Preliminary Ecological Appraisal

”Owlthorpe Fields”
Sites C, D & E – Moorthorpe Way
Owlthorpe, Mosborough
Sheffield S20 6QB

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Field Investigations and Data

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Wildscapes CIC and Sheffield and Rotherham Wildlife Trust for inaccuracies in the data supplied by any other party.

Declaration of Compliance

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed within this document are our true and professional bona fide opinions.

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Contents

1 Summary

1.1 Purpose of the report

1. This report presents a Preliminary Ecological Appraisal of the site as a whole, makes recommendations for further surveys to be carried out **and provides** suggestions for ecological enhancement opportunities. The results of this PEA and of any additional surveys should be drawn together into an Ecological Impact Assessment (EcIA) and used to inform planning for the site, should development proceed.

1.2 Methodology

2. A desk study including review of data search results was carried out. A field survey mapping the site took place between 3rd and 20th July by a suitably qualified ecologist, mapping the site using the UK Habitat Classification scheme, producing a species list and assessing the site for the presence and likely use by a range of notable or protected species.

1.3 Key issues

3. The site's location within an SSSI Impact Risk Zone and its close proximity to three Local Wildlife Sites mean that any development will need close consultation with the Local Planning Authority to establish what the impacts may be, and what mitigation is required to protect them. The Local Wildlife Sites host a variety of bird, bat, invertebrate and botanical species that are locally important.

4. The main habitats on site consist mainly of young broad-leaved woodland, areas of neutral grassland, dense and scattered scrub, and scattered trees. Three Annexe 1 Priority Habitats are on site (wet woodland, hedgerow and open mosaic habitats on previously developed land) which should be protected from development where possible, or suitably mitigated for.

5. Notable invertebrate species are present in the local area, and the habitat on site supports a range of invertebrate families and would be impacted by any habitat loss. Common amphibians are considered to be present on site and should be protected from harm during any development. The site is not considered suitable for Great Crested Newt. The site is considered suitable for reptiles and if reptiles are present, they would be impacted by any development.

6. The site is likely to hold local or regional value for birds, with 13 notable species recorded on site, and a total of 38 notable species recorded in the local area. The site offers good nesting and foraging habitat for a range of species due to the mix of grassland, scrub and trees; hole-nesting species are less well supported, due to the lack of natural nest hole availability. Removal of onsite habitat would have a negative impact on the bird population in the area.

7. The site is considered to offer moderate suitability for foraging and commuting bats. Roosts are unlikely to be present over much of the arable reversion area due to the lack of suitable features, but could be present in areas of denser/older woodland. The site is an important connecting link between the three surrounding Local Wildlife Sites, and habitat removal may significantly impact on bat foraging and commuting routes.

8. It is likely that badgers are active in wider area and the habitats on site offer value for foraging and commuting badgers at a local scale.

9. Hedgehog are considered likely to use the site for foraging and commuting, and may also nest in the dense areas of scrub.

10. The site is considered suitable for brown hare; development is likely to lead to habitat loss.

1.4 Conclusions

11. The large areas of neutral grassland have the potential to be enhanced to improve their species diversity. Locally scarce common spotted orchids are present and should be protected from development, or

translocated. Ash dieback appears to be present on site, which may change the nature of some sections of young woodland, and present an opportunity for fallen and standing deadwood resource. Although the plant assemblage indicates the water table is close to the surface, there is no standing water present, and the site could be enhanced by the installation of ponds.

12. The hedgerow(s) on Site E should be surveyed using the Hedgerow Regulations 2017 to establish if they are classed as 'important'.
13. A fungi survey is recommended in the autumn, to establish whether there are any notable grassland fungi present.
14. An invertebrate survey should be carried out to provide information to support habitat enhancement and any mitigation necessary from development.
15. A presence/absence survey for reptiles should be carried out and the results used to inform any development plans.
16. A breeding bird survey should be carried out to identify key species utilising the site and the results incorporated into any development plans. Various enhancements, such as the provision of bird boxes, are feasible.
17. A bat survey should be carried out to identify the key species using the site. Areas of denser/older woodland not accessed during the PEA survey should be assessed for the potential presence of bat roost features followed by nocturnal presence/absence surveying. Enhancements such as the provision of bat boxes are feasible.
18. A badger survey would need to be carried out several months before the start of any clearance or development works, to identify if any new setts have been dug and to identify key commuting routes. Information gained from the survey should be used to inform development plans and to liaise with Natural England in the case of any impacts on active setts.
19. Hedgehog are likely to be present on site and would be impacted by habitat clearance or the blocking of commuting routes. Any development plans should be designed to incorporate areas of habitat to support these species, and commuting routes through any built up areas.
20. Brown hare may use the site as part of a larger habitat mosaic, and may be impacted by habitat clearance or the blocking of commuting routes. Any development plans should be designed to incorporate areas of habitat to support these species, and commuting routes through any built up areas.

2 Introduction

21. The survey and report were carried out and written by Julie Riley, BA MA DipRSA ACIEEM, who holds a BSBI Field Identification Skills Certificate at Level 4 and a Certificate in Biological Recording and Species Identification from Manchester Metropolitan University.

22. The report was commissioned by Owlthorpe Action Group. As Owlthorpe Action Group are not the landowners, permission to carry out surveys was received from Cllr Bob McCann.

23. The site is variously known as "Owlthorpe Fields" or as "Sites C, D and E – Moorthorpe Way". For the purposes of this report, the site has been referred to as Owlthorpe Fields. In the text "the site" refers to the entire site; where a subsection of the site is being considered it is referred to as Site C, D or E. The central grid reference for the site is SK417826.

24. A location map is shown in Appendix A.

25. The site is an arable reversion site, having been farmland adjacent to Moorhole Collieries since at least the 1900s, with farming appearing to cease around 1999-2002 when the road network was built across the site [Google Earth historical imagery], separating Sites C and D. Site E is separated from the other areas by Moorthorpe Rise to the southeast, and a tarmacked cycle track to the northeast.

26. Sheffield City Council's sale information states that Site C measures approx. 2.6 hectares; Site D measures approx. 1.9 hectares; and Site E measures approx. 3.35 hectares – approx. 7.85 hectares in total. These figures differ slightly from site size as measured on QGIS during habitat mapping.

27. The immediately surrounding land is a mixture of woodland and grassland, including three Local Wildlife Sites (Owlthorpe LWS, Ochre Dike LWS and Westfield Plantation LWS). Residential housing lies to the north, east and south of the site, with a patchwork of arable fields to the west, south and east.

28. There is a similar range of habitats present across all three areas, with some minor differences. Large areas of neutral grassland are present, often with species tolerant of wet conditions and occasionally with acid characteristics. Where ground was disturbed for road building, there is more diverse grassland present, and some modified grassland along paths. There is frequent scattered scrub and young trees, copses of young woodland and small areas of more mature woodland and wet woodland.

29. Other than some mowing along the road verges, the site appears to be largely unmanaged, probably since the early 2000s (Google Earth), although Site C went into a Higher Level Stewardship scheme in 2013 (Magic). It is a popular location for dog walkers, cyclists and ramblers. There is some litter present, particularly around the access points.

30. As the land has been put up for sale for development, Owlthorpe Action Group commissioned this Preliminary Ecological Appraisal in order to establish a current ecological baseline for the site as a whole, making a preliminary assessment of the habitats and species of interest present. This report includes a preliminary assessment of the likely ecological receptors present on site, and will, if possible with the current information, provide advice on ways to avoid, minimise or mitigate potential effects of any development on these receptors.

31. Further information is required to produce an Ecological Impact Assessment for any outline proposals; as such recommendations for further surveys have been made where appropriate. A Biodiversity Net Gain

baseline calculation is also provided. However, further information would be required to confirm if the biodiversity value recorded on site can be maintained following any development.

3 Planning policy and legislation

32. This legal information is a summary and intended for general guidance only. It is recommended that the original documentation is referred to for detailed and definitive information.

3.1 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2020

33. The Conservation of Habitats and Species Regulations 2017 (as amended) transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is absent at the time). This has recently been amended by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2020 which continue the same provision for European protected species, licensing requirements, and protected areas after the United Kingdom's exit from the European Union.

3.2 Wildlife & Countryside Act 1981

34. The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006 (which also places a duty on authorities to have due regard for biodiversity and nature conservation) consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act.

3.3 Section 41 Habitats and Species (NERC Act 2006)

35. Section 41 (S41) of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40.

3.4 The Protection of Badgers Act 1992

36. This Act was introduced to combat the threats posed to badgers from illegal activities such as badger digging/badger baiting, and sets out a list of offences.

3.5 National Planning Policy Framework

37. The National Planning Policy Framework (NPPF) outlines government planning policies and how they should be applied to local authorities (Ministry of Housing, Communities & Local Government, 2019). The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed overusing land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF has three overarching objectives :

38. An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure

39. A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being

40. An environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy

41. It also states that to conserve and enhance the natural environment planning policies and decisions should contribute to and enhance the natural and local environment by:

    - Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)
    - Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland
    - Maintaining the character of the undeveloped coast, while improving public access to it where appropriate
    - Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures
    - Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans
    - Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate

3.6 Local Planning Policy

42. The Sheffield Local Plan has a number of policies associated with conservation and biodiversity, including but not limited to GE11: Nature Conservation and Development; GE13: Areas of Natural History Interest and Local Nature Sites; and GE15: Trees and Woodland. These policies guide decision making around development where it is likely to impact on the natural environment and local wildlife sites.

43. Sheffield also has a Grasslands Habitat Action Plan (HAP), which includes targets for maintaining and increasing the amount of good quality grassland habitat in the city. Owlthorpe Local Wildlife Site (immediately west of Owlthorpe Fields) is targeted for improvement/enhancement under this plan.

44. Sheffield's Unitary Development Plan Map 7 shows the area of Owlthorpe Fields largely designated for proposed housing, surrounded by open space areas. The Sheffield Development Framework Core Strategy key diagram shows that part of the Strategic Green Network runs parallel to the site, directly to the south.

3.7 Biodiversity Net Gain

45. DEFRAs 25 Year Environment Plan (2018) seeks to embed a 'net environmental gain' principle for development to deliver environmental improvements locally and nationally. Current policy is that the

planning system should provide biodiversity net gains where possible, however this is moving towards a mandatory requirement Defra has developed a metric based on evaluating each individual habitat's value. While the Defra metric is still under development and subject to future review, a 'beta test' Biodiversity Metric 2.0 (Natural England, 2019 as amended August 2020) is available for use. The calculator is in excel format and is used to measure the biodiversity value of habitats and hedgerows within an application site before and after development, therefore calculating the expected biodiversity net loss or gain.

46. The development site is mapped and divided into existing habitat criteria. Habitats are defined under UK Habitat Classification with further information providing habitat area, distinctiveness and condition, which are used to calculate the value of each habitat. Linear habitats require different treatments, measuring lengths rather than areas. Therefore, in accordance with the guidance hedgerows are considered separately.

47. A baseline biodiversity value for the three sites making up Owlthorpe Fields has been provided.

4 Methodology

4.1 Desk study

1 Ecological record information for the site and surrounding area (up to two kilometres) was requested from the organisations included within Table 4-1.

Table 4-1. Consulted Records Organisation

DATE CONSULTED	ORGANISATION	RECORDS REQUESTED
27/07/2020	Sheffield City Council Biological Records Centre	All protected and notable species within 1.5km of the site centroid
27/07/2020 & 21/09/2020	Sheffield & Rotherham Wildlife Trust 'Nature Counts' database	All records within 1.5km of the site centroid
05/08/2020	South Yorkshire Bat Group	All bat records within 2km of the site centroid
23/09/2020	Multi-Agency Geographic Information for the Countryside (MAGIC)	All relevant habitat and species layers checked within 1km of site centroid

4.1.1 Designated wildlife sites

48. Information regarding designated wildlife sites within the local area was requested from the organisations within Table 4-2

Table 4-2. Organisations consulted with regard to designated wildlife sites

DATE CONSULTED	ORGANISATION	RECORDS REQUESTED
23/09/2020	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 or Ramsar sites within a 2km radius of the site, and other relevant layers
27/07/2020	Sheffield City Council Biological Records Centre	Non-Statutory Sites Search

49. In additional to above online mapping sources including Google Earth and Grid Reference Finder were used to view both satellite imagery and maps of the site and surrounding land.

4.2 Field survey

4.2.1 Habitats – UK Habitat Classification habitat survey

50. The survey was carried out in accordance with the UK Habitat Classification scheme (2018) survey methodology. UKHab is a comprehensive classification system for the UK, designed around vegetation types and classified into five hierarchical levels. For this survey, the UK Habitat Classification – Professional Level scheme (Version 1-0) was used. A comprehensive botanical species list was collected on site and dominant habitats identified and mapped in the field.

51. The information collected during the survey was then approximately digitally mapped using a combination of field maps, GPS waypoints, satellite images and QGIS software Version 3.4.14 , and can be found on the UKHab survey maps in Appendix B.

52. Habitats have been mapped using primary coding (habitat types) and separated into alphanumeric subsections based on secondary coding (additional information).

53. The Minimum Mapping Unit (MMU) used was the fine scale of 25m^2, 5m length.

4.2.2 Invasive flora - Controlled and invasive species assessment

54. The site was assessed during the UKHab survey for the presence of invasive non-native species including Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera*, giant hogweed *Heracleum mantegazzianum* and Australian swamp stonecrop *Crassula helmsii*. Other potentially invasive species were also noted if appropriate.

55. An active search for these species was not undertaken, however, if observed on the site they were recorded using a GPS.

4.2.3 Bats - Ground based risk assessment

56. Where accessible, mature trees within and immediately adjacent to the boundary of the site were visually assessed for potential bat roosting opportunities from ground level.

57. Each tree was 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 birds or bat boxes. Signs indicating use of tree features by roosting bats include scratches and/or staining around entry points, bat droppings in/around/below entrance, audible squeaking at dusk or in warm weather, flies around entry points, the distinctive smell of bats and the smoothing of surfaces around cavities.

58. When a roost is positively identified during the inspection the tree within which the roost is located is classified within the category Roost Present. Other trees are classified as having High, Moderate, Low or Negligible potential to contain bat roosts based upon the number and quality of features present, and the trees position in relation to the surrounding environs.

59. Table 1 (Section 10) gives the features considered when attributing a potential classification to a tree.

4.2.4 Great Crested Newts – Aquatic habitat suitability index assessment

60. The OS map identified no waterbodies within the boundary of the site, and six waterbodies within a 250m buffer zone of the boundary of the site (W1, W2, W3, W4, W5 and W6) on the site-side of any major barriers to dispersal. Major barriers to dispersal present include Donetsk Way to the north of the site, and the areas of housing to the north, northeast and south of the site; waterbodies within these areas were discounted from the HSI assessment.

61. Each waterbody was visited on 20th July 2020 with the intention of carrying out the standard Habitat Suitability Index (HSI) assessment methodology provided by the National Amphibian and Reptile Recording Scheme (Oldham et al., 2000).

62. The HSI assessment uses ten key habitat criteria and is based in the assumption that habitat quality can be used as a tool to determine whether a pond is likely to contain great crested newts and the likely population size. The criteria are as follows:

- SI1 = geographic location
- SI2 = pond area
- SI3 = pond permanence
- SI4 = water quality
- SI5 = pond shading

- SI6 = number of waterfowl
- SI7 = occurrence of fish
- SI8 = pond density
- SI9 = proportion of 'newt friendly' habitat
- SI10 = macrophyte (aquatic plant) content

63. Of these, SI2, SI3, SI5, SI6, SI8, SI9 and SI10 are assessed using objective measures, whilst SI1, SI4 and SI7 are assessment quality.

64. The HSI is derived using the following equation:

HSI = (SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10) 1/10

65. The results of the HSI calculation would be compared to categorised HSI scores used by the National Amphibian and Reptile Recording Scheme and developed by Oldham et al.,2000 to identify the probability of a pond to support great crested newts. The five categories are summarised in Table 10-2.

66. However, as noted on the map in Appendix C, none of the waterbodies were holding sufficient water, or had enough aquatic vegetation present, to be considered generally suitable for Great Crested Newt. Therefore a full HSI assessment was not considered necessary.

4.2.5 Reptiles – habitat suitability

67. Suitability of the habitats on site for reptiles was assessed, following the NARRS Reptile Habitat guide. This includes assessing the presence of variable vegetation structure with a mixture of vegetation heights, tangled or thorny areas, mosaics, bare patches, lots of edges ('ecotones') and good basking places. The number of sunny, sheltered locations that are unshaded and south-facing was assessed. The topography of the site and the connectivity around the site were also considered.

4.2.6 Badgers – tracks and signs

68. Suitable habitats were searched for evidence of badgers including setts, snuffle holes, runs and presence of hair on push-throughs under fences or scrub. Where access permitted, searches were extended to look for evidence of badger (including setts) within 30m of the full site boundary.

4.2.7 Birds – habitat suitability survey

69. Suitable habitats on site were checked for evidence of breeding, which includes the presence of singing adult males, occupied nests and adult birds alarm calling around probable nest sites. The survey took place towards the end of the breeding season so the presence of juvenile birds was also noted.

4.2.8 Other protected species assessment

70. Any incidental records of other notable mammal, amphibian, invertebrate or other species, observed when conducting other surveys and assessments across the site, were recorded. Habitats to support such species were also assessed.

