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West Midlands
Interchange

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WEST MIDLANDS INTERCHANGE TECHNICAL APPENDIX 10.1 BASELINE ECOLOGY REPORT

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1. EXECUTIVE SUMMARY

This report forms an appendix to the Ecology and Nature Conservation chapter in the West Midlands Interchange EIA and should be read in conjunction with the chapter. A comprehensive suite of habitat and species surveys have been undertaken in 2016 and 2017 to inform the ecological baseline used for impact assessment and these surveys and their findings are described in this report. A summary is provided in the following paragraphs.

1.1 Habitats

- The majority of the Site is occupied by agricultural fields that are a mixture of arable and grazed pastures. Several of the fields in the north-east portion of the Site are subject to ongoing quarrying activity. A number of broadleaved and mixed woodlands are scattered across the Site, the largest of which is located in the centre of the Site (Calf Heath Wood). Calf Heath Wood is used for the release of game birds for shooting. The fields are surrounded by a network of interconnecting hedgerows and drainage ditches. Numerous mature trees, as well as ponds are located along the lengths of hedgerows. The western portion of the Site is bisected by a railway line and the Staffordshire and Worcestershire Canal, both of which run approximately north-south through the Site. The habitats recorded on-site in approximate descending order of size include:
 - i. Arable:
 - ii. Improved grassland;
 - iii. Quarry;
 - iv. Poor semi-improved grassland;
 - v. Mixed plantation woodland;
 - vi. Semi-improved grassland;
 - vii. Broad-leaved plantation woodland;
 - viii. Broad-leaved semi-natural woodland;
 - ix. Hedgerows;
 - x. Individual trees;
 - xi. Standing water;
 - xii. Running water;
 - xiii. Scrub; and
 - xiv. Buildings and hardstanding.
- 1.1.2 The Phase 1 Habitat Survey identified the presence of Japanese knotweed (Fallopia japonica) on the railway embankments immediately north and south of the A5 and Himalayan balsam (Impatiens glandulifera) was observed on the site boundary in the approximate location of the Site boundary by a ditch running along the south of the wet woodland adjacent Straight Mile.



- 1.1.3 *Rhododendron* was present extensivley through Calf Heath Wood and dominated the understorey.
- 1.1.4 The above mentioned plants are non-native species listed on Schedule 9 (Part 2) of the Wildlife and Countryside Act 1981 (as amended).
- 1.1.5 A summary of the geographic value and whether a given habitat is considered an 'Important' or 'Other' Ecological Feature is provided in Table 1.1 below. This evaluation is in relation to intrinsic habitat value; these habitats support protected and notable species and those species/groups are of value in their own right.

Table 1.1: Summary of Habitat Valuations

Habitat	Geographic Value	'Important' or 'Other' Ecological Feature
Arable	Site	Other Ecological Feature
Improved grassland	Site	Other Ecological Feature
Poor semi-improved grassland	Site	Other Ecological Feature
Semi-improved grassland	Local	Important Ecological Feature
Hedgerows	Local	Important Ecological Feature
Woodland (including mixed plantation, broad-leaved plantation woodland and broad-leaved semi-natural woodland)	Local	Important Ecological Feature
Individual trees	Local	Important Ecological Feature
Standing water	Local	Important Ecological Feature
Running water	Site	Other Ecological Feature
Scrub	Site	Other Ecological Feature
Buildings	Site	Other Ecological Feature
Quarry	Negligible	Other Ecological Feature
Invasive vegetation	Negligible	Other Ecological Feature

1.2 Species

1.2.1 A small population of the specially protected great crested newt were identified as present breeding in an off-site pond to the south of the Site beyond Station Road. No great crested newt were recorded during a suite of traditional surveys of on-site ponds despite ten of these ponds testing positive for e-DNA suggesting that individuals of this species are present in the landscape but in low numbers, undetectable by traditional techniques.



- Common toad (a species of principal importance), common frog and smooth newt were also identified as present.
- No reptile species were recorded during the survey, and these species are presumed to be absent from the Site.
- 1.2.3 Records of white-clawed crayfish (*Austropotamobius pallipes*) exist for the River Penk and Watershed Brook (1.4 km south-west of the Site) and Saredon Brook (750 m south of the Site). Habitats on-site were considered sub-optimal for this species. Although the canal has good connectivity to the wider landscape, it is not hydrologically linked to rivers and the habitat suitability for crayfish refuges is considered to be low due to the lack of refuge features and the presence of hard, engineered banks along much of the canal. Precautionary methods of working will be employed to ensure biosecurity and protection of unanticipated individuals present.
- 1.2.4 Sixty-two species of birds were recorded in the breeding bird survey, of which there were 12 UKBAP/s41 species of principal importance, 10 Red List species (all of which except mistle thrush are listed in s41) and 12 Amber List species. There are eight Staffordshire BAP species of which five form part of the Action Plan for Farmland Seed Eating Birds. The only species on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) recorded were hobby and barn owl which are considered to be breeding off site. The breeding bird assemblage on the site includes the s41/Red List/LBAP farmland birds (lapwing, skylark, yellow wagtail, linnet, yellowhammer and reed bunting) reflecting the agricultural landscape present.
- 1.2.5 Calf Heath Reservoir supports a range of breeding waterbirds, notably mallard, great crested grebe and coot which were confirmed breeding.
- 1.2.6 A kingfisher (Schedule 1) was seen on two occasions in the western side of Calf Heath reservoir. This species may nest at this location, although the habitat is not ideal. The Amber List lesser-black backed gull, black-headed gull and common tern were recorded on or over the reservoir. Other waterbirds recorded in the survey were feral/hybrid mallard, cormorant, moorhen and tufted duck.
- 1.2.7 The Gailey Reservoirs LWS (including Calf Heath Reservoir) support wintering bird assemblages consistent with their designation at the county scale. Records of note include a flock of pink-footed geese on Gailey Lower Reservoir on one date and Canada goose, greylag goose, mallard and large numbers of tufted duck on both Gailey Reservoirs. Four records of the Schedule 1 kingfisher were made on Gailey Reservoirs. Farmland birds present in the winter correspond broadly with those breeding on the Site, although yellowhammer was not recorded on the Site, this species presumably flocking elsewhere. No notable concentrations of lapwing or skylark were noted and wading birds (snipe, oystercatcher) seem to use the Site on occasion only. Several flocks of wintering thrushes (fieldfare and



- redwing) were recorded, although these were typical of the size of flocks of both species recorded across the West Midlands²⁶.
- 1.2.8 A total of 420 species were recorded during the invertebrate surveys. Of the total 420 species recorded, 133 invertebrate species from target groups of biodiversity interest were recorded in Calf Heath Wood, 90 species were recorded from the quarry, 172 species were recorded across the wider Calf Heath landscape and 179 species were recorded in the Land south of Vicarage Road. The habitat diversity is broadly poor in terms of invertebrate assemblage types. Eight species/groups of importance were identified, seven Nationally Scarce (NS) or s41 species and one group of species that are of county, Staffordshire importance. The habitats identified are largely populated by common and localised species indicative of a broad suite of preferences rather than a specialised set of habitat criteria. The habitats present on-site are well represented in the local area.
- 1.2.9 Ten species of bat were confirmed to be present in the survey area. As an assemblage of bats this is considered significant as there are 12 species recorded in Staffordshire (SER, 2016) and the Site supports to a greater of lesser extent the majority of these species. Species recorded on-site include common pipistrelle, soprano pipistrelle, nathusius pipistrelle, noctule, Daubenton's, whiskered, Brandt's, serotine, brown long-eared and natterer's.
- 1.2.10 A total of twenty-two roosts were identified. Nine bat roosts were identified in 2016 and 13 bat roosts were identified in 2017 via a combination of survey methods. Six of the roosts were on-site and sixteen were off-site. Of the sixteen off-site roosts, seven are within 100 m of the Site boundary. Nine tree roosts and thirteen building roosts were identified. The roosts identified are summarised below in Table 1.2.

Table 1.2: Confirmed Bat Roosts

Table Tiel Committee Bat I	able 1.2. Committee but Roosts				
Roost Name	Distance and Orientation from Site	Species	Roost Classification		
Gailey Magazine	On-site	Common pipistrelle Soprano pipistrelle	Day roost		
Woodside Barn	On-site	Natterer's Common pipistrelle Soprano pipistrelle Brown long-eared	Day roost Night roost Probable feeding perch		
Mile End Cottage	On-site	Common pipistrelle	Day roost		
Croft House	On-site	Common pipistrelle	Day roost		
Heath Farm – Main Farmhouse	On-site	Brown long-eared	Day roost		
T97 – Oak	On-site	Soprano pipistrelle	Day roost		
Calf Heath Wood Birch 2 Roost 2	Approximately 20 m west	Daubenton's	Day roost		



Roost Name	Distance and Orientation from Site	Species	Roost Classification
Woodview Cottage Roost 3	20 m south	Brown long-eared	Maternity roost or satellite roost
Stable Lane Building Roost 13	25 m east	Brown long-eared	Day roost
Tree Roost 15	40 m south	Noctule	Maternity roost
Tree Roost 10	45 m south	Whiskered/brandt's	Night roost
Calf Heath Wood Birch 1 Roost 1	Approximately 80 m west	Daubenton's	Day roost
Tree Roost 9	90 m south	Daubenton's	Day roost
Bungalow – Stable Lane Roost 7	120 m east	Brown long-eared	Day roost
Stable Lane Building Roost 11	200 m east	Whiskered/brandt's	Day roost
Standeford Barn Conversion Roost 8	1000 m south	Natterer's	Maternity roost
Somerford Grange Farm Roost 4	1250 m west	Natterer's	Day roost
Quarry Tree Roost 16	1300 m south east	Daubenton's	Maternity roost
Somerford Tree Roost 14	1400 m west	Noctule	Maternity roost
Woodland north of Laches Wood Outdoor Education Centre – Birch. Roost 6	1500 m south west	Whiskered/brandt's	Day roost
Slade Heath Building Roost 12	2100 m south west	Whiskered/brandt's	Day roost / Possible maternity roost
House – Old Stafford Road Roost 5	2350 m south west	Whiskered/brandt's	Day roost

- 1.2.11 Bat activity was recorded across the Site; however, key commuting and foraging areas were noted including:
 - i. Staffordshire and Worcestershire Canal;
 - ii. Calf Heath Wood (Interior and woodland edge);
 - iii. Ditch / hedgerow past Gailey Magazine linking the Staffordshire and Worcestershire Canal and Calf Heath Wood;
 - iv. Access track past Woodside Farm leading into the wayleave/track running north west south east in Calf Heath Wood;
 - v. Hedgerow running east to west in centre of Transect 4 including Point Count 4.11;
 - vi. Hedge / tree line running southwest to northeast between Calf Heath Woodland and Reservoir;
 - vii. Hedgerow running north-west to south-east between Vicarage Road and Straight Mile;
 - viii. Hedgerow / bund running north to south in the far south west of the Site between the canal and Straight Mile;



- ix. Hedge / treeline in location of Pond 24;
- x. Wet woodland in south of the Site adjacent Straight Mile and the tree line extending north from this to the wooded copse off Woodlands Lane; and
- xi. The canal and woodland habitats in the south of the Site have been shown to support foraging, commuting and roost sites for a range of species.
- 1.2.12 Four ditches and ponds present across the Site, and the length of the Staffordshire and Worcestershire Canal intersecting the Site were surveyed for water vole field signs. Three of the four ditches were during some surveys found to hold shallow depths of water (<5cm), and the remaining ditch was adjacent to a layby and was observed to be heavily influenced by human disturbance, litter and pollution. Although field signs and direct observations of other mammal species (including brown rat (*Rattus norvegicus*), bank vole (*Myodes glareolus*) and field vole (*Microtus agrestis*) were noted, no water vole field signs were noted within the ditches, ponds or the canal during surveys. Water vole are presumed to be absent from the Site.
- or in any further targeted species surveys undertaken. Inspections of the Gravelly Way road bridge and the Gravelly way footbridge were undertaken monthly from May to October 2016 (following bat activity transects) and identified staining possibly caused by aged otter spraint in May, with no fresh signs for the following months. An otter footprint was observed in the very north of the Site during the badger survey in March 2017; it was by the ditch south of the A5, approximately 100 m east of the Staffordshire and Worcestershire canal. There are known records of otter within and around the Site from the last ten years¹ and consultation comments from the Canal and River Trust confirm that the Staffordshire and Worcestershire Canal provides important habitat for otter². Therefore, it is considered the canal forms part of an otter territory, and otters are likely to use the stretch of canal that passes through the Site, using the terrestrial parts of the Site on occasion.
- 1.2.14 Comprehensive badger bait marking surverys were undertaken. The results of these are provided in Confidential Technical Appendix 10.2.
- 1.2.15 No brown hares (s41 Priority Species and LBAP) were recorded on-site; no specific surveys for this species have been carried out, but this species is large and often conspicuous. Brown hare is likely to be absent from the Site.
- 1.2.16 A polecat (Protected under Conservation of Habitats and Species Regulations 2017, WCA, 1981 and s41 Priority Species) (or possible polecat-ferret) was encountered approximately 200 m northeast of the Site in June 2016; it was

Staffordshire Ecological Record (2016) Data Search: Four Ashes (revised boundary) 2km buffer. Ref: SER/16/392, 11 August 2016

The Planning Inspectorate (2016) Scoping Opinion: Proposed West Midlands Interchange. Ref TR050005, October 2016



- seen crossing the A5 near its junction with the M6 motorway. It is likely that at least one polecat (or polecat-ferret) territory overlaps with the Site, specifically the northeast section.
- 1.2.17 Four hedgehog (s41 Priority Species) sightings were made across the Site in total during the 2016 and 2017 surveys. Two hedgehog sightings were made within the central-northern section of the site on 16 and 17 May 2016. The two remaining hedgehog sightings were made via infra-red cameras deployed in the small woodland in the very southeast of the Site (by Straight Mile) in August 2017.
- 1.2.18 Harvest mice (s41 Priority Species) are assumed to be present on-site given the habitats present, although no surveys for this species have been conducted and no animals or evidence of this species have been recorded.
- 1.2.19 A summary of the geographic value and whether a given species is considered an 'Important' or 'Other' Ecological Feature is provided in Table 1.3 below.

Table 1.3: Summary of Species Valuations

Species	Geographic Value	'Important' or 'Other' Ecological Feature
Amphibians – GCN	Local	Important Ecological Feature
Amphibians – Common Toad	Local	Important Ecological Feature
Amphibians – Smooth Newt	Site	Other Ecological Feature
Amphibians – Common Frog	Site	Other Ecological Feature
Reptiles	Absent	Not considered further in this assessment
Other Aquatic Species – White Clawed Crayfish	County	Other Ecological Feature (Outside of zone of influence)
Other Aquatic Species - Fish	Negligible	Other Ecological Feature
Birds	County	Important Ecological Feature
Invertebrates	Local	Important Ecological Feature
Bats	District	Important Ecological Feature
Badger	Local	Important Ecological Feature
Water Vole	Absent	Not considered further in this assessment
Otter	District	Important Ecological Feature
Other Mammals – Brown hare	Absent	Not considered further in this assessment
Other Mammals – Polecat	Local	Important Ecological Feature
Other Mammals – Hedgehog	Local	Important Ecological Feature



Species	Geographic Value	'Important' or 'Other' Ecological Feature
Other Mammals – Harvest mice	Local	Important Ecological Feature

2. INTRODUCTION

- 2.0.1 This Baseline Ecology Report Technical Appendix has been produced by Ramboll Environment and Health UK (Ramboll) to support the Environmental Impact Assessment (EIA) for the West Midlands Interchange (WMI), 'the Proposed Development'. This report should be read with reference to Chapter 10 of the Environmental Statement (ES) where assessment methodology is described e.g. valuation of receptors and definitions as to what constitutes 'Important' or 'Other' Ecological Features.
- 2.0.2 The aim of the report is to provide details of the ecological baseline with respect to habitats and species identified via desk study and field surveys. Details are provided as follows where relevant:
 - Legislation;
 - Guidance and industry standards;
 - Methodology;
 - Limitations;
 - Desk study findings;
 - Results of field surveys; and
 - Valuation of receptor geographic scale and 'Important' or 'Other' Ecological Feature.

