

# Ecological Impact Assessment

River Mease and Tributaries, Harlaston, Staffordshire

Trent Rivers Trust

June 2021



ecology

**Important: This report includes information about protected species and therefore should not be made public without further editing.**

## QUALITY ASSURANCE

REPORT TYPE	SITE NAME	REVISION
Ecological Impact Assessment	River Mease and Tributaries, Harlaston, Staffordshire	A

CLIENT	COMMISSION DATE
Trent Rivers Trust	April 2021

	NAME	QUALIFICATIONS	POSITION	DATE
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## **A SUMMARY**

- 1 The purpose of this report is to identify and describe the presence of any protected or notable habitats or species within and in the immediate vicinity of the site and to set out the mitigation measures to ensure compliance with nature conservation legislation, where appropriate.
- 2 The surveys undertaken at the site have been commissioned to support plans to carry out habitat improvement works along the River Mease and Harlaston Brook.
- 3 This assessment has been undertaken in accordance with Guidelines for Ecological Impact Assessment in the UK and Ireland, published in September 2018 by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).
- 4 In the absence of mitigation, the following ecological receptors are considered to have potential to be subject to minor negative effects as a result of the indicative proposals:
  - Nesting birds
  - Badgers
  - Otters
  - Reptiles and Amphibians
  - Bats
  - Hedgehogs
  - Invasive Species
- 5 In the absence of mitigation measures, the proposed works would be anticipated to have, at most, adverse effects at the site and local level. However, with the implementation of some straightforward mitigation measures as proposed, most of the extent and magnitude of the significant effects are reduced or removed completely. Overall, the proposed works will result in a positive impact in the medium and long-term.
- 6 The results of this report are considered to be valid for up to two years of the date of the fieldwork: May 2021.

## B INTRODUCTION

- 1 The principal author of the following report was Elizabeth McBride BSc (Hons) MCIEEM, Consultant Ecologist.
- 2 LM Ecology was commissioned in April 2021 by Trent Rivers Trust to undertake ecological survey works at the location listed within Table 1.

**Table 1. Site Location Details**

SITE ADDRESS	GRID REFERENCE (LINEAR)
Section of the River Mease and Harlaston Brook between Harlaston and Haunton, Staffordshire	SK 2196 1137 to SK 2328 1131

### B.1 Background to Survey

- 3 The site consists of a section of the River Mease approximately 2km in length, which is located between the villages of Harlaston and Haunton, Staffordshire. Sections of Harlaston Brook (approximately 940m in total) are also included within the survey area, as is the land immediately surrounding the watercourses. This section of the river is located within an arable landscape, dotted with small villages, hedgerows, treelines and occasional small areas of woodland.
- 4 The ecological survey was commissioned to support plans to carry out habitat improvement works along the watercourses and within adjacent land. Proposed works include bank re-profiling, tree planting, gravel introduction and backwater creation to provide fish habitat, and creation of new scrapes, ponds and swales.

**Table 2. Pre-existing Information**

TYPE	ITEM TITLE / REFERENCE	PRODUCED BY	DATE PRODUCED
Plan	Mease Meadow Woods MEA016/EA2 V2	Trent Rivers Trust	25/03/2021
Plan	Harlaston Brook, Acacia Farm MEA016/EA3	Trent Rivers Trust	23/02/2021
Plan	Harlaston Brook, Acacia Farm MEA016/EA4	Trent Rivers Trust	23/02/2021
Plan	Harlaston Mill MEA16/EA5	Trent Rivers Trust	26/03/2021
Plan	MG4 Grassland MEA16/EA6	Trent Rivers Trust	26/03/2021

**B.2 Purpose of the Report**

5 Table 3 shows the purpose of the report.

**Table 3. Purpose of the Report**

<b>OBJECTIVES</b>
To identify and describe all potentially significant ecological effects associated with the proposals
To set out mitigation measures required to ensure compliance to address any potentially significant ecological effects.

**B.3 Survey Validity**

6 The results of this report are considered to be valid for up to two years of the date of the fieldwork: May 2021.

## **C LEGISLATION**

### **C.1 Legislation**

7 Legislation relating to wildlife and biodiversity of particular relevance to this EclA includes:

- The Conservation of Habitats and Species Regulations 2017 (as amended)
- The Wildlife and Countryside Act 1981 (as amended)
- The Natural Environment and Rural Communities (NERC) Act 2006
- The Protection of Badgers Act 1992

8 The above legislation has been addressed, as appropriate, in the production of this report.

### **C.2 Standing Advice**

9 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining planning applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed guidance documents, in the scoping of ecological surveys and production of this report.



## D METHODOLOGY

### D.1 Scope of the Assessment

#### D.1.1 Zone of Influence

10 The zone of influence is considered to be the area of land predicted to potentially suffer any negative ecological effect during or after the proposed works.

11 Due to the scale of the proposals, the predicted zone of influence is considered to be the site and immediate surroundings only. However, for the purposes of the data search, the potential zone of influence for more mobile species has been considered up to 2km from the site.

### D.2 Desk Study

12 Species and site information within the zone of influence was requested from the organisations included within Table 4.

**Table 4 Consulted Records Organisations**

DATE CONSULTED	ORGANISATION	RECORDS REQUESTED
April 2021	Staffordshire Ecological Record (data requested by Trent Rivers Trust)	All protected and notable species records within a 2km radius of the site
May 2021	Multi Agency Geographic Information for the Countryside (MAGIC)	Local Nature Reserves, National Nature Reserves, Ancient woodland, Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty, Special Areas of Conservation, Special Protection Areas, Important Bird Areas, National Parks or Ramsar sites within a 2km radius of the site.
		Granted EPSM Mitigation Licences within 2km radius of the site and GCN licence returns and pond surveys 2017-2019.

### D.3 Field Survey

13 Table 5 lists the surveys carried out on site and the personnel who undertook them. Summary methodologies are also provided below.

**Table 5 Survey, Dates, Type and Personnel**

DATE	SURVEY TYPE	PERSONNEL
16/04/2021	Phase 1 Habitat Survey	Elizabeth McBride BSc(Hons), MCIEEM – Consultant Ecologist (Natural England Bat Licence 2017-29301-CLS-CLS) (Natural England GCN Licence 2016-20242-CLS-CLS)
	Protected and Notable Species Risk Assessment	

DATE	SURVEY TYPE	PERSONNEL
14/05/2021	Otter and Water Vole Survey	Louisa Molloy BSc (Hons)– Consultant Ecologist (Natural England Bat Licence 2016-22694-CLS-CLS) (Natural England GCN Licence 2016-22646-CLS-CLS)

### D.3.1 Phase 1 Habitat Survey

14 The survey was carried out in accordance with the standard methodology as described in the Joint Nature Conservation Committee Phase 1 Habitat Survey handbook (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision. Target notes have been used to annotate areas of the site of ecological interest including, where applicable, the presence of invasive species.

### D.3.2 Bats – Ground-based Risk Assessment of Trees

15 Trees within the survey area were visually assessed from the ground for potential bat roosting features in accordance with the methods outlined in current guidance (Collins, J (ed.), 2016).

16 Trees were inspected for features which may be used by roosting bats including natural holes, woodpecker holes, cracks/splits in major limbs, loose bark, dense thick-stemmed ivy, hollows, cavities and bird or bat boxes.

17 When a roost is positively identified during the assessment, the tree within which the roost is identified is classed as roost present. Other trees are classed as having high, moderate, low or negligible suitability to support bats roosts based upon the number and quality of features present, and the trees position in relation to surrounding environs.

### D.3.3 Otter and Water Vole Survey

18 The banks of the river and brook were searched for evidence of otter and water vole. Otter signs include spraints and tracks, and the banks were searched for otter holts, which are frequently found amongst tree roots or holes within vegetation. Water vole signs include latrines, feeding piles, burrows and vegetation chewed on a diagonal.

### D.3.4 Protected and Notable Species Risk Assessment

19 The site was search for field signs and assessed for its suitability to support protected and notable species.

### D.4 Constraints

20 An area at Mill House, which includes sections of the River Mease and Harlaston Brook, could not be accessed due to the presence of horses in adjacent fields.