4.2.9 Survey timing and weather conditions

71. Each survey took place in daylight hours with good visibility. Weather conditions were as follows:

Date	Average Temperature	Cloud cover	Wind/Rain
03/07/2020	14°C	70%	Dry, windy
14/07/2020	16°C	90%	Dry, windy
20/07/2020	15°C	90%	Dry, breezy

4.2.10 Limitations and restrictions

72. Some areas of woodland were dense and overgrown with bramble, and therefore not fully accessed. Where possible binoculars were used to see into inaccessible areas.

73. The survey took place towards the end of the optimal botanical survey season, so spring-flowering woodland and grassland plants were not recorded, unless dead material was found and could be identified.

74. The survey took place towards the end of the bird breeding season, so the likelihood of hearing singing males was reduced.

75. On each survey date the wind was strong enough to reduce the likelihood of seeing/hearing birds and some invertebrates.

76. The optimum time for reptile surveying is during April, May and September; the survey took place outside of these times, meaning a reduced likelihood of incidental sightings.

5 Baseline ecological conditions

5.1 Designated sites

77. The magic.defra.gov.uk website was checked and there are no statutory designated sites located within 2km of the site. The site is located in a SSSI Impact Risk Zone.

78. Non-statutory designated sites are located as follows:

Table 5-1: Non Statutory Designated Sites

NAME	DISTANCE FROM SITE	COMMENT
Owlthorpe Local Wildlife Site (266)	Immediately adjacent to west of Site E	Contains semi-natural woodland, bracken, other tall herbs, improved grassland, scrub and ancient/species rich hedgerows. A number of locally important/notable plants are present, along with an extensive assemblage of invertebrates. Both locally and nationally important bird species have been recorded on site. Bats have been recorded on site.
Westfield Plantation (273)	Immediately adjacent to south of Site C	Contains woodland including notable plant species (ancient woodland indicators). Locally and nationally important bird species have been recorded on site.
Ochre Dike (296)	This narrow LWS runs along the north boundary of Sites E and D, and links to Owlthorpe LWS.	The LWS continues to the east, the entire LWS is listed for its woodland, grassland, wetland and notable BAP species. There are a number of veteran trees in the portion that runs along the site boundary.

79. According to Magic, the site is located within an area recorded by the Priority Habitat Inventory as “No main habitat but additional habitat exists – lowland meadows and pastures”. The Priority Habitat Inventory also records Deciduous Woodland habitat to the north of Site E.

80. Site C is noted as being within a Higher Level Stewardship scheme administered by Sheffield City Council, with a start date of 2013. The finish date of the HLS scheme is not known.

81. Magic shows the site is within an area where lapwing and grey partridge records have been mapped, and is also within an area identified by Natural England as a priority area for Countryside Stewardship measures addressing lapwing habitat issues. The Forestry Commission spatial dataset identifies the surrounding areas as targeted for willow tit woodland habitat creation.

5.2 Habitats

82. Across the site there are large areas of neutral grassland, with ground flora such as rushes indicating prolonged periods of waterlogged soils, and occasionally presenting acidic characteristics. The grassland is tall and tussocky in places, and the ground underfoot is consistent with having been ploughed in the past, with previous ploughlines visible in many areas. There are many areas where stands of tall ruderals dominate the grassland. Around the edges of the road network to the east where the ground was disturbed for road construction, there are banks up to the fields which have a different character, with mosses and bare ground and shorter, more diverse grassland that fits the ‘open mosaic on previously developed land’ habitat most closely. There is some modified grassland present along tracks and pavement edges.

83. The grassland has frequent scattered scrub and young trees present, along with some young-mature trees, most often willow Salix species. There are many areas of dense scrub, generally dominated by bramble *Rubus fruticosus agg.* with occasional stands dominated by hawthorn. Most species are native but there are also species derived from gardens, notably domestic apples Malus domestica, pears *Pyrus* sp., horse chestnut *Aesculus castaneum*, patches of garden honeysuckle cultivars *Lonicera* sp. and various other shrubs and trees.

84. In many areas across the site, there are patches of mostly young-mature trees, most frequently willow, which have grown sufficiently close together to form areas of closed canopy. Many of these are goat willow *Salix caprea*, grey willow *Salix cinerea* and hybrid willows. These have been mapped as woodland. Although the presence of willow and alder suggests wet woodland, there is no standing water present and the typical wet woodland ground flora is also lacking, so the majority of this woodland has been mapped as lowland mixed deciduous woodland. There is one 0.07Ha area that has been mapped as wet woodland in Site E, and there are also areas of more mature mixed woodland (Sites C and E), some alder *Alnus glutinosa* woodland (Site E) and a 0.21Ha area of dense young ash *Fraxinus excelsior* woodland (Site C). Ash trees across the site are showing signs of ash dieback disease, and there are several dead ash trees.

85. Full species lists for each habitat are available in Appendix D.

86. Each habitat is described in detail in the sections below. An estimation of area and condition is presented using the DEFRA Biodiversity Metric 2.0 guidelines. A separate baseline calculation of Biodiversity Units is presented in Appendix E.

87. UKHab primary codes are given in each section below. The secondary codes used are as follows:

Table 5-2: UKHab Secondary Codes

CODE	DEFINITION
10	Scattered scrub – patches below 0.04ha with an overall cover of <90%
11	Scattered trees – non-woodland habitats that include trees growing at low density, with canopy cover <20%
16	Tall herb – tall perennial or biennial dicotyledons e.g. rosebay willowherb, common nettle
34	Arable reversion grassland
36	Plantation
38	Secondary woodland – woodlands that have regrown on abandoned or neglected ground
47	Native
48	Non-native
57	Young trees – self-set – tree seedlings/saplings of natural regeneration origin
64	Mown
77	Neglected – not actively managed
78	Abandoned – likely to have been unmanaged for at least 10 years
118	Mesic – water table 40-100cm of the surface, may dry out during the mid-summer
140	Anthills
148	Flower forage abundant – wildflower rich brownfields/open habitats providing important forage for invertebrates
161	Tall or tussocky sward – tall swards providing nectar, pollen, foodplants, seeds, dead seed heads and prey items for invertebrates and certain bird species

5.2.1 w1f7 – Other Lowland Mixed Deciduous Woodland

Coded as A1 on the map

88. UKHab Definition: Vegetation dominated by trees that are more than 5m high when mature, which form a distinct, although sometimes open canopy with a canopy cover of greater than 25%... Woodland growing at

relatively low altitudes on a wide range of soils, that does not fit into other defined Priority Habitat categories. Likely to include woodland that is self-sown and/or recently established in either rural or urban situations.

89. This woodland habitat occurs across all three sites. Smaller patches are generally dominated by a variety of similar-aged young to young-mature willow *Salix* species, essentially copses of often multi-stemmed trees where the understorey is either absent or comprised predominantly of bramble. Some woodland areas to the northeast of Site C and the north and southwest of Site E have more species variety, with ash, sycamore *Acer pseudoplatanus*, alder (in Site E) and sessile oak *Quercus petraea* becoming more common; these woodlands are crowded with similar-aged young to young-mature trees and dense bramble that make the habitat difficult to access. A small number of other tree and shrub species are also present, particularly in the woodland to the southwest of Site E which may be derived from an overgrown hedgerow.

Full UKHab-P coding: w1f7 38 78 118

Site C: 0.95Ha, condition moderate
Site D: 0.16Ha, condition moderate
Site E: 0.58Ha, condition moderate

5.2.2 w1f7 – Other Lowland Mixed Deciduous Woodland [ash dominated]

Coded as A2 on the map

90. This area of woodland occurs to the south of Site C and has been separated out from other w1f7 woodland because it has slightly different secondary coding. It is dominated by young, crowded ash trees, many of which could be classed as saplings. There are signs that the ash has been affected by ash dieback disease. There are also occasional silver birch *Betula pendula* present and the understorey is mostly bramble, with locally frequent areas of ivy *Hedera helix*. Herbs and grasses are sparse, but a common spotted orchid was noted (Target Note 1) and remnants of bluebell *Hyacinthoides sp.* were present.

Full UKHab-P coding: w1f7 38 57 78

Site C: 0.21Ha, condition moderate

5.2.3 w1f7 – Other Lowland Mixed Deciduous Woodland [alder dominated]

Coded as A3 on the map

91. This area of woodland is located at the western edge of Site E and has been separated out from other w1f7 woodland as it is comprised of abundant alder with occasional oak. This is an older section of woodland where the trees are of mixed ages, with bare ground, bramble and ivy forming the understorey. The dominance of alder indicates that the water table is close to the surface, as it generally thrives in moist ground. This area was not fully accessed so it is possible that parts of it could qualify as wet woodland, although the necessary characteristics were not visible from the path.

Full UKHab-P coding: w1f7 38 78 118

Site E: 0.32Ha, condition moderate

5.2.4 w1d – Wet Woodland – Annexe I Priority Habitat

Coded as A4 on the map

92. UKHab Definition: Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, Scots pine *Pinus sylvestris* and beech *Fagus sylvatica* on the drier riparian areas. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, in peaty hollows, along lake edges and fen marsh

margins…the boundaries with dryland woodland may be sharp or gradual and may change with time through succession, depending on the hydrological conditions and the treatment of the wood and its surrounding land. Therefore wet woods frequently occur in mosaic with other woodland key habitat types.

93. The majority of woodland on the site, although dominated by willow and alder, does not meet the criteria for wet woodland due to a lack of hydrophytic ground flora, although it undoubtedly has wet characteristics. In Site E there is a small area of alder and willow woodland that has extensive glaucous sedge and compact rush as the ground flora, this fits most closely to the w1d habitat.

Full UKHab-P coding: w1d 38 78 118

Site E: 0.07Ha, condition moderate

5.2.5 w1g6 – Line of Trees

Coded as A5 on the map. Coded as a polygon, rather than as a line, as it meets the MMU.

94. UKHab Definition: A line of trees at least 20 metres in length with open habitat on each side.

95. This is a line of young silver birch trees planted alongside the cycle path at the west edge of Site D. The line measures c.21 metres in length.

Full UKHab-P coding: w1g6 36

Site D: 0.01Ha, condition moderate

5.2.6 h3 – Dense Scrub

Coded as B1 to B6 on the map, depending on more detailed category.

96. UKHab Definition: Patches of shrubs less than 5 metres tall with continuous (>90%) cover. Includes patches with occasional trees more than 5 metres tall, and tree species less than 5m tall. Further subdivided into:

    h3d – Bramble Scrub. *Dense scrub with dominant bramble.* Mapped as B1.

    h3f – Hawthorn Scrub. *Dense scrub with dominant hawthorn.* Mapped as B2.

    h3h – Mixed Scrub. *Dense scrub comprising a mixture of species without a single species dominant.* Mapped as B3, B5 and B6.

97. There are multiple areas of dense scrub across the site, the majority of which are bramble scrub, with much less frequent areas of hawthorn scrub, both of which tend towards single-age, impenetrable stands.

98. There are three different types of mixed scrub present: map code B3 represents areas where there is a dense tangle of one or two varieties of garden honeysuckle *Lonicera sp..* Map codes B5 and B6 represent areas in Site E, particularly at the southwest edge, where there is dense scrub made up of a combination of bramble, hawthorn, hazel *Corylus avellana,* dogwood *Cornus sanguinea* and elder *Sambucus nigra*, along with scattered tree species in B6. It is likely that the scrub at the southwest edge is derived from previously existing hedgerows. At Target Note 4, there are some large grown out hawthorn which could be part of a remnant hedge.

Full UKHab-P coding:

BI = h3d
B2 = h3f
B3 = h3h 48
B5 = h3h

B6 = h3h 11 16

	SITE C		SITE D		SITE E		Total Ha
	Ha	Condition	Ha	Condition	Ha	Condition	
B1	0.27	Poor	0.41	Poor	0.25	Poor	0.93
B2	0.1	Poor	0.03	Poor	0	N/A	0.13
B3	0	N/A	0.01	Moderate	0.01	Poor	0.02
B5	0	N/A	0	N/A	0.08	Poor	0.08
B6	0	N/A	0	N/A	0.29	Poor	0.29

5.2.7 h2a – Hedgerow – Annexe I Priority Habitat

Coded as B4 on the map. Coded as a polygon, rather than as a line, as it meets the MMU.

99. UKHab Definition: Hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species.

100. This hedgerow runs along the southwestern boundary of the site (Site E) and comprises abundant hawthorn with occasional bramble. Hazel, holly *Ilex aquifolium*, elder and dog rose *Rosa canina* are present in smaller quantities.

101. Older Google Earth satellite imagery shows this hedgerow ran all the way across the site in a straight line, however at the time of the site visit the northmost part of the hedgerow appears to have been absorbed into areas of dense scrub or parts of it around the track removed.

Full UKHab-P coding: h2a 47 77

Site E: 0.05Ha, condition moderate

5.2.8 Secondary codes 10 (scattered scrub) and 11 (scattered trees)

Not coded on the map, but included as secondary codes with other habitats.

102. UKHab Definition: Scattered scrub: non-woodland habitats that include patches of scattered scrub, each below 0.04ha, with an overall cover of <90%. Scattered trees: non-woodland habitats that include trees growing at a low density, with canopy cover <20%.

103. Many of the grassland, scrub and open mosaic habitats have a scattering of young trees and areas of scrub that fall below the size criterion to map separately. There are a wide variety of woody species present, with the most frequent being hawthorn, goat willow and bramble, with occasional ash, alder, grey willow and willow hybrids. There are also species derived from gardens or municipal planting, including Norway maple *Acer platanoides*, horse chestnut, butterfly bush *Buddleja davidii*, dogwood *Cornus sanguinea*, tutsan *Hypericum androsaemum*, apples, pears and guelder rose *Viburnum opulus*, present in very small quantities and with trees generally at the sapling or pole stage. Larger trees have been mapped as points on the map.

5.2.9 g1c – Bracken

Coded as C7 on the map

104. UKHab Definition: Land with Bracken *Pteridium aquilinum* at >95% canopy cover at the height of the growing season.

105. There are two dense areas of bracken located in Site E.

Site E: 0.16Ha, condition poor

5.2.10 g3c5 – Arrhenatherum neutral grassland

Coded as C1, C1A, C2, C8 and C9 on the map

106. UKHab Definition: Neutral grassland is vegetation dominated by grasses and herbs on a range of neutral soils usually with a pH of between 4.5 and 6.5. Neutral grassland differs from agriculturally improved grasslands (g4) by having a less lush sward, a greater range and higher cover of herbs, and usually less than 35% cover of perennial rye grass *Lolium perenne*. Arrhenatherum neutral grassland (g3c5) is characterised by dominant false oat-grass *Arrhenatherum elatius* and is usually found in lightly managed or unmanaged fields or road verges in lowland areas.

107. The majority of grassland across the three sites falls into this category. It has been separated into different codes to reflect different secondary coding, but generally the grasslands all have abundant false oat-grass and occasional to frequent Yorkshire fog, with small quantities of other grasses such as creeping bent *Agrostis stolonifera*, cocksfoot *Dactylis glomerata*, fescues *Festuca sp.* and rough meadow grass *Poa trivialis*. Perennial rye grass is present near pathways and verges.

108. The grassland is rank and tussocky in nature, between 70-90% grasses, with scatterings and stands of tall ruderal species. There are rarely sedges and rushes indicating a propensity to waterlogging. There are over 70 herbaceous species present, mostly in small quantities and often with more diversity nearer to the site edges. The most common of these species found across most of the sites are cow parsley *Anthriscus sylvestris*, creeping thistle *Cirsium arvense*, great willowherb *Epilobium hirsutum*, red clover *Trifolium pratense* and common nettle *Urtica dioica*. There are also localised patches of goat's rue *Galega officinalis,* cleavers *Galium aparine*, oxeye daisy *Leucanthemum vulgare*, birdsfoot trefoil *Lotus corniculatus* and creeping cinquefoil *Potentilla reptans*. Common spotted orchid were noted (Target Note 1). Meadow vetchling *Lathrus pratensis*, red bartsia *Odontites verna* (hemi-parasitic on grass), common ragwort *(Senecio jacobaea)* and hairy tare *Vicia hirsuta* are found in small quantities scattered across all sites.

109. Areas marked as C2 are more diverse with a lower proportion of grasses to herbs and no scattered shrubs or trees, these are found around the edges of the roundabout near the medical centre and are likely to have developed due to prior soil movement for the roadworks; as the ground is flatter here they have most likely developed from the urban mosaic habitat that still exists around the roundabout to the east. Here are located a number of different herbs including common knapweed *Centaurea nigra*, wild carrot *Daucus carota*, perforate St John's wort *Hypericum perforatum*, black medic *Medicago lupulina* and goat's beard *Tragopogon pratensis*.

110. Scattered scrub and trees are found across the majority of this grassland type, see secondary codes 10 and 11 above. The grasslands labelled C1A on the map have anthills present.