2.1 Site Context

- 2.1.1 The Site comprises an area of approximately 297 ha and is located in the Shropshire, Cheshire and Staffordshire Plain National Character Area (NCA), as defined by Natural England³. The NCA is characterised by an expanse of flat or gently undulating, lush, pastoral farmland.
- 2.1.2 The Site's immediate surroundings largely reflect the wider NCA and comprise a mixed farming landscape, albeit with several roads, rail and scattered settlements spread through the area. The surrounding area supports several small woodlands, as well as standing waterbodies. The Site is large and has an irregularly shaped boundary. It is bounded to the north by the A5 dual carriageway (several small light industrial units and commercial properties are located along the A5, including a petrol filling station and a garden centre). Calf Heath Reservoir is also situated at the northern boundary of the Site. The M6 motorway passes the Site at its north-

³ Publications.naturalengland.org.uk. (2016). *Natural England Natural Character Area Profile 61: Shropshire, Cheshire and Staffordshire Plain.* [online] Available at: http://publications.naturalengland.org.uk/file/6497812007092224 [Accessed 15/12/16]



east corner. Vicarage Road and Straight Mile Road dissect the southern portion of the Site. The Site is bounded to the South by the Staffordshire and Worcestershire Canal. Four Ashes Industrial Estate is partly surrounded by the Site, situated within the central area of the southern boundary. The A449 (Stafford Road) forms the western Site boundary. The Site is shown in Figure 10.1.001.

2.2 Desk Study Methods

- The purpose of the desk study was to collect existing baseline data about the Site and the surrounding area, such as the location of designated sites or other natural features of potential ecological importance (e.g. woodland and ponds). The following Zone of Influence (ZoI) has been considered:
 - All statutory internationally designated sites up to 10 km from the Site, including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and RAMSAR sites;
 - ii. All statutory nationally designated sites up to 2km from the Site including National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI);
 - iii. Statutory locally designated sites Local Nature Reserves (LNR) within 2km of the Site;
 - iv. Non-statutory designated sites: Local Wildlife Sites (LWS) up to 2 km from the Site;
 - v. Special Areas of Conservation (SAC) or Sites of Special Scientific Interest (SSSI) designated for bats within a 10 km radius of the Site; and
 - vi. Records of notable and protected species up to 2 km of the Site.
- 2.2.2 Staffordshire Ecological Records Centre (SERC) was contacted to provide details of non-statutory designated sites and protected species within 2 km of the Site. The SERC report is provided in Annex 10.1.1 and relevant records are summarised in the appropriate sections.
- 2.2.3 The Multi Agency Geographic Information for the Countryside (MAGIC) website⁴ was searched for information on statutory designated sites. Supplementary information on the Site and its surroundings were obtained from Ordnance Survey maps, as well as aerial images available from Google™ Earth Pro.
- 2.2.4 This report was written by Christopher Hodsman MSc BSc (Hons) MCIEEM of Ramboll.

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⁴ MAGIC. (2016). Magic Interactive Map. [online] Available at: http://www.magic.gov.uk [Accessed 04/11/16]



3. HABITATS

3.1 Legislation

3.1.1 The Hedgerow Regulations 1997 set out the properties that make a hedgerow 'important' and therefore afforded protection under the legislation. In summary, a hedgerow is considered important if it is more than 30 years old and meets one or more of the following criteria:

Archaeology and history

- Marks part or all of the boundary of a historic parish or township that existed before 1850:
- Incorporates an archaeological feature (or is associated with one) included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979 or recorded in a Sites and Monuments Record (dating from 27 March 1997);
- Marks the boundary of a pre-1600 AD estate or manor (or visibly associated with one) and is listed in a Sites and Monuments Record or other such document held at a Records Office since 27 March 1997;
- Forms an integral part of a field system predating the Inclosure Acts;

Wildlife and landscape

- Contains species listed in part I of Schedule 1 (birds), 5 (animals) or 8 (plants) of the Wildlife and Countryside Act 1981 (as amended), or species considered to be "declining breeders, endangered, extinct, rare or vulnerable" in UK Red Data Books; and
- Includes at least a) 7 woody species, b) 6 woody species plus 3 associated features, c) 6 woody species including a black poplar; largeleaved lime, small-leaved lime or wild service tree, d) 5 woody species and 4 associated features or e) is adjacent to a public right of way (byway open to all traffic) and supports at least 4 woody species in addition to 2 associated features.

3.1.2 Associated features include:

- (a) a bank or wall which supports the hedgerow along at least one half of its length;
- (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- (c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree:



- (d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;
- (e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
- (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
- (g) a ditch along at least one half of the length of the hedgerow;
- (h) connections scoring 4 points or more in accordance with sub-paragraph (5); and
- (i) a parallel hedge within 15 metres of the hedgerow.

3.2 Methodology

3.2.1 An extended Phase 1 Habitat Survey of the Site was undertaken by Matt Neale MCIEEM on 23 and 24 November 2015 and 24 and 25 February 2016. A further survey was undertaken by Chris Hodsman MCIEEM and Emily McVean ACIEEM on 4 July 2016, and further areas were surveyed by Emily McVean ACIEEM and James Fraser on 13 September 2017. Targeted botanical surveys were undertaken by Malcolm Robertson CEnv MCIEEM on 18 May 2017 of areas of interest as identified during the Phase 1 Habitat Survey. The initial surveys (November and February) were not undertaken within the appropriate season (April to September). The later verification survey was therefore required and undertaken in July and observations were made throughout the optimum period whilst undertaking further targeted protected species surveys as detailed in Section 4 of this report. The areas surveyed in September 2017 comprised roadside habitats where road or junction improvements may be required, these were surveyed during the optimum period for habitat surveys. Matt is a Chartered Ecologist, holds a BSc in Environmental Science and an MSc in Coastal Conservation Management and has worked professionally as an ecological consultant since 2004. He holds Natural England survey licenses for dormouse (Muscardinus avellanarius) and great crested newt (Triturus cristatus). Chris and Emily both hold a BSc in Environmental Science, and Chris holds an MSc in Environmental Monitoring and Assessment, as well as Natural England survey licenses for bats and great crested newts. James holds a BSc in Environmental Management and Planning. Chris, Emily and James have eight, six and three years' experience in environmental consultancy respectively. Malcolm Robertson is a Chartered Environmentalist and holds a BSc in Geography/Biology and has worked as a professional ecological consultant for 16 years. He holds a Natural England survey license for great crested newt.



The extended Phase 1 Habitat Survey involved a Site walkover and preliminary assessment of key habitats, land use and ecological features. The main habitats present were recorded using standard Phase 1 Habitat Survey methodology as described in the Handbook for Phase 1 Habitat Survey (JNCC, 2010)⁵. The following Site description should be read in conjunction with the Phase 1 Habitat Plan, provided in Figure 10.1.002. Target notes were used to record habitats and features of particular interest; these are provided in Annex 10.1.2 and are referenced where appropriate within Sections 3 and 4 of this report. In addition to general habitat classification, a list was compiled of observed plant species (using the nomenclature of Stace, 2010⁶, with common and Latin names referred to in the first instance after which only the common names are used). The abundance of each species was estimated for each habitat respectively using standard 'DAFOR' codes:

i. D = Dominant

ii. A = Abundant

iii. F = Frequent

iv. O = Occasional

v. R = Rare

- The Site was inspected for signs of any invasive plant species subject to legal controls. The Site was assessed for its potential to support protected and notable species such as reptiles, great crested newt and bats. This assessment, in addition to consultation with relevant stakeholders identified the scope of survey requirements as presented in Section 4 of this report.
- June 2016 and on 12th July 2017 and hedgerows were assessed using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997. The 2016 surveys covered all land within the Site north of Vicarage Road. Surveys of hedgerows south of Vicarage Road took place in 2017 with hedgerows being assessed using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997 and the Hedgerow Evaluation and Grading System (HEGS). The hedgerow survey reports are provided in Annex 10.1.3 of this document. The findings for 2016 and 2017 are summarised in Section 3.7.
- An ecological walkover was undertaken of off-site land identified to help provide mitigation for impacts on farmland birds. The survey was undertaken by Malcolm Robertson and James Fraser on 8th November 2017 and sought to identify habitats present and suitability of the site for enhancement for the benefit of farmland birds. The land surveyed is shown in Figure 10.004 of the ES.

⁵ Handbook for phase 1 habitat survey a technique for environmental audit. (2010). 1st ed. Peterborough [England]: JNCC

⁶ Stace C. (2010). New flora of the British Isles. 1st ed. Cambridge: Cambridge University Press



3.3 Habitat Descriptions - Arable

- 3.3.1 The majority of fields on the Site are utilised for arable cultivation. At the time of the initial extended Phase 1 Habitat Survey, these had been mostly harvested, leaving stubble and bare earth, or had been recently sown. Crops observed as planted subsequently in the year included potatoes, rapeseed, cereal crops and corn. The cropped area was noted to extend close to the surrounding hedgerows, leaving very narrow field margins in most instances (less than one metre wide). The narrow field margins are vegetated and contain a sward of tall grasses and herbaceous species with coarse grasses including Yorkshire fog (Holcus lanatus), false oat-grass (Arrhenatherum elatius) and cock's-foot (Dactylis glomerata) which were widely dominant. Further locally dominant common herbs recorded included common nettle (Urtica dioica), broad-leaved dock (Rumex obtusifolius), broad-leaved willowherb (Epilobium montanum), redshank (Persicaria maculosa), scentless mayweed (Tripleurospermum inodorum) hogweed (Heracleum sphondylium), lesser knapweed (Centaurea nigra), rosebay willowherb (Chamerion angustifolium), teasel (Dipsacus fullonum), creeping thistle (Cirsium arvense) and bracken (Pteridium aquilinum).
- Target Note 34 is an arable margin south of Vicarage Road, species recorded in this location differ and include; wild oat (*Avena* sp.) and barley (*Hordeum vulgare*), rosebay willowherb, scentless mayweed, scarlet pimpernel (*Anagallis arvensis*), broad-leaved dock, common nettle, common vetch (*Vicia sativa*), fumitory (*Fumaria officinalis*), timothy (*Phleum pratense*) and redshank. Hedgerows demarcate the majority of arable field margins. Further species present are provided in the hedgerow section (3.5) detailing the ground flora which would in many cases can also be applicable to the description above for arable field margins.
- 3.3.3 Areas of arable set aside (TN 60) were noted to the north of Calf Heath Wood in the Phase 1 Habitat Verification Survey, species present included poppy (*Papaver rhoeas*), field pansy (*Viola arvensis*), groundsel (*Senecio vulgaris*), common nettle and rosebay willowherb. This area was noted to be back in production in 2017. A further area of set aside is shown as TN62; this area was seasonally wet with an associated shallow ditch, and had a high proportion of dock, thistle and rush (*Juncus* sp.).
- 3.3.4 Arable habitats on-site are considered to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA.

3.4 Habitat Descriptions - Improved Grassland

3.4.1 One field in the east of the Site north of Vicarage Road (TN78) was recorded as improved grassland in addition to several fields to the south east of Vicarage Road (TN25 and TN33) (see Figure 10.1.002). This habitat type



- generally comprises homogenous grassland of low species diversity, which appears to be managed for hay production or forage.
- The improved fields at TN 25 to the south of Straight Mile were dominated by perennial rye-grass and Yorkshire fog. Further species recorded, generally at the margins were common bent (*Agrostis capillaris*), cock's-foot, annual meadow grass (*Poa annua*), scentless mayweed, common thistle, common nettle, broad-leaved dock, ragwort (*Senecio jacobaea*), red clover (*Trifolium pratense*), and rosebay willowherb.
- Improved grassland at TN33 was noted to be of similar to composition as observed at TN25. Additional occasionally occurring species present included bird's-foot-trefoil (*Lotus corniculatus*), creeping buttercup (*Ranunculus repens*), broad-leaved plantain (*Plantago major*), spear thistle (*Cirsium vulgare*), redshank, chickweed (*Stellaria media*), self heal (*Prunella vulgaris*), wood rush (*Luzula campestris*), meadow foxtail (*Alopecurus pratensis*) and forget-me-not (*Myosotis* sp.).
- 3.4.4 A field to the south off of Straight Mile (TN52) was noted to be heavily grazed and perennial rye-grass was dominant. Red clover and common nettle were frequently observed. The southern extent of this field adjacent the woodland was noted to offer a greater diversity and be subject to less grazing pressure. Additional species recorded in this location included hedge bedstraw (*Galium mollugo*), bird's-foot-trefoil and four marsh orchids (*Dactylorhiza praetermissa*).
- 3.4.5 Improved grassland habitats on-site are considered to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA.

3.5 Habitat Descriptions – Poor Semi-Improved Grassland

Ten fields and smaller areas of grassland in the Site north of Vicarage Road were identified as containing grassland of poor species diversity and are typically grazed (TN79). The dominant species were false oat-grass, cock's-foot, Yorkshire fog and perennial rye-grass was also present frequently. The herbaceous component in these locations is sparse and includes occasional creeping thistle, broad-leaved dock and common nettle.

An area comprising poor semi-improved grassland is present on the Site south of Vicarage Road (TN 23). Species recorded included Yorkshire fog, annual meadow grass, red clover, white clover (*Trifolium repens*), yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), willowherb (*Epilobium* sp), cock's-foot, common nettle and creeping buttercup.



3.5.2 Poor semi-improved grassland habitats on-site are considered to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA.