21 In some sections the banks of the river were steep or densely vegetated, so could not be fully accessed to search for signs of protected species. These sections were viewed from a nearby accessible point, using binoculars where necessary.

**D.5 Evaluation and Assessment**

22 Ecological features have been identified, evaluated and assessed with due consideration for CIEEM Guidelines for Ecological Impact Assessment (CIEEM, 2018).

## **E BASELINE ECOLOGICAL CONDITIONS**

### **E.1 Designated Sites**

23 The River Mease is a Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC). It has been designated primarily for the fish species spined loach *Cobitis taenia* and bullhead *Cottus gobio*, with additional interest being white clawed crayfish *Austropotamobius pallipes* and otter *Lutra lutra*.

24 The search of the MAGIC database did not reveal any further designated sites within a 2km radius.

25 A summary table of designated sites is included as APPENDIX A.3.

### **E.2 Habitats**

26 A description of each habitat is provided below. A Phase 1 Habitat plan of the site and site photographs are included as APPENDICES A.1 and A.2.

27 Target notes and descriptions are included on the Phase 1 Habitat plan. Where a target note relates to an important feature, the relevant number is given in the description below for ease of reference.

#### **E.2.1 River Mease**

28 The River Mease flows through the survey area from east to west. It is approximately 5 to 8m wide, with vegetated earth banks supporting occasional trees. Species along the banks include nettle *Urtica dioica*, great willowherb *Epilobium hirsutum*, lesser celandine *Ficaria verna*, hogweed *Heracleum sphondylium*, meadowsweet *Filipendula ulmaria*, patches of Himalayan balsam *Impatiens glandulifera* and small amounts of greater pond sedge *Carex riparia*. Branched bur-reed *Sparganium erectum* is frequent within the watercourse, with reed canary grass *Phalaris arundinacea* along the water's edge.

29 At Mill House the river separates into two to form a mill race. The riverbanks in this area are badly poached by livestock.

#### **E.2.2 Harlaston Brook**

30 Two sections of Harlaston Brook at Acacia Grove Farm are included in the survey area. Both sections are narrow and bounded by arable land.

31 The northern section is slow flowing and approximately 2m wide. It has steep earth banks with nettle, pendulous sedge *Carex pendula*, great willowherb, bramble *Rubus fruticosus*, hawthorn *Crataegus monogyna* and scattered trees. The water quality appears relatively poor in this section, possibly due to agricultural runoff.

32 The southern section is approximately 1m wide and relatively shallow and fast flowing. Within the water are branched bur-reed, great willowherb and brooklime *Veronica*

*beccabunga*, whilst the banks support nettle, bramble, grasses, meadowsweet, great willowherb and lesser celandine.

### **E.2.3 Ponds and Ditches**

33 The survey area includes a relatively new pond close to the river at Mease Meadow Farm. It currently has low water levels, with shallow muddy banks. There is some emergent vegetation, including small amounts of bulrush *Typha latifolia*, with reed canary grass, meadowsweet and young crack willow *Salix fragilis* trees around the edges.

34 A pond has also formed at Mill House at an old bend in the river where it splits into two. It has shallow banks which are mostly bare and badly poached, with limited vegetation within or around the pond.

35 At the western edge of the survey area at Mease Meadow Farm is a ditch approximately 1m wide and holding around 20cm of water. It is shaded by a hedgerow and trees on one side and the banks support bramble, nettle and great willowherb. There are also two ditches holding water at Knight Farm, both are almost completely shaded by scrub and trees and both appear polluted.

### **E.2.4 Unimproved Grassland**

36 Two fields at Knight Farm adjoin the river. The larger field to the west consists of abundant great burnet *Sanguisorba officinalis*, with frequent meadowsweet at the field edges and occasional common knapweed *Centaurea nigra* and common sorrel *Rumex acetosa*. Meadow foxtail *Alopecurus pratensis* is the most common grass species within the sward. This is consistent with NVC community MG4 grassland, although a more detailed botanical assessment would be required to confirm the grassland community. Species along the ditches/hedgerows and riverbank include cow parsley *Anthriscus sylvestris*, nettle, garlic mustard *Alliaria petiolata* and meadowsweet. Saplings in tree protectors have recently been planted in lines throughout the majority of the grassland.

37 A large chicken shed is located in the eastern corner of the field and an area of the grassland has been fenced off for the chickens to use. It was noticed during the May site visit that the fenced area had increased in size and the chickens had caused significant damage to the grassland.

38 The second field is narrow and roughly rectangular in shape. The section near the river supports meadow foxtail, great burnet, meadow buttercup *Ranunculus acris* and hogweed. The remaining grassland within the field has been downgraded to semi-improved grassland due to damage caused by chickens.

### **E.2.5 Semi-improved Grassland**

39 The second field at Knight Farm has previously been used for rearing chickens and the damage to the grassland is still evident, especially to the south and west of the field. The

grazed areas consist of bare ground with tussocks of grasses, frequent hogweed and creeping thistle *Cirsium arvense* with occasional great burnet.

40 The grassland adjacent to the river at Mease Meadow Farm is species poor, with rank grasses including cocksfoot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius* and patches of reed canary grass. Herbs are infrequent and mainly limited to broadleaved dock *Rumex obtusifolius* and hogweed.

41 The accessible grasslands at Mill House are heavily horse grazed and, in many places, overgrazed, leaving frequent bare ground. In other areas perennial rye-grass *Lolium perenne* is abundant, with frequent/abundant broadleaved dock, occasional nettle, cocksfoot and lesser celandine.

#### **E.2.6 Improved Grassland**

42 Between Main Road and the River Mease is a large field which is part of Acacia Grove Farm. It is dominated by grasses, with occasional cuckooflower *Cardamine pratensis*.

#### **E.2.7 Arable**

43 The two sections of Harlaston Brook at Acacia Grove Farm are surrounded by arable fields.

#### **E.2.8 Broadleaved Plantation Woodland**

44 Broadleaved plantation woodland is located to the north of the river at Mease Meadow Farm. The woodland appears to be approximately 10 to 15 years old and the trees are well spaced creating a relatively open canopy in some sections. Poplar *Populus sp.* is the single species planted in many areas and there are also small separate areas dominated by cherry *Prunus avium*, sweet chestnut *Castanea sativa*, ash *Fraxinus excelsior* and field maple *Acer campestre*. Other areas support a mix of ash, alder *Alnus glutinosa*, oak *Quercus sp.*, hawthorn and hazel *Corylus avellana*. The ground flora consists of grasses and tall ruderals. There are wide grass rides throughout the plantation.

#### **E.2.9 Recently Felled Woodland**

45 Signs of ongoing management are present within the plantation at Mease Meadow Farm, including areas of recently felled woodland, with the majority of felled trees appearing to be willow *Salix sp.*

#### **E.2.10 Broadleaved Woodland and Scattered Broadleaved Trees**

46 There are occasional individual or small groups of trees along the river and Harlaston Brook, varying in age from young to mature, with the majority consisting of crack willow, but other species include hawthorn, oak, ash and alder.

### **E.2.11 Hedgerows**

47 The site supports several hedgerows, with most dominated by hawthorn, some including mature trees such as oak and ash, and species such as blackthorn *Prunus spinosa*, field maple and rose *Rosa sp.* One of the hedgerows at Mease Meadow Farm has been partially laid.

## **E.3 Species**

### **E.3.1 Nesting Birds**

48 The data search returned a number of bird records from within a 2km radius of the site for species such as skylark *Alauda arvensis*, kingfisher *Alcedo atthis*, mallard *Anas platyrhynchos*, yellowhammer *Emberiza citrinella*, house sparrow *Passer domesticus* and song thrush *Turdus philomelos*.

49 Common species of bird were seen during the survey, including a nesting swan *Cygnus olor* on a small island in the river. The trees, scrub, hedgerows and riparian habitat provide plenty of nesting opportunities for bird species, including waterfowl.