Full UKHab-P coding:

C1 – g3c5 10 11 34 57 78 118 161
C1A – g3c5 10 11 34 57 78 118 140 161
C2 – g3c5 34 118
C8 – g3c5 16 34 118 161
C9 – g3c5 10 16 34 118 161

	SITE C		SITE D		SITE E		Total
	Ha	Condition	Ha	Condition	Ha	Condition	
C1	0	N/A	0	N/A	0.42	Moderate	0.42
C1A	0.98	Moderate	0.95	Moderate	0	N/A	1.93

C2	0.03	Moderate	0.09	Moderate	0.02	Moderate	0.14
C8	0	N/A	0	N/A	0.09	Moderate	0.09
C9	0.27	Poor	0.41	Poor	0.25	Poor	0.93

5.2.11 g3c8 – Holcus-Juncus neutral grassland

Coded as C3 on the map

111. UKHab Definition: Neutral grassland with Yorkshire fog and rushes dominant. One of the neutral grassland types typical of poorly-drained permanent pastures in lowland areas.

112. In Site E these areas do not fit completely into this category, as there is still occasional to frequent false oat-grass present, but they have wetter characteristics with frequent Yorkshire fog and a variety of rushes present including compact rush *Juncus conglomerata* and sharp-flowered rush *Juncus acutiflorus*. Rosebay *Chamerion angustifolium*, ribwort plantain and common ragwort are occasional in the sward. Common spotted orchids were noted at Target Note 1.

113. The small area of this habitat mapped in Site C is a patch of abundant meadowsweet *Filipendula ulmaria* with smaller quantities of compact rush, again it is not an exact habitat match.

Full UKHab-P coding: g3c8 10 11 34 57 118

Site C: 0.01Ha, condition moderate
Site E: 0.30Ha, condition moderate

5.2.12 g4 – Modified Grassland

Coded as C4 and C5 on the map

114. UKHab Definition: Vegetation dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grass and white clover. Typically either managed as pasture or mown regularly.

115. Modified grassland is found along the tracks (C4) and along the road verge (C5) and features frequent to abundant perennial rye grass, frequent white clover and smaller quantities of other species that generally indicate higher fertility and disturbance.

Full UKHab-P coding: C4: g4 C5: g4 64

	Site C		Site D		Site E		Total
	Ha	Condition	Ha	Condition	Ha	Condition	
C4	0.04	Poor	0	N/A	0.08	Poor	0.12
C5	0	N/A	0	N/A	0.03	Poor	0.03

5.2.13 g3c5 16 – Arrhenatherum neutral grasslands: tall herb

Coded as C6 on the map

116. UKHab Definition: Secondary code 16 indicates stands of tall perennial or biennial dicotyledons, such as rosebay willowherb, common nettle, hogweed and Japanese knotweed.

117. Tall herb (aka tall ruderals) has been mapped separately as a feature of the site is numerous dense single-species stands of tall herbs, particularly rosebay, great willowherb and common nettle. There are also more localised stands of Michaelmas daisy *Aster sp.* in Site C, cow parsley in Site D and creeping thistle in Site E.

Full UKHab-P coding: g3c5 16

Site C: 0.03Ha, condition poor
Site D: 0.15Ha, condition poor
Site E: 0.12Ha, condition poor

5.2.14 u1a – Open Mosaic Habitats on Previously Developed Land – Annexe I Priority Habitat

Coded as D on the map

118. UKHab Definition: Each of the following five criteria must be met. (1) Open mosaic habitat at least 0.25 ha in size. (2) Known history of disturbance or evidence that soil has been removed or severely modified by previous use(s). Extraneous materials/substrates such as industrial spoil may have been added. (3) Site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland. (4) Contains unvegetated, loose bare substrate and pools may be present. (5) The site shows spatial variation, forming a mosaic of one or more of early successional communities (a)-(h) above plus bare substrate, within 0.25ha.

119. This habitat occurs along the eastern edges of the road system, largely on soil banks that have been formed as part of the road creation. It should be noted that separately, the patches do not meet Criteron (1) of the definition, as they are individually under 0.25ha in size due to the road running through. However the habitats are adjacent and when taken together measure 0.32ha. The area is considered sufficiently different for it to be treated separately, particularly as this habitat is classed as a Priority habitat.

120. The habitat located on Site C shows a high level of diversity, with grasses forming 50-60% of the sward, and open patches of mosses and bare ground present. Over 50 herbaceous plants occur in small numbers, with the most commonly occurring being yarrow *Achillea millefolium*, common knapweed *Centaurea nigra*, great willowherb *Epilobium hirsutum,* birdsfoot trefoil *Lotus corniculatus* and self-heal *Prunella vulgaris*. There are areas of common spotted orchid *Dactylorhiza fuchsii* present (Target Note 1). The most commonly occurring grasses are false oat grass and Yorkshire fog, with locally abundant patches of glaucous sedge *Carex flacca,* a perennial which tolerates a wide range of soil conditions but thrives in relatively nutrient poor, open grassland.

121. The habitat located on the other side of the road in Area D is a similar mosaic but less diverse, with the most commonly occurring plants being common cat's ear *Hypochaeris radicata,* birdsfoot trefoil, ribwort plantain *Plantago lanceolate,* false oat grass, Yorkshire fog and glaucous sedge.

Full UKHab-P coding: u1a 10 11 148

Site C: 0.11Ha, condition good
Site D: 0.21Ha, condition good

5.3 Species and species groups

122. A summary of the data search results for notable or protected species, along with maps where deemed relevant, is located in Appendix F. The data search parameters include records within the last 10 years and within 1.5 km of the survey site central grid reference SK417 826 (2km for South Yorkshire Bat Group records), however, records outside this time period are included if pertinent. Please note that 'a record' does not mean one plant/animal; records (especially for plants) can consist of multiple individuals. The data search results are discussed in conjunction with the field survey results below.

5.3.1 Plants

123. The majority of the plants on site are not particularly rare. There are two recent notable records for vulnerable or endangered/nationally scare species within 160m of the site central grid reference, stinking chamomile *Anthemis cotula* and spreading hedge-parsley *Torilis arvensis*. The arable reversion habitat is considered suitable for these species, but neither record has been verified. An older record for marsh stitchwort *Stellaria palustris*, a vulnerable species, is located to the southwest, in between Site E and Owlthorpe LWS.

124. There are 30 records for bluebell *Hyacinthoides non-scripta* within the data search area, with several records occurring on site. Bluebell was noted during the survey in woodland on the edge of Site C. Bluebell is an ancient woodland indicator species; there are also scattered records for a number of other ancient woodland indicator species, all outside the site and generally associated with the older woodland areas around watercourses W3 and W4 in the nearby LWS. No other ancient woodland indicator species were found during the survey.

125. Common spotted orchid is the UK's most common orchid and there are 4 records for the species on site, each record covering over 100 individuals. Common spotted orchid were located in groups of 1-20 on each section of the site during the field visit. There is also a recent record on Site C for southern marsh orchid *Dactylorhiza praertermissa*, which prefers damp ground. Orchids are sensitive to environmental change with a complex life cycle, often involving fungal partners and specific pollinators. The citation sheet for the nearby Owlthorpe LWS lists common spotted orchid as locally scarce.

126. One record for scarlet waxcap, *Hygrocybe coccinea*, was noted on Site C. Although not designated with any status, the presence of waxcaps can indicate older grassland. A record for blackening waxcap, *Hygrocybe conica*, was noted at the edge of the residential area to the south. The field survey did not take place at the correct time of year to record fungi, which are most abundant in autumn.

5.3.2 Invertebrates

127. The data search returned a number of notable invertebrate records within the last 10 years, many of which are located within Owlthorpe LWS, which is noted for its extensive assemblage of invertebrates. The citation document for Owlthorpe LWS, last updated in 2010, reports a number of notable species present including slender ground hopper *Tetrix subulata*, Adonis ladybird *Hippodamia variegata* and hoverfly *Didea fasciata*, all locally rare. Other notable species on the citation include small copper *Lycaena phlaeas,* gatekeeper *Pyronia tithonus*, small tortoiseshell *Aglais urticae* and dragonfly species.

128. Species records within the footprint of the site include several records for cinnabar moth, and records for the shaded broad bar *Scotopteryx chenopodiata* and common fan-foot *Pechipogo strigilata.*

129. The field surveyor is not an invertebrate specialist but noted a wide range of invertebrate families present during the site visit, including a variety of bumblebees, solitary bees, moths, butterflies, beetles, crickets, slugs, snails etc. A large number of anthills were also noted, particularly on sites C and D.

130. The large areas of neutral grassland with scattered scrub, and the smaller area of open mosaic habitat on previously developed land, are considered to provide extensive shelter, food plants and flower forage for invertebrates. It is possible that the site offers value for notable invertebrate assemblages; a specialised survey would confirm this.

5.3.3 Amphibians

131. The data search revealed a handful of records within the 1.5km search area. There are two records for common frog *Rana temporaria* within the site footprint.

132. No amphibians were noted during the field survey. Although the site as a whole has some quite wet characteristics, there are no ponds or watercourses on site that would provide breeding habitat. There are watercourses surrounding the site, many of which were dry (see Appendix C). The surrounding residential area is likely to include some garden ponds.

133. The lack of suitable water bodies and absence of any nearby records for Great Crested Newt imply that this area is not likely to support this species.

134. The tussocky, damp grassland with a rich invertebrate assemblage is likely to provide suitable foraging habitat for other amphibians. The older areas of woodland with dense ground cover may also provide suitable natural hibernacula.

135. It is unlikely that great crested newts use the site but it is likely that common amphibians (common frog) use the site. However, the value of the site for amphibians is not likely to be significant at a local scale.

5.3.4 Reptiles

136. No records for reptiles were returned from the data search.

137. No reptiles were noted during the survey visit. However, a targeted reptile survey was not undertaken as part of this assessment and the survey was undertaken outside the optimal period for surveying reptiles.

138. The habitat mosaic of tussocky grassland, scattered and dense scrub and small woodland copses is considered suitable to support reptiles, although there is a lack of material such as fallen deadwood or rocks that would form natural hibernacula and basking areas within the grassland. The edges of dense scrub patches would provide suitable shelter.

139. The site connects to the surrounding landscape to allow movement of reptiles, however the wider area is bounded by roads and residential areas, particularly to the north and east. This likely creates barriers to movement across the wider landscape.

140. It is possible the site offers value for reptiles at a local scale.

5.3.5 Birds

141. The data search returned a large number of bird records for the area. Once filtered, the list included 38 notable or protected bird species, a full list of which is available in the appendix, along with any statutory or conservation designations that apply. The species are linked to a number of different habitats, including woodland, farmland, grassland and water, and include both resident and migrant birds.

142. Within the footprint of the site, 13 notable bird species have been recorded, these being sparrowhawk *Accipiter nisus*, swift *Apus apus*, greenfinch *Chloris chloris*, black-headed gull *Chroicocephalus ridibundus*, kestrel *Falco tinnunculus*, linnet *Linaria cannabina*, grasshopper warbler *Locustella naevia*, house sparrow *Passer domesticus*, willow warbler *Phylloscopus trochilus*, dunnock *Prunella modularis,* bullfinch *Pyrrhula pyrrhula*, song thrush *Turdus philomelos* and barn owl *Tyto alba*.

143. During the field survey, a number of common birds such as blue tit *Cyanistes caeruleus*, robin *Erithacus rubecula* and wren *Troglodytes troglodytes* were noted, along with summer migrants chiffchaff *Phylloscopus collybita* (a juvenile and a singing male were encountered) and blackcap *Sylvia atricapilla*. Notable bird species were also encountered on site, including dunnock, greenfinch and song thrush.

144. The site is likely to be used by a range of notable and protected bird species. Therefore, the site is likely to offer value for local or regional bird populations. However, further survey is required to adequately determine if it value is significant at a local or regional geographical scale.

145. The habitats on site are highly suitable for a range of bird species with extensive opportunities for foraging and nesting. The large invertebrate assemblage in the grassland areas and the presence of various types of berry-bearing shrubs such as hawthorn provide ample food, and frequent areas of scrub, scattered trees, copses and extensive woodland provide a variety of nesting opportunities. There are fewer opportunities for hole-nesters such as blue tit and woodpecker as many of the trees are young to young-mature.

146. The site links the woodlands of Owlthorpe LWS and Ochre Dike LWS to the woodlands of Westfield Plantation LWS, with the scattered trees, copses and scrub providing 'stepping stones' across the site.

5.3.6 Bats

147. A range of bat species have been recorded within the data search area, including common and soprano pipistrelle, whiskered bat, brown long-eared bat and noctule. Common pipistrelle is the most frequently occurring, with 27 records made in the last decade. There are also 25 records of bats where the species was not recorded.

148. Records for common pipistrelle, soprano pipistrelle and brown long-eared bat have been made within the footprint of the site, along with records of unknown bats.

149. There are no buildings on site. A medical practice is located in between the three sites, this was not assessed as part of this survey investigation.

150. All accessible trees were examined for suitable bat use features. The vast majority of trees on site are young to young-mature, and generally lack the features that bats require for roosting, i.e. they did not have holes, broken limbs etc. It is considered unlikely that bats are roosting on site, although there may be suitable trees within the inaccessible older woodland to the west of Site E. It is, however, likely that the older trees along the adjacent Ochre Dike and Westfield Plantation would support roosting bats.

151. The habitats on site are suitable for foraging as the invertebrate assemblage will provide a good variety of food. It is also likely that bats will navigate across the site, most likely around the edges along the strips of dense woodland that adjoin the site.

152. It is likely that common pipistrelle, soprano pipistrelle and brown-long eared bats use the site. Therefore, the site is likely to offer value for local bat populations. However, further survey is required to adequately determine the significance of the site value at an appropriate geographical scale.

5.3.7 Badgers

153. 44 badger *Meles meles* records were returned from the data search; the locations have been blurred to protect this persecuted species.

154. No active setts were found on site during the field survey, but possible badger tracks/push-throughs were located on Site C. No obvious latrines or snuffle holes were located. The survey took place at a time when badgers are weaning cubs, and are therefore less active.

155. The site contains suitable foraging habitat for badgers and it is possible that areas of inaccessible woodland around the perimeter of the site may contain setts. It is more likely that badger setts are located outside of the site boundary, but that badger will forage or commute through parts of the site.

156. It is likely that badgers are active in wider area and the habitats on site offer value for foraging and commuting badgers at a local scale.

5.3.8 Hedgehog

157. 12 records of hedgehog *Erinaceus europaeus* were returned by the data search, all reported from residential areas around the site, the closest being 96 metres from the site central grid reference.

158. No signs or sightings of hedgehog were encountered, but the habitat on site is considered suitable as there is a lot of dense scrub and woodland edge for them to move around safely.

159. The site is likely to offer significant value for local hedgehog populations

5.3.9 Brown Hare

160. Five records for brown hare *Lepus europaeus* were returned by the data search, with the closest record being 99 metres from the site central grid reference. The most recent record dates from 2012.

161. The habitat is suitable as part of a larger mosaic for brown hare, who prefer a mixture of arable fields, grasses and hedgerows.

6 Biodiversity Net Gain baseline measurement

162. A baseline measurement of the site's biodiversity value utilising the DEFRA Biodiversity Net Gain Metric 2.0 has been produced. This is available in Appendix E.

163. The total value of the site as measured in Biodiversity Units is 71.47 habitat (area) unites and 1.14 hedgerow units, broken down as follows:

Table 6-1: Onsite Baseline using Biodiversity Net Gain Metric 2.0

	HABITAT UNITS	HEDGEROW UNITS
Site C	28.31	0
Site D	18.19	0
Site E	24.97	1.14
Total	***71.47***	***1.14***

Table 6-2: Onsite Baseline per Site - Area = hectares, Value = Biodiversity Units

	SITE C	
	Existing Area	Existing Value
Grassland	1.1	9.2
Heathland and Shrub	0.4	1.6
Urban	0.1	2.2
Woodland and Forest	1.2	15.3
	SITE D	
	Existing Area	Existing Value
Grassland	1.2	9.8
Heathland and Shrub	0.5	2
Urban	0.2	4.2
Woodland and Forest	0.2	2.2
	SITE E	
	Existing Area	Existing Value
Grassland	1.3	9.4
Heathland and Shrub	0.6	2.8
Urban	0	0
Woodland and Forest	1	12.8
		Total
	TOTALS	
	Existing Area	Existing Value
Grassland	3.6	28.4
Heathland and Shrub	1.5	6.4
Urban	0.3	6.4
Woodland and Forest	2.3	30.3

7 Ecological constraints and opportunities, and recommendations for mitigation and further survey

7.1 Proximity to locally designated sites

164. Owlthorpe Fields is located in an SSSI Impact Risk Zone. Any planned development will need to be assessed for its likely impact on the relevant SSSIs.

165. Owlthorpe Fields is bordered by three Local Wildlife Sites – Owlthorpe LWS, part of Ochre Dike LWS and part of Westfield Plantation LWS. Local planning policy GE13 states that development that would damage areas of natural history interest would not normally be permitted, and development affecting local nature sites should, wherever possible, be sited and designed so as to protect and enhance the most important features of natural history interest.

166. It is likely that development over the entirety of the site would have impacts on the adjoining Local Wildlife Sites, including but not limited to disturbance during construction; additional pressure on the sties from increased residential numbers; increased pollution from additional residents' vehicles; increased light pollution from additional residential units impacting sensitive species such as bats; loss of connectivity between sites; loss of habitat availability for breeding and foraging for a variety of mobile species including birds, bats, invertebrates, reptiles, amphibians, badgers and hedgehog.