3.6 Habitat Descriptions - Semi-Improved Grassland

- 3.6.1 Six fields and elements of marginal habitats present on the Site contain semi-improved grassland. This habitat appears to be relatively unmanaged and has a rank appearance, often with tussocks of grasses including cock'sfoot and Yorkshire fog as well as false oat-grass, smooth meadow-grass (Poa pratensis) and sporadic hard rush (Juncus inflexus). Frequently, herbs are present within the sward including creeping buttercup, creeping thistle, cleavers (Galium aparine), dandelion (Taraxacum officinale agg), common ragwort, yarrow, ribwort plantain and broad-leaved willowherb.
- 3.6.2 Areas of semi-improved grassland of particular note include the following which were subject to targeted flora surveys.
- 3.6.3 The large field south of Straight Mile and north of the canal (TN57) was divided with temporary fences in place for grazing horses. The main field within the fenced areas was heavily grazed and species recorded included perennial rye-grass, broadleaf dock, creeping buttercup, Epilobium sp., soft rush, common nettle, spear thistle and cock's-foot. Semi-improved grassland (not grazed recently) around the margins included the species above and also included southern marsh orchid, common spotted orchid (Dactylorhiza fuchsii), red clover, hogweed, ribwort plantain, yarrow, false-oat grass, Geranium sp., common vetch, bird's-foot-trefoil, hedge bedstraw, ladies smock (Cardamine pratensis) and ragged robin (Lychnis flos-cuculi).
- 3.6.4 The field south of Fir Tree Cottage in the west of the Site (TN80) was noted to include pignut (Conopodium majus) amongst the typical composition of species described in paragraph 3.6.1. This species is present across the field suggesting a long history without having been ploughed or improved significantly. The presence of pignut suggested an area with greater floristic diversity; however, further targeted surveys did not identify any other noteworthy species in this location.
- The semi-improved grassland shown on Figure 10.1.002 as TN39 between Vicarage Road and Straight Mile was found to include abundant sweet vernal grass (Anthoxanthum odoratum) and creeping bent (Agrostis stolonifera). Frequent species included; creeping buttercup, meadow foxtail, Yorkshire fog, common sorrel (Rumex acetosa), white clover and meadow buttercup (Ranunculus acris) (locally abundant). Occasional species included; mouseear chickweed (Cerastium fontanum), broad-leaved dock, perennial ryegrass, red fescue (locally abundant) (Festuca rubra), soft rush (Juncus effusus) and marsh foxtail (Alopecurus geniculatus). Rare species recorded included; cow parsley (Anthriscus sylvestris), soft brome (Bromus hordeaceus), ragwort,



common nettle, creeping thistle, hogweed, spear thistle, hairy tare (Vicia hirsuta), flax (Linum sp.), thyme leaved speedwell (Veronica serpyllifolia) southern marsh orchid and common spotted orchid. The orchids were rare but locally frequent. Some limited areas of bare ground were recorded.

- 3.6.6 The species composition of the southern margin of the semi-improved grassland described in TN39 above varied and was less diverse. This area has a larger proportion of bare ground. Frequently recorded species included; dandelion, cow parsley and soft brome. Occasional species recorded included; mouse-ear chickweed, creeping buttercup, meadow foxtail (locally frequent), sweet vernal grass and perennial ryegrass. Rare species recorded included broad leaved dock, ragwort, common nettle, common sorrel, cock'sfoot, creeping bent and spear thistle.
- 3.6.7 During targeted surveys marsh orchids were also identified in the semiimproved grassland field in the south of the Site adjacent the Bericote development (TN 61).
- 3.6.8 Semi-improved grassland habitats on-site are considered to be of value at the Local scale due to botanical species present and are to be considered as an 'Important Ecological Feature' within the EIA.

3.7 Habitat Descriptions – Hedgerows and Hedgerows with Trees

2016 North of Vicarage Road

- 3.7.1 The majority of the field boundaries are formed by hedgerows, which are intact and stock proof. Only a few small sections of hedgerow are defunct and have wide gaps. Many of the hedges incorporate retained trees many of which are mature. The majority of hedgerows appear to be regularly trimmed and as a result are quite compact and of a fairly uniform shape. Unmanaged 'leggy' hedgerows were also observed some of which were subject to under grazing by livestock. Many of the hedgerows occur in association with shallow drainage ditches (approximately 0.5 m deep and 1 m wide), which were predominantly dry during the survey.
- 3.7.2 Hawthorn (Crataegus monogyna) is the dominant hedgerow species. Further species recorded include blackthorn (Prunus spinosa), ash (Fraxinus excelsior), elder (Sambucus nigra), lime (Tilia sp), dog rose (Rosa canina agg.), holly (Ilex aquifolium), pedunculate oak (Quercus robur), hazel (Corylus avellana), sycamore (Acer pseudoplatanus), silver birch (Betula pendula), rowan (Sorbus aucuparia) and honeysuckle (Lonicera spp) along with the occasional field maple (Acer campestre) and goat willow (Salix caprea).



- The majority of hedgerows contain mature trees at regular intervals along their lengths; usually pedunculate oak and ash, with occasional grey poplar (*Populus* x *canescens*), silver birch and alder (*Alnus glutinosa*).
- 3.7.4 Ground flora within each hedgerow is typically quite poor. Site wide the following species were observed in the understorey of hedgerows and in immediate adjacent field margins. Grass species included; red fescue, false oat-grass, brown bent (*Agrostis vinealis*), sweet vernal-grass, rough meadow-grass (*Poa trivialis*), wavy hair-grass (*Deschampsia flexuosa*) and common couch (*Elymus repens*).
- 3.7.5 Further species recorded included; common nettle, foxglove (*Digitalis purpurea*), bracken, lesser stitchwort (*Stellaria graminea*), bramble (*Rubus fruticosus* agg), rosebay willowherb, ladies bedstraw (*Galium verum*), common bird's-foot-trefoil, common hogweed, cow parsley, red campion (*Silene dioica*), meadow vetchling (*Lathyrus pratensis*), marsh horsetail (*Equisetum palustre*), great willowherb (*Epilobium hirsutum*), creeping thistle, bittersweet (*Solanum dulcamara*) and ivy (*Hedera helix*).
- 3.7.6 Hedgerows 9 and 10 in the north of the Site were observed to support ground flora indicative of acidic conditions including sheep's sorrel (*Rumex acetosella*), foxglove and bracken.
- 3.7.7 Of the 97 hedgerows surveyed in 2016, 11 were considered 'important' under the Hedgerow Regulations 1997 on ecological grounds. A further six were considered borderline, as a result of failing to reach the requisite number of associated features for consideration as 'important' by one. The majority of hedgerows surveyed in 2016 did not meet the criteria. An assessment of the value of the hedgerows in terms of heritage is provided in Chapter 9 of the ES.

2017 South of Vicarage Road

- The character of the hedgerows south of Vicarage Road varied throughout the study area from intensively managed roadside hedgerows to unmanaged 'leggy' field boundaries and mature trees. In some places hedgerows were newly planted, and in others it formed an outgrown hedgerow/treeline. Some sections of hedgerow sampled were fragmented.
- The vast majority of hedgerows within the study area were considered to be species-poor. Hawthorn was the dominant woody species. No rare or notable species were identified during the site visit. Unusual woody species not normally found in hedgerows included: grey alder (*Alnus incana*), Swedish whitebeam (*Sorbus intermedia*) and a common lime (*Tilia x europaea*).
- 3.7.10 Using the Hedgerow Regulations 1997 criteria of assessment, none of the 31 recorded hedgerows surveyed in 2017 were considered 'important'. Following



comments received during consultation, the hedgerows surveyed in 2017 were also assessed using the Hedgerow Evaluation and Grading System (HEGS).

3.7.11 Using HEGS, 15 of the 31 hedgerows assessed were evaluated as *Moderately high* to *High* value. Of these 15 hedgerows B26 (TN81) and B27 (TN40) were evaluated as being in the upper end of the scale (2+). These two hedgerows are located in the south-west of the study area and are made up of unmanaged hedgerows with frequent trees. The rest of the hedgerows evaluated were *Low* or *Moderate* value. The results of the HEGS Evaluation are summarised in Table 3.1.

Table 3.1: HEGS Evaluation Scores

		aluation scores			HEGS	
ID	Structural	Connectivity	Diversity	Features	Grade	HEGS evaluation
B1	6	6	3	-	4-	Low value
B2	3	4	6	-	3-	Moderate value
В3	12	5	3	-	3	Moderate value
B4	7	6	3	-	3+	Moderate value
B5	8	6	3	-	3+	Moderate value
B6	9	7	3	-	2-	Mod high / High value
B7	10	7	3	2	2-	Mod high / High value
B8	9	8	3	4	2-	Mod high / High value
B9	13	4	4	4	2-	Mod high / High value
B10	10	3	4	2	3-	Moderate value
B11	7	8	4	4	2-	Mod high / High value
B12	8	5	3	-	3	Moderate value
B13	5	3	3	-	4-	Low value
B14	9	7	3	6	2-	Mod high / High value
B15	8	8	3	3	2-	Mod high / High value
B16	8	8	3	-	2-	Mod high / High value
B17	12	4	3	-	3	Moderate value
B18	6	8	3	-	3-	Moderate value
B19	9	7	3	-	2-	Mod high / High value
B20	8	6	3	-	3+	Moderate value
B21	9	7	3	-	2-	Mod high / High value
B22	8	8	3	-	2-	Mod high / High value
B23	11	7	3	4	2-	Mod high / High value
B24	6	6	3	-	4+	Low value
B25	8	8	3	-	2-	Mod high / High value
B26	15	7	3	4	2+	Mod high / High value
B27	13	7	4	2	2+	Mod high / High value
B28	12	6	3	-	3+	Moderate value
B29	9	6	3	-	3+	Moderate value
B30	6	6	3	-	4+	Low value
B31	8	6	3	-	3+	Moderate value

Hedgerows Summary

3.7.12 Of the 128 hedgerows recorded in total, 11 were considered 'important' under the Hedgerow Regulations 1997 on ecological grounds. These are shown on Figure 10.1.005. A further six were considered borderline, as a result of failing to reach the requisite number of associated features for



- consideration as 'important' by one. These are shown on Figure 10.1.005. The majority of hedgerows did not meet the criteria. Consideration of importance under heritage aspects is included in chapter 9 of the ES.
- 3.7.13 Using HEGS for hedgerows south of Vicarage Road, 15 of the 31 hedgerows assessed were evaluated as *Moderately high* to *High* value.
- 3.7.14 Hedgerows are considered a habitat of principal importance and form an extensive network across the Site. As such, hedgerows are considered of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.

3.8 Habitat Descriptions – Mixed Plantation Woodland

- The centre of the Site is occupied by a large section of mixed plantation woodland (Calf Heath Wood, see TN 65). The woodland comprises semimature silver birch interspersed by blocks of early mature Austrian pine (*Pinus nigra* ssp. *Nigra*) and Scots pine (*Pinus sylvestris*). The shrub layer in much of the woodland is formed by dense rhododendron (*Rhododendron* sp.), bramble, bracken or laurel (*Prunus Laurocerasus*). Occasional mature pedunculate oak, Turkey oak (*Quercus cerris*), elder, holly and rowan are located within the woodland. Several more open areas are situated in the centre of the plantation woodland. These areas are dominated by bracken and scattered silver birch. The woodland is managed for game and a large game pen is located in the centre of the woodland. Two linear open areas are also formed by wayleaves for overhead powerlines.
- According to MAGIC⁷, Calf Heath Wood is not on the Ancient Woodland Inventory (i.e. not ancient semi-natural woodland (ASNW) or plantation on an ancient woodland site (PAWS). On the 1884 Ordnance Survey map, it appears that the woodland was a mixed conifer and broadleaved plantation at that time and given the name, this suggests that it is an early forestry plantation on a former heath.
- 3.8.3 A smaller area of mixed plantation woodland broadly triangular in shape is situated towards the west of the Site (TN82) dominated by pine, including Austrian pine and Scots pine (*Pinus sylvestris*). Other species present include elder, hawthorn and alder. The understory is predominantly bare with pine needles with areas of dense bramble scrub.
- 3.8.4 Mixed plantation woodland habitats on-site are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.

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⁷ MAGIC. (2016). *Magic Interactive Map.* [online] Available at: http://www.magic.gov.uk [Accessed 04/03/2016]



3.9 Habitat Descriptions - Broad-Leaved Plantation Woodland

- 3.9.1 An area of broad-leaved plantation woodland in the east of the Site extends off-site onto an embankment formed by the M6 motorway (TN86). Internal areas of the woodland contain semi-mature and early mature silver birch, alder, oak, beech, sweet chestnut and holly. Trees are more mature towards the west of the woodland and many of the trees closest to the adjoining field are late mature and showing signs of extensive die-back. These form the field boundary. The shrub layer contains scattered bramble, gorse (Ulex europaeus) and elder amongst a field layer of hard rush and grasses, which extend into the woodland from the adjoining semi-improved grassland habitat.
- 3.9.2 A small area of broad-leaved plantation woodland is located in the south of the Site beside the access road to Woodside Farm House (TN87). The woodland contains a mix of early mature pedunculate oak, silver birch, elder, sycamore, aspen (Populus tremula) and hornbeam (Carpinus betulus).
- 3.9.3 Broad-leaved plantation woodland habitats on-site are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.

3.10 Habitat Descriptions - Broad-Leaved Semi-Natural Woodland

- 3.10.1 There are several areas of broad-leaved semi-natural woodland on the Site. A small area of broad-leaved woodland is located in the northeast corner of the Site, adjacent to Calf Heath Reservoir (see TN 69). The woodland predominantly comprises a dense stand of early mature silver birch of uniform size and age and occasional semi-mature alder. Marginal areas of the woodland are occupied by scattered mature pedunculate oak and Austrian and scots pine. The field layer is predominantly bracken with locally dominant bramble and the occasional hard rush and broad buckler fern (Dryopteris dilatata).
- 3.10.2 One of the largest areas adjoins the mixed plantation woodland within Calf Heath Wood (TN70). The woodland is mature and dominated by silver birch and pedunculate oak, ranging from small saplings to large late mature specimens. Occasional mature alder and horse chestnut (Aesculus hippocastanum) are also present. The understorey comprises locally dominant stands of bramble or rhododendron, which largely obscure the sparse field layer.
- 3.10.3 A further area of broad-leaved semi-natural woodland is located in the northwest portion of the Site off the A449 (TN85). The woodland contains several large mature pedunculate oak and Lombardy poplar (Populus nigra 'Italica'), as well as the occasional ash, Norway maple (Acer platanoides) and hornbeam. The shrub layer consists of elder, hawthorn and goat willow, with



- occasional bramble. The field layer contains lesser celandine (*Ranunculus ficaria*), lords and ladies (*Arum maculatum*) and common ivy. Parts of the woodland are quite damp and a pond is located in this woodland.
- 3.10.4 A small area of broad-leaved semi-natural woodland is located towards the south-west of the Site adjacent the railway line (TN83). The woodland contains early mature sycamore, elder, pedunculate oak, sweet chestnut (*Castanea sativa*), Austrian Pine and Scots Pine (Less than 30%). The canopy in part of the woodland is quite open and the ground flora in these areas is dominated by common nettle and grasses. Bramble is more abundant in areas of the woodland where the canopy is closed.
- 3.10.5 A small area of woodland is present at the southernmost extent of the Site adjacent the canal (TN 55). Species present include oak, silver birch, elder, beech, hawthorn, horse chestnut, holly and rowan. The understorey comprises bramble, soft rush, common nettle, willowherb sp., bracken and wood avens (*Geum urbanum*).
- 3.10.6 A further mature broad-leaved woodland block is present adjacent Woodlands Lane (TN 47) in the south east of the Site. Species present include sessile oak (*Quercus petraea*), hawthorn, sycamore, holly, grey poplar (*Populus× canescens*), yew (*Taxus baccata*), rowan, silver birch and, false acacia. The understorey is dominated by bramble and common nettle. Also present is creeping bent, cock's-foot and ivy. The woodland is protected from adjacent grazing by a stock proof fence.
- 3.10.7 An area of broad-leaved woodland is located beside the canal in the centre of the Site (north of TN 84). The woodland is mature and predominantly occupied by pedunculate oak and alder with abundant silver birch and the occasional horse chestnut. Small numbers of rowan are also present. The shrub layer predominantly comprises holly. Parts of the woodland appear to be quite wet and three seasonally connected small shallow ponds are located in low lying depressions.
- 3.10.8 A small area of broad-leaved wet woodland in situated in the south of the Site (TN49). This area was dry in July 2016 but wet in winter and spring. The woodland is dominated by semi-mature alder with occasional oak, silver birch, *Salix* sp, holly and sycamore. It appears to be regenerating naturally. The shrub layer includes scattered bramble scrub, soft rush, *Carex* sp, creeping buttercup and common nettle.
- 3.10.9 Some areas of woodland on site are represented on the 1884 OS maps (1:2,500); however, the ground flora was not found to be representative of ancient woodland. Broad-leaved semi-natural woodland habitats on-site are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.