### **E.3.2 Badger**

50 The data search returned eight badger *Meles meles* records from within a 2km radius of the site.

51 An active main badger sett is located around the ditch at the western edge of the survey area at Mease Meadow Farm (Target Note 2). A total of nine entrance holes are located on the banks and in the adjacent hedgerow. There are signs of recent digging, bedding material and a well-used path leading into the plantation. Badger paths and latrines were also noted in other locations within the survey area, but no further setts were found.

### **E.3.3 Otter**

52 The data search returned five otter records dated from 1999 to 2014. All were recorded on the River Mease close to Harlaston.

53 No evidence of otters was recorded during the survey. However, there is suitable habitat to support this species and although no holts were identified, as otters have large home ranges, it is assumed that otters pass through this section of the river and may occasionally use resting places in the bankside vegetation.

### **E.3.4 Water Vole**

54 The data search did not return any water vole *Arvicola amphibius* records from within a 2km radius of the site.

55 No evidence of water voles was recorded during the initial survey visit and a search of the riparian vegetation during the second visit also did not identify any signs of water vole

presence. There was no vegetation chewed on a diagonal, latrines, food piles or small mammal paths along the banks.

56 There is suitable water vole habitat within the survey area, including steep and well vegetated banks. However, mink *Neovison vison* are known to be present on the river and one of the landowners confirmed seeing them on his land. Potential mammal burrows in the bank were noted at SK 2309 1122 (Target Note 19) ) but could not be fully accessed for examination. Due to the lack of other water vole evidence and presence of mink, it is considered unlikely that they are water vole burrows and instead could be used by rats or mink. In conclusion, it is considered unlikely that water voles are present within the survey area and no further consideration of this species is required at this stage.

### **E.3.5 White-clawed Crayfish**

57 The data search returned one white-clawed crayfish record for the River Mease, dated to 1996.

58 No evidence of white-clawed crayfish was recorded during the survey visits.

59 White-clawed crayfish used to be present within the River Mease and are mentioned on the SSSI and SAC citations as a notable species. The River Mease Restoration Plan produced for Natural England and the Environment Agency in 2012 states that white-clawed crayfish appeared to be absent from the SSSI and a spot survey undertaken by Staffordshire Wildlife Trust in June 2011 recorded a dominant population of signal crayfish *Pacifastacus leniusculus*. Information provided by Trent Rivers Trust also confirms that signal crayfish are now present within the river system.

60 It is considered unlikely that white-clawed crayfish are present within the survey area and therefore no further consideration of this species is required at this stage.

### **E.3.6 Reptiles**

61 The data search did not return any reptile records from within a 2km radius of the site and no evidence of reptiles was recorded during the survey visits.

62 The majority of the habitat surrounding the river and brook is arable, improved grassland or heavily grazed horse fields, and therefore has low potential to support reptiles. The watercourses and their banks, plus the habitat at Mease Meadow Farm are likely to support low numbers of common reptiles, such as grass snake *Natrix natrix*.

### **E.3.7 Amphibians**

63 The data search returned a total of six great crested newt *Triturus cristatus* records all from 2008 and all located over 1km from the site. A search of the MAGIC database within 2km of the site did not identify any GCN EPSML records, GCN class survey licence return records, or ponds where GCN were recorded as present during 2017 to 2019 surveys.



64 As flowing watercourses, the River Mease and Harlaston Brook are largely unsuitable for amphibians. There are occasional ditches across the survey area, although some of these have poor water quality, along with two ponds. The pond at Mease Meadow Farm is relatively new, whilst the one at Mill House is in poor condition, with little vegetation present. There are occasional ponds within the surrounding landscape, but as the land is predominately arable many of these are isolated. Due to the above mentioned reasons and the lack of suitable terrestrial habitat around the river and brook, it is considered unlikely that great crested newts are present in the survey area and therefore no further consideration is required at this time.

65 Due to the small scale of the works there are not considered to be any impacts on amphibian populations.

### **E.3.8 Bats**

66 The data search returned a total of 21 bat records from within a 2km radius of the site, including common pipistrelle *Pipistrellus pipistrellus*, noctule *Nyctalus noctula*, brown long-eared *Plecotus auritus*, Myotis sp., Natterer's bat *Myotis nattereri* and Nathusius pipistrelle *Pipistrellus nathusii*.

67 Whilst the majority of trees within the survey area have negligible suitability to support roosting bats, occasional mature crack willow, ash and oak trees include potential roosting features such as rot holes and split bark.

68 Although the majority of the surrounding land is arable, which has limited value to bats, the river, Harlaston Brook, the hedgerows and the woodland/grassland at Mease Meadow Farm provide suitable habitat for foraging and commuting bats.

### **E.3.9 Hedgehog**

69 The data search returned six hedgehog *Erinaceus europaeus* records from within a 2km radius of the site. No evidence of hedgehog was observed during the survey.

70 The hedgerows, woodland and scrub have potential to support small numbers of nesting hedgehogs and there is potential for hedgehogs to forage within the areas of grassland and along the banks of the watercourses.

### **E.3.10 Fish**

71 The River Mease has been designated as a SSSI and SAC mainly for its populations of spined loach and bullhead. It is anticipated that fish, including these two species, are present within the River Mease and its tributaries.

### **E.3.11 Invasive Species**

72 Himalayan balsam was recorded in several locations within the survey area (Target Notes 3, 9, 10, 11, 15, 17 and 18). The seeds of this plant are spread when they enter the river

system, therefore it has potential to be present at any point along the banks of the river and Harlaston Brook.

- 73 As discussed above in section E.7, signal crayfish are known to be present within the River Mease and are therefore likely to also be present within its tributaries.

## **F IMPACT ASSESSMENT**

### **F.1 Brief Outline of Proposals**

74 The proposed works will enhance the habitats along the watercourses. Plans for the River Mease include creation of interconnected scrapes and swales in adjacent grassland, bank re-profiling, channel narrowing, gravel introduction, small scale tree planting and otter holt creation. Sections of Harlaston Brook are to be re-profiled to create a wetland shelf, which will be seeded with native wetland species.

### **F.2 Assessment of Impacts**

#### **F.2.1 Designated Sites and Habitats**

75 The proposed works will cause short-term disturbance and habitat loss to the River Mease (SSSI/SAC), Harlaston Brook and the immediate surrounding habitats. However, in the medium and long-term, the proposed works will improve the watercourses for wildlife, creating new and more diverse areas of habitat. This will result in a positive impact at district / regional level.

#### **F.2.2 Nesting Birds**

76 The proposed works will require some scrub and tree removal, plus removal of bankside vegetation. There is potential for birds, including ground nesting waterfowl, to be nesting in these habitats during the main bird breeding season i.e. March to August.

77 Under the Wildlife and Countryside Act 1981, as amended (Section 1), it is an offence to remove, damage or destroy the nest of any wild bird while that nest is in use or being built.

78 Without mitigation measures in place there is the potential for the proposed works to result in adverse impacts on nesting birds and this is considered to offer a minor negative significant impact at site level.

79 The following reasonable avoidance measures will be put in place to ensure the protection of nesting birds throughout the duration of the proposed works:

- In order to minimise the risk to nesting birds, where possible, vegetation clearance will be undertaken outside of the bird nesting season (the bird nesting season is considered to extend from March to August inclusive).
- It will be assumed that the habitats support nesting birds between 1<sup>st</sup> March and 31<sup>st</sup> August unless a recent survey has been undertaken by a suitably experienced person who has determined that nesting birds are not present.

80 With the recommended mitigation measures in place there will be no negative residual effects.

### **F.2.3 Badger**

81 A main badger sett is present within the survey area. This is located over 50m from the work areas so there will be no direct impacts on the sett. However, there is potential for the sett to be accidentally damaged by machinery, vehicles, or materials brought onto the site during the works.

82 Without mitigation measures in place this would result in a minor negative significant impact at local level. Therefore, the following reasonable avoidance measures will be put in place:

- Any contractors working near that location will be made aware of the sett;
- Large machinery is to avoid accessing the river via the woodland ride where the badger sett is located (Target Note 2).

