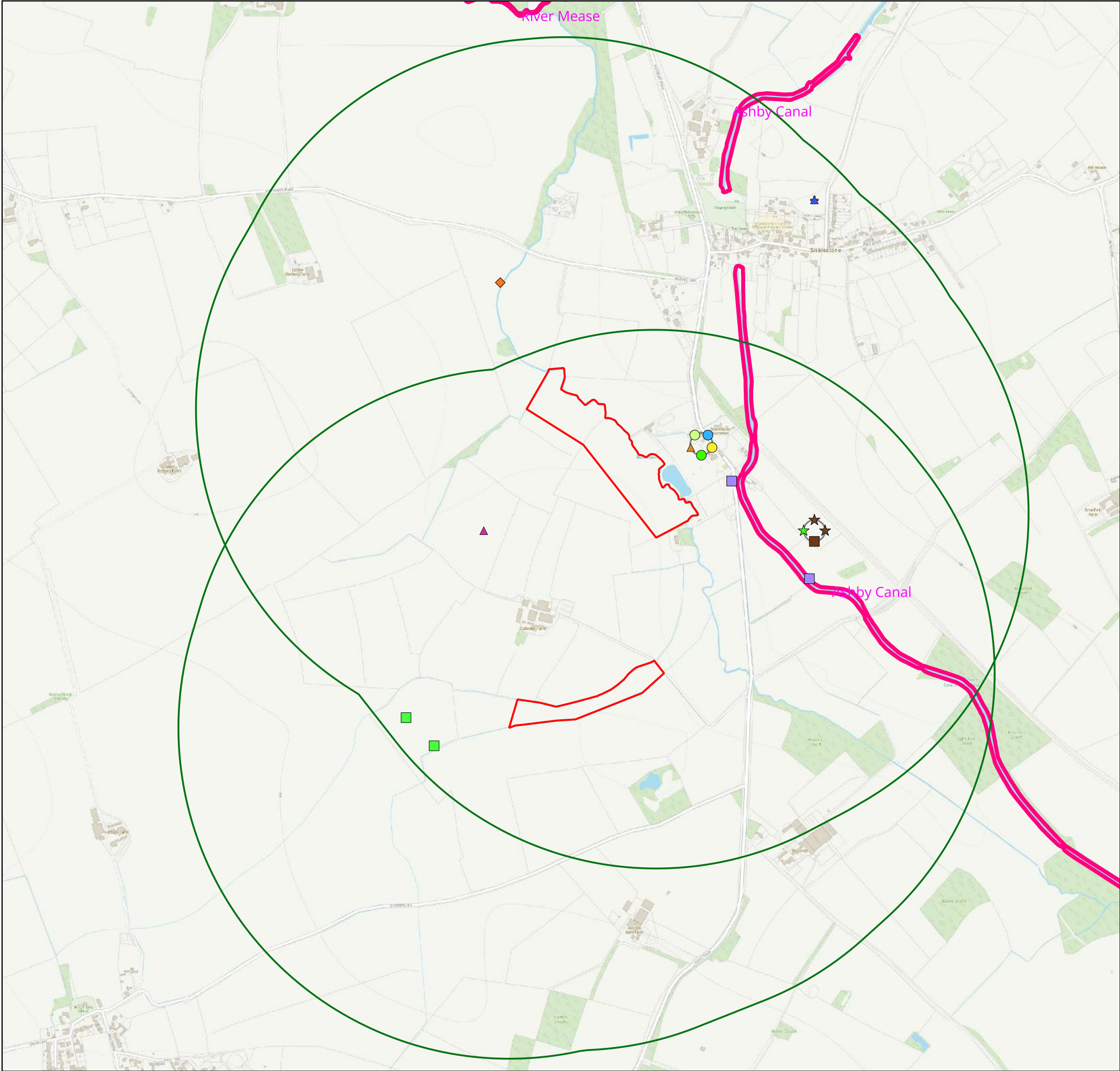
General Recommendations

- 6.55 To minimise disturbance, all work should ideally be undertaken by hand where possible, and machinery use limited. This will lessen the impact on any wildlife present.
- 6.56 Where possible, work should be carried out in the winter months to limit disturbance to all wildlife.
- 6.57 Any deep excavations which must be left open overnight must have sloping boards installed to ensure that any animals such as badgers, hedgehogs, hares, or amphibians that fall in are able to escape.
- 6.58 Should any non-protected species such as hedgehog, frog, smooth newt, or toad be found during works they should be moved carefully by hand to an area to be left undisturbed by works.

- 6.59 Should evidence of protected species, such as nesting birds, great crested newts, badgers, or reptiles, be discovered during works, works should temporarily stop while Pioneer Environment Group Ltd or the local office of Natural England are contacted for advice on the best way to proceed.