3.11 Habitat Descriptions - Individual Trees

- 3.11.1 A comprehensive tree survey has been undertaken and includes a schedule of all trees within the Site (Technical Appendix 12.7 of the ES). The majority of individual trees are located within the Site's hedgerows and are predominately late mature ash and pedunculate oak trees. Occasionally grey poplars have been planted at regular intervals amongst the hedgerows. A small number of trees, predominantly mature oak, are located away from the hedgerows within the fields themselves. A line of early mature cherry (*Prunus* sp.), silver birch and alder are located to the side of the railway line in the southwest of the Site. A line of mature trees are present on the access way leading south from Heath Farm (TN27); these trees comprise pedunculate oak and Turkey oak predominantly with cherry also present. Several of the individual mature trees throughout the Site are showing signs of die-back or have fissures within the trunk.
- 3.11.2 Eleven veteran trees have been identified as present on-site, all of which are pedunculate oak (T153, T159, T166, T168, T169, T175, T178, T222, T276 and T279) with the exception of a single sweet chestnut (T167). These trees are shown on the Phase 1 Habitat Survey Drawing as TN58 and are shown on Figure 10.1.005. A further 25 trees (all pedunculate oak) that have stem diameters in excess of 1000 mm were identified and can be considered future or transitional veteran trees.
- 3.11.3 One tree specimen recorded on-site (T102) on the current approach haul road to the quarry off the A5 has been confirmed as a native black poplar (*Populus nigra* a protected species) via DNA testing (TN88).
- 3.11.4 An assessment of the suitability of trees for protected species is provided in Section 4.5 of this report (Bats).



3.11.5 Individual trees on-site are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA. The native black poplar is considered important at the County scale and is dealt with separately as an 'Important Ecological Feature' within the EIA.

3.12 Habitat Descriptions - Standing Water

3.12.1 Seventeen ponds were identified from maps and during the walkover within the Site (Ponds 4, 5, 6, 8, 14, 18, 20, 21, 22, 23, 24, 25, 27, 29, 30, 31 and 32) with a further 18 ponds identified within the surrounding 500 m. A description of the ponds on-site is provided below in Table 3.2. The locations of ponds on-site and within 500 m of the Site are shown in Figure 10.1.004. The ponds were all considered to be of limited ecological value and were not particularly diverse in terms of their aquatic flora.

Table 3.2: Pond Descriptions

Pond Number	Pond Description	Photograph
4	Pond within woodland in the east of the Site. Considered likely to dry annually as such was not considered to support fish populations. There was no aquatic vegetation present, the pond basin being dominated by leaf litter from the woodland. Bramble scrub was encroaching on the margins.	
5	Pond in woodland near to the canal which was observed to dry annually and not support fish species. There was no aquatic vegeatation present, the pond basin being dominated by leaf litter from the woodland.	

Shallow interconnecting pond (To Pond 5) in woodland near to the canal which was observed to dry annually and not support fish species. The pond was dominated by flote grass (Glyceria sp.).



8 Pond in the centre of the plantation woodland on Site (Calf Heath Wood), surrounded by dense rhododendron. Water quality was moderatly poor and the pond very turbid. No aquatic vegetation was visible.



Pond in south-west of the Site near the A449. Typha present to the southern bank but little other aquatic vegetation present. Pond was noted initially to have moderate water quality but this deteriorated and the pond had a persistent sheen on subsequent visits. The pond has potential to support fish.



Pond in north of the Site adjacent the A5. This was dry during the Phase 1 habitat survey but was later established to be holding water. No aquatic vegetation was present, terrestrial vegetation is present which is seasonally inundated.

Juncus noted as present in this area.



20 Pond to the south east of Calf Heath Wood. Small and considered likely to dry frequently. Very little macrophyte cover. Some turbidity noted (pond is located adjacent active quarry operations on 3 sides.



21 Situated amongst trees in farm land 80 m south of Vicarage Road.

Most of the pond is covered with a thick matt of emergent vegetation, and had a strong sulphurous smell, which may indicate anoxic conditions. Water quality was poor.

Aquatic/marginal vegetation included bulrush (*Typha* sp.), water lillies (*Nymphaeaceae* sp.), yellow flag iris (*Iris pseudacorus*), *Carex* sp., great willowherb (*Epilobium hirsutum*) and common nettle.



22 Situated within a hedgerow
260 m south beyond
Vicarage Road. This is a
shallow depression in the
edge of the field. Dry at the
time of the July 2016
survey, but is known to be
seasonally wet and wet
following heavy rain.
Vegetation present is
consistent with the adjacent
improved grassland.



23



Situated amongst trees in farm land 60 m south beyond Vicarage Road.
Approximately 30 by 30 m surrounded and shaded by dense scrub and overhanging vegetation.
Waterfowl were present within the pond, as well as small amounts of aquatic vegetation suitable for newt egg laying.

24 Situated within a hedgerow 290 m south beyond Vicarage Road. Approximately 20 by 40 m, there is evidence of poaching by horses on the western side where it extends below the fencing during wetter times of year. Water fowl were present in the pond. Extremely limited submerged vegetation, lots of leaf litter from surrounding trees shading pond.

Dry pond in woodland. Bare earth and leaf litter. No vegetation.Shallow pool area within a

Shallow pool area within a drainage ditch in the south of the Site. Margins of the pond are heavily encroached by dense bramble scrub. Some limited flote grass (*Glyceria* sp.).



No photograph.



29

30

31

32

Ephemeral pond beside woodland towards the south east of the Site. Limited number and extent of submerged plants. Generally the pond basin was full of leaf litter from the surrounding woodland. No fish were noted as present.



Broadly horseshoe shaped depression in woodland adjacent the canal. Pond considered to dry seasonally and did not support any fish. The pond basin did not include any emergent or floating aquatic vegetation and was full of leaf litter from the surrounding woodland. Vegetation surrounding the pond included bramble, *Carex* sp. and bracken.



Small circular pond basin within wet woodland. The pond was heavily shaded and had significant amounts of leaf litter within the basin. No aquatic vegetation was present. Pond was noted to dry annually.

No photograph.

Small circular pond basin within woodland adjacent the canal. The pond was heavily shaded and had significant amounts of leaf litter and woody debris within the basin. Pond was noted to dry annually.



3.12.2 The Staffordshire and Worcestershire Canal runs through the Site in a roughly north-south orientation in the main and west to east along the southern boundary of the Site. The banks are predominantly hard engineered sheet pile with no marginal or emergent vegetation. A towpath comprising amenity grassland is present on the western and southern margins of the



canal. Species present include perennial ryegrass, greater plantain, ribwort plantain, dandelion, red clover, common nettle, cow parsley, creeping buttercup, vetch, daisy, great willowherb and bramble. The eastern bank comprises overhanging vegetation from the adjacent field margins and site boundaries including trees and grasses. A number of mature trees, predominantly oak are present along the canal.

- 3.12.3 There are large areas of standing water associated with quarrying operations in the east of the Site. These areas are not colonised by vegetation owing to the regular and recent disturbance in these habitats.
- 3.12.4 Calf Heath Reservoir lies directly adjacent to the Site to the northeast. This reservoir forms part of the Gailey Reservoirs Local Wildlife Site. As such, consideration of Calf Heath Reservoir will be undertaken as part of a review of designated sites in the ES.
- 3.12.5 An assessment of the suitability of standing water bodies mentioned above for protected species is provided in Section 4 of this report.
- 3.12.6 Standing water habitats, namely the ponds and the canal are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA. The ponds on site are not considered to meet the criteria for classification as a UK BAP priority habitat due to their poor structure, lack of aquatic and emergent vegetation, shading, containing high levels of leaf litter and apparent poor water quality.

3.13 Habitat Descriptions - Running Water

Running water on the Site is confined to three slow flowing drainage ditches (TN6, TN7 and TN8). TN6 comprises a ditch with 1 m high banks. Water flows towards the northern boundary of the Site. The water level is shallow and the banks are predominantly shaded by trees, although short sections of the ditch are open with grassy banks. Emergent vegetation is absent. This ditch was noted to dry during extended period of settled weather. TN7 is a ditch beside the Site's northern boundary and is approximately 3 m wide. The ditches banks are approximately 1 m high and vegetated with rank grasses and bramble. Vegetation within the ditch is predominantly duckweed (*Lemna* sp). The depth of the ditch is not known. TN8 is located in the centre of the Site and marks a short section of shallow water in a narrow ditch. The ditch banks are approximately 1 m high and vegetated with grasses. Emergent vegetation was largely absent.



- 3.13.2 Several of the other drainage ditches are located adjacent to hedgerows but these were dry at the time of the survey and appear to rarely hold water, because of an absence of wetland vegetation. These are mapped on Figure 10.1.002 as dry ditches.
- 3.13.3 Running water habitats, namely the ditches are considered to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA.

3.14 Habitat Descriptions - Scrub

- 3.14.1 Parts of the Site beside the canal and quarry are occupied by scattered scrub. Scrub predominantly comprises bramble and hawthorn. Ash and oak saplings, as well as and gorse are also occasionally present.
- 3.14.2 Scrub habitats are considered to be of value at the Site scale due to their small extent and are to be considered as an 'Other Ecological Feature' within the EIA.

3.15 Habitat Descriptions - Buildings

- 3.15.1 There are several buildings on the Site including a group of three small derelict utility buildings (TN3) in the centre of the Site, a cluster of buildings at Gravelly Way Farm (TN5) near to the canal, a farmhouse and barns at Woodside Farm in the south of the Site (TN 9), a cottage and barn at Firtree cottage in the southwest of the Site (TN12), Clovelly in the north of the site adjacent the A5 (TN89) and group of buildings in the south of the site, comprising Heath Farmhouse and neighbouring homes and barns/outbuildings (TN13 to TN19). Five further properties are located where Vicarage Road and Straight Mile converge in the south of the site, these properties are; Mile End Cottage, Stoney Brook Cottage, Stoney Brook Cottage Annex, Ash House and a modern bungalow off Vicarage Road.
- 3.15.2 Further details of each building and an assessment of the buildings' suitability for protected species is provided in Section 4 of this report. Detailed building descriptions are provided in Annex 10.1.6 (A to O) alongside an assessment of their potential to support roosting bats.
- 3.15.3 Buildings are considered to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA other than when they support roosting bats, in which case they are considered in the bats section.

3.16 Habitat Descriptions - Quarry

3.16.1 Seven fields in the northeast of the Site are currently subject to quarrying. The quarrying is taking place in the central portion of the fields but the



surrounding hedgerows are largely intact. The quarrying has stripped and removed the topsoil to access the underlying sand and gravel, which has been quarried to a depth of several metres. Vegetation is absent in these areas and standing water is common.

3.16.2 The quarry is considered to be of negligible value and is to be considered as an 'Other Ecological Feature' within the EIA.

3.17 Habitat Descriptions - Invasive Vegetation

- 3.17.1 Several invasive plant species were recorded. The locations of the observations are shown on Figure 10.1.003.
- 3.17.2 Japanese knotweed (Fallopia japonica) was identified on the railway embankments immediately north and south of the A5 (TNs 75 and 76) and Himalayan balsam (Impatiens glandulifera) was observed by a ditch running along the south of the wet woodland adjacent Straight Mile (TN 77). This was also noted to be prevalent in the wet woodland off-site on the opposite side of Straight Mile.
- 3.17.3 Rhododhendron was present extensivley through Calf Heath Wood and dominated the understorey.
- 3.17.4 The above mentioned plants are non-native species listed on Schedule 9 (Part 2) of the Wildlife and Countryside Act 1981 (as amended).
- 3.17.5 Invasive vegetation is considered to be of negligible value and is to be considered as an 'Other Ecological Feature' within the EIA. Consideration will however be made to potential effects from invasive weeds on other receptors as a result in of the redevelopment in the impact assessment, and to mitigation to ensure works are carried out in the correct manner to ensure the spread of these plants is avoided.

3.18 Habitat Descriptions - Off-site Mitigation Land

- 3.18.1 The off-site mitigation land is dominated by two arable fields one north of the other, which at time of survey were intensively managed and sown with a winter cereal crop. The field headlands were narrow or in many places the fields were cultivated up to the field boundary.
- 3.18.2 The field margins were either fences (for instance to the adjacent railway line to the east) or hedges (with trees along the western boundary and along the road separating the two fields).
- 3.18.3 Two smaller areas of habitat are present in the northern part of the off-site mitigation land. A small area of habitat best classified as semi-improved grassland is present leading from the eastern boudary into the northern field.



This area also had dense and scattered scrub present and supports a rabbit warren.

3.18.4 An area to the north east of the northern field and extending parallel to its northern boundary is tall ruderal habitat dominated by willowherbs with scattered scrub and includes a wet ditch running northwards to the site boundary and is lined by mature trees for half its length. The Saredon Brook forms the northern boundary of the site and is also lined with mature trees.

3.19 Summary of Habitat Valuation

3.19.1 Table 3.3 below provides a summary of the valuations of habitats identified as present on Site.

Table 3.3: Summary of Habitat Valuations

Habitat	Geographic Value	'Important' or 'Other' Ecological Feature
Arable	Site	Other Ecological Feature
Improved Grassland	Site	Other Ecological Feature
Poor Semi-Improved Grassland	Site	Other Ecological Feature
Semi-Improved Grassland	Local	Important Ecological Feature
Hedgerows	Local	Important Ecological Feature
Woodland (including Mixed Plantation, Broad-Leaved Plantation Woodland and Broad-Leaved Semi-Natural Woodland)	Local	Important Ecological Feature
Individual trees	Local	Important Ecological Feature
Individual Tree – Native black poplar	County	Important Ecological Feature
Standing Water	Local	Important Ecological Feature
Running Water	Site	Other Ecological Feature
Scrub	Site	Other Ecological Feature
Buildings	Site	Other Ecological Feature
Quarry	Negligible	Other Ecological Feature
Invasive Vegetation	Negligible	Other Ecological Feature



4. SPECIES

4.1 Amphibians

Legislation

- 4.1.1 All European Protected Species (EPS) are protected under the Wildlife and Countryside Act (WCA) 1981 and the Conservation of Habitats and Species Regulations 2017, the 'Habitat Regulations'. Under this legislation it is illegal to:
 - i. Intentionally or deliberately capture, kill or injure listed species;
 - ii. Intentionally deliberately or recklessly damage, destroy or obstruct access to any place used for shelter or protection including resting and breeding places, whether occupied or not; and
 - iii. Deliberately, intentionally or recklessly disturb listed species when in a place of shelter (and elsewhere for EPS).
- 4.1.2 Great crested newts (GCN) (*Triturus cristatus*) are protected under this legislation.