167. Any development plans would need to include mitigation measures to reduce the impact on the habitats within and species using the adjacent Local Wildlife Sites. As a minimum, this would have to include sufficiently sized buffer zones to protect ecological sensitive habitats, wildlife sensitive lighting plan in line with current best practice guidance (Institute of Lighting Professionals, 2018) to protected nocturnal birds, invertebrates and mammals, including foraging and commuting bats. As well as management practice within the LWS to protect ecological sensitive features (i.e. fencing, path modification and installation of signage and interpretation) from anthropogenic pressures

168. If the site was not developed, it could be incorporated into the adjacent Owlthorpe LWS as an extension, particularly helping to fulfil Sheffield's Grassland HAP targets.

7.2 Habitats and plants

169. There are three areas of Annexe 1 Priority Habitat identified on site: w1d Wet Woodland, h2a Hedgerow and u1a Open Mosaic Habitats on Previously Developed Land.

170. Any development should seek to retain the wet woodland if possible, enhance it and potentially create additional areas of wet woodland. Drainage would need to be carefully managed in order to reduce the likelihood of the wet woodland drying out.

171. There is some evidence from historical maps [personal communication] that the hedgerows on Site E may be ancient in origin, and the adjacent Owlthorpe LWS has a number of old/ancient hedgerows with ancient woodland indicator species present. It is recommended that a hedgerow survey takes place following the Hedgerow Regulations 1997 methodology, to identify if any hedgerows are classed as 'important'. Hedgerows of any age provide important habitat and connectivity for a number of different species, so should be retained, enhanced and added to, using suitable native species.

172. The Open Mosaic habitat is likely to be the most difficult habitat to retain due to its location adjacent to the road network, and the likelihood of succession altering the habitat over time. Its importance is chiefly in providing excellent flower forage for invertebrates, so alternative food sources should be provided either by retaining and enhancing existing grasslands elsewhere on site, or creating new areas of species-rich grassland.

173. The extensive areas of g3c5 *Arrhenatherum* and g3c8 *Holcus-Juncus* neutral grassland with scattered scrub and scattered trees support a good range of invertebrate families as well as providing foraging habitat for other species. As much of this grassland as possible should be retained, and suitable management practices adopted to improve its condition and increase the species diversity within these areas. Conservation grazing or an equivalent mowing regime, with the removal of all arisings, should reduce the fertility of the soil over time and allow the desirable species already present around the edges of the road network to spread further into the site. Additionally, plug planting or appropriately targeted and managed seed spreading of hemi-parasitic species such as yellow rattle *Rhinanthus minor* or red bartsia *Odontites vernus* would reduce the vigour of the grass species present, and allow other species to thrive. The scattered scrub and trees would need to be managed to maintain a balance of retaining some scrub/trees while not permitting succession to woodland.

174. The area of w1f7 ash-dominated Other Lowland Mixed Deciduous Woodland to the south of Site C appears to be suffering from ash dieback. If this area of woodland is to be retained it may need management of dying/dead trees and potentially additional replacement planting with other species. Retention of some fallen and standing deadwood is recommended, as this is lacking on site and provides an important additional habitat for invertebrates.

175. Orchids have been noted at various points across the site. Development should avoid these areas where possible; if not possible, orchid species could be translocated into suitable habitat nearby. However successful translocation can be difficult.

176. The records of waxcap on and near the site imply that the grassland may support a range of grassland fungi. A basic fungi walkover survey should be commissioned in the autumn to properly assess whether the site holds importance for fungi. Good quality wax cap grassland would be considered an irreplaceable habitat. It is currently not possible to recreated wax cap grasslands. As such it would not be possible to achieve net gain on site if a significant assemblage of wax caps are present.

177. Although many of the plants present on site indicate the water table is close to the ground, there is no standing water present. The site could be enhanced by the addition of ponds to provide additional habitat to support a variety of species, including invertebrates and amphibians.

7.3 Invertebrates

178. A range of invertebrate families were noted during the field survey, and the data search returned evidence of notable species within and near the site, particularly within the adjacent Owlthorpe LWS. Development of the site would reduce the amount of habitat available for invertebrate species.

179. We recommend that an invertebrate survey be carried out over the site as a whole, to obtain baseline information on the species present on site including the presence of any notable species. This information can then be used when designing enhancement or mitigation proposals, as described in the Habitats section above, to ensure that the required food and nectar plants are included.

180. There are frequent stands of h3d bramble across the site; bramble is valuable for invertebrates as a number of species feed on the foliage, the flowers provide nectar and the dead stems are used as nest sites by a variety of solitary bees and wasps. Dense bramble clumps in open sunny situations are of particular value. Areas of bramble should be retained on site where possible.

7.4 Amphibians

181. It is unlikely that great crested newts are present on site; no further survey work for this species is considered necessary.

182. Common amphibians have been noted on site, these should be protected from harm during any development works. If ponds are added to the site, these will improve conditions for amphibians.

183. Additional enhancement for amphibians could include the provision of hibernacula in suitable locations.

7.5 Reptiles

184. Although no records or sightings of reptiles on site have been found, the site is considered suitable for reptiles. As all reptiles are protected to varying degrees under the Wildlife and Countryside Act (1981) as amended, and are a material consideration for planning applications, a reptile presence/absence survey is recommended. To determine the presence or absence or reptiles on a site a simple survey is required which pinpoints and examines suitable reptile microhabitats for the presence of reptiles. These microhabitats include sunny spots, hedgerow bases, scrub and under logs and stones and the species and number of any reptiles found will be recorded.

185. These surveys should take place between March and October when reptiles are most active, the optimum months being April, May and September. A minimum of seven site visits is required to determine presence or absence. This should identify whether more detailed surveys are required, and/or be used in any mitigation planning.

186. Provision of foraging habitat and connectivity across the site would need to be maintained for the benefit of any reptiles present.

187. Enhancement of the site for reptiles could include provision of hibernacula in the form of habitat piles in suitable locations.

7.6 Birds

188. Development on site that includes removal of scrub, woodland and grassland will negatively affect bird species by removing suitable nesting and foraging habitat. As records for 38 notable/protected species of birds were returned, the habitat on site is likely to be valuable for local bird populations.

189. A breeding bird survey is recommended to determine the site's current geographical importance of local bird populations. This involves monthly visits between April and June, recording all bird species present and their activity. The results will inform any future impact assessment and the potential significant effect on local bird populations.

190. Nesting birds are protected under the Wildlife and Countryside Act (1981) as amended. Any scrub or tree removal should take place outside of the bird breeding season (which runs from March to August inclusive). If scrub or tree removal is necessary during the bird breeding season, a suitably qualified ecologist should be present just before works take place, to check for nesting birds. Where active birds' nests are identified works should be diverted from these areas until they can be confirmed as being inactive.

191. Potential enhancements for birds include the provision of nest boxes on larger trees to provide nesting opportunities for hole-nesting species, as the trees across the site are generally not mature enough to have natural holes/cracks. Pond creation would increase foraging and nesting opportunities for other bird species as well as providing a water source. Standing deadwood created or retained on site would provide a valuable source of invertebrate prey and possible nesting opportunities over time.

192. Any building development should include bird boxes in habitat design, including boxes targeted at red and amber listed species, for example installing house sparrow terraces or swift boxes on rooflines.

7.7 Bats

193. All bat species are protected under UK and European law. No potential roosting features (PRF) were identified on trees accessed during the site visits, and it is unlikely that roosting bats are present over the majority of the site, as the trees on site are generally not mature enough to provide roosting opportunities for bats, lacking the necessary cracks, holes, loose bark etc. However, the denser areas of woodland to the west edge of Site E, and the older woodland to the east of Site C., were not accessed during the site visits and these may contain PRF of note for tree roosting bat species.

194. In these areas, a detailed Ground Based Bat Roost Risk Assessment should be carried out. The Ground Based Assessment should be followed by a combination of Nocturnal Presence and Absence Surveys and Aerial PRF Assessments to adequately confirm presence or absence of roosting bats.

195. Following the guidance set out in Table 4.1 of Collins (2016), the site is considered to offer moderate suitability for foraging and commuting bats. Therefore further survey is required to determine the site's value for local bat populations. This should comprise one transect survey per month between April and October, along with five consecutive nights of static bat detector surveys per month in the same time period.

196. All bat species are negatively affected by artificial light (Rowse, et al., 2015; Stone , 2013). At present the site appears to be largely unlit at night. Any development must reduce lighting impacts on bats, particularly around the northern and northwestern boundaries of the site, where the woodland along Ochre Dike and Owlthorpe LWS are known to be used by bats. Best practice as outlined in Bats and Artificial Lighting in the UK (2018) should be followed.

197. Any work to improve the site for invertebrates will eventually have a positive impact on improving the site for bats, as they fly over and forage for insects. Retaining and potentially increasing the existing tree canopy, primarily around the edges of the site, will also retain the site's function as a corridor for commuting bats moving through the area.

198. Additional roosting opportunities can be created by installing bat boxes on suitable trees. Any building development should include bat bricks or similar to provide roosting opportunities.

7.8 Badgers

199. Badgers are legally protected from harm under the Protection of Badgers Act 1992. Any site clearance has the potential to cause harm to badgers, by destroying or impacting on any setts that may be present, by removing foraging habitat and by disrupting established commuting routes.

200. Badgers are widely distributed throughout Britain; their population has increased over the last ten years with a current population of 562,000 throughout the UK (Mammal Society review, Matthews et al. (2018)). As such any development of the site is unlikely to negatively affect badgers at a local scale. However, further survey would be required to confirm no setts are on, or within 50m of the development site to ensure adequate protection measures are adopted through construction and site clearance works.

201. As badgers can dig new setts at any time, a walkover badger survey is recommended several months before any development begins, so that if a sett is found a badger sett survey can take place and an appropriate mitigation strategy designed and approved by Natural England. The ideal time to survey for badgers is in the winter months, when vegetation has died back and sett entrances will be more obvious, but surveys can take place at any time.

202. Data search records were only sourced from the Local Record Centre and from the Sheffield and Rotherham Wildlife Trust database. The South Yorkshire Badger Group should be contacted to discuss whether any known badger setts are in the vicinity of the site.

203. Badgers can continue to try using established commuting routes even after they have been developed; identifying commuting routes and designing any development to allow badgers to continue accessing foraging areas is recommended. Safe routes across roads should be planned where possible.

7.9 Hedgehog

204. Hedgehog are nationally endangered according to recent Mammal Society research, and are a species of importance under the NERC Act, as well as having some protection under the Wildlife and Countryside Act. . Hedgehog are considered likely to use the site for foraging and commuting, and may also nest in the dense areas of scrub. As their presence is presumed no additional survey is needed.

205. Any development would be likely to negatively impact on this species by removing suitable habitat and connectivity. Development plans should include retention of commuting routes across the site and retention of areas of foraging habitat. Housing should be built with 'hedgehog holes' in fencing to allow hedgehogs to move freely through residential areas.

7.10 Brown Hare

206. The site is considered suitable for brown hare; development is likely to lead to habitat loss. Retention of areas of scrub and tussocky grassland, and ensuring connectivity to the surrounding landscape is not interrupted, should be sufficient to mitigate for this.

8 Conclusions

207. This report presents a Preliminary Ecological Appraisal of the site as a whole, and makes recommendations for further surveys to be carried out before any development takes place along with suggestions for ecological enhancement opportunities. The results of this PEA and of any additional surveys should be drawn together into an Ecological Impact Assessment (EcIA) and used to inform planning for the site, should development proceed.

208. The site's location within an SSSI Impact Risk Zone and its close proximity to three Local Wildlife Sites mean that any development will need close consultation with the Local Planning Authority to establish what the impacts may be, and what mitigation is required to protect them. The Local Wildlife Sites host a variety of bird, bat, invertebrate and botanical species that are locally important.

209. The main habitats on site consist mainly of young broad-leaved woodland, areas of neutral grassland, dense and scattered scrub, and scattered trees. Three Annexe 1 Priority Habitats are on site (wet woodland, hedgerow and open mosaic habitats on previously developed land) which should be protected from development where possible, or suitably mitigated for. The large areas of neutral grassland have the potential to be enhanced to improve their species diversity. Locally scarce common spotted orchids are present and should be protected from development, or translocated. Ash dieback appears to be present on site, which may change the nature of some sections of young woodland, and present an opportunity for fallen and standing deadwood resource. Although the plant assemblage indicates the water table is close to the surface, there is no standing water present, and the site could be enhanced by the installation of ponds.

210. The hedgerows on Site E should be surveyed using the Hedgerow Regulations 2017 to establish if they are classed as 'important'.

211. A fungi survey is recommended in the autumn, to establish whether there are any notable grassland fungi present.

212. Notable invertebrate species are present in the local area, and the habitat on site supports a range of invertebrate families and would be impacted by any habitat loss. An invertebrate survey should be carried out to provide information to support habitat enhancement and any mitigation necessary from development.

213. Common amphibians are considered to be present on site and should be protected from harm during any development. The site is not considered suitable for Great Crested Newt.

214. The site is considered suitable for reptiles and if reptiles are present, they would be impacted by any development. A presence/absence survey should be carried out and the results used to inform any development plans.

215. The site is likely to hold local importance for birds, with 13 notable species recorded on site, and a total of 38 notable species recorded in the local area. The site offers good nesting and foraging habitat for a range of species due to the mix of grassland, scrub and trees; hole-nesting species are less well supported, due to the lack of natural nest hole availability. Removal of onsite habitat would have a negative impact on the bird population in the area. A breeding bird survey should be carried out to identify key species utilising the site and the results incorporated into any development plans. Various enhancements, such as the provision of bird boxes, are feasible.

216. The site is likely to have moderate local importance for bats, mainly for foraging and commuting purposes, with roosts unlikely to be present due to the lack of suitable features. The site is an important connecting link between the three surrounding Local Wildlife Sites, and habitat removal may significantly impact on bat commuting routes. A bat survey should be carried out to identify the key species using the site. Areas of

denser/older woodland not accessed during the PEA survey should be assessed for the potential presence of bat roost features followed by nocturnal presence/absence surveying.

217. Although no active badger setts were located, badgers are highly likely to use the site for commuting and foraging. A badger survey should be carried out several months before any development works start, to identify if any new setts have been dug and to identify key commuting routes. Information gained from the survey should be used to inform development plans and to liaise with Natural England in the case of any impacts on active setts.

218. Hedgehog are likely to be present on site and would be impacted by habitat clearance or the blocking of commuting routes. Any development plans should be designed to incorporate areas of habitat to support these species, and commuting routes through any built up areas.

219. Brown hare may use the site as part of a larger habitat mosaic, and may be impacted by habitat clearance or the blocking of commuting routes. Any development plans should be designed to incorporate areas of habitat to support these species, and commuting routes through any built up areas.

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10 Tables

Table 1. Features typical of trees within the different risk categories

Negligible	Low Potential	Moderate Potential	High Potential
Geographic location poor species diversity (i.e.: extensive arable areas, upland sites)	Geographic location moderate species diversity	Geographic Location moderate species diversity	Geographic location with moderate or high species diversity (i.e.: Welsh valleys, southern counties)
Isolated tree	Located within coniferous plantation or within groups of young trees with simple growth forms	Located within an area offering some habitat features likely to be used by bats	Located within ancient woodland or parkland
Immature or semi mature tree with no evidence of disease or damage	Immature or semi mature tree with evidence of disease or damage. Mature tree in good condition	Mature tree or over mature tree with signs of disease or damage	Mature tree, over mature or dead tree with obvious signs of disease or damage
No cracks or crevices	Few small cracks and crevices	Cracks/crevices suitable for small numbers or individual bats	Cracks/crevices potentially suitable for larger colonies
No flaking bark	Limited flaking bark	Loose or Flaking bark with suitability to support small numbers or Individual bats	Loose or Flaking bark with areas deep enough to support larger colonies
Low/no ivy cover	Low ivy cover	Medium-Dense Ivy cover	Medium-Dense ivy cover
No epicormic growth	Limited epicormic growth	Thick epicormic growth	Thick epicormic growth
No Woodpecker holes	No Woodpecker holes	Woodpecker holes	Woodpecker holes
No deadwood in canopy or stem	Limited deadwood in canopy or stem with no obvious holes	Deadwood in canopy or stem with shallow cracks or holes	Deadwood in canopy or stem with obvious cracks and holes
No snagged branches	No snagged branches	Snagged branches	Snagged branches
No hollow areas	Majority of limbs and stem solid	Hollow stem or limb suitable for small numbers or individual bats	Hollow stem or limb with areas deep enough to support larger colonies
Buttresses intact	Buttresses intact	Hole between buttresses with areas deep enough small numbers or individual bats	Hole between buttresses with areas deep enough to support larger colonies
Core Solid	Core solid	Hollow core with areas deep enough small numbers or individual bats	Hollow core with areas deep enough to support larger colonies

Table 10-1. Common types of features used by bats for roosting and shelter and field signs that may indicate use by bats. Source: BCT (2012).