83 With the recommended mitigation measures in place there will be no negative residual effects.

### **F.2.4 Otter**

84 The surveys did not identify any otter holts or resting places along the watercourses. However, as otters are known to be present on the River Mease and there is habitat to support them within the survey area, there is potential for them to be disturbed during the works. Without mitigation this would result in a minor negative significant impact at local level.

85 Therefore, the following reasonable avoidance measures will be put in place:

- Clearance of areas of dense vegetation and scrub to be supervised by a suitably experienced person where necessary so that habitat can be checked for presence of otter and other wildlife.

86 With the recommended mitigation measures in place there will be no negative residual effects.

### **F.2.5 Reptiles**

87 There is potential for small numbers of common species of reptiles to be present within the survey area. However, due to the lack of suitable surrounding habitat, it is anticipated that animals will be limited to the banks of the watercourses and the small scale of the proposed works means that any animals present are likely to be able to move away from the affected areas.

88 To reduce the risk of any impacts on reptiles the following reasonable avoidance measures will be put in place:

- Where necessary, vegetation clearance to be supervised by a suitably experienced person so that habitat can be checked for the presence of wildlife.

### **F.2.6 Bats**

89 The majority of trees within the survey area have been assessed as having negligible suitability to support roosting bats and the proposed works require minimal tree removal. However, without further consideration there is potential for mature tree removal to result in a minor negative significant impact at site level. There are not considered to be any negative impacts on foraging or commuting bats.

90 If any mature trees require removal they should be assessed by a suitably experienced person and the following reasonable avoidance measures put in place:

- The felling should be supervised where necessary by a suitably experienced person;
- If there is concern that bats may be present in a tree, the works should be postponed, and an ecologist contacted for advice;
- The larger trees should be felled in sections, rather than from ground level;
- If small cavities or holes are present, care should be taken not to cut directly through them;
- If bats or evidence of bats, including live or dead bats (including bats seen emerging from the trees in the daytime) or accumulations of bat droppings are recorded at any point during the works then all works will cease immediately, and an ecologist contacted for advice.

91 With the recommended mitigation measures in place there will be no negative residual effects.

### **F.2.7 Hedgehog**

92 There is a low risk of hedgehog being encountered within areas of dense scrub along the watercourses.

93 Without mitigation, there is potential for vegetation clearance to result in harm to individuals and this offers a minor negative significant impact at site level. Therefore, the following reasonable avoidance measures will be in place throughout the works:

- A suitably experienced person will be present when necessary during the vegetation clearance to check for the presence of hedgehog and other wildlife;
- In the event that hedgehogs are encountered within the site they will in the first instance be allowed to move out of the work area of their own accord. If they are reluctant to move, they will be captured and placed carefully in suitable undisturbed cover away from the work area.
- Any hedgehogs with hoglets will not be moved. Instead, works will cease in that area and a protection area around the nest will be defined, which will be checked regularly until the young have dispersed.

94 With these mitigation measures in place there will be no negative residual effects.

#### **F.2.8 Fish**

95 Fish, including spined loach and bullhead, are known to be present with the River Mease. However, due to the small scale of the works there are not considered to be any negative impacts on fish populations and therefore no mitigation is required.

96 In the medium and long-term, the works are designed to improve the habitat of the watercourses for fish and other wildlife, resulting in a positive impact at local level.

#### **F.2.9 Invasive Species**

97 Both Himalayan balsam and signal crayfish are invasive species listed on schedule 9 of the Wildlife and Countryside Act 1981 (as amended), making it an offence to cause or allow them to spread to new locations.

98 The potential spread of invasive species would result in a moderate negative significant impact at local level. However, the Trent Rivers Trust are committed to a high level of biosecurity in order to prevent the transfer of undesirable plants, disease, or animal species between sites, Therefore the proposed work will be carried out under the control of the existing Trent Rivers Trust Invasive Non-Native Species (INNS) Method Statement., which has been reviewed by LM Ecology and found to be fit for purpose.

99 With these mitigation measures in place there will be no negative residual effects.

## **G ENHANCEMENT RECOMMENDATIONS**

100 The proposed works are already enhancing the habitats within the survey area in a variety of ways. The following options should also be considered:

### **G.1 Removal of Saplings at Knight Farm**

101 The fields at Knight Farm have recently been planted with saplings. As these fields support a relatively uncommon NVC meadow community, this is considered to be an unsuitable location for tree planting and the saplings should be removed.

### **G.2 Restoration of Grassland at Knight Farm**

102 The use of the smaller field at Knight Farm as a chicken farm has resulted in significant deterioration of the grassland. Undesirable species such as hogweed and creeping thistle are abundant in the disturbed areas. Options to restore the grassland should be considered, including restoration using green hay cut from the adjacent field. This would involve harvesting the hay just as the majority of flowering plants begin to set seed and spreading it on the prepared species-poor areas.

### **G.3 Monitor Chicken Farming at Knight Farm**

103 As discussed above, the chicken farming has a significant negative impact on the quality of the grassland at Knight Farm. The drains in this area were polluted, likely from run-off from the chicken shed and it was noted during the second site visit that the fenced area for chicken grazing in the larger field had increased in size. Consider liaising with the landowner to find ways to reduce habitat damage and prevent the grazed area from increasing further in size and damaging the remaining grassland.

### **G.4 Reduce Poaching at Mill House**

104 It was noted during the survey that the watercourses at Mill House were significantly poached in places due to livestock accessing these areas. Consider liaising with the landowner to fence off some sections and therefore reduce the impact from the livestock.

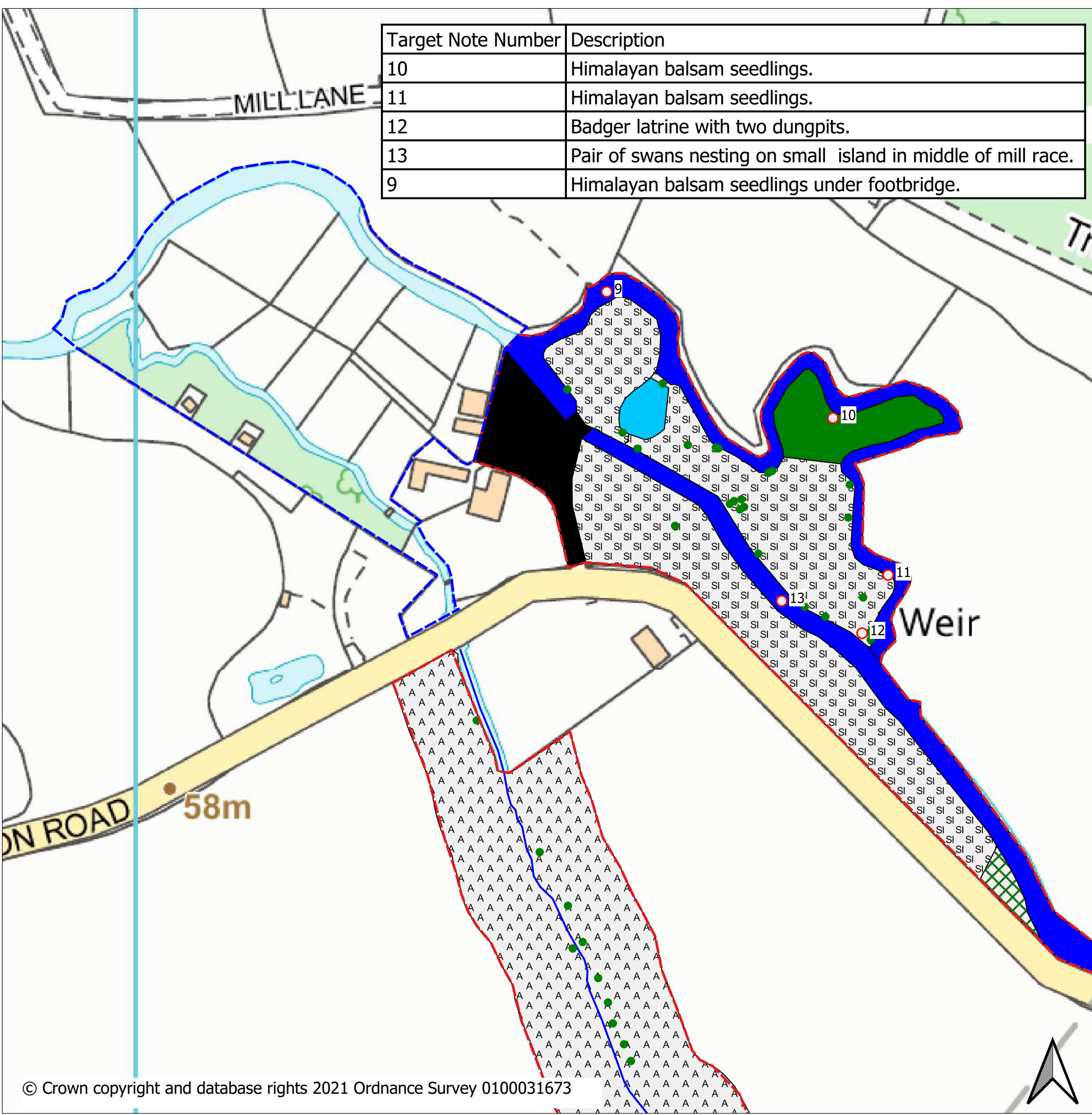
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## APPENDIX A