Section 41/UK BAP Amphibian Species

- 4.1.3 Furthermore, several amphibian species are listed under Section 41 (s41) of the 2006 Natural Environment and Rural Communities (NERC) Act as species of principal importance for the purpose of conserving biodiversity (also known as UK Biodiversity Action Plan (BAP) priority species). These include common toad (*Bufo bufo*), natterjack toad (*Epidalea calamita*), pool frog (*Pelophylax lessonae*) and great crested newt.
- 4.1.4 Pool frog and natterjack toad have a restricted distribution in the UK. Pool frog have been reintroduced in Norfolk and are not present in Staffordshire. Natterjack toad has a highly restricted distribution in England but small and isolated populations are found in Staffordshire at Cannock Chase.

Staffordshire BAP Species

In addition to the Section 41/UK BAP species, the Staffordshire BAP also lists natterjack toad and great crested newt as the amphibian species that are included in their biodiversity action plan.

⁸ Froglife (2016). Pool Frog. [Online] Available at: http://www.froglife.org/amphibians-and-reptiles/pool-frog/ Accessed 19/12/2016

⁹ Staffordshire Biodiversity Action Plan (2016) Available at: http://sbap.org.uk/actionplan/species/index.php?id=36 Accessed 19/12/2016



Guidance Notes and Industry Standards

- 4.1.6 Survey works have been undertaken in line with English Nature's (Natural England) Great Crested Newt Mitigation Guidelines¹⁰, the Herpetofauna Worker's Manual¹¹ and with regard to ARG UK Advice Note 4 'Amphibian disease precautions'¹². The Great Crested Newt Mitigation Guidelines recommend that ponds within 500 m of GCN ponds should be taken into account where it is thought likely that GCN populations centred on these ponds would be affected. 500 m from GCN ponds has been used as a threshold for consideration in choosing which ponds to survey for amphibians.
- 4.1.7 The environmental DNA (e-DNA) elements of the amphibian survey were carried out in line with the Department for Environment, Food and Rural Affairs (DEFRA) Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA.

Methodology

- 4.1.8 A total of 35 ponds on or within 500 m of the Site were assessed for their potential to support GCN due to the specially protected nature of this species of principal importance. The location of the 35 ponds considered is shown in Figure 10.1.004.
- Where water bodies were present (and accessible) on-site or within 500 m of the Site and were not subject to any prohibitive constraints such as there being a major physical barrier between the pond and Site, a Habitat Suitability Index (HSI) assessment was undertaken using the methodology set out in ARG UK Advice Note 5¹³. Based on the waterbodies physical attributes, its setting, the presence of some bird, fish and invertebrate species a score was calculated to give an estimation of a water bodies potential to support GCN. HSI assessments were carried out on all qualifying ponds with the exception of Ponds 15 and 17 where an HSI Assessment was not carried out because these ponds were considered as a pond complex with Pond 16. Please note that Ponds 5 and 6 form a pond complex and were surveyed as one pond, Pond 6, during the amphibian presence/absence surveys.
- 4.1.10 The ponds within 500 m of the Site not adjudged to be separated by a significant barrier to movement were tested for e-DNA. e-DNA testing was carried out on 17 ponds on and within 500 m of the Site boundary. The samples were taken by suitably licensed Ramboll surveyors during April 2016

Hayes C and Whitehurst J. (2001). *Great crested newt mitigation guidelines*. 1st ed. Peterborough, U.K.: English Nature

¹¹ Gent T and Gibson S. (1998). Herpetofauna worker's manual. 1st ed. Peterborough: JNCC

¹² Amphibian and Reptile Groups of the United Kingdom (2008) ARG UK Advice Note 4: Amphibian disease precautions: A guide for fieldworkers. Unpublished. Online. Available from: www.arguk.org/index.php?option=com_docman&task=doc_download&gid=8&Itemid=17

¹³ Amphibian and Reptile Groups of the United Kingdom (2010) ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Unpublished. Online. Available from: www.arguk.org/index.php?option=com_docman&task=doc_download&gid=9&Itemid=17



and a further single pond was sampled in June 2016. The ponds which returned negative e-DNA results in 2016 were tested again via e-DNA in April 2017. Samples were taken following best practice methods as set out in the section below.

- 4.1.11 The e-DNA method involved taking 20 water samples from each pond identified and then sending them to a laboratory for analysis. The water samples from each pond were collected in a bag and gently shaken to homogenise the sample. Samples were taken with a ladle from as deep as possible into the ponds, without disturbing sediment on the pond bottom. Once the samples had been taken, six vials containing a pre-filled control DNA solution were filled using a pipette and labelled. The six samples for each pond were sent to the laboratory for analysis to determine the presence or absence of GCN DNA. At no time was the water entered and new sterile gloves were used at each pond to avoid any potential cross-contamination between water bodies. The surveyed pond locations can be seen on Figure 10.1.004.
- 4.1.12 The presence/likely absence survey for GCN, adopted the methods recommended in the Great Crested Newt Mitigation Guidelines and the Herpetofauna Worker's Manual for detecting the presence of GCN. Ten ponds were identified as requiring population estimate surveys following the HSI assessments and e-DNA testing. A further four ponds were surveyed using traditional methods in 2017 to establish presence/likely absence. At least three of the four standard survey techniques were deployed on the fourteen ponds by suitably licensed surveyors. The surveys were led at various times of the survey season by GCN License holders Chris Hodsman (License no. 2015-17342-CLS-CLS), Chris Day (License no. 2015-17852-CLS-CLS) and Malcolm Robertson (License No. 2015-16910-CLS-CLS) and were supported by Emily McVean, James Fraser, Carl Bailey and Timothy Cathery, all of whom have experience of carrying out GCN surveys. The techniques from which three were used are described below:
 - i. Bottle trapping During each survey, bottle traps were set at approximately 2 m intervals, along accessible and suitable margins of the ponds. Partly submerged bottles with an air bubble retained, were held firmly in place with a cane inserted into the substrate, to prevent tilting, and loss of the air bubble. Bottles were left overnight, and checked/removed early the following morning.
 - ii. Torchlight counts After dark, all accessible areas of open water within each of the ponds were slowly walked around, and scanned with a powerful 1-million candle power beam. Any amphibians observed during a circuit of the ponds were identified, and recorded. Additional, non–target species (including invertebrates and fish) were also recorded to provide a context to the results.



- iii. Egg search GCN eggs were searched for on submerged and floating aquatic vegetation, and suitable debris within the pond. This method is considered to be very effective at detecting GCN (Gent and Gibson, 1998) and can be used to confirm breeding behaviour within the ponds.
- iv. Hand Netting Areas of open water, and suitable submerged vegetation, were searched using a D-net for approximately 15 to 20 minutes. Non-target species such as invertebrates and fish were also recorded for context.
- 4.1.13 Environmental data, such as air temperature, weather conditions, vegetation density and water turbidity was also recorded for each pond survey. This can help determine the validity of survey, and how robust the data gathered is. Incidental records of other amphibian species seen in the survey were made.

Limitations

- 4.1.14 Limitations were mainly related to the changing seasonal conditions over the course of the survey programme. Limitations encountered included significant fluctuations in the water levels of the surveyed ponds due to sustained periods of wet or dry weather and the underlying geology. This was notable between the end of May and mid-June. Surveys undertaken in late-May/early June showed significant drying of the ponds whereas water levels increased appreciably for surveys undertaken later in June, particularly those carried out on 15 June 2016. The drying of ponds meant water levels dropped so low as to make it difficult to get bottle traps fully submerged under the water or reducing the number of traps it was possible to deploy in reduced size ponds. Pond 22 dried up completely for the fourth and fifth surveys and so no survey was possible at these times.
- 4.1.15 The fluctuating water level also impacted on egg searches at Ponds 23 and 29 where the vegetation where amphibian eggs had previously been found became deeply submerged and so were not possible to search further. In these instances, all accessible vegetation was searched.



- 4.1.16 The condition of the water bodies was at times a limitation to the surveys. Turbidity of the water was a factor that made torching of the ponds (or areas of the ponds) difficult at times. The turbidity changed according to local conditions and tended to be worse after rainfall. Light to moderate rainfall (showers) were encountered on surveys undertaken on 10 May 2016 and 12 May 2016 and whilst making torching more difficult due to the water being disturbed this was not considered to be a significant constraint to the survey. Other limitations included large amounts of debris and detritus such as leaves in and on the surface of the some of the ponds making torching less effective. Visibility was also reduced by a film of pollen, areas of flote grass and thick algal blooms in certain ponds at various times of the year.
- 4.1.17 Safe access to ponds was a limitation on some surveys, particularly when the water level rose significantly due to heavy rainfall and when increases in vegetation growth over the season decreased safe access to some of the bank areas. This was particularly the case at Pond 14 on the first and fifth visits (3 May 2016 and 7 June 2016 respectively) and Pond 21 on the first visit (4 May 2016). Some ponds had limited or difficult access throughout the surveys. This was particularly evident at Pond 8 where 90% of the margin was surrounded by dense rhododendron preventing access. This reduced the ability to spread out bottle traps and thoroughly search the pond by torch. No safe access was possible for surveyors to undertake an egg search. As such, only two survey methods were employed on this pond. It should be noted that despite this particular limitation at Pond 8, smooth newts were found on four out of six surveys.
- 4.1.18 Bottle trapping and egg searches at Pond 21 were on occasion partially constrained due to deep sediment and associated thick vegetation which prevented safe access to all areas of the pond. Bottle traps were deployed and egg searches undertaken in all areas which were safely accessible.
- 4.1.19 The first and second bottle trapping survey visits (3 May 2016 to 4 May 2016 and 4 May 2016 to 5 May 2016) were constrained in that overnight the temperatures dropped below the recommended guidelines for surveys i.e. below 5 °C. Temperatures in the mornings of these surveys were recorded as 1 °C and 4 °C respectively. On both instances the bottle traps were set within the recommended temperature guidelines and at the right time of year and the temperature forecast was not predicted to drop below 5 °C. Both surveys caught newts in bottle traps and no welfare issues were found with any of the animals trapped.



- 4.1.20 Net surveys were not carried out in 2016 as it was considered that net surveys would disturb habitat, including any eggs present, and further increase the turbidity of the water. Restrictions for access to banks noted above also applied to netting. Surveys undertaken in 2017 utilised netting as no limitations were noted with respect to turbidity and there was a relative lack of suitable vegetation for egg laying to search for the presence of eggs.
- 4.1.21 Despite the constraints listed, newts (smooth newt) were found at every survey pond apart from Pond 22 and the results of constrained surveys were comparable to unconstrained ones. The constraints encountered are not considered to have had a major impact on the overall findings of the surveys and so the results can be considered to be valid.

Desk Study

The SERC returned 19 records of GCN in the vicinity of the Site. The closest records are approximately 987 m to the south of the Site recorded in 2007. The other records are also to the south of the Site and range from 2109 m to 2733 m away from the centre of the Site (approximately 1600 m to 2300 m from the closest point to the Site). The dates of these records range from 1985 to 2015 and the majority are from the Laches Wood area, the location of the Laches Wood Outdoor Education Area.

Results

- 4.1.23 A total of 35 static waterbodies were identified on the Site and within a 500 m buffer of the Site boundary. The 35 ponds can be seen on Figure 10.1.004. Twenty-nine of these ponds were considered in surveys undertaken in 2016 and a further 6 ponds were considered in 2017.
 - Of the off-site ponds within 500 m of the Site, Ponds 1, 2, 3, 10, 11, 12, 13 and 28 were not considered for further survey as there was a physical barrier to amphibian movement between them and the Site. Pond 33 and 34 returned a Poor HSI score and were heavily stocked with fish and impacted by wildfowl and were not surveyed further.
- 4.1.24 Pond numbers 7, 9 and 25 were found to be dry. Pond 26 was on private property where access was not permitted; as such this was not surveyed.
- 4.1.25 The remaining ponds (either on the Site or within 500 m of Site) were considered to have the potential to support GCN and all were categorised under an HSI assessment and tested for GCN DNA using the e-DNA technique or were surveyed using traditional survey methods. The ponds which returned negative e-DNA results in 2016 were tested again via e-DNA in 2017. All ponds tested negative again (4, 15, 20 and 27) with the exception of pond 17 which tested positive. Ponds 15, 16 and 17 were treated as a complex of ponds and pond 16 was already confirmed to support



low numbers of GCN in 2016. A summary table of the findings of the GCN surveys is below in Table 4.1.

Table 4.1: Summary of GCN Survey Results

Pond Reference	Habitat Suitability Index Score	GCN Suitability	2016 e-DNA Results	2017 e-DNA Results	Traditional Survey Results
Pond 1	Barrier to mov	ement – A449.			
Pond 2	Barrier to mov	ement – A5.			
Pond 3	Barrier to mov	ement – A5.			
Pond 4	0.57	Below average	Negative	Negative	N/A
Pond 5	0.56	Below average	Negative	N/A	Surveyed with Pond 6 – Assumed absent
Pond 6	0.61	Average	Positive	N/A	Surveyed with Pond 5 – Assumed absent
Pond 7	DRY	Not Suitable	N/A	N/A	N/A
Pond 8	0.75	Good	Positive	N/A	Assumed absent
Pond 9	DRY	Not Suitable	N/A	N/A	N/A
Pond 10	Barrier to mov	ement – A449.			
Pond 11	Barrier to mov	ement – A449.			
Pond 12	Barrier to mov	ement – A449.			
Pond 13	Barrier to mov	ement – A449.			
Pond 14	0.74	Good	Positive	N/A	Assumed absent
Pond 15	0.75	Good	Negative	Negative	Pond part of complex with 16 & 17
Pond 16	0.78	Good	Positive	N/A	Low Population
Pond 17	0.61	Average	Negative	Positive	Pond part of complex with 15 & 16
Pond 18	0.67	Average	Positive	N/A	Assumed absent
Pond 19	0.70	Good	Negative	N/A	N/A
Pond 20	0.48	Poor	Negative	Negative	N/A
Pond 21	0.59	Below Average	Positive	N/A	Assumed absent
Pond 22	0.51	Below Average	Positive	N/A	Assumed absent
Pond 23	0.75	Good	Positive	N/A	Assumed absent



Pond Reference	Habitat Suitability Index Score	GCN Suitability	2016 e-DNA Results	2017 e-DNA Results	Traditional Survey Results
Pond 24	0.75	Good	Positive	N/A	Assumed absent
Pond 25	DRY	Not Suitable	N/A	N/A	N/A
Pond 26	No Access – Pri	vate property.			
Pond 27	0.49	Poor	Negative	Negative	N/A
Pond 28	Barrier to move	ement - Staffords	shire and Worcest	ershire Canal.	
Pond 29	0.71	Good	Positive	N/A	Assumed absent
Pond 30	0.50	Below Average	N/A	N/A	Assumed absent
Pond 31	0.62	Average	N/A	N/A	Assumed absent
Pond 32	0.55	Below Average	N/A	N/A	Assumed absent
Pond 33	0.31	Poor - heavily stocked with fish and impacted by wildfowl	N/A	N/A	N/A
Pond 34	0.31	Poor - heavily stocked with fish and impacted by wildfowl	N/A	N/A	N/A
Pond 45 SL	0.64	Average	N/A	N/A	Assumed absent

4.1.26 A population estimate survey using traditional techniques was carried out using standard techniques over six visits in 2016. A presence/likely absence survey using traditional techniques was carried out using standard techniques over four visits in 2017. The following table (Table 4.2) displays the weather conditions for each of the six GCN surveys carried out in 2016 and the four additional surveys carried out on four ponds in 2017.