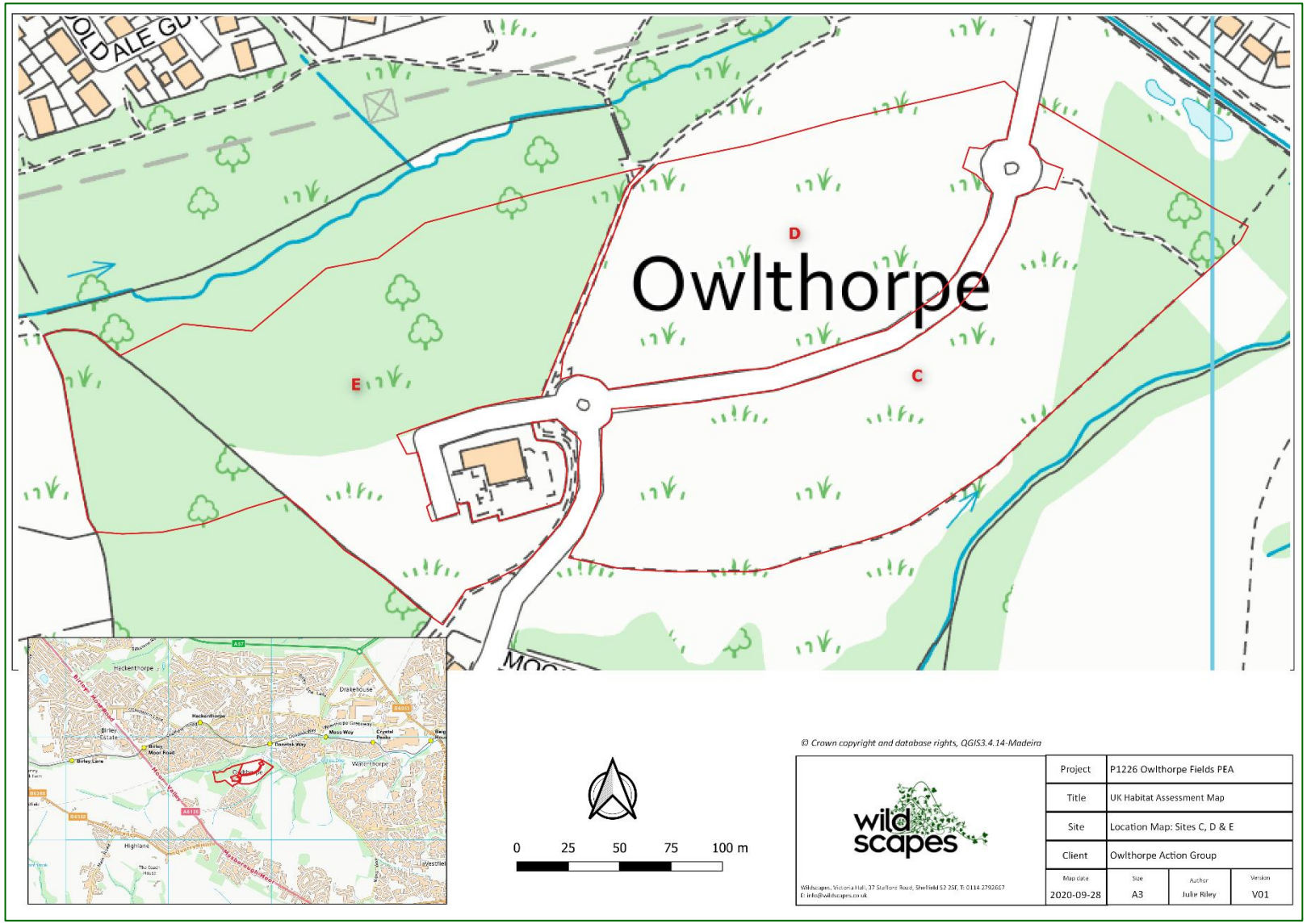
Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes	Tiny scratches around entry point
Woodpecker holes	Staining around entry point

Cracks/splits in major limbs	Bat droppings in/around/below entrance
Loose bark	Audible squeaking at dusk or in warm weather
Behind dense, thick-stemmed ivy	Flies around entry point
Hollows/cavities	Distinctive smell of bats
Within dense epicormic growth	Smoothing of surfaces around cavity
Bird and bat boxes	

Table 10-2 HIS Classification Criteria (Oldham, et al., 2000)

Probability of ponds supporting GCN	**HSI Scores**
Poor	Below 0.5
Below average	0.5 – 0.59
Average	0.6 – 0.69
Good	0.7 – 0.79
Exceptional	Above 0.8

A. Appendix A: Location Plan



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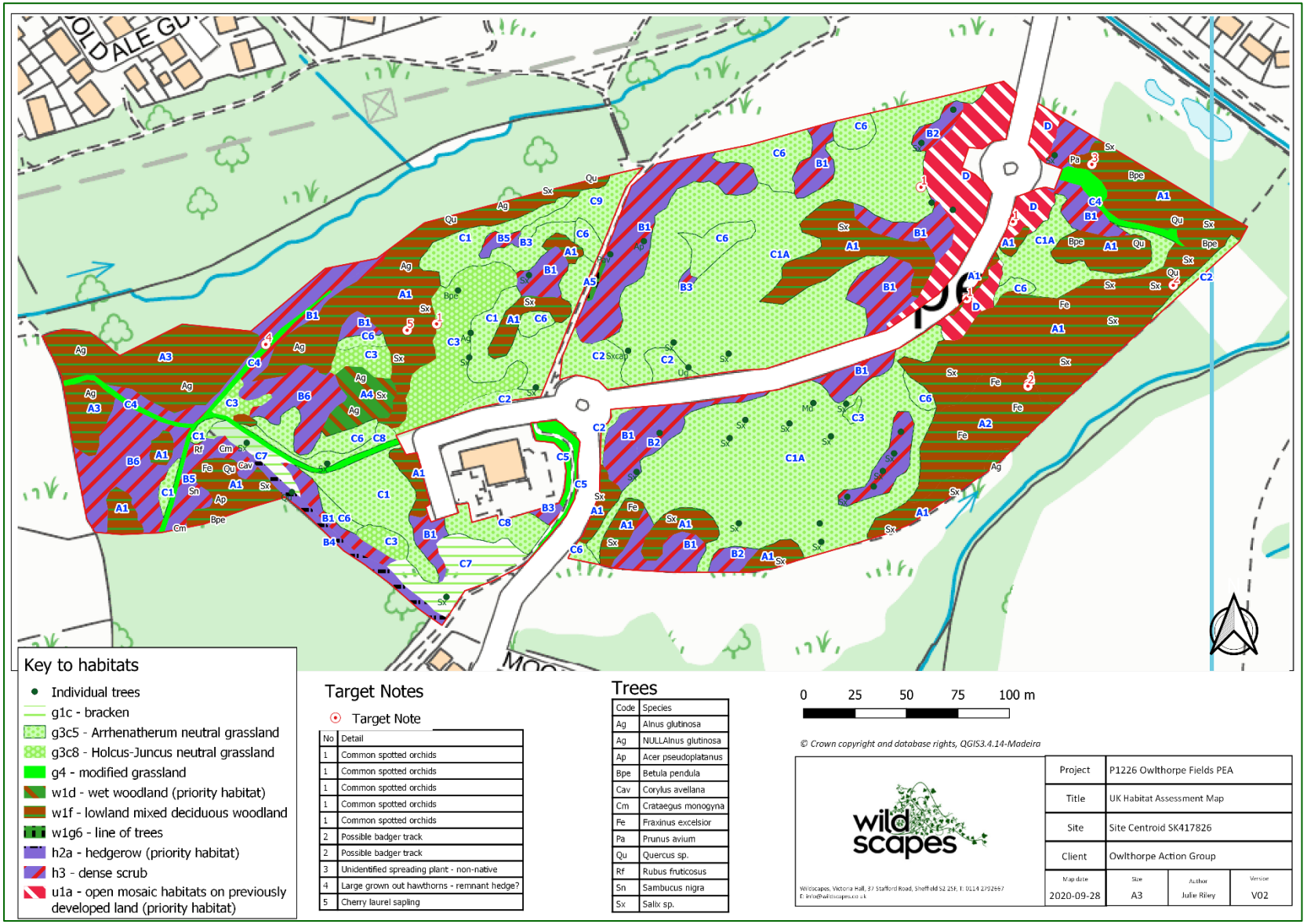
Publication Date : 02/10/2020

Version: 1
Reference :P1226

B. Appendix B: UK Habitat Survey Maps



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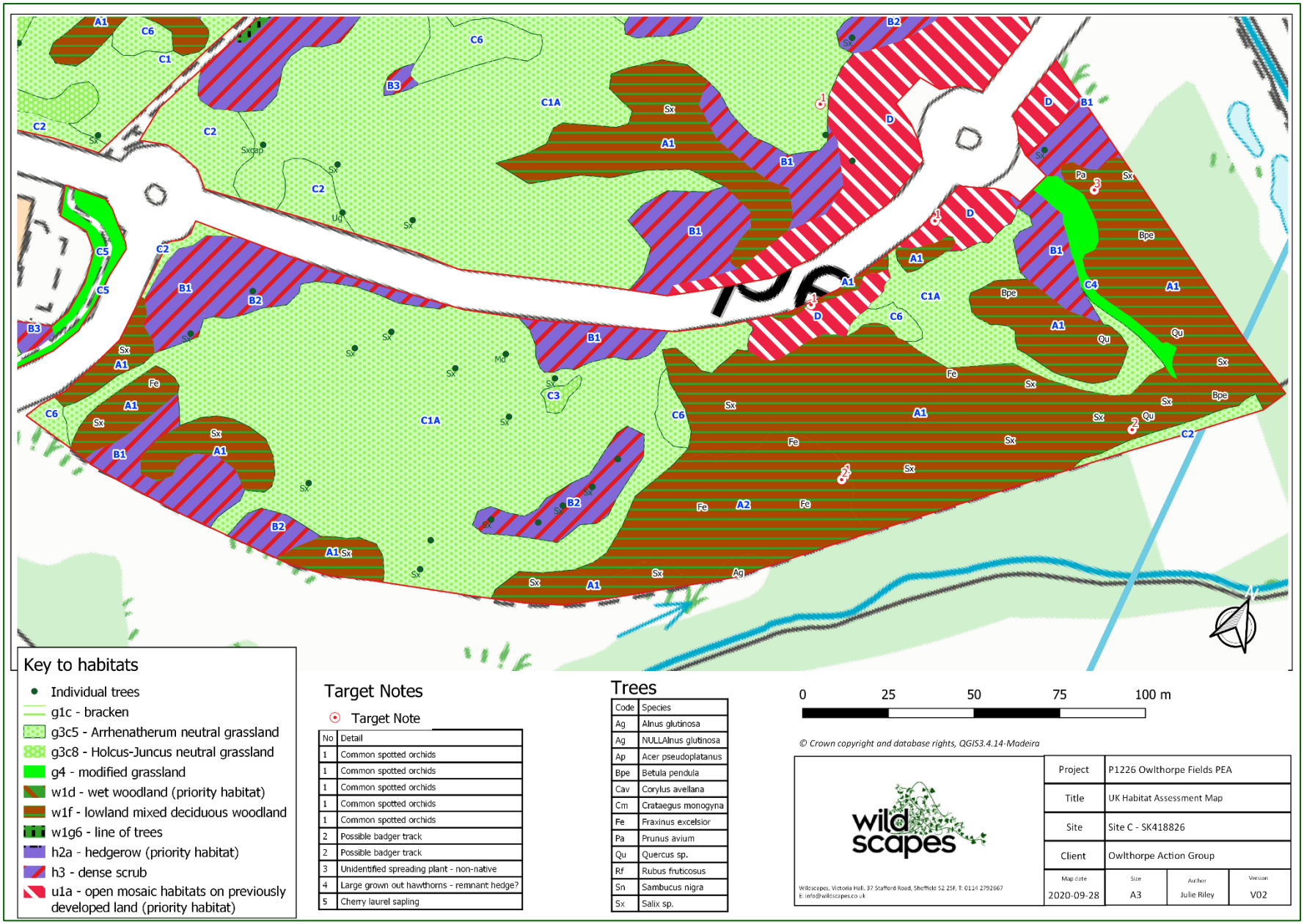
Reference :P1226



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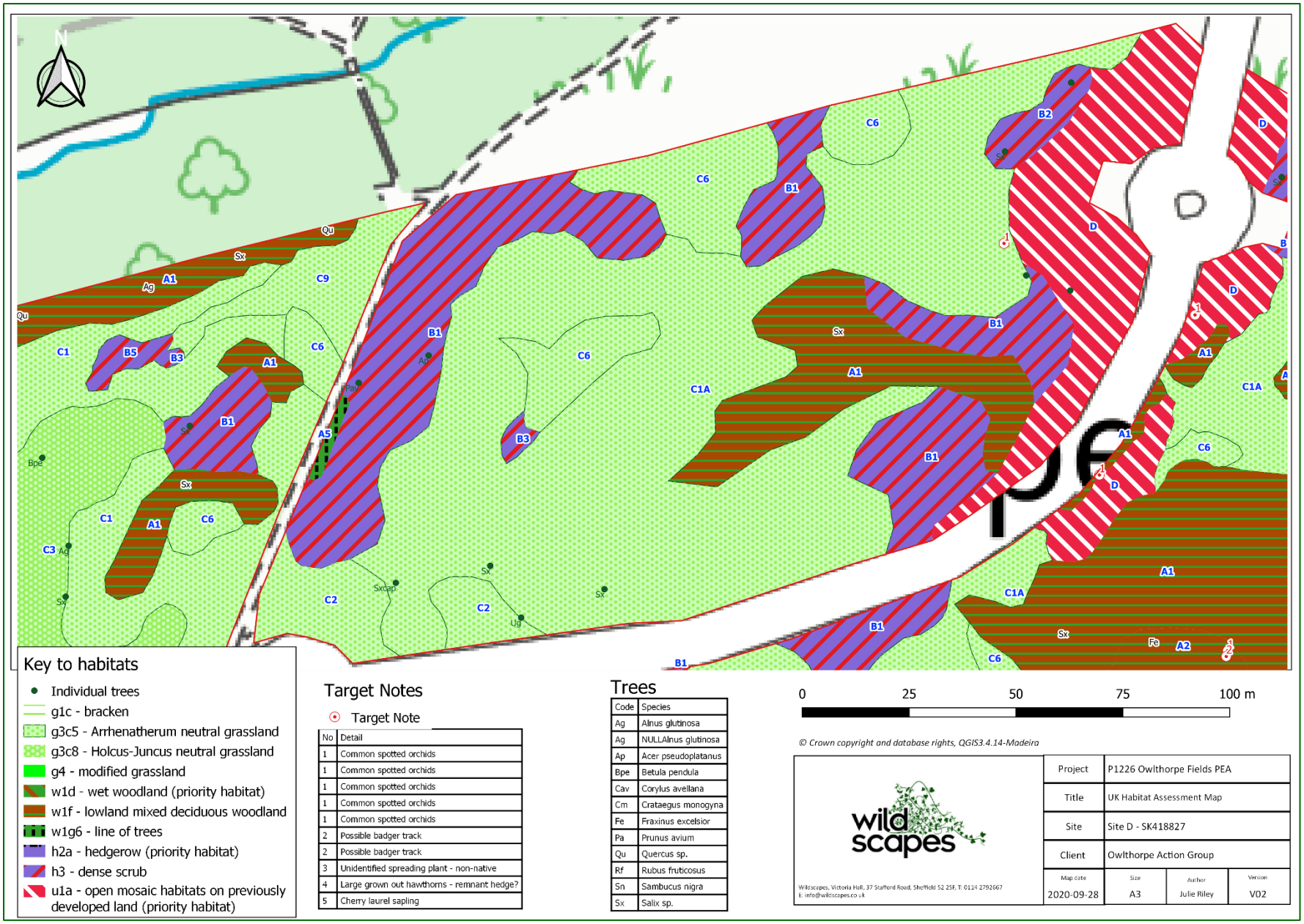