7.0 Bibliography

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Key

- Site Boundary
- 1km Buffer Zone

Designated Sites

- Sites of Special Scientific Interest (SSSI)
- Special Areas of Conservation (SAC)

Protected Species

- Brown Long-eared Bat
- Common Pipistrelle
- Grass Snake
- Hare
- Kingfisher
- Myotis Bat species
- Otter
- Skylark
- Swallow
- Unknown Bat Species
- Wall
- Water Vole
- White-letter Hairstreak

Invasive Species

- Himalayan Balsam

150 0 150 300 450 600 m

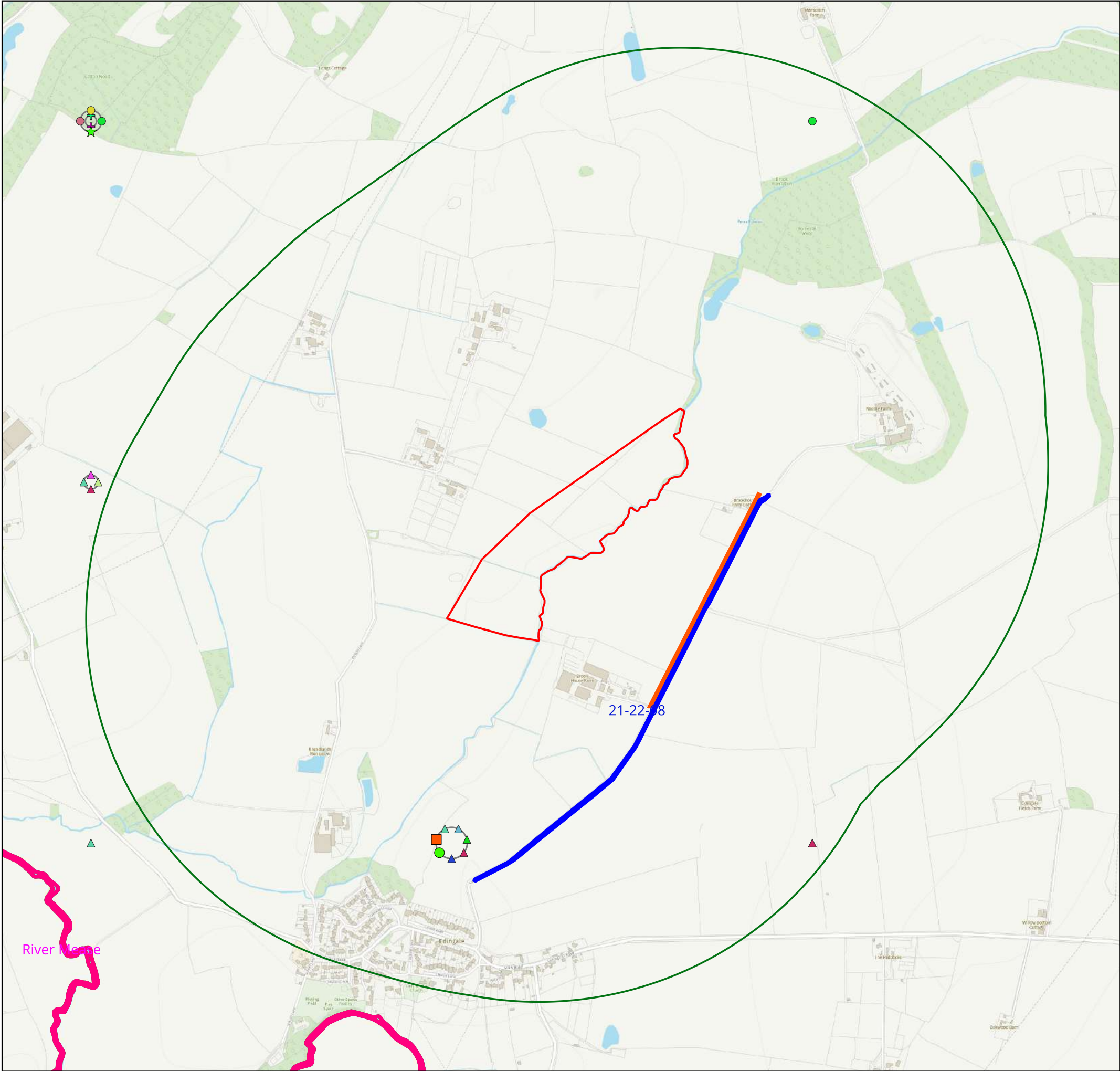
Project Name: **River Mease Catchment Area**

Client: **Trent Rivers Trust**

Figure No: **Figure 1**

Date: 23.05.2024	Title: Site Location and Consultation Plan - Site 1
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Key

- Site Boundary
- 1km Buffer Zone
- Designated sites
- Local Wildlife Sites (LWS)
- Biodiversity Alert Sites (BAS)
- Sites of Special Scientific Interest (SSSI)

Protected Species

- Bluebell
- Tawny Owl
- White-letter Hairstreak
- Wren
- Curlew
- Kingfisher
- Lapwing
- Meadow Pipit
- Skylark
- Snipe
- Swift
- Unknown Bat Species
- West European Hedgehog