Table 4.2: Dates and Weather Conditions for GCN Surveys

Date	Air Temperature at Survey Start °C	Minimum Overnight Air Temperature °C	Conditions	
03/05/2016 –	6	1	No rain; light wind; 33-66% cloud cover	
04/05/2016	O	I	No rain, light wind, 33-00% cloud cover	
04/05/2016 -	5	4	No rain, light wind, 0,22% sloud sover	
05/05/2016	3	4	No rain; light wind; 0-33% cloud cover	
10/05/2016 -	17	12	Moderate rain; light wind; 66-100% cloud	
11/05/2016	17	12	cover	
11/05/2016 –	20	12	Light rain; light wind; 66-100% cloud	
12/05/2016	20	12	cover	
16/05/2016 –	7	7	No rain; light wind; 0-33% cloud cover	



Date	Air Temperature at Survey Start °C	Minimum Overnight Air Temperature °C	Conditions
17/05/2016			
17/05/2016 – 18/05/2016	12	7	No rain; light wind; 33-66% cloud cover
18/05/2016 - 19/05/2016	12	10	No rain; light wind; 0-33% cloud cover
24/05/2016 – 25/05/2016	10	8	No rain; light wind; 0-33% cloud cover
25/05/2016 – 26/05/2016	10	7	No rain; light wind; 66-100% cloud cover
06/06/2016 – 07/06/2016	14	10	No rain; no wind; 0-33% cloud cover
07/06/2016 – 08/06/2016	14	13	No rain; light wind; 33-66% cloud cover
14/06/2016 – 15/06/2016	13	11	No rain; light wind; 66-100% cloud cover
15/06/2016 – 16/06/2016	13	13	No rain; no wind; 33-66% cloud cover
30/03/2017 – 31/03/2017	12	12	No rain; no wind; 0-33% cloud clover
05/04/2017 – 06/04/2017	6	4	No rain; light wind; 33-66% cloud cover
12/04/2017 – 13/04/2017	9	6	No rain; light wind; 66-100% cloud cover
04/05/2017 – 05/05/2017	11	6	No rain; light wind; 0-33% cloud cover

4.1.27 The following tables (Table 4.3 to Table 4.16) show the survey methods used during each of the visits and the results.

Table 4.3: Pond 6 GCN Survey Results

	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations
03/05/2016 – 04/05/2016	0	О	О	0	0	О	Turbidity ¹ – 4; Vegetation cover ² - 3
10/05/2016 – 11/05/2016	1	0	0	0	0	0	Turbidity ¹ - 3; Vegetation cover ² - 2 (dense in patches)
17/05/2016 – 18/05/2016	0	0	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 2
24/05/2016 – 25/05/2016	0	1	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 2
07/06/2016 – 08/06/2016	0	0	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 2
15/06/2016 – 16/06/2016	0	0	0	0	0	0	Turbidity ¹ – 1; Vegetation cover ² - 2

¹ Turbidity of water (0- completely clear to 5- very turbid)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



Table 4.4: Pond 8 GCN Survey Results

	Smooth Newt			GCN			Other Observations	
Survey Date	Torch	Bottle	Egg Search	Torch Bottle		Egg Search	Other Observations	
04/05/2016 – 05/05/2016	0	1	No safe access	0	0	No safe access	Turbidity ¹ – 4; Vegetation cover ² - 0	
11/05/2016 – 12/05/2016	0	0	No safe access	0	0	No safe access	Turbidity ¹ – 4; Vegetation cover ² - 0	
16/05/2016 – 17/05/2016	0	4	No safe access	0	0	No safe access	Turbidity ¹ – 1; Vegetation cover ² - 0	
25/05/2016 – 26/05/2016	0	2	No safe access	0	0	No safe access	Turbidity ¹ – 2/3; Vegetation cover ² - 1	
07/06/2016 – 08/06/2016	0	14	No safe access	0	0	No safe access	Turbidity ¹ – 2; Vegetation cover ² - 1	
15/06/2016 – 16/06/2016	0	4	No safe access	0	0	No safe access	Turbidity ¹ – 2; Vegetation cover ² - 1	

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.5: Pond 14 GCN Survey Results

Table 4.5. Polic	able 4.5: Pond 14 GCN Survey Results								
C	Smooth Newt			GCN			Other Ohermanian		
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations		
03/05/2016 – 04/05/2016	0	1	0	0	0	0	Turbidity ¹ – 5; Vegetation cover ² - 3		
10/05/2016 – 11/05/2016	4	0	0	0	0	0	Turbidity ¹ – 3/4; Vegetation cover ² – 3/4		
18/05/2016 – 19/05/2016	0	2	0	0	0	0	Turbidity ¹ – 3/4; Vegetation cover ² - 1		
25/05/2016 – 26/05/2016	4	4	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1		
07/06/2016 – 08/06/2016	0	2	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1		
14/06/2016 – 15/06/2016	1	1	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 1		

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.6: Pond 16 GCN Survey Results

	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations
03/05/2016 – 04/05/2016	0	0	0	0	0	0	Turbidity ¹ – 5; Vegetation cover ² - 1
10/05/2016 – 11/05/2016	0	0	0	0	0	0	Turbidity ¹ – 4; Vegetation cover ² - 1
17/05/2016 – 18/05/2016	6	1	0	1 (tail flash)	0	0	Turbidity ¹ – 5; Vegetation cover ² - 1
24/05/2016- 25/06/2016	2	2	0	0	0	0	Turbidity ¹ – 4; Vegetation cover ² -1
06/06/2016 – 07/06/2016	10	0	0	0	1 (gravid)	0	Turbidity ¹ – 3; Vegetation cover ² - 1

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



14/06/2016 –	_	2	0	1 (tail	2	0	Turbidity ¹ – 2/3;
15/06/2016	3	2	U	flash)	2	U	Vegetation cover ² -1

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.7: Pond 18 GCN Survey Results

Company Data	Smooth Newt			GCN		Other	
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Observations
03/05/2016 – 04/05/2016	0	0	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 3
10/05/2016 – 11/05/2015	0	7	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 4
16/05/2016 – 17/05/2016	0	1	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 4
24/05/2016 – 25/05/2016	0	0	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 2
07/06/2016 – 08/06/2016	1	0	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 3
14/06/2016 – 15/06/2016	0	2	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² – 2

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.8: Pond 21 GCN Survey Results

	Smooth Newt			GCN			
Survey Date	Torch Bottle Egg Search Torch Bottle		Egg Search	Other Observations			
04/05/2016 – 05/05/2016	О	o	О	o	О	О	Turbidity ¹ – 2; Vegetation cover ² - 4
11/05/2016 – 12/05/2016	0	О	О	0	0	О	Turbidity ¹ – 3; Vegetation cover ² – 3/4
16/05/2016 – 17/05/2016	О	o	О	o	o	О	Turbidity ¹ – 2; Vegetation cover ² - 3
24/05/2016 – 25/05/2016	О	2	О	o	o	О	Turbidity ¹ – 3; Vegetation cover ² - 4
06/06/2016 – 07/06/2016	О	o	О	o	o	0	Turbidity ¹ – 2; Vegetation cover ² - 3
14/06/2016 – 15/06/2016	o	o	О	О	o	О	Turbidity ¹ – 3; Vegetation cover ² - 3

¹ Turbidity of water (0- completely clear to 5- very turbid)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



Table 4.9: Pond 22 GCN Survey Results

C	Smooth Newt			GCN			Other Oheemisticus
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations
04/05/2016 – 05/05/2016	0	О	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 2
11/05/2016 – 12/05/2016	0	0	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 2
16/05/2016 – 17/05/2016	0	0	0	0	0	0	Turbidity ¹ – 1; Vegetation cover ² - 1
24/05/2016 – 25/05/2016	Pond	N/A – Pond dry	N/A – Pond dry	N/A – Pond dry	IPond	N/A – Pond dry	Turbidity ¹ – N/A; Vegetation cover ² – N/A
06/06/2016 – 07/06/2016	N/A – Pond dry	N/A – Pond dry	N/A – Pond dry	N/A – Pond dry	lPond	N/A – Pond dry	Turbidity ¹ – N/A; Vegetation cover ² – N/A
14/06/2016 – 15/06/2016	0	0	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.10: Pond 23 GCN Survey Results

Survey Date	Smooth Newt			GCN			
	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations
04/05/2016 – 05/05/2016	6	0	0	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 2
11/05/2016 – 12/05/2016	2	4	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1
16/05/2016 – 17/05/2016	2	0	Present	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1
25/05/2016 – 26/05/2016	0	0	Present	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1
06/06/2016 – 07/06/2016	2	0	Present	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1
15/06/2016 – 15/06/2016	0	0	Water too deep	0	0	0	Turbidity ¹ – 2/3; Vegetation cover ² - 1

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.11: Pond 24 GCN Survey Results

14DIC 4.11.10	able 4.11. Folia 24 GCN 3alvey Results							
	Smoot	Smooth Newt						
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations	
04/05/2016 – 05/05/2016	12	4	0	0	0	0	Turbidity ¹ – 4; Vegetation cover ² - 1	
11/05/2016 – 12/05/2016	О	4	0	0	0	0	Turbidity ¹ – 1; Vegetation cover ² - 1	
16/05/2016 – 17/05/2016	5	0	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1	
24/05/2016 – 25/05/2016	О	3	0	0	0	0	Turbidity ¹ – 2; Vegetation cover ² - 1	

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



06/06/2016 – 07/06/2016	1	2	0	0	0	IN.	Turbidity¹ – 2; Vegetation cover² - 1
14/06/2016 –	4	2	0	0	0	0	Turbidity ¹ – 1;
15/06/2016	4	2	U	U	U	U	Vegetation cover ² - 1

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.12: Pond 29 GCN Survey Results

able 4.12. Folia 27 och burvey kesaits							
	Smooth Newt			GCN			Other Oheemstiers
Survey Date	Torch	Bottle	Egg Search	Torch	Bottle	Egg Search	Other Observations
04/05/2016 – 05/05/2016	0	6	0	0	0	0	Turbidity ¹ – 5; Vegetation cover ² - 1
11/05/2016 – 12/05/2016	12	7	0	0	0	0	Turbidity ¹ – 1; Vegetation cover ² - 1
16/05/2016 – 17/05/2016	1	4	Present	0	0	0	Turbidity ¹ – 1; Vegetation cover ² - 1
24/05/2016 – 25/05/2016	2	3	Present	0	0	0	Turbidity ¹ – 3; Vegetation cover ² - 1
06/06/2016 – 07/06/2016	1	0	Present	0	0	0	Turbidity ¹ – 2; Vegetation cover ² – ½ NB – pond largely dry
15/06/2016 – 16/06/2016	2	0	Water too deep	0	0	О	Turbidity ¹ – 4; Vegetation cover ² - 2

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.13: Pond 30 GCN Survey Results

	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search/ Netting	Torch	Bottle	Egg Search/ Netting	Other Observations
30/03/2017 – 31/03/2017	0	1	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 2; Vegetation cover ² -0
05/04/2017 – 06/04/2017	2	0	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ - 0; Vegetation cover ² - 0
12/04/2017 – 13/04/2017	0	1	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ – 1; Vegetation cover ² - 0
04/05/2017 – 05/05/2017	0	4	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ – 1; Vegetation cover ² - 0

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.14: Pond 45 (SL) GCN Survey Results

14.14.16	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search/ Netting	Torch	Bottle	Egg Search/ Netting	Other Observations
30/03/2017 – 31/03/2017	0	1	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 4; Vegetation cover ² - 3
05/04/2017 – 06/04/2017	0	0	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ - 5; Vegetation cover ² - 5
12/04/2017 – 13/04/2017	0	0	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ – 4; Vegetation cover ² – 4

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.15: Pond 31 GCN Survey Results

able 4.13. Folia 31 GGN Survey Results							
	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search/ Netting	Torch	Bottle	Egg Search/ Netting	Other Observations
30/03/2017 – 31/03/2017	0	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 0; Vegetation cover ² - 1
05/04/2017 – 06/04/2017	0	0	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ - 1; Vegetation cover ² - 1
12/04/2017 – 13/04/2017	0	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 1; Vegetation cover ² - 3
04/05/2017 – 05/05/2017	1	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 1; Vegetation cover ² – 3/4

¹ Turbidity of water (0- completely clear to 5- very turbid)

Table 4.16: Pond 32 GCN Survey Results

	Smooth Newt			GCN			
Survey Date	Torch	Bottle	Egg Search/ Netting	Torch	Bottle	Egg Search/ Netting	Other Observations
30/03/2017 – 31/03/2017	0	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 2; Vegetation cover ² - 0
05/04/2017 – 06/04/2017	0	0	0 (Netting)	0	0	0 (Netting)	Turbidity ¹ - 3; Vegetation cover ² - 0
12/04/2017 – 13/04/2017	0	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ – 3; Vegetation cover ² - 1
04/05/2017 – 05/05/2017	1	0	0 (Egg search)	0	0	0 (Egg search)	Turbidity ¹ 1:

¹ Turbidity of water (0- completely clear to 5- very turbid)

- 4.1.28 The results in Tables 4.3 to 4.16 above show that of the fourteen ponds surveyed, GCN were confirmed as being present in one of the ponds, Pond 16 (which formed a complex with ponds 15 and 17). Results of the GCN Surveys are presented in Figure 10.1.101.
- 4.1.29 A maximum count of two (female) GCN were caught in bottle traps on survey 6 in Pond 16 carried out on 14 June 2016 to 15 June 2016 indicating a 'small' population i.e. a maximum count up to ten. One gravid female was caught in a bottle trap on survey 5.
- 4.1.30 Smooth newts (Lissotriton vulgaris) were present in thirteen out of the fourteen ponds surveyed, the exception being Pond 22. In addition to newts

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)

² Vegetation cover (0- no vegetation obscuring survey to 5- water completely obscured by vegetation)



observed, smooth newt eggs were found on three visits each at Pond 23 and Pond 29. Survey visit 6 (15/06/2016) at both Pond 23 and Pond 29 was constrained due to a significant rise in water levels submerging vegetation where eggs had been found on the previous three surveys at both ponds.

4.1.31 Other amphibian species (in addition to newts) were identified during the survey programme. This includes the common toad which is a Section 41/UK BAP species. The other amphibians identified are shown in Table 4.17 below.