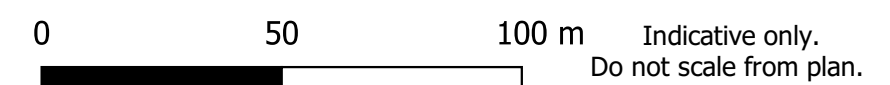
Target Note Number	Description
10	Himalayan balsam seedlings.
11	Himalayan balsam seedlings.
12	Badger latrine with two dungpits.
13	Pair of swans nesting on small island in middle of mill race.
9	Himalayan balsam seedlings under footbridge.



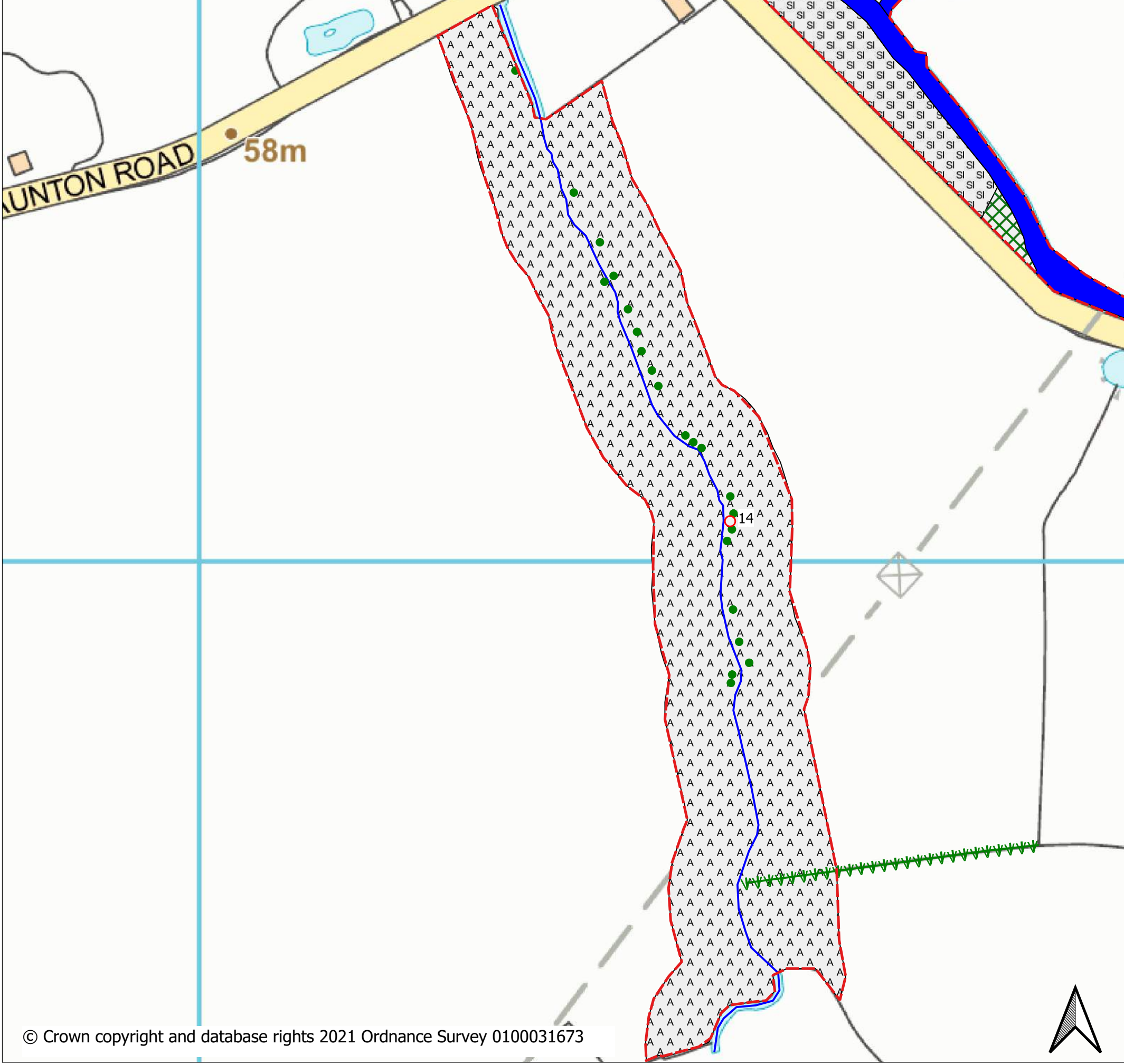
### Legend

- Survey boundary
- Not surveyed - inaccessible
- Broadleaved woodland - semi-natural
- Scrub - dense/continuous
- Poor semi-improved grassland
- Standing water
- Running water
- Cultivated/disturbed land - arable
- Buildings and hardstanding
- Scattered trees (indicative only)
- Target note and number

<b>Project</b>	River Mease and Tributaries, Harlaston, Staffordshire
<b>Title</b>	A.1 Phase 1 Habitat Plan - Mill House - 1 of 4
<b>Client</b>	Trent Rivers Trust
<b>Date</b>	June 2021
<b>Ref</b>	[LM0046a]A.1[Rev A]P1 - 1 of 4



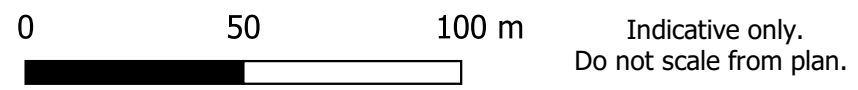
Target Note Number	Description
14	Mature crack willow. Hollow inside. Suitability for nesting birds. Low suitability for roosting bats.