Invasive Species

- Himalayan Balsam
- Rhododendron

150 0 150 300 450 600 m

Project Name: **River Mease Catchment Area**

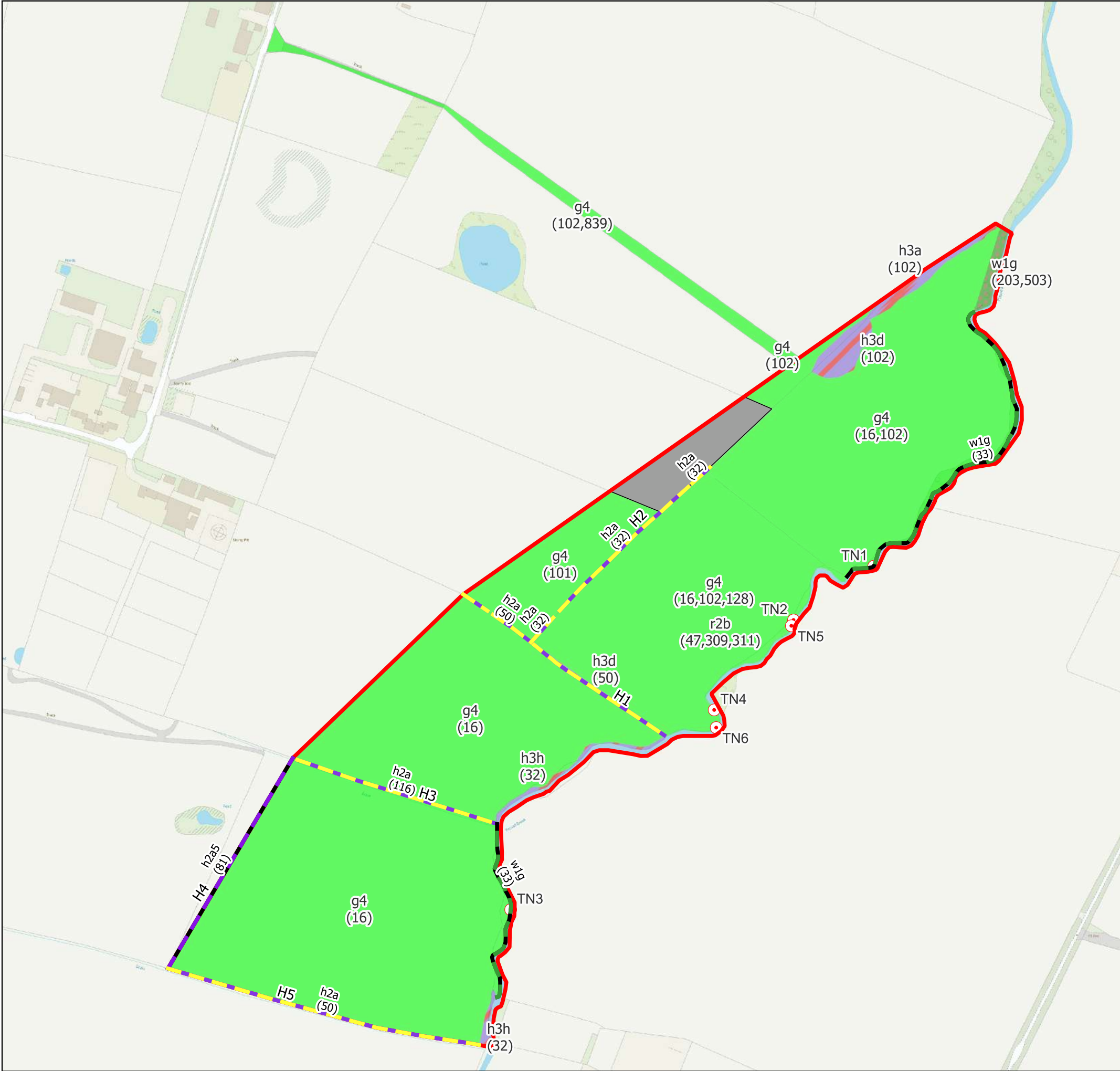
Client: **Trent Rivers Trust**

Figure No: **Figure 2**

Date: 23.05.2024

Title: Site Location and Consultation Plan - Site 2





Key

- Site Boundary
- Non-surveyed Areas
- Target Notes

Habitats

- Blackthorn scrub
- Bramble scrub
- Mixed scrub
- Modified grassland
- Other broadleaved woodland
- Other rivers and streams

Hedgerows

- Line of Trees
- Native hedgerow
- Species-rich native hedgerow

35 0 35 70 105 140 m

Project Name: **River Mease Catchment Area**

Client: **Trent Rivers Trust**

Figure No: **Figure 4**

Date: 22.05.2024	Title: UK Habitat Classification Plan - Site 2
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