Table 4.17: Amphibian Survey Results

Pond Reference	Survey Date	Amphibian Species Identified			
	17/05/2016 – 18/05/2016	Tadpoles – common frog			
Pond 6	24/05/2016 – 25/05/2016	Tadpoles –common frog Tadpoles – common toad			
	07/06/2016 – 08/06/2016	Tadpoles – common frog			
	15/06/2016 – 16/06/2016	Tadpoles – common frog			
Pond 8	N/A	No other amphibian species identified			
Donal 14	03/05/2016 – 04/05/2016	One common toad			
Pond 14	25/05/2016 – 26/05/2016	Tadpoles – common frog			
	17/05/2016 – 18/05/2016	Tadpole – common frog			
Pond 16	24/05/2016 - 25/06/2016	Tadpole – common frog			
	14/06/2016 – 15/06/2016	Tadpole – common frog			
Pond 18	N/A	No other amphibian species identified			
	11/05/2016 – 12/05/2016	Tadpole – common frog			
	16/05/2016 – 17/05/2016	Tadpole – common frog			
Pond 21	24/05/2016 – 25/05/2016	Two common frog Tadpoles – common frog			
	06/06/2016 – 07/06/2016	Common frog Tadpoles – common frog			
	14/06/2016 – 15/06/2016	Tadpoles – common frog			
Pond 22	n/a	No other amphibian species identified			
	25/05/2016 – 26/05/2016	Tadpoles – common frog			
Pond 23	06/06/2016 – 07/06/2016	Common frog Tadpoles – common frog			
	15/06/2016 – 16/06/2016	Tadpoles – common frog			
	24/05/2016 – 25/05/2016	Tadpoles – common frog			
Pond 24	06/06/2016 – 07/06/2016	Common frog			



Pond Reference	Survey Date	Amphibian Species Identified
	14/06/2016 – 15/06/2016	Tadpoles – common frog
	11/05/2016 – 12/05/2016	Tadpoles – common frog
Pond 29	16/05/2016 – 17/05/2016	Common toad Tadpoles – common frog
FOIIG 29	24/05/2016 – 25/05/2016	Tadpoles – common frog
	15/06/2016 – 16/06/2016	Common frog (juvenile)
Pond 30	12/04/2017 – 13/04/2017	Tadpole – common frog
Pond 45 (SL)	N/A	No other amphibian species identified
D 1 21	30/03/2017 – 31/03/2017	Common toad
Pond 31	04/05/2017 – 05/05/2017	Common frog
Pond 32	N/A	No other amphibian species identified

- 4.1.32 Table 4.17 above shows that three common toad were observed during the surveys, one in Pond 14, one in Pond 29 and one in Pond 31. Common toad tadpoles were also observed in Pond 6. In addition, a total of seven common frogs were observed in Ponds 21, 23, 24, 29 and 31 with common frog tadpoles observed in all ponds except Ponds 8, 18, 22, 45 and 32 where no other amphibians were observed at all.
- 4.1.33 Incidental records of amphibians were made during the reptile survey (see Section 4.2 for methods employed in that survey). Records included common toads recorded under reptile refugia on six out of seven reptile surveys in 2016 (not found on Survey 3) and four out of seven reptile surveys in 2017. A peak count of 18 toads were found on survey 7 in 2016. Over the seven reptile surveys a total of 56 toad records were made in 2016 and 6 in 2017. Toads were found in all areas of the Site where reptile refugia had been placed, with the exception of refugia 88-103 that were placed along the margin of arable fields and adjacent to the railway line in the western portion of the Site. Many of the toads recorded were juveniles. In addition, three common frogs were found under reptile refugia over the course of the surveys. See Figure 10.1.201 for the locations of the reptile refugia.

Valuation Summary

4.1.34 A disparity exists between the GCN e-DNA results and the surveys undertaken utilising traditional survey methods whereby GCN were only physically confirmed as present through use of traditional techniques in one of the ten ponds that returned positive e-DNA results. Results gained via e-DNA tests do not provide a population size class assessment (i.e. newt



abundance). The positive e-DNA results indicate that GCN are present within the landscape. No GCN were found during surveys of four ponds undertaken in 2017 using traditional survey techniques. The surveys undertaken using traditional methods indicate that whilst present within the landscape they are present in low numbers (undetectable by traditional survey techniques) with the exception of Pond 16 off-site which is within 500m of the Site.

- 4.1.35 The newt population identified on the Site is in keeping with the Staffordshire population i.e. widespread and present across the county. As such, GCN (and common toad) are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.
- 4.1.36 Common frog and smooth newt are considered to be to be of value at the Site scale and are to be considered as an 'Other Ecological Feature' within the EIA.

4.2 Reptiles

Legislation

- 4.2.1 All of the common reptile species native to Britain; grass snake (*Natrix natrix*), adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*) are protected under Sections 9(1) and 9(5) of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it illegal to intentionally kill, injure, sell or advertise for sale a common reptile and also, to sell, barter, exchange or transport for sale these animals or parts of them. However, their habitat is not directly protected.
- 4.2.2 In addition, sand lizard and smooth snake are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2017 making them European Protected Species. This legislation makes it illegal to carry out the following activities:
 - i. Deliberately or recklessly disturb, capture or kill these animals;
 - ii. Deliberately or recklessly take or destroy eggs of these animals;
 - iii. Damage or destroy a breeding site or resting place of such a wild animal; and
 - iv. Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead animal, or any part of, or anything derived from such a wild animal.

Section 41/UK BAP Reptile Species

4.2.3 Furthermore, all UK reptile species are listed under Section 41 (s41) of the 2006 Natural Environment and Rural Communities (NERC) Act as species of



- principal importance for the purpose of conserving biodiversity and UK Biodiversity Action Plan (BAP) priority species.
- Sand lizard and smooth snake have a restricted distribution in the UK and neither species occurs in Staffordshire¹⁴.

Staffordshire BAP Species

4.2.5 In addition to the Section 41/UK BAP species, the Staffordshire BAP also lists grass snake as a priority species.

Guidance Notes and Industry Standards

This survey was undertaken following best practice guidance outlined in the Herpetofauna Workers' Manual¹⁵ and Froglife Advice Sheet 10¹⁶.

Methodology

- 4.2.7 Artificial refugia, each measuring approximately 0.5 m² were placed within areas of suitable reptile habitat, such as areas of coarse grass habitat and woodland edges that would be in direct sunlight, and left to bed-in for one week. A total of 132 refugia were placed across the Site in surveys carried out across 2016 and 2017. The location of the refugia is shown in Figure 10.1.201. Refugia were of bituminous roofing felt with four additional 1 m² coroline corrugated roofing tiles placed to supplement the felt refugia in an area thought to have the highest potential for snake species, notably adder, to be present. It was ensured that the survey was conducted in accordance with the recommended densities for refugia given in Froglife Advice Sheet 10.
- 4.2.8 Seven survey visits were undertaken to each of the refugiably suitably qualified and experienced Ramboll surveyors, following the best practice guidance described above and in accordance with the Herpetofauna Workers Manual. The refugia were checked at suitable times of day and in suitable weather conditions as far as was possible. Please see 'Limitations' below for any exceptions to this. The survey dates and conditions are shown in Table 4.18 below.

West Midlands Interchange

Forestry Commission, 2013. Guidance on managing woodlands with sand lizards and smooth snake in England. Online. Available from: http://www.forestry.gov.uk/pdf/england-protectedspecies-snake.pdf/\$FILE/england-protectedspecies-snake.pdf

¹⁵ Gent A H, & Gibson S D, eds. 2003. Herpetofauna workers' manual. Peterborough, Joint Nature Conservation Committee

Froglife (1999) Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth



Table 4.18: Reptile Survey Dates and Weather Conditions

Date	Start Time	Weather Conditions							
		Temp (°C)	% Cloud Cover	Wind Speed	Precipitation				
2016									
27/05/2016	09:00	12	0-33	Light	None				
21/06/2016	09:10	17	66-100	Light	None				
04/08/2016	09:15	15	66-100	Moderate	None				
11/08/2016	08:51	16	66-100	Light	None				
17/08/2016	14:07	24	0-33	Light	None				
26/08/2016	07:50	15	0-33	Light	None				
12/09/2016	11:12	19	66-100	Moderate	None				
2017									
12/04/2017	13:30	12	66-100	Moderate	None				
05/05/2017	13:40	15	0-33	Moderate	None				
16/05/2017	10:30	13	0-33	Light	None				
24/05/2017	11:00	14	0-33	Light	None				
19/06/2017	13:05	14	0-33	Light	None				
13/09/2017	13:50	14	0-33	Light	None				
14/09/2017	13:00	14	66-100	Moderate	None				

4.2.9 Refugia were approached slowly and carefully in order to minimise disturbance to any reptiles on top, or beneath the refuge and maximise potential observations. In addition, visual searches were made of potential basking locations in other areas of suitable habitat within the Site. This ensured that all areas were represented in the survey, and that the survey was not biased towards those reptiles more likely to use refugia. Records of any reptile sightings from this method were recorded to the nearest refuge. Potential reptile refugia already present on the site such as discarded wooden boards and plastic sheets were also lifted to check for the presence of reptiles.

Limitations

4.2.10 Several limitations were encountered during the reptile survey programme. Survey numbers 5, 6 and 7 (2016) and 1, 2, 5, 6 and 7 (2017) were undertaken outside of the recommended guidance set out in Froglife Advice



Sheet 10 i.e. for surveys to be carried out between 08:30 hrs and 11:00 or 16:00 and 18:30. Of these surveys, numbers 6 and 7 (2016) were carried out relatively close to the guidance times and while survey 6 began earlier than the guidance time, much of the survey was carried out after 08:30 due to the large size of the site. Though carried out outside of the guidance times, the results returned were comparable to the other surveys and so it is not thought that the time of day made a material difference to the result of the survey.

- 4.2.11 Surveys 5 and 7 (2016) were also outside of the Froglife Advice Sheet guidance for temperature of being between 9 °C and 18 °C. Both surveys were conducted in conditions hotter than 18 °C, though survey 7 was only marginally higher than 18 °C and so can be accepted as a valid survey. Survey 5 was carried out on a particularly hot day but the results of the survey were comparable to the other six survey results and so it is not thought that the temperature made a material difference to the result of the survey.
- 4.2.12 Over the course of the survey periods, vegetation in some areas of the site grew to become very dense and as a result several refugia could not be found to lift. The density and shade cast by the vegetation is likely to have precluded use by reptiles. This was particularly true in the Calf Heath Wood where continuous bracken became dominant.
- 4.2.13 Over the course of the 2016 survey several refugia that were placed in suitable habitat immediately adjacent the Site (on land associated with the Bericote development) were destroyed due to ground works being undertaken. Several further refugia were also damaged as a result of quarrying operations. In addition, three out of four coroline corrugated refugia had been moved so as to be inaccessible part way through the survey. The numbers of refugia destroyed or lost were relatively low and the areas in question retained enough refugia to provide adequate survey coverage relative to the area of the suitable habitat present.
- 4.2.14 Despite the above survey limitations, the large scale of the surveys and successful completion of the majority of surveys ensured enough data was gathered for the survey to be considered as a complete and reliable measure of the status of reptiles on site. The uniformity of returned results over the seven surveys and lack of incidental sighting during other survey work indicates the reliability of the surveys as a whole despite the limitations encountered.

Desk Study

4.2.15 SERC returned one reptile record, a common lizard (*Zootoca vivipara*) located approximately 2350 m roughly north of the site.



4.2.16 A survey undertaken in 2015 for the Bericote development identified common lizard as present (peak count of 2). The habitat in this location was superior to that present on-site. In addition, personal communication received from HFM Pyrotechnics Ltd, who manage the Gailey Magazine area of the site, stated in an email of 3 May 2016 that adder have regularly been sighted by their staff in the area around Gailey Magazine during maintenance visits¹⁷.

Results

- 4.2.17 The reptile survey programme, during both the 2016 and 2017 surveys, did not identify any reptiles on-site either under the refugia or by direct observation. No signs of reptiles such as sloughed skin were found and no reptiles were observed during the course of any of the other extensive ecological surveys that were carried out across the Site.
- 4.2.18 The results of the reptile survey suggest that reptiles are likely to be absent from the Site, or else with a low enough local population so as to be below detectible levels. This is thought to be for several reasons including a very high number of pheasants in the area which would be likely to predate reptile species. Large fluctuations in the local water table were also evident on site over the course of the surveys with the site being inundated with standing water at times. This would impact the potential for reptiles to live on site as they would ordinarily seek out areas with better drainage. Similarly, the habitats on site are not ideal for the majority of reptile species with large areas either being given over to arable fields or else being heavily shaded by trees and tall vegetation. The wider Staffordshire context shows that reptile populations in the area are generally low, as evidenced by the ecological data records received from SERC.
- 4.2.19 While no reptiles were found, several toads, a common frog and small mammals were found under the refugia over the course of the surveys. See section 4.1 for consideration of common toad records.

Valuation Summary

4.2.20 Reptiles are considered to be absent and therefore not a receptor but due to records in the vicinity and anecdotal adder records, the mitigation section will consider the unlikely event that reptiles are discovered.

4.3 Other Aquatic Species

4.3.1 This section describes the baseline conditions for freshwater fish and crustaceans.

¹⁷ Personal communication, 03/05/2016. Email from HFM Pyrotechnics to Chris Hodsman – Senior Ecologist, Ramboll



Legislation

- The white-clawed crayfish (*Austropotamobius pallipes*) is listed under the following legislation, policies and guidance:
 - Bern Convention, Appendix 3;
 - Habitats Directive, Annex 2 and Annex 5;
 - Biodiversity Lists England NERC s41;
 - Global Red list status Endangered;
 - Biodiversity Action Plan UK list of priority species;
 - Wildlife and Countryside Act 1981, Schedule 5 Section 9 (only in respect of section 9(1) so far as it relates to taking and in respect of section 9(5) on selling); and
 - Staffordshire LBAP.

Methodology

4.3.3 No focussed fish or shellfish surveys were undertaken. See section 4.1 for details of pond torching, egg searches and bottle trap surveys undertaken at ponds for amphibians.

Limitations

4.3.4 Surveys suitable to determine the presence or likely absence of fish and crustaceans were not undertaken.

Desk Study

- 4.3.5 The white-clawed crayfish is Britain's only native species of crayfish. It inhabits small streams, rivers, canals, lakes, reservoirs and quarry pools. SERC hold six records of white-clawed crayfish within the study area, ranging from 1991 to 2008. All SERC records were located more than 1.4 km southwest of the Site. The records relate to the River Penk and Watershed Brook, which have limited to no connectivity to the Site. Staffordshire Wildlife Trust shared an additional record from 22/05/2017 where white-clawed crayfish were confirmed as present on the Saredon Brook located approximately 750m to the south of the Site at its closest point. White-clawed crayfish are widely distributed in England and Wales, but have experienced significant decline since the 1970s, mostly due to the spread of non-native American signal crayfish (Pacifastacus leniusculus) and the crayfish plague (Aphanomyces astaci) that it often carries. Staffordshire reflects this decline.
- 4.3.6 No records of fish in the study area are held by SERC. Angling websites and forums have been consulted to understand the known fish species within the waterbodies that are open to angling; where approached, fishermen were also consulted during the bird survey to get an understanding of the use of the reservoirs by piscivorous birds. Searches of angling resources for



anecdotal records of crayfish by fishermen were also undertaken; however no information relevant to the Site was available. No formal consultation has been held with anglers as the Site does not include any commercial/leisure fishing resources. The Calf Heath Reservoir, directly northeast of the site is stocked with carp (*Cyprinus carpio*), bream (*Abramis brama*), perch (*Perca fluviatilis*), roach (*Rutilus rutilus*) and tench (*Tinca tinca*)¹⁸. The Staffordshire and Worcester Canal is also known to support carp, chub (*Squalius cephalus*), roach, perch, bream, barbel (*Buarbus* sp.), tench and pike (*Esox lucius*) 19,20, as well as other course and game fish.