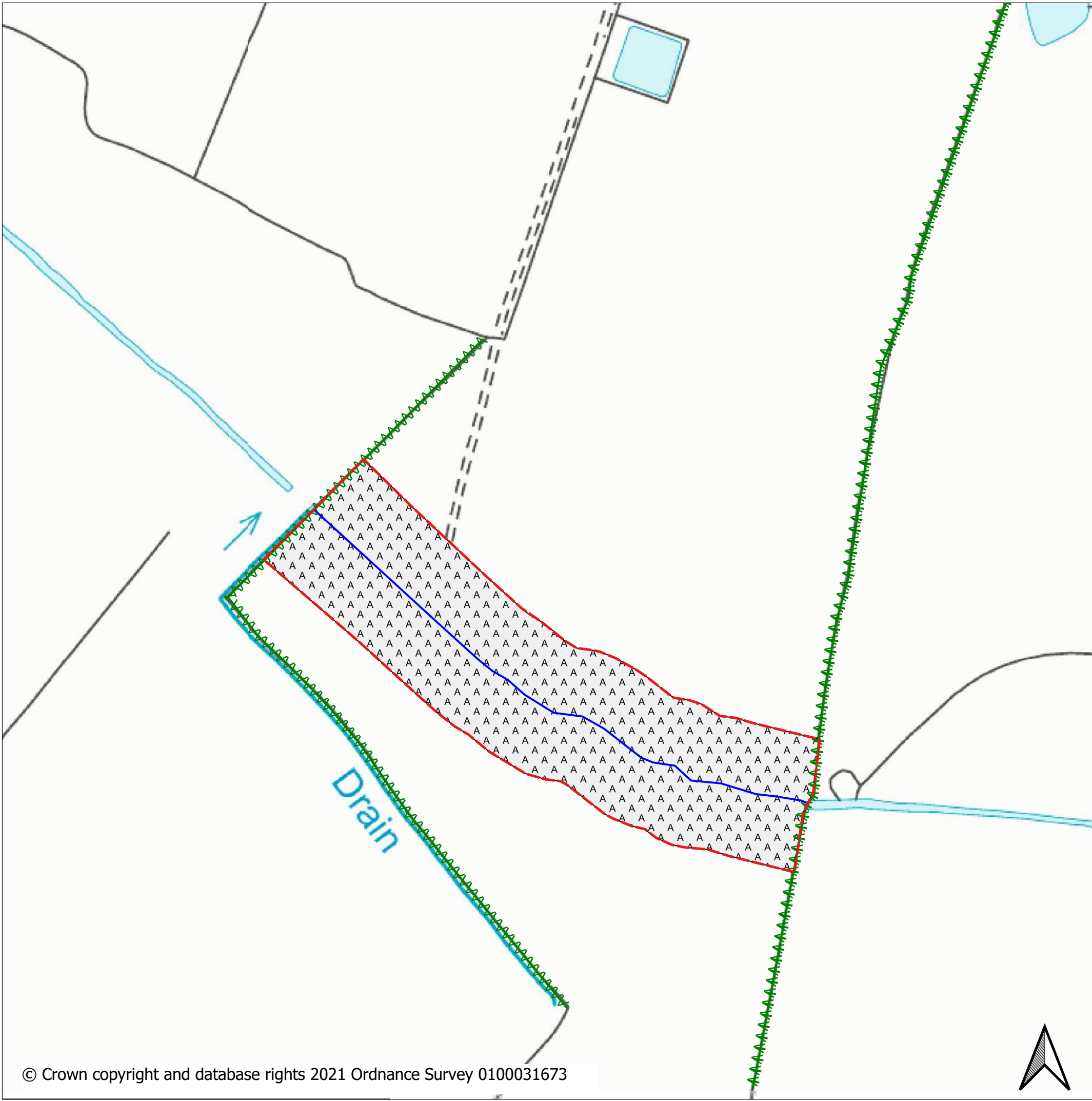


**Legend**

- Survey boundary
- Scrub - dense/continuous
- Poor semi-improved grassland
- Running water
- Cultivated/disturbed land - arable
- Hedge with trees - native species-rich
- Scattered trees (indicative only)
- Target note and number

<b>Project</b>	River Mease and Tributaries, Harlaston, Staffordshire
<b>Title</b>	A.1 Phase 1 Habitat Plan - Harlaston Brook North - 2 of 4
<b>Client</b>	Trent Rivers Trust
<b>Date</b>	June 2021
<b>Ref</b>	[LM0046a]A.1[Rev A]P1 - 2 of 4

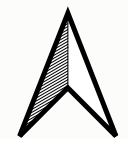
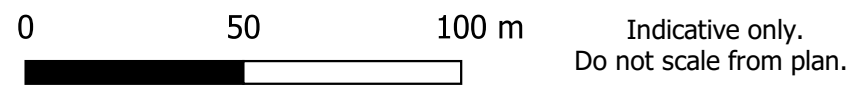




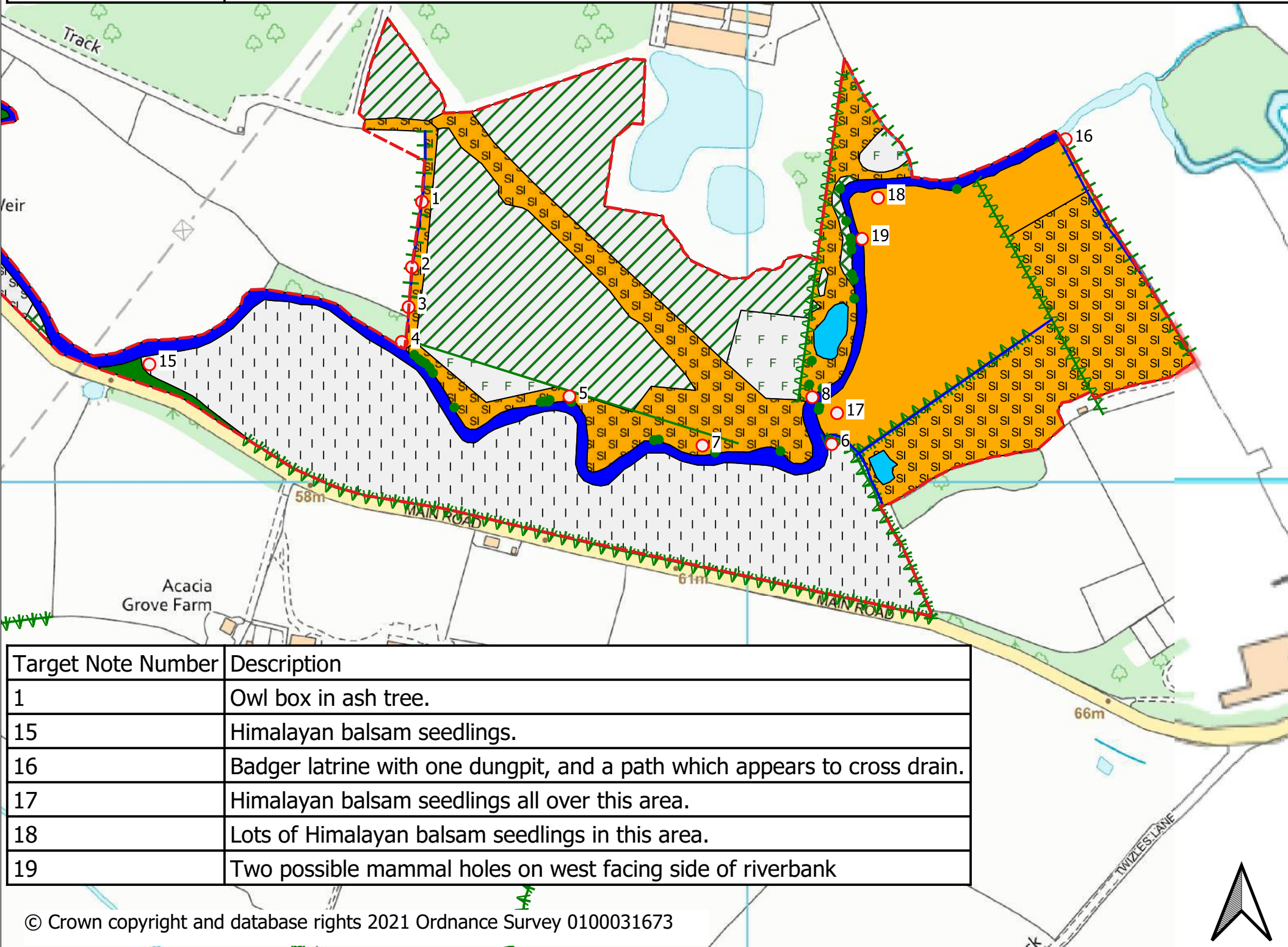
**Legend**

- Survey boundary
- Cultivated/disturbed land - arable
- Intact hedge - native species-rich
- Hedge with trees - native species-rich

<b>Project</b>	River Mease and Tributaries, Harlaston, Staffordshire
<b>Title</b>	A.1 Phase 1 Habitat Plan - Harlaston Brook South - 3 of 4
<b>Client</b>	Trent Rivers Trust
<b>Date</b>	June 2021
<b>Ref</b>	[LM0046a]A.1[Rev A]P1 - 3 of 4



Target Note Number	Description
2	Main badger sett approx. 9 holes across both sides of drain (approx. 15m along), all used. Mostly under hedgerow. Fresh grass in entrances. Well worn path going through woodland to east.
3	Himalayan balsam seedlings on bank and in body of drain.
4	Large mature crack willow. Several rot holes. Lots of dead wood. Nesting bird and roosting bat suitability.
5	Mature oak, possibly veteran. Mostly dead wood but some living branches still present. Fairly hollow. Negligible bird or bat potential as very open to elements.
6	Badger latrine with two dungpits, and a well used path that appears to use large fallen willow to cross river. Also Himalayan balsam seedlings in this section.
7	Badger latrine approx. four dungpits. Dung present but not fresh.
8	Badger latrine - one dungpit with fresh dung.