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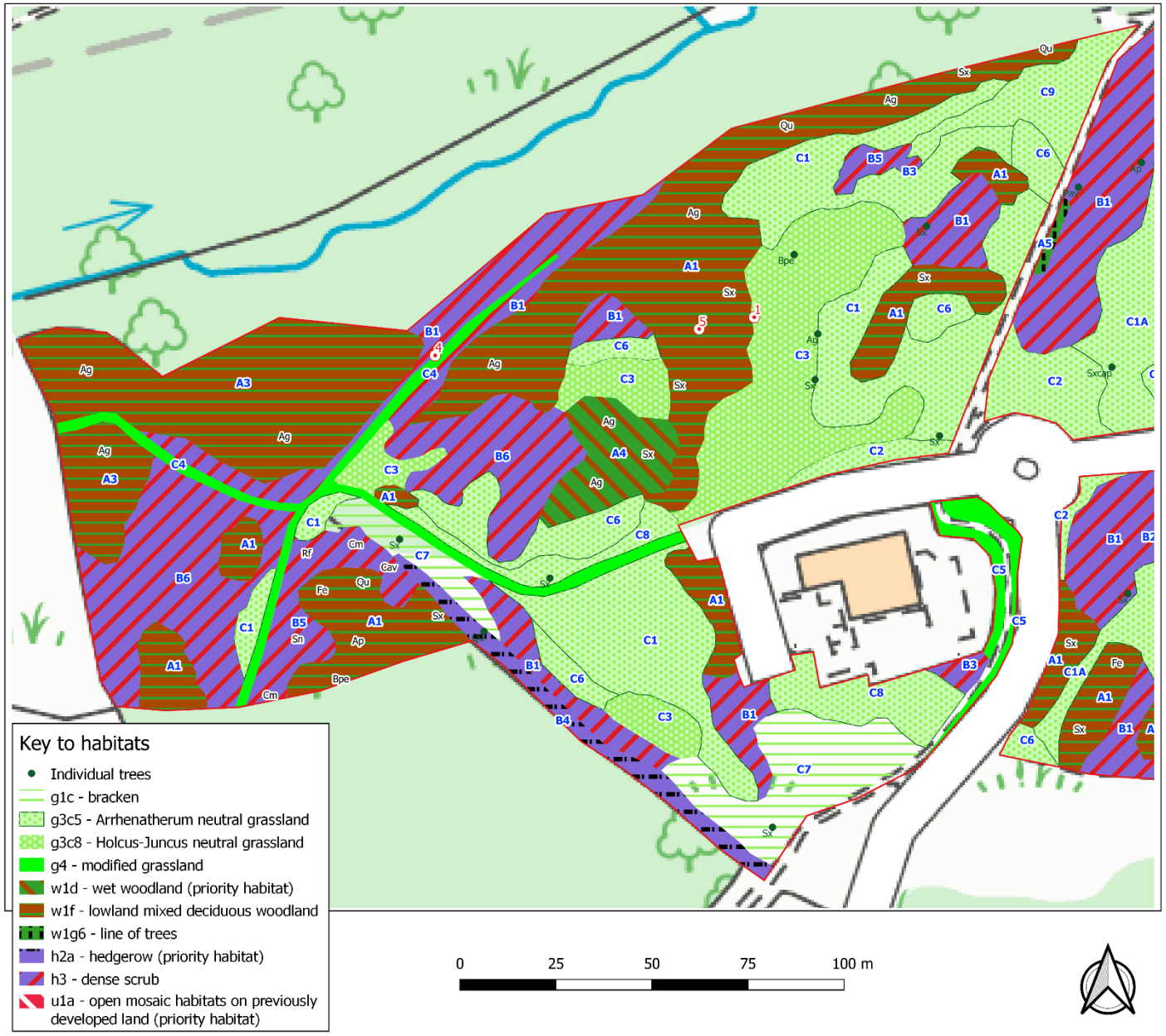

Target Notes

Target Note

No	Detail
1	Common spotted orchids
1	Common spotted orchids
1	Common spotted orchids
1	Common spotted orchids
1	Common spotted orchids
2	Possible badger track
2	Possible badger track
3	Unidentified spreading plant - non-native
4	Large grown out hawthorns - remnant hedge?
5	Cherry laurel sapling

Trees

Code	Species
Ag	Alnus glutinosa
Ag	NULLAlnus glutinosa
Ap	Acer pseudoplatanus
Bpe	Betula pendula
Cav	Corylus avellana
Cm	Crataegus monogyna
Fe	Fraxinus excelsior
Pa	Prunus avium
Qu	Quercus sp.
Rf	Rubus fruticosus
Sn	Sambucus nigra
Sx	Salix sp.

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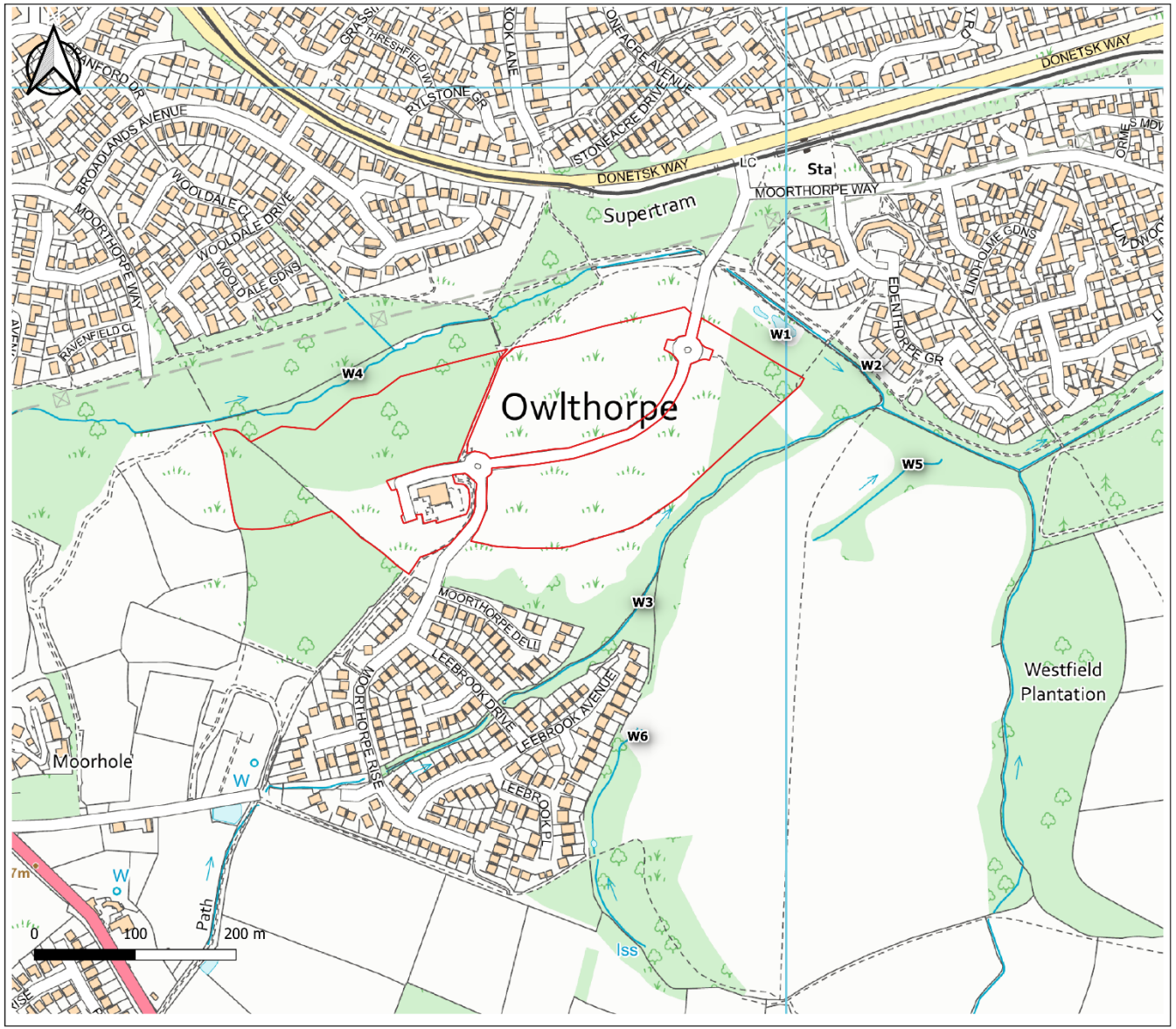
Project	P1226 Owlthorpe Fields PEA		
Title	UK Habitat Assessment Map		
Site	Site E - SK415826		
Client	Owlthorpe Action Group		
Map date	Site	Author	Version
2020-09-28	A3	Julie Riley	V02

Company : Wildscapes
Author : Julie Riley
Email : j.riley@wildsheffield.com

Publication Date : 02/10/2020
Version: 1
Reference :P1226

C. Appendix C: Watercourses



Key

Site Boundary

W1: Marked as two ponds on the map, when viewed from the footpath these appear to be fully dry depressions with tall ruderals, some species associated with damp soil e.g. Himalayan balsam.

W2: Shallow man-made channel which turns into a beck with earth banks. Very muddy, some still water in places, otherwise dry and fully shaded by bramble. Little in-channel vegetation, extensive litter.

W3: Difficult access as located within dense woodland, where accessible channel was dried out and fully shaded with no in-channel vegetation.

W4: Ochre Dyke - deep channel with clay banks holding hardly any water, running through shaded woodland, very little in-channel vegetation.

W5: Similar to W3.

W6: Within woodland, not fully accessed but appeared similar to W3 and W5.

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Project	P1226 Owlthorpe Fields PEA		
Title	Great Crested Newt Habitat Suitability Assessment Sites		
Site	Owlthorpe - 250m around SK417826		
Client	Owlthorpe Action Group		
Map date: 2020-09-17	Size: A3	Author: Julie Riley	Version: V01

Company : Wildscapes
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Email : j.riley@wildsheffield.com

Publication Date : 02/10/2020
Version: 1
Reference :P1226

D. Appendix D: Species List

Owlthorpe Site C	Survey Date: 14/07/2020										
Surveyor: Julie Riley	Weather: 16°C, windy but dry, 90% cloud cover										
	Habitat	Other lowland mixed deciduous woodland	Other lowland mixed deciduous woodland	Bramble scrub	Hawthorn scrub	Scattered trees & scattered scrub	Arrhenatherum neutral grassland	Holcus - Juncus neutral grassland	Modified grassland	Arrhenatherum neutral grassland: tall ruderals	Open Mosaic Habitats on Previously Developed Land
	UKHab code	w1f7	w1f7	h3d	h3f	Secondary codes 10 & 11	g3c5	g3c8	g4	g3c5 16	u1a
	Map code	A1	A2	B1	B2	Not primary habitat	C1A, C2	C3	C4	C6	D
Common Name	***Scientific Name***										
Woody species											
Norway maple	*Acer platanoides*					R					
Sycamore	*Acer pseudoplatanus*	O	R			R					
Horse chestnut	*Aesculus castaneum*					R					
Alder	*Alnus glutinosa*		R								
Silver birch	*Betula pendula*		O			R					
Birch sp.	*Betula sp.*										
Butterfly bush	*Buddleja davidii*			R							
Dogwood	*Cornus sanguinea*			R		R					
Hazel	*Corylus avellana*	R									
Hawthorn	*Crataegus monogyna*	O	R	R	O	F					
Ash	*Fraxinus excelsior*	F	D			O					
Ivy	*Hedera helix*		O (LF)								
Tutsan	*Hypericum androsaemum*										
Holly	*Ilex aquifolium*										

Honeysuckle (garden)	*Lonicera sp.*										
Apple	*Malus domestica*					R					
Wild cherry	*Prunus avium*	R				R					
Cherry laurel	*Prunus laurocerasus*										
Pear	*Pyrus sp.*					R					
Sessile oak	*Quercus petraea*					R					
Oak	*Quercus sp.*		R								
Dog rose	*Rosa canina*	R		R		R					
Rose sp.	*Rosa sp.*		R								
Bramble	*Rubus fruticosus agg.*	F	F	D	O						
Raspberry	*Rubus idaeus*	R									
Goat willow	*Salix caprea*	O				F					
Grey willow	*Salix cinerea*	O				O					
Crack willow	*Salix fragilis agg.*										
Willow sp. inc hybrids	*Salix sp.*	A									
Elder	*Sambucus nigra*					R					
Rowan	*Sorbus aucuparia*					R					
Whitebeam sp.	*Sorbus sp.*					R					
Wych elm	*Ulmus glabra*										
Guelder rose	*Viburnum opulus*					R					
Herbaceous species											
Yarrow	*Achillea millefolium*										O
Cow parsley	*Anthriscus sylvestris*		R				O				
Mugwort	*Artemesia vulgaris*			R			R				
Michaelmas daisy	*Aster sp.*			R						D	R
Daisy	*Bellis perennis*										R
Bindweed	*Calystegia sepium*			R							
Common knapweed	*Centaurea nigra*						R				O
Common centaury	*Centaurium erythraea*										R
Common mouse ear	*Cerastium fontanum*										R

Rosebay	*Chamerion angustifolium*									D	
Creeping thistle	*Cirsium arvense*			R			O				
Spear thistle	*Cirsium vulgare*			R			R				
Smooth hawksbeard	*Crepis capillaris*										
Common spotted orchid	*Dactylorhiza fuchsii*		R								O
Wild carrot	*Daucus carota*										R
Teasel	*Dipsacus fullonum*						R				R
Great willowherb	*Epilobium hirsutum*			R	R		O			D	O
Broad-leaved willowherb	*Epilobium montanum*		R				R				
Willowherb sp.	*Epilobium sp.*										
Meadowsweet	*Filipendula ulmaria*							LA			
Goat's rue	*Galega officinalis*						R				R
Cleavers	*Galium aparine*						R				R
Cut leaved geranium	*Geranium dissectum*										R
Meadow cranesbill	*Geranium pratense*	R					R				
Hogweed	*Heracleum sphondylium*		R				O				
Hawkweed sp.	*Hieracium sp.*										
Bluebell sp.	*Hyacinthoides sp.*		R								
Perforate St John's wort	*Hypericum perforatum*						R				R
Common cat's ear	*Hypochaeris radicata*						R				R
Hoary ragwort	*Jacobaea erucifolia*							R			R
Nipplewort	*Lapsana communis*										
Meadow vetchling	*Lathyrus pratensis*						R				R
Oxeye daisy	*Leucanthemum vulgare*										R
Birdsfoot trefoil	*Lotus corniculatus*						R				O
Pineappleweed	*Matricaria discoidea*										
Black medic	*Medicago lupulina*						R				R
Ribbed melilot	*Melilotus officinalis*								R		
Red bartsia	*Odontites verna*						R		R		

Ribwort plantain	*Plantago lanceolata*						R		O		R
Greater plantain	*Plantago major*										
Knotgrass	*Polygonum aviculare*										
Creeping cinquefoil	*Potentilla reptans*						R	F			
Self-heal	*Prunella vulgaris*		R								O
Meadow buttercup	*Ranunculus acris*		R								R
Creeping buttercup	*Ranunculus repens*										R
Wild mignonette	*Reseda lutea*										R
Curled dock	*Rumex crispus*			R							
Broad-leaved dock	*Rumex obtusifolius*						R				
Autumn hawkbit	*Scorzoneroides autumnalis*										
Common ragwort	*Senecio jacobaea*						R				R
Red campion	*Silene dioica*		R								
Smooth sowthistle	*Sonchus oleraceus*										R
Hedge woundwort	*Stachys sylvatica*		R				R				
Lesser stitchwort	*Stellaria graminaea*										
Tansy	*Tanacetum vulgare*						R				R
Dandelion	*Taraxacum officinale agg.*										R
Upright hedge parsley	*Torilis japonica*										
Goat's beard	*Tragopogon pratensis*						R				
Lesser trefoil	*Trifolium dubium*										
Zigzag clover	*Trifolium medium*										
Red clover	*Trifolium pratense*										R
White clover	*Trifolium repens*								F		R
Scentless mayweed	*Tripleurospermum inodorum*										
Coltsfoot	*Tussilago farfara*										R
Common nettle	*Urtica dioica*	R		R	R		O				
Germander speedwell	*Veronica chamaedrys*										R
Tufted vetch	*Vicia cracca*										R

Hairy tare	*Vicia hirsuta*						R				R
Common vetch	*Vicia sativa*										R
Smooth tare	*Vicia tetrasperma*										
Vetch sp.	*Vicia sp.*		R								
Grasses, rushes and sedges											
Common bent	*Agrostis capillaris*										R
Creeping bent	*Agrostis stolonifera*										
Meadow foxtail	*Alopecurus pratensis*										R
False oat grass	*Arrhenatherum elatius*	R		O	R		A	F			O
Glaucous sedge	*Carex flacca*										R (LA)
Common sedge	*Carex nigra*										
Crested dogstail	*Cynosurus cristatus*										R
Cocksfoot	*Dactylis glomerata*						O		O		R
Tufted hair grass	*Deschampsia cespitosa*										
Couch	*Elymus repens*						R				
Tall fescue	*Festuca arundinacea*										
Red fescue	*Festuca rubra*										
Fescue sp.	*Festuca sp.*										R
Yorkshire fog	*Holcus lanatus*						O	R			O
Sharp-flowered rush	*Juncus acutiflorus*										
Compact rush	*Juncus conglomeratus*						R	O			
Soft rush	*Juncus effusus*										
Perennial rye grass	*Lolium perenne*								F		R
Timothy	*Phleum pratense*								R		
Annual meadow grass	*Poa annua*										R
Rough meadow grass	*Poa trivialis*	R	R				R				
Ferns & horsetails											
Male fern	*Dryopteris filix-mas*		R								
Bracken	*Pteridium aquilinum*										

Field horsetail	*Equisetum arvense*						R	R			r
Mosses											F
Common lawn moss	*Rhytidiadelphus squarrosus*										R

Owlthorpe Site D	Survey Date: 03/07/2020									
Surveyor: Julie Riley	Weather: 14°C, breezy with 23mph gusts, 70% cloud cover									
	Habitat	Other lowland mixed deciduous woodland	Line of trees	Bramble scrub	Hawthorn scrub	Non native scrub	Scattered trees & scattered scrub	Arrhenatherum neutral grassland	Arrhenatherum neutral grassland: tall ruderals	Open Mosaic Habitats on Previously Developed Land
	UKHab code	w1f7	w1g6	h3d	h3f	h3h	Secondary codes 10 & 11	g3c5	g3c5 16	u1a
	Map code	A1	A5	B1	B2	B3	Not primary habitat	C1A, C2	C6	D
Common Name	***Scientific Name***									
Woody species										
Norway maple	*Acer platanoides*									
Sycamore	*Acer pseudoplatanus*									
Horse chestnut	*Aesculus castaneum*						R			
Alder	*Alnus glutinosa*									
Silver birch	*Betula pendula*		D				R			
Birch sp.	*Betula sp.*									
Butterfly bush	*Buddleja davidii*									
Dogwood	*Cornus sanguinea*			R			R			
Hazel	*Corylus avellana*									
Hawthorn	*Crataegus monogyna*	R		O	D		O			
Ash	*Fraxinus excelsior*	R		F			O			
Ivy	*Hedera helix*									