Results

- 4.3.7 The ponds on site have little connectivity to the wider landscape. The canal provides a linear corridor that is directly connected to the wider landscape. The onsite waterbodies that remain wet throughout the year mainly comprise the canal and quarry pools. The quarry pools have turbid water with no visible features that may provide refuge for crayfish and are subject to short-term changes as mineral extraction progresses. Suitability surveys of canal banks were undertaken (note that visibility was impaired due to depth and turbidity, which contributes to lower suitability for crayfish). The majority of the banks of the canal adjacent the Site are steel sheet-piled or concrete walls for bank reinforcement which are unfavourabe for this species. The surveys undertaken are not suitable to determine presence/likely absence of white-clawed crayfish; however, based on the low suitability of habitats within the canal, it is considered that precautionary working methods will be an appropriate approach to ensuring the protection of this species if present in the canal adjacent to Site.
- 4.3.8 Pond 5/6 and Pond 24, in the north and southeast of the Site respectively were found during amphibian surveys to support low density population of three-spined stickleback (*Gasterosteus gymnurus*). The fish were observed during all torch and bottle trap surveys. Other ponds within the site were not noted to have any fish species present; Ponds 4, 5 18, 20, 22, 25and 30 are not considered to hold enough water throughout the year to support fish. No conservation action has been targeted for this species (which is listed on the global red list of least concern status). Great diving beetle (*Dytiscus marginalis*) larvae and adults also found throughout the ponds on Site. These predators will feed on small newts and tadpoles.

Blackfords Progressive Angling Society (2012) Calfheath Reservoir. Available at: http://blackfordsprogressiveanglingsociety.co.uk/calfheath-resevoir-general/ [accessed 12/12/2016]

Used Tackle Ltd (2013) Staffordshire and Worcester Canal, Stafford. Fish on Friday. [online] Available at: http://www.fish-on-friday.com/2013/01/staffordshire-and-worcester-canal-stafford/> [accessed 12/12/2016]

Visit Worcestershire (2016) Fishing at Staffordshire & Worcestershire Canal. [online] Available at: http://www.visitworcestershire.org/thedms.aspx?dms=3&feature=1001&venue=1360020 [accessed 12/12/2016]



Valuation Summary

- 4.3.9 The white-clawed crayfish recorded in Saredon Brook are considered to be of County value but outside the zone of influence and are therefore considered as an 'Other Ecological Feature' within the EIA.
- 4.3.10 Fish (Three-spined stickleback) are considered to be of negligible value and are to be considered as an 'Other Ecological Feature' within the EIA.

4.4 Birds

4.4.1 This section focusses on breeding birds on the Site, then considers breeding birds at the adjacent Calf Heath Reservoir and then considers wintering birds on the Site, Calf Heath and Gailey Reservoirs.

Legislation

- 4.4.2 All wild birds in the UK are protected under the WCA 1981. This makes it illegal to:
 - i. Kill, injure or take any wild bird;
 - ii. Take, damage or destroy the nest of any wild bird while it is being built or in use:
 - iii. Take or destroy the eggs of any wild bird; and
 - iv. Possess or control any wild bird egg unless obtained legally.
- 4.4.3 Some species, listed on Schedule 1 of the WCA 1981 receive a higher level of protection, making it illegal to intentionally or recklessly disturb any bird listed on Schedule 1 while nest building or at or near a nest containing eggs or young, or to disturb any of its dependent young.

Methodology

Breeding Birds

4.4.4 In order to carry out a breeding bird survey five survey visits were undertaken in the early morning or evening of the site other than land south of Station Road in 2016. In 2017 the land south of Station Road was surveyed over three visits. Surveys were carried out by an experienced ecologist, Malcolm Robertson CEnv MCIEEM. The surveys were carried out on the dates described in Table 4.19; the table also sets out the weather conditions during the survey.



Table 4.19: Bird Survey Dates and Weather Conditions

Visit	Date	Survey Time	Weather Conditions
1(2016)	13/4/16	Morning (05:20-09:30)	Foggy at the start, becoming clearer through the survey
1(2010)	14/4/16	Morning (05:30-09:00)	Dry, slight breeze, 7/8 cloud, light rain 06:00-06:45
	18/5/16	Evening (19:30-22:15)	Breezy, cool, 1/8 cloud
2(2016)	19/5/16	Morning (05:25-09:15)	Light breeze, 8/8 cloud
20/5/16		Morning (05:00-08:45)	Light breeze, 8/8 cloud
	15/6/16	Evening (19:55-22:30)	7/8 cloud, mild, dry and muggy. Drizzle from 22:15 onwards
3(2016)	16/6/16	Morning (04:45-09:15)	Dry, warm, 8/8 cloud
	17/6/16	Morning (04:30-08:30)	Light rain at times, slight breeze, 8/8 cloud
4(2017)	15/3/17	Morning (05:45-08:00)	Light breeze, misty at times, 1/8 cloud
5(2017)	19/5/17	Morning (05:00-07:15)	Light rain, 8/8 cloud
6(2017)	21/6/17	Morning (05:00-06:50)	Still, dry and mild 8/8 cloud

- The survey approach for the morning surveys was based on the Common Bird Census methodology²¹. The surveyor walked a repeated route across the survey area approaching to within 50 m of all points to ensure adequate coverage but at the same time being careful to avoid double counting birds. For most species, birds exhibiting breeding behaviour were considered to be holding different territories if they were separated by at least 100 m. On several occasions the surveyor was able to determine if birds were separate individuals and in these cases the records are shown appropriately on the maps.
- 4.4.6 A modified approach was followed on the evening visits carried out in 2016 due to health and safety considerations in limited light and the species being surveyed. The survey visits involved watching and listening from vantage points for crepuscular/noctural birds; during the survey the characteristic calls of nightjar and owls were listened for and birds were observed from the vantage points. Other species were recorded during the dusk survey and where appropriate this data was used to augment that from the dawn surveys and used in mapping territories. No evening surveys were carried out in 2017 in land south of Station Road because the survey in 2016 did not record any significant crepuscular birds or activity and no habitat particularly suitable for such species (for instance nightjar) is present in the land south of Vicarage Road.

²¹ Gilbert G, Gibbons DW and Evans J (1998). Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire. -See more at: http://www.cieem.net/birds#sthash.xahU0vYU.dpuf



- 4.4.7 Calf Heath Reservoir was surveyed in 2017 on the same mornings as the breeding bird survey given in Table 4.19 (weather conditions were similar to those described). The survey involved counting all waterbirds on the reservoirs as well as birds noted in flight over the reservoir and in vegetation around the reservoir.
- 4.4.8 Bird registrations were recorded on field maps using British Trust for Ornithology (BTO) two-letter species codes and activity recording codes²². The field maps were used as a basis for drawing up visit maps of the bird records for each survey visit. Territories have not been accurately mapped as this would have required more data obtained from substantially more survey visits over the full breeding season. Nevertheless it is considered that the level of survey would have detected birds breeding on the site in the survey period and gives a representative indication of the distribution across the site for most species, and of the species breeding on the site. Based on field signs, behaviour and habitat association, birds were classified as 'confirmed', 'probable' or 'possible' breeding.

Wintering Birds

- 4.4.9 Birds seen during the Phase 1 Habitat Survey carried out on 23 and 24 November 2015 and 24 and 25 February 2016 were recorded.
- 4.4.10 In order to assess and understand the wintering bird species and resident bird species which remained overwinter, monthly visits to the Site were completed between November 2016 and March 2017.
- 4.4.11 Calf Heath Reservoir and the Upper and Lower Gailey reservoirs, situated immediately north-east of the Site, were visited each month in addition to the Site. This allowed for the identification of wildfowl populations which utilised these waterbodies over winter.
- 4.4.12 Each monthly visit comprised of two visits to each site over two days i.e. both reservoirs and the Site were visited once on day one then again on day two. This allowed for each location to be visited at different times each day, varying from month to month. Covering all times of day allowed for any diurnal patterns of species activity/ habitat usage to be identified. It also enabled for the presence of more crepuscular species such as tawny owl (Strix aluco) and barn owl (Tyto alba) to be identified, along with afternoon mass movements of species such as starlings (Sturnus vulgaris) or winter thrushes (Turdus sp.).
- 4.4.13 Surveys were completed by Elizabeth Butler BSc (Hons) on foot, using binoculars and a telescope. Results were recorded on paper maps using BTO

British Trust for Ornithology. (2016). BTO Species Codes. [online] Available at: $\label{lem:http://www.bto.org/sites/default/files/u16/downloads/forms_instructions/bto_bird_species_codes.pdf [accessed 15/12/2016] \\$



species and activity codes and then digitised using ArcMap GIS software. Dates and times of the survey are presented in Table 4.20 below.

Table 4.20: Wintering Bird Survey Dates and Times

Table 4.20: Wintering Bird Survey Dates and Times								
	Visit/ Date	Survey Locations/ Time of Visits **						
Month		Upper & Lower Gailey Reservoir	Calf Heath Reservoir	Site				
November 2016	Tuesday 22 rd	DAY 14.00-15.00	DAY 13.00-14.00	DAY/DUSK 14.00-16.30				
	Wednesday 23 rd	DAWN 7.30-8.10	DAWN/ DAY 8.20- 9.10	DAY 9.15-12.30				
December 2016	Wednesday 7 th	DUSK 15.00-16.05	DAY 11.30-12.20	DAY/DUSK 12.20-17.00				
	Thursday 8 th	DAWN 7.30-8.10	DAWN/DAY 8.20- 9.00	DAY 9.10-12.30				
January 2017	Monday 23 rd	DAY 12.20-13.30	DAY 11.20-12.00	DAY/DUSK 13.00-18.20				
	Tuesday 24 th	DAWN 7.50-8.20	DAWN 8.30-9.20	DAY 9.20-11.50				
February 2017	Monday 20 th	DAY 12.45-13.40	DAY 11.30-12.20	DAY/DUSK 14.40- 18.50				
	Tuesday 21 st	DAY 9.45-10.20	DAWN 7.30-8.20	DAWN/DAY 7.20- 12.30				
March 2017	Monday 20 th	DAY 13.00-13.50	DUSK 17.50- 18.30	DAY/DUSK 14.00-17.30				
	Tuesday 21 st	DAWN 7.00-7.50	DAY 9.00-9.50	DAY 10.00-12.00				

^{**} Overlap in times between Calf Heath Reservoir and Site visits occur as sections of the Site could be viewed from Calf Heath so records could be made in conjunction.

Limitations

- 4.4.14 Due to the size of the Site it took two days for the surveyor to cover the parts of the Site surveyed in 2016 for the morning breeding bird surveys. Some birds were recorded in the evening surveys and then in the subsequent morning. It is possible that some birds were recorded twice as a result, but this is an inherent feature of the survey technique and number of territories has been estimated from clusters of records and so this is taken into account.
- 4.4.15 The breeding bird survey of the Site took place over two years and different parts of the site were surveyed each year. It is possible that birds breeding north of Station Road in 2016 were recorded there and then the same pair bred south of Station Road in 2017 and were recorded there. This may have led to an overestimation of number of pairs of birds present in the assessment. However, in both years birds were recorded outside the



- boundaries of the land surveyed, in the other land forming part of the Site and so this is not a significant constraint to the findings or assessment.
- 4.4.16 The survey in 2016 did not cover late February or March and as a result species that display or sing early in the season may have been missed. In order to address this the first survey carried out in 2017 (15/03/17) included a transect walked around Calf Heath Wood (the most significant block of woodland on the Site) with the aim of looking/listening for early singing/calling woodland species such as lesser spotted woodpecker and willow tit.
- 4.4.17 The M6 motorway, A5, A449 and to a lesser degree the railway line through the site produce noise; the noisy conditions, particularly along the north and western boundaries of the Site and on the boundaries of Calf Heath and Gailey Reservoirs nearest the roads may have masked bird song.
- 4.4.18 Visibility during visit 1 in 2016 was restricted by fog and so this survey was carried out largely using bird song and calls; restricted visibility at this time may have also influenced bird behaviour and thus detectability. The rain experienced during the survey was not considered to represent a constraint to the survey.
- 4.4.19 The guarry fields in the east of the Site were not accessible for health and safety reasons but were observed from a safe location. As a result, the records from this part of the Site may be an underrepresentation of the birds present in that part of the site.

Desk Study

- 4.4.20 SERC provided a long list of bird species records, although many of these relate to either vagrants or winter migrants unlikely to breed within habitats on-site. A full list of bird records provided by SERC is provided in Annex 10.1.4, along with an assessment of the likelihood that they may breed onsite.
- 4.4.21 According to Drivers Jonas²³ (2007), a breeding bird survey was completed in 2006 and 2007 within part of Calf Heath Wood, adjacent to the Site. The survey also included one field within the Site boundary, located to the southwest of Calf Heath Wood. A total of 29 species were recorded as either confirmed or probably breeding within the woodland area. Most of the species recorded are common and widespread, listed as green on Bird of Conservation Concern²⁴. However, three red listed species were also recorded: mistle thrush (*Turdus viscivorus*), song thrush (*Turdus philomelos*) and willow tit (Poecile montanus). In addition, four amber listed birds were

²³ Drivers Jonas (2007) Warehouse Development at Four Ashes, South Staffordshire: Environmental Statement

Eaton M, Aebischer N, Brown A, Hearn R, Lock L, Musgrove A, Noble D, Stroud D and Gregory R. 2015. Birds of Conservation Concern 4: the Red List for Birds. British Birds 108. 708 - 746



recorded: tawny owl, willow warbler (*Phylloscopus trochilus*), dunnock (Prunella modularis) (also s41) and bullfinch (Pyrrhula pyrrhula) (also s41). In an adjacent field, and additional two Red List species, skylark (Alauda arvensis) and starling(both also s41) and an amber list species common kestrel (Falco tinnunculus) was recorded.

- 4.4.22 A breeding bird survey of the Bericote land to the west of Calf Heath Wood carried out by Ecology Solutions (Date unknown) found breeding or probable breeding for the Red List lapwing (Vanellus vanellus) (two pairs) and the Amber List snipe (Gallinago gallinago) (also LBAP), dunnock (two pairs) and six other species of no specific conservation concern. Possible breeding was recorded for 13 further species including the Schedule 1 little ringed plover (Charadrius dubius), s41/Red List song thrush, reed bunting (Emberiza schoeniclus - two pairs of this s41/Amber List species) and the Amber List mistle thrush and willow warbler (Reference unknown – drawing only).
- 4.4.23 SERC provided a record of the amber list barn owl (Tyto alba), which was recorded in the north of the Site in 1999 and 2006.
- 4.4.24 WeBS data for the Gailey Pools core counts has been reviewed. This count covers the two Gailey Reservoirs (Upper and Lower), but not Calf Heath Reservoir. For all species combined the total numbers are presented in Table 4.21 below to illustrate the numbers of birds using the reservoirs.

Table 4.21: Gailey Pools WeBS Site Mean counts of total waterbirds

	Peak Monthly Total	Autumn Peak	Winter Peak	Spring Peak
Mean Count	791	1020	897	439

4.4.25 The data includes annual peak counts which are presented in Table 4.22 below for those species with mean peak counts of over 10 birds.

Table 4.22: Gailey Pools WeBS Site Five year annual peak counts

Species	2010/11	2011/12	2012/13	2013/14	2014/15	Mean Peak
Mute swan	24	25	11	8	13	18
Greylag goose	28	32	40	32	35	33
Canada goose	99	371	186	68	160	177
Gadwall	12	26	13	12	38	20
Mallard	64	105	41	109	81	80
Pochard	77	19	26	12	22	31
Tufted duck	159	140	119	165	138	144



Species	2010/11	2011/12	2012/13	2013/14	2014/15	Mean Peak
Little grebe	21	17	19	12	17	17
Great crested grebe	37