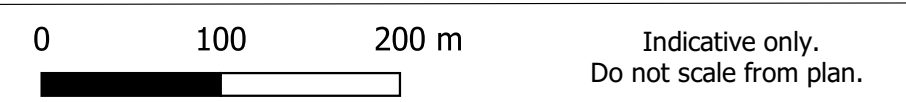


Target Note Number	Description
1	Owl box in ash tree.
15	Himalayan balsam seedlings.
16	Badger latrine with one dungpit, and a path which appears to cross drain.
17	Himalayan balsam seedlings all over this area.
18	Lots of Himalayan balsam seedlings in this area.
19	Two possible mammal holes on west facing side of riverbank

### Legend

- Survey boundary
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Scrub - dense/continuous
- Broadleaved woodland - recently felled
- Neutral grassland - unimproved
- Neutral grassland - semi-improved
- B4 - Improved grassland
- Poor semi-improved grassland
- Standing water
- Running water
- Intact hedge - native species-rich
- Intact hedge - species-poor
- Hedge with trees - native species-rich
- Hedge with trees - species-poor
- Dry ditch
- Scattered trees (indicative only)
- Target note and number

<b>Project</b>	River Mease and Tributaries, Harlaston, Staffordshire
<b>Title</b>	A.1 Phase 1 Habitat Plan -Acacia Grove, Mease Meadow and Knight Farms - 4 of 4
<b>Client</b>	Trent Rivers Trust
<b>Date</b>	June 2021
<b>Ref</b>	[LM0046a]A.1[Rev A]P1 - 4 of 4



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## A.2 Photographs

Photographs taken during the site visits in April and May 2021.



Photograph 1: Badger sett



Photograph 2: Laid hedgerow at Mease Meadow Farm



Photograph 3: Saplings planted in the unimproved grassland at Knight Farm



Photograph 4: Chicken grazing at Knight Farm



Photograph 5: Polluted drain at Knight Farm



Photograph 6: Undesirable species in the grassland at Knight Farm



Photograph 7: Poaching and overgrazing at Mill House



Photograph 8: Poaching at the pond at Mill House

### A.3 Designated Sites Search Results

A MAGIC search was conducted in order to search for the following designations within 2km of the site:

- Local Nature Reserves
- National Nature Reserves
- Areas of Outstanding Natural Beauty
- National Parks
- Ramsar Sites
- Special Areas of Conservations
- Special Protection Areas
- Sites of Special Scientific Interests
- Ancient Woodlands
- Important Bird Areas

The results of the searches are shown in Tables 1 below.

**Table 1 Results of MAGIC Designated Sites Search**

Site Name	Designation	Grid Reference (centroid)	Distance from Site (km)	Bearing	Size (ha)	Primary Reason for Designation	Additional Interest
River Mease	Site of Special Scientific Interest & Special Area of Conservation	SK 2257 1116	Site	N/A	23.03	Spined roach, bullhead	White-clawed crayfish, otter



## A.4 Records Search Results

The records within a 2km radius received from Staffordshire Local Record are summarised in Table 1 below.

**Table 1 Data Search Results.**

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	04/06/2008	SK2268009780	1.3	S
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	10/06/2008	SK2268009780	1.3	S
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	04/06/2008	SK2254009520	1.6	SSW
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	08/05/2008	SK2254009520	1.6	SSW
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	12/05/2008	SK2254009520	1.6	SSW
amphibian	<i>Triturus cristatus</i>	Great Crested Newt	Field record	22/04/2008	SK2254009520	1.6	SSW
bird	<i>Acanthis cabaret</i>	Lesser Redpoll	Field record	01/01/2011	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	29/04/2008	SK2011	2.2	WSW
bird	<i>Alauda arvensis</i>	Skylark	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	08/01/2009	SK2212	1.4	NNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Alauda arvensis</i>	Skylark	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Alauda arvensis</i>	Skylark	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Alcedo atthis</i>	Kingfisher	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Alcedo atthis</i>	Kingfisher	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Anas crecca</i>	Teal	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Anas platyrhynchos</i>	Mallard	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Anthus pratensis</i>	Meadow Pipit	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Apus apus</i>	Swift	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Apus apus</i>	Swift	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Apus apus</i>	Swift	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	26/05/2015	SK2112	1.8	WNW

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Columba oenas</i>	Stock Dove	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Columba oenas</i>	Stock Dove	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Columba oenas</i>	Stock Dove	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Columba oenas</i>	Stock Dove	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Columba oenas</i>	Stock Dove	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Cygnus olor</i>	Mute Swan	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Cygnus olor</i>	Mute Swan	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Cygnus olor</i>	Mute Swan	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Cygnus olor</i>	Mute Swan	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Cygnus olor</i>	Mute Swan	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Delichon urbicum</i>	House Martin	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Delichon urbicum</i>	House Martin	Field record	23/05/2014	SK214108	1.3	WSW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	18/05/2011	SK2012	2.5	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	24/05/2011	SK2012	2.5	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	20/07/2011	SK2012	2.5	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	04/01/2012	SK211123	2.0	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	12/10/2015	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	12/04/2016	SK2112	1.8	WNW

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Emberiza citrinella</i>	Yellowhammer	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	05/02/2012	SK211123	2.0	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Emberiza schoeniclus</i>	Reed Bunting	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Falco columbarius</i>	Merlin	Field record	24/01/2009	SK2011	2.2	WSW
bird	<i>Falco subbuteo</i>	Hobby	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Falco subbuteo</i>	Hobby	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Falco subbuteo</i>	Hobby	Field record	02/06/2001	SK215109	1.1	WSW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	10/01/2011	SK2012	2.5	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Falco tinnunculus</i>	Kestrel	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Fringilla montifringilla</i>	Brambling	Field record	28/02/2008	SK2112	1.8	WNW
bird	<i>Fringilla montifringilla</i>	Brambling	Field record	08/01/2011	SK2112	1.8	WNW
bird	<i>Larus argentatus</i>	Herring Gull	Field record	May 2013 - July 2013	SK228097	1.4	SSE

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	23/10/2012	SK2012	2.5	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	12/10/2015	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Larus fuscus</i>	Lesser Black-backed Gull	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Linaria cannabina</i>	Linnet	Field record	20/06/2011	SK2012	2.5	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Linaria cannabina</i>	Linnet	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Milvus milvus</i>	Red Kite	Field record	29/04/2016	SK2112	1.8	WNW
bird	<i>Motacilla flava</i>	Yellow Wagtail	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Motacilla flava</i>	Yellow Wagtail	Field record	11/07/2008	SK2112	1.8	WNW
bird	<i>Motacilla flava</i>	Yellow Wagtail	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Motacilla flava</i>	Yellow Wagtail	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Pandion haliaetus</i>	Osprey	Field record	27/04/2009	SK2011	2.2	WSW
bird	<i>Pandion haliaetus</i>	Osprey	Field record	28/04/2009	SK2011	2.2	WSW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	30/12/2012	SK211123	2.0	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	12/10/2015	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	23/05/2014	SK214108	1.3	WSW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	24/05/2015	SK214108	1.3	WSW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	18/02/2009	SK2212	1.4	NNW