Tutsan	*Hypericum androsaemum*						R			
Holly	*Ilex aquifolium*									
Honeysuckle (garden)	*Lonicera sp.*					LD				
Apple	*Malus domestica*						R			
Wild cherry	*Prunus avium*						R			
Cherry laurel	*Prunus laurocerasus*									
Pear	*Pyrus sp.*						R			
Sessile oak	*Quercus petraea*						R			
Oak	*Quercus sp.*	R					R			
Dog rose	*Rosa canina*						R			
Rose sp.	*Rosa sp.*									
Bramble	*Rubus fruticosus agg.*	O		D	O		F			
Raspberry	*Rubus idaeus*									
Goat willow	*Salix caprea*	O					O			
Grey willow	*Salix cinerea*	O					O			
Crack willow	*Salix fragilis agg.*	R					R			
Willow sp. inc hybrids	*Salix sp.*	F								
Elder	*Sambucus nigra*						R			
Rowan	*Sorbus aucuparia*			R			R			
Whitebeam sp.	*Sorbus sp.*									
Wych elm	*Ulmus glabra*						R			
Guelder rose	*Viburnum opulus*						R			
Herbaceous species										
Yarrow	*Achillea millefolium*							R		R
Cow parsley	*Anthriscus sylvestris*							O	F	
Mugwort	*Artemesia vulgaris*									R
Michaelmas daisy	*Aster sp.*							R		
Daisy	*Bellis perennis*									
Bindweed	*Calystegia sepium*							R		
Common knapweed	*Centaurea nigra*							O		R
Common centaury	*Centaurium erythraea*									R

Common mouse ear	*Cerastium fontanum*									
Rosebay	*Chamerion angustifolium*			R				R	D	
Creeping thistle	*Cirsium arvense*							O		
Spear thistle	*Cirsium vulgare*							R		
Smooth hawksbeard	*Crepis capillaris*									
Common spotted orchid	*Dactylorhiza fuchsii*							R		
Wild carrot	*Daucus carota*							R		
Teasel	*Dipsacus fullonum*							R		
Great willowherb	*Epilobium hirsutum*							O	D	
Broad-leaved willowherb	*Epilobium montanum*							R		
Willowherb sp.	*Epilobium sp.*									
Meadowsweet	*Filipendula ulmaria*									
Goat's rue	*Galega officinalis*							R (LF)		
Cleavers	*Galium aparine*							R (LF)		
Cut leaved geranium	*Geranium dissectum*									R
Meadow cranesbill	*Geranium pratense*									
Hogweed	*Heracleum sphondylium*							R		
Hawkweed sp.	*Hieracium sp.*									
Bluebell sp.	*Hyacinthoides sp.*									
Perforate St John's wort	*Hypericum perforatum*									
Common cat's ear	*Hypochaeris radicata*									O
Hoary ragwort	*Jacobaea erucifolia*							R		
Nipplewort	*Lapsana communis*							R		
Meadow vetchling	*Lathyrus pratensis*							R		
Oxeye daisy	*Leucanthemum vulgare*							R (LF)		
Birdsfoot trefoil	*Lotus corniculatus*							R (LF)		O
Pineappleweed	*Matricaria discoidea*									
Black medic	*Medicago lupulina*							R		R
Ribbed melilot	*Melilotus officinalis*									R
Red bartsia	*Odontites verna*							R		

Ribwort plantain	*Plantago lanceolata*									O
Greater plantain	*Plantago major*									
Knotgrass	*Polygonum aviculare*									
Creeping cinquefoil	*Potentilla reptans*							R (LF)		
Self-heal	*Prunella vulgaris*									R
Meadow buttercup	*Ranunculus acris*							R		
Creeping buttercup	*Ranunculus repens*							R		
Wild mignonette	*Reseda lutea*									
Curled dock	*Rumex crispus*							R		
Broad-leaved dock	*Rumex obtusifolius*							R		
Autumn hawkbit	*Scorzoneroides autumnalis*									
Common ragwort	*Senecio jacobaea*							R		R
Red campion	*Silene dioica*									
Smooth sowthistle	*Sonchus oleraceus*									
Hedge woundwort	*Stachys sylvatica*							R		
Lesser stitchwort	*Stellaria graminaea*							R		
Tansy	*Tanacetum vulgare*									
Dandelion	*Taraxacum officinale agg.*							R		R
Upright hedge parsley	*Torilis japonica*							R		
Goat's beard	*Tragopogon pratensis*							R		
Lesser trefoil	*Trifolium dubium*									
Zigzag clover	*Trifolium medium*							R		
Red clover	*Trifolium pratense*							O		R
White clover	*Trifolium repens*							R		R
Scentless mayweed	*Tripleurospermum inodorum*									
Coltsfoot	*Tussilago farfara*							R		
Common nettle	*Urtica dioica*							F	F	
Germander speedwell	*Veronica chamaedrys*									
Tufted vetch	*Vicia cracca*									
Hairy tare	*Vicia hirsuta*							R		
Common vetch	*Vicia sativa*							R		

Smooth tare	*Vicia tetrasperma*							R		
Vetch sp.	*Vicia sp.*									
Grasses, rushes and sedges										
Common bent	*Agrostis capillaris*									
Creeping bent	*Agrostis stolonifera*							R		
Meadow foxtail	*Alopecurus pratensis*									
False oat grass	*Arrhenatherum elatius*			R	R			A	O	O
Glaucous sedge	*Carex flacca*									O
Common sedge	*Carex nigra*									R
Crested dogstail	*Cynosurus cristatus*									R
Cocksfoot	*Dactylis glomerata*							F		R
Tufted hair grass	*Deschampsia cespitosa*							R		
Couch	*Elymus repens*									R
Tall fescue	*Festuca arundinacea*									
Red fescue	*Festuca rubra*									R
Fescue sp.	*Festuca sp.*							R		
Yorkshire fog	*Holcus lanatus*							O		O
Sharp-flowered rush	*Juncus acutiflorus*									
Compact rush	*Juncus conglomeratus*							R		
Soft rush	*Juncus effusus*									
Perennial rye grass	*Lolium perenne*							R		R
Timothy	*Phleum pratense*									R
Annual meadow grass	*Poa annua*									
Rough meadow grass	*Poa trivialis*							R		
Ferns & horsetails										
Male fern	*Dryopteris filix-mas*									
Bracken	*Pteridium aquilinum*							R		
Field horsetail	*Equisetum arvense*									R
Mosses										O

Common lawn moss	*Rhytidiadelphus squarrosus*															

Owlthorpe Site E	Survey Date: 20/07/2020															
Surveyor: Julie Riley	Weather: 15°C, breezy, 90% cloud cover															
	Habitat	Other lowland mixed	Other lowland mixed deciduous	Wet woodland	Bramble scrub	Hawthorn scrub	Non native scrub	Hedgerow	Mixed scrub	Scattered trees & scattered scrub	Arrhenatherum neutral grassland	Holcus-Juncus neutral grassland	Modified grassland	Modified grassland	Arrhenatherum neutral grassland: tall ruderals	Bracken
	UKHab code	w1f 7	w1f7	w1d	h3d	h3f	h3h	h2a	h3h	Secondary codes 10 & 11	g3c5	g3c8	g4	g4	g3c5 16	g1c
	Map code	A1	A3	A4	B1	B2	B3	B4	B5, B6	Not primary habitat	C1, C2, C8, C9	C3	C4	C5	C6	C7
Common Name	***Scientific Name***															
Woody species																
Norway maple	*Acer platanoides*															
Sycamore	*Acer pseudoplatanus*	R														
Horse chestnut	*Aesculus castaneum*															
Alder	*Alnus glutinosa*	F	A	A						O						
Silver birch	*Betula pendula*	R								R						
Birch sp.	*Betula sp.*	R														
Butterfly bush	*Buddleja davidii*									R						
Dogwood	*Cornus sanguinea*	R							P	R						
Hazel	*Corylus avellana*							R	P	R						
Hawthorn	*Crataegus monogyna*	O			R	O		A	P	A						

Ash	*Fraxinus excelsior*	O								O						
Ivy	*Hedera helix*	R	R													
Tutsan	*Hypericum androsaemum*															
Holly	*Ilex aquifolium*							R								
Honeysuckle (garden)	*Lonicera sp.*						LD									
Apple	*Malus domestica*									R						
Wild cherry	*Prunus avium*	R								R						
Cherry laurel	*Prunus laurocerasus*	R														
Pear	*Pyrus sp.*	R								R						
Sessile oak	*Quercus petraea*	O														
Oak	*Quercus sp.*		O							F						
Dog rose	*Rosa canina*	R						R		R						
Rose sp.	*Rosa sp.*															
Bramble	*Rubus fruticosus agg.*	F	O		D	R		O	P	F						
Raspberry	*Rubus idaeus*															
Goat willow	*Salix caprea*	A														
Grey willow	*Salix cinerea*	O														
Crack willow	*Salix fragilis agg.*															
Willow sp. inc hybrids	*Salix sp.*	O	R	A		R			P	O						
Elder	*Sambucus nigra*							R	P	R						
Rowan	*Sorbus aucuparia*	R				R			P	R						
Whitebeam sp.	*Sorbus sp.*															
Wych elm	*Ulmus glabra*															
Guelder rose	*Viburnum opulus*									R						
Herbaceous species																

Yarrow	*Achillea millefolium*													R		
Cow parsley	*Anthriscus sylvestris*															
Mugwort	*Artemesia vulgaris*										R					
Michaelmas daisy	*Aster sp.*															
Daisy	*Bellis perennis*															
Bindweed	*Calystegia sepium*							R								
Common knapweed	*Centaurea nigra*															
Common centaury	*Centaurium erythraea*										R					
Common mouse ear	*Cerastium fontanum*													R		
Rosebay	*Chamerion angustifolium*				R						R	O			LD	
Creeping thistle	*Cirsium arvense*										O				LD	
Spear thistle	*Cirsium vulgare*										R					
Smooth hawksbeard	*Crepis capillaris*										R					
Common spotted orchid	*Dactylorhiza fuchsii*											R				
Wild carrot	*Daucus carota*															
Teasel	*Dipsacus fullonum*															
Great willowherb	*Epilobium hirsutum*	R			R						O				LD	
Broad-leaved willowherb	*Epilobium montanum*										R					
Willowherb sp.	*Epilobium sp.*											R				
Meadowsweet	*Filipendula ulmaria*															
Goat's rue	*Galega officinalis*										O	R		R		

Cleavers	*Galium aparine*										R					
Cut leaved geranium	*Geranium dissectum*										R					
Meadow cranesbill	*Geranium pratense*										R					
Hogweed	*Heracleum sphondylium*										R					
Hawkweed sp.	*Hieracium sp.*										R	R				
Bluebell sp.	*Hyacinthoides sp.*															
Perforate St John's wort	*Hypericum perforatum*										R					
Common cat's ear	*Hypochaeris radicata*										O	R		O		
Hoary ragwort	*Jacobaea erucifolia*											R				
Nipplewort	*Lapsana communis*															
Meadow vetchling	*Lathyrus pratensis*										R					
Oxeye daisy	*Leucanthemum vulgare*											R				
Birdsfoot trefoil	*Lotus corniculatus*										R	R				
Pineapple weed	*Matricaria discoidea*												R			
Black medic	*Medicago lupulina*											R		R		
Ribbed melilot	*Melilotus officinalis*											R				
Red bartsia	*Odontites verna*										R		R			
Ribwort plantain	*Plantago lanceolata*										O	O		R		
Greater plantain	*Plantago major*												R			
Knotgrass	*Polygonum aviculare*												O			
Creeping cinquefoil	*Potentilla reptans*										R					
Self-heal	*Prunella vulgaris*															

Meadow buttercup	*Ranunculus acris*															
Creeping buttercup	*Ranunculus repens*											R		R		
Wild mignonette	*Reseda lutea*										R					
Curled dock	*Rumex crispus*															
Broad-leaved dock	*Rumex obtusifolius*												O			
Autumn hawkbit	*Scorzoneroides autumnalis*										R					
Common ragwort	*Senecio jacobaea*										O	O	R			
Red campion	*Silene dioica*															
Smooth sowthistle	*Sonchus oleraceus*											R				
Hedge woundwort	*Stachys sylvatica*															
Lesser stitchwort	*Stellaria graminaea*										R					
Tansy	*Tanacetum vulgare*															
Dandelion	*Taraxacum officinale agg.*										R			A		
Upright hedge parsley	*Torilis japonica*										R					
Goat's beard	*Tragopogon pratensis*															
Lesser trefoil	*Trifolium dubium*										R					
Zigzag clover	*Trifolium medium*															
Red clover	*Trifolium pratense*										O	R				
White clover	*Trifolium repens*										R	R	F	F		

Scentless mayweed	*Tripleurospermum inodorum*												O			
Coltsfoot	*Tussilago farfara*										R					
Common nettle	*Urtica dioica*	R			R						O				LD	
Germander speedwell	*Veronica chamaedrys*															
Tufted vetch	*Vicia cracca*										R					
Hairy tare	*Vicia hirsuta*										R	R				
Common vetch	*Vicia sativa*										R	R				
Smooth tare	*Vicia tetrasperma*															
Vetch sp.	*Vicia sp.*													R		
Grasses, rushes and sedges																
Common bent	*Agrostis capillaris*															
Creeping bent	*Agrostis stolonifera*										O	F				
Meadow foxtail	*Alopecurus pratensis*															
False oat grass	*Arrhenatherum elatius*				R						A	O				
Glaucous sedge	*Carex flacca*	R		A							R	R				
Common sedge	*Carex nigra*															
Crested dogstail	*Cynosurus cristatus*										R	R				
Cocksfoot	*Dactylis glomerata*										R	R	R			
Tufted hair grass	*Deschampsia cespitosa*															
Couch	*Elymus repens*											R				
Tall fescue	*Festuca arundinacea*											R (tentative ID)				
Red fescue	*Festuca rubra*															

Fescue sp.	*Festuca sp.*										R	R		R		
Yorkshire fog	*Holcus lanatus*										F	F		R		
Sharp-flowered rush	*Juncus acutiflorus*											R				
Compact rush	*Juncus conglomeratus*			F								R				
Soft rush	*Juncus effusus*	R														
Perennial rye grass	*Lolium perenne*										R	R	A	A		
Timothy	*Phleum pratense*												R			
Annual meadow grass	*Poa annua*												O			
Rough meadow grass	*Poa trivialis*	R														
Grasses, rushes and sedges																
Male fern	*Dryopteris filix-mas*										R					
Bracken	*Pteridium aquilinum*															D
Field horsetail	*Equisetum arvense*															
Mosses											R (road edge)					
Common lawn moss	*Rhytidiadelphus squarrosus*															

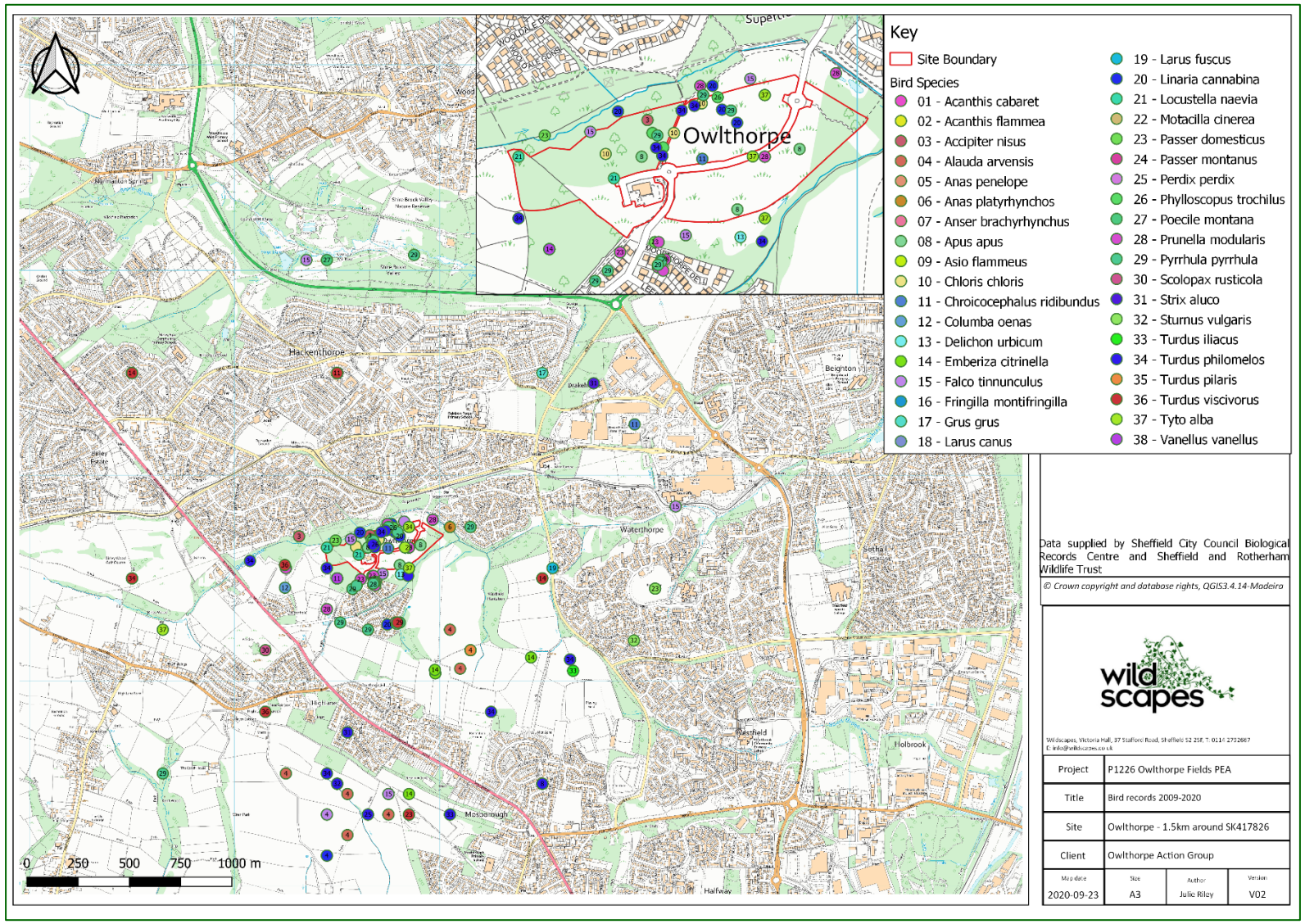
E. Appendix E: Biodiversity Net Gain Baseline Assessment (DEFRA Metric 2.0)

See separate PDF document

F. Appendix F: Summary Data Search Results

For raw data, please see separate PDF document

F.1 Birds



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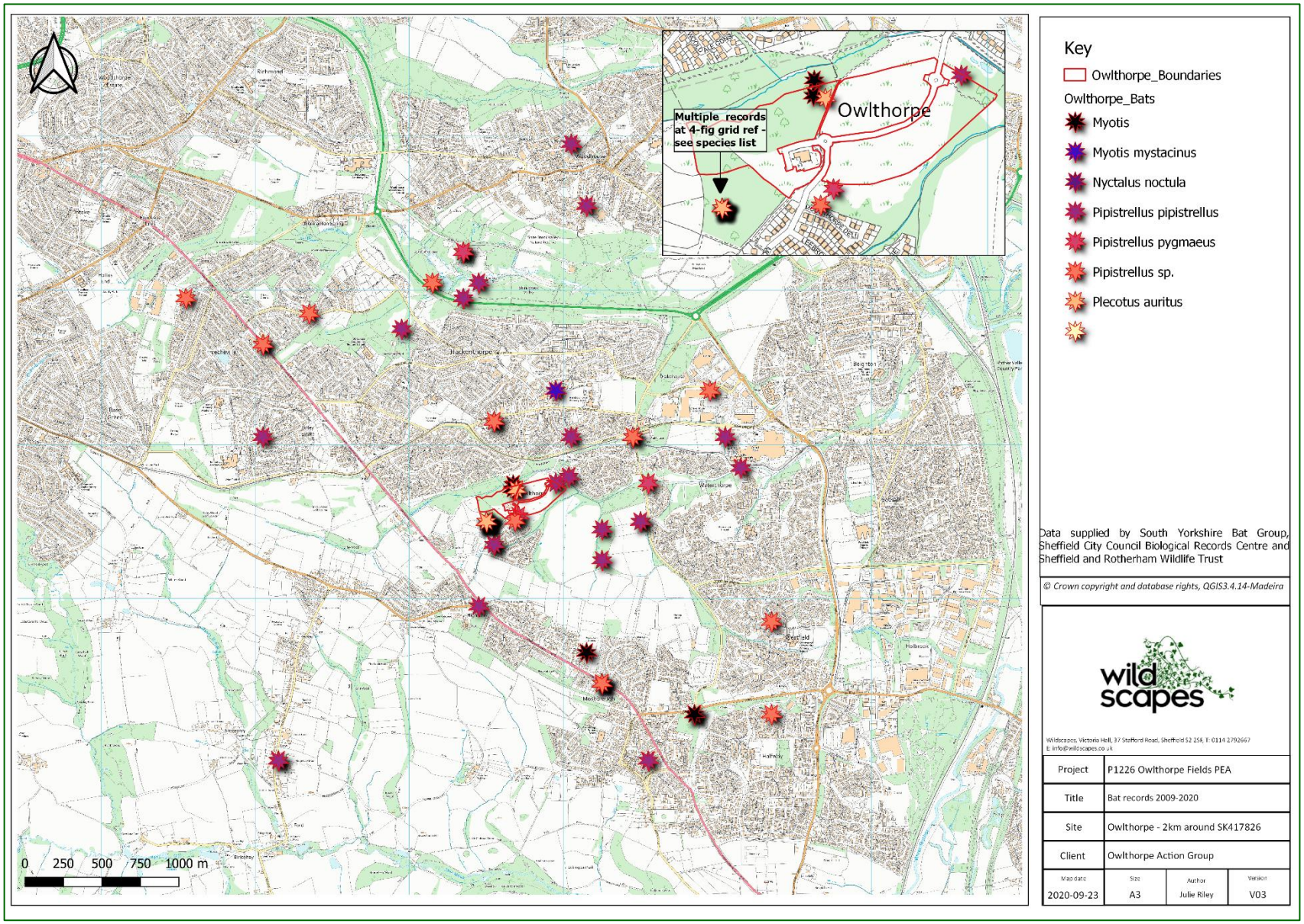
Reference :P1226

F.2 Bats



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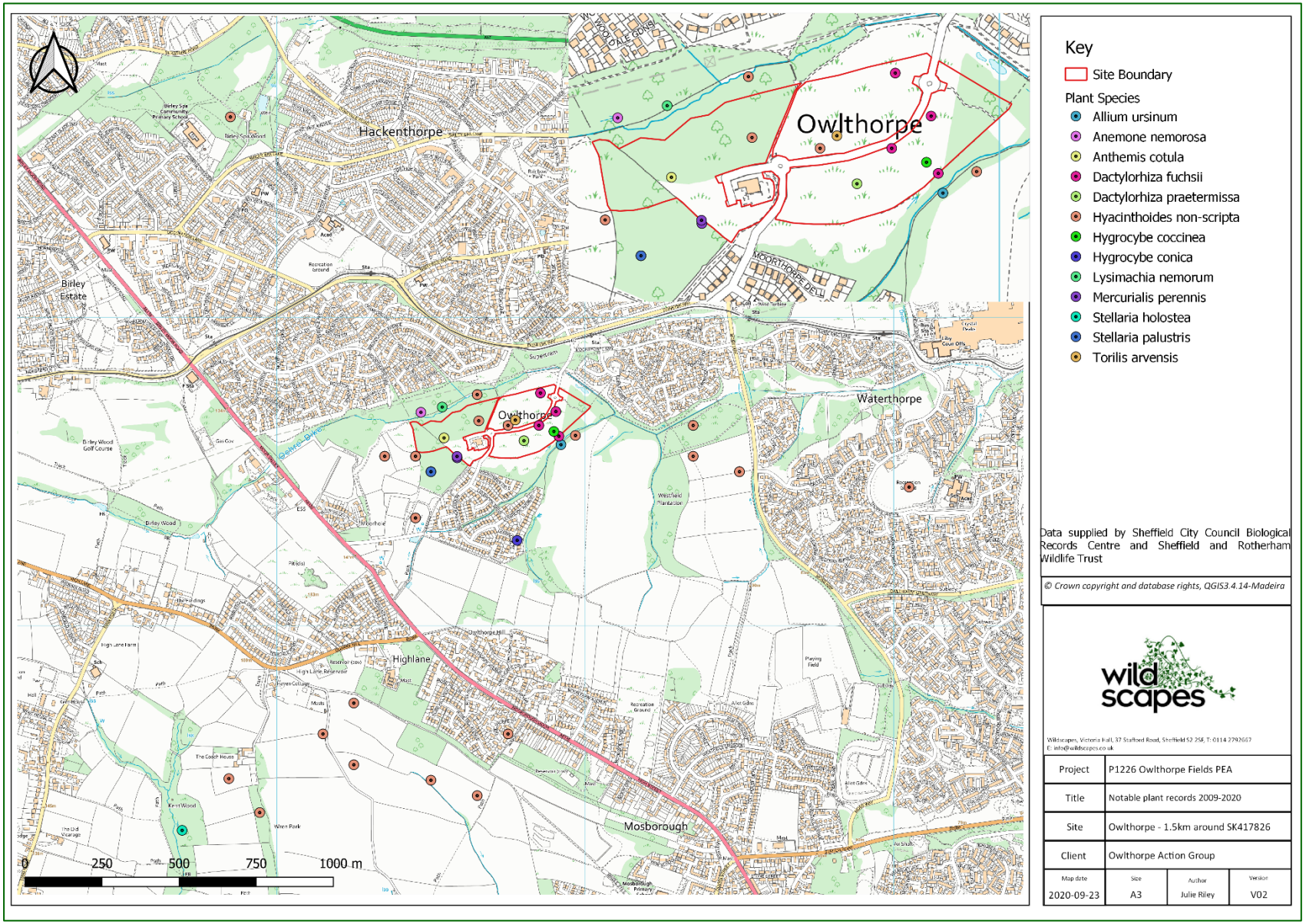
F.3 Notable Plants



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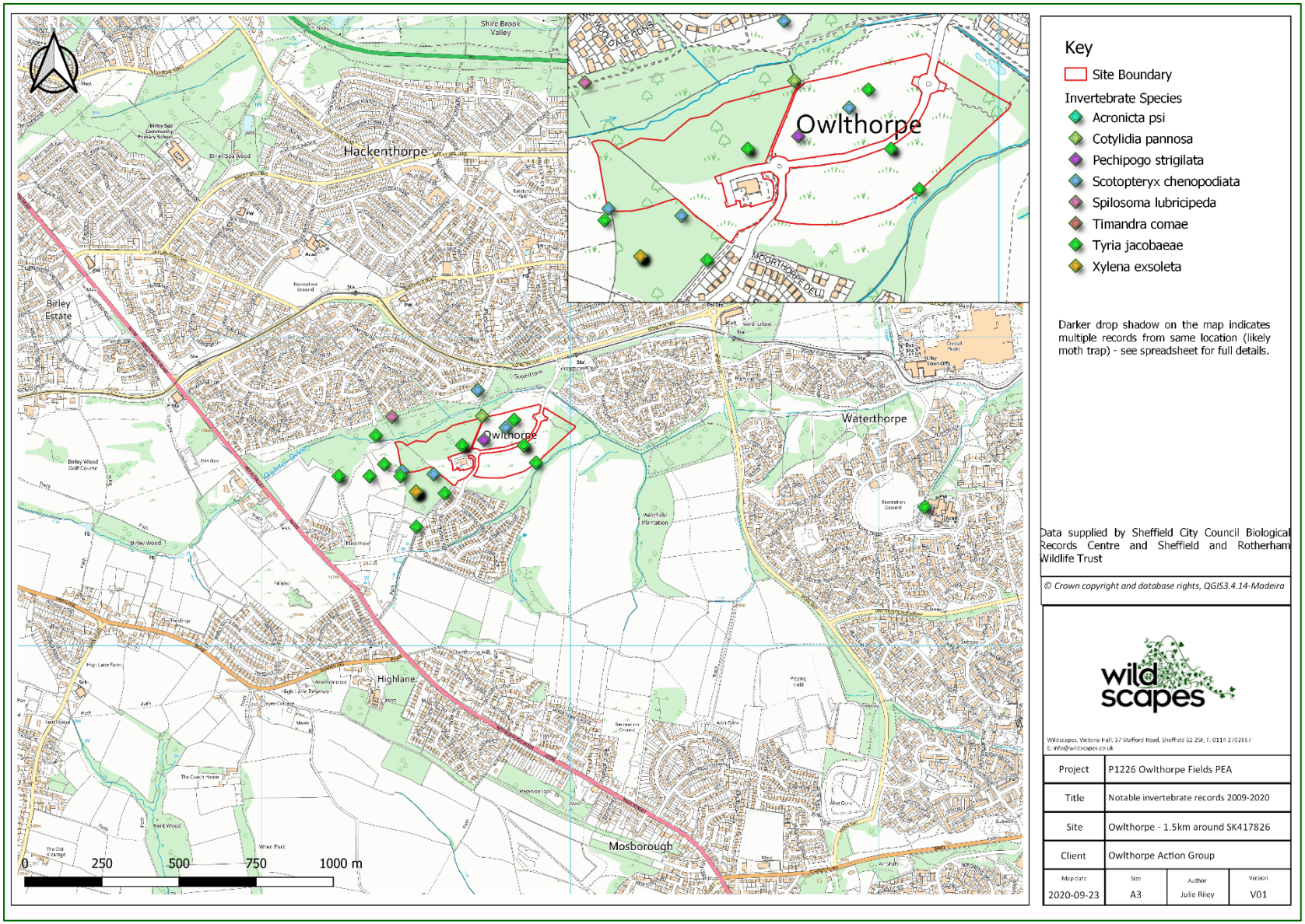
F.4 Notable Invertebrates



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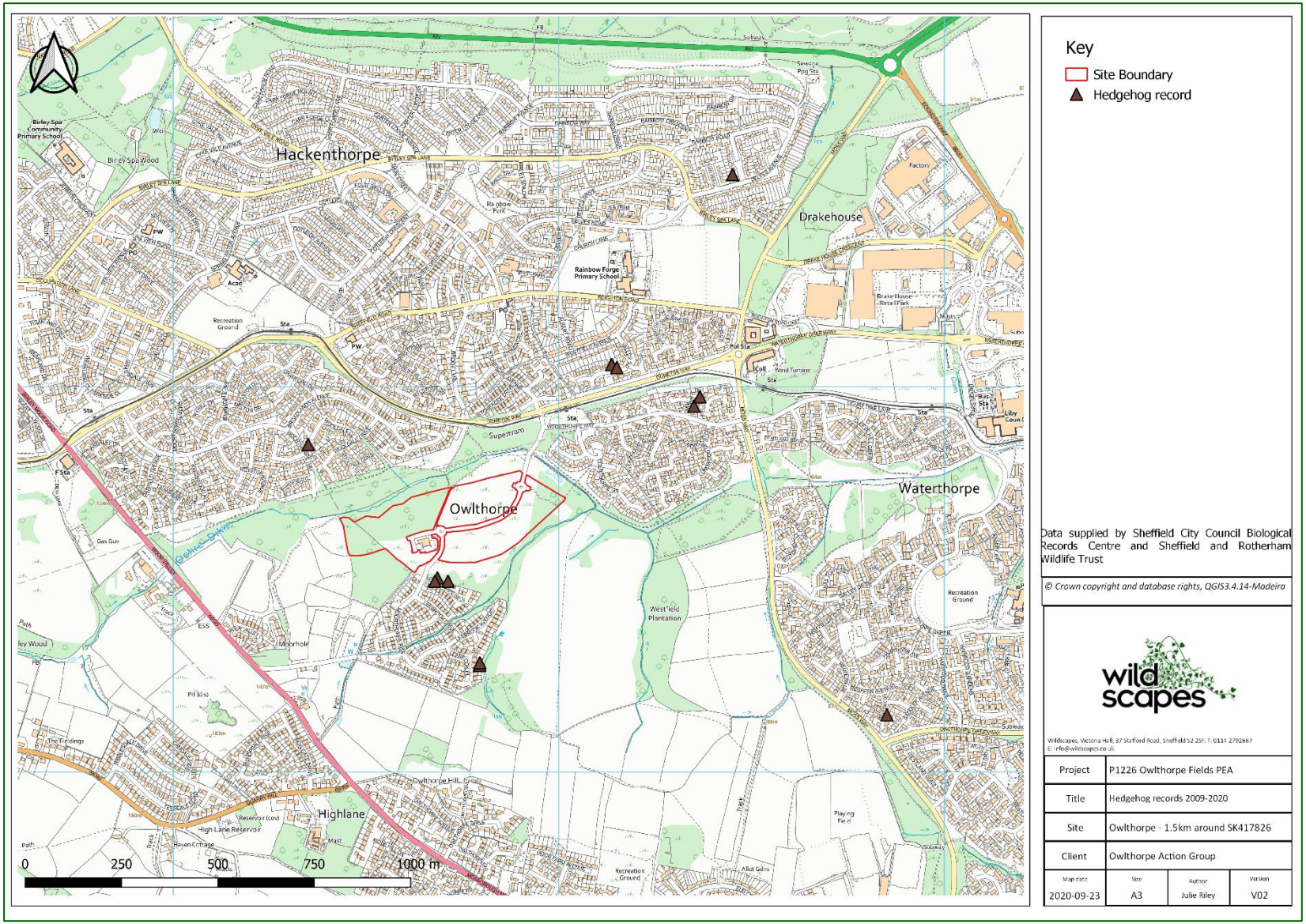
F.5 Hedgehog



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