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Passer domesticus</i>	House Sparrow	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Passer domesticus</i>	House Sparrow	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Passer domesticus</i>	House Sparrow	Field record	16/07/2009	SK2310	1.0	SSE
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	30/12/2012	SK211123	2.0	WNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	08/01/2011	SK2112	1.8	WNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Passer montanus</i>	Tree Sparrow	Field record	16/07/2009	SK2310	1.0	SSE
bird	<i>Phylloscopus trochilus</i>	Willow Warbler	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Phylloscopus trochilus</i>	Willow Warbler	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Pluvialis apricaria</i>	Golden Plover	Field record	14/01/2013	SK2012	2.5	WNW
bird	<i>Pluvialis apricaria</i>	Golden Plover	Field record	21/02/2013	SK2012	2.5	WNW
bird	<i>Poecile montanus</i>	Willow Tit	Field record	16/07/2009	SK2310	1.0	SSE
bird	<i>Prunella modularis</i>	Dunnock	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Prunella modularis</i>	Dunnock	Field record	28/02/2008	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	12/10/2015	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Prunella modularis</i>	Dunnock	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Prunella modularis</i>	Dunnock	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Prunella modularis</i>	Dunnock	Field record	16/07/2009	SK2310	1.0	SSE
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Pyrrhula pyrrhula</i>	Bullfinch	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Strix aluco</i>	Tawny Owl	Field record	02/10/2011	SK2112	1.8	WNW
bird	<i>Strix aluco</i>	Tawny Owl	Field record	14/07/2019	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	22/04/2008	SK2112	1.8	WNW

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Sturnus vulgaris</i>	Starling	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	12/10/2015	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	23/05/2014	SK214108	1.2	WSW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	24/05/2015	SK214108	1.2	WSW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Sturnus vulgaris</i>	Starling	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Sturnus vulgaris</i>	Starling	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Sturnus vulgaris</i>	Starling	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Turdus iliacus</i>	Redwing	Field record	23/12/2011	SK2012	2.5	WNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	07/01/2013	SK2012	2.5	WNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	11/02/2013	SK2012	2.5	WNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	09/04/2013	SK2012	2.5	WNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Turdus iliacus</i>	Redwing	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	29/04/2008	SK2011	2.2	WSW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	22/04/2008	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	17/06/2008	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	10/07/2015	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	23/07/2016	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	24/08/2017	SK2112	1.8	WNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	09/05/2009	SK2212	1.4	NNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	18/07/2009	SK2212	1.4	NNW
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	May 2013 - July 2013	SK228097	1.4	SSE
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Turdus philomelos</i>	Song Thrush	Field record	16/07/2009	SK2310	1.0	SSE
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	21/10/2011	SK2012	2.5	WNW
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	11/02/2013	SK2012	2.5	WNW

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	09/04/2013	SK2012	2.5	WNW
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Turdus pilaris</i>	Fieldfare	Field record	29/01/2009	SK2310	1.0	SSE
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	29/04/2008	SK2011	2.2	WSW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	24/06/2015	SK2112	1.8	WNW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	12/04/2016	SK2112	1.8	WNW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	07/01/2017	SK2112	1.8	WNW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	18/02/2009	SK2212	1.4	NNW
bird	<i>Turdus viscivorus</i>	Mistle Thrush	Field record	11/05/2009	SK2310	1.0	SSE
bird	<i>Tyto alba</i>	Barn Owl	Field record	16/12/2012	SK2010	2.2	WSW
bird	<i>Tyto alba</i>	Barn Owl	Field record	04/06/2013	SK2210	0.6	SSW
bird	<i>Tyto alba</i>	Barn Owl	Field record	04/06/2013	SK223100	1.1	SSW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	29/04/2008	SK2011	2.2	WSW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	17/06/2008	SK2011	2.2	WSW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	16/12/2010	SK2012	2.5	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	07/03/2011	SK2012	2.5	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	11/03/2011	SK2012	2.5	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	14/01/2013	SK2012	2.5	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	06/01/2008	SK2112	1.8	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	26/05/2015	SK2112	1.8	WNW
bird	<i>Vanellus vanellus</i>	Lapwing	Field record	May 2013 - July 2013	SK228097	1.3	SSE
crustacean	<i>Austropotamobius pallipes</i>	White-clawed Freshwater Crayfish	Field record	20/09/1996	SK230110	0.3	ESE
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	17/06/2000	SK2310	1.0	SSE
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	25/09/2006	SK2110	1.3	WSW
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	30/07/2004	SK2112	1.8	WNW
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	11/07/2019	SK2112	1.8	WNW
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	12/07/2019	SK2112	1.8	WNW
mammal	<i>Erinaceus europaeus</i>	West European Hedgehog	Field record	17/06/2000	SK245109	1.8	ESE
mammal	<i>Lepus europaeus</i>	Brown Hare	Field record	June 2013	SK228097	1.3	SSE
mammal	<i>Lutra lutra</i>	European Otter	Field signs	23/02/1999	SK21521114	1.1	WNW
mammal	<i>Lutra lutra</i>	European Otter	Field signs	23/02/1999	SK21561115	1.1	WNW
mammal	<i>Lutra lutra</i>	European Otter	Field record	23/02/1999	SK214112	1.2	WNW
mammal	<i>Lutra lutra</i>	European Otter	Field record	01/02/2001	SK214112	1.2	WNW
mammal	<i>Lutra lutra</i>	European Otter	Field signs	15/08/2014	SK21371161	1.4	WNW
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	2019	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	2013	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	01/01/2019	Confidential	-	-

Group	Scientific Name	Common Name	Record Type	Date	OS Grid Ref	Distance from Site – Central Point (km)	Bearing
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	June 2013	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	June 2013	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	June 2013	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	June 2013	Confidential	-	-
mammal	<i>Meles meles</i>	Eurasian Badger	Field record	24/07/1959 - 25/07/1959	Confidential	-	-
mammal - bat	<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	Field record	11/08/1993	SK21661098	1.0	WSW
mammal - bat	<i>Pipistrellus</i>	Pipistrelle Bat species	Roost	22/07/2009	SK215107	1.1	WSW
mammal - bat	<i>Myotis</i>	unidentified Myotis bat	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Nyctalus noctula</i>	Noctule Bat	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Pipistrellus nathusii</i>	Nathusius's Pipistrelle	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Pipistrellus pipistrellus sensu stricto</i>	Common Pipistrelle	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Plecotus auritus</i>	Brown Long-eared Bat	Field record	June 2013 - September 2013	SK228097	1.3	SSE
mammal - bat	<i>Myotis nattereri</i>	Natterer's Bat	Dung or other signs	26/03/1990	SK215120	1.4	WNW
mammal - bat	<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	Dung or other signs	26/03/1990	SK215120	1.4	WNW
mammal - bat	<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	Field record	20/09/1990	SK21641214	1.4	WNW
mammal - bat	<i>Plecotus auritus</i>	Brown Long-eared Bat	Dung or other signs	26/03/1990	SK215120	1.4	WNW
mammal - bat	<i>Nyctalus noctula</i>	Noctule Bat	Field record	01/07/2013	SK24081043	1.5	ESE
mammal - bat	<i>Nyctalus noctula</i>	Noctule Bat	Field record	03/07/2013	SK24081043	1.5	ESE
mammal - bat	<i>Pipistrellus pipistrellus sensu stricto</i>	Common Pipistrelle	Field record	September 2009	SK240104	1.5	ESE
mammal - bat	<i>Pipistrellus pipistrellus sensu stricto</i>	Common Pipistrelle	Field record	28/09/2009	SK24081043	1.5	ESE
mammal - bat	<i>Pipistrellus pipistrellus sensu stricto</i>	Common Pipistrelle	Field record	01/07/2013	SK24081043	1.5	ESE
mammal - bat	<i>Pipistrellus pipistrellus sensu stricto</i>	Common Pipistrelle	Field record	03/07/2013	SK24081043	1.5	ESE
mammal - bat	<i>Plecotus auritus</i>	Brown Long-eared Bat	Field record	01/07/2013	SK24081043	1.5	ESE
mammal - bat	<i>Chiroptera</i>	Bats	Field record	02/05/1990	SK2112	1.8	WNW
mammal - bat	<i>Chiroptera</i>	Bats	Field record	31/12/2012	SK212123	1.8	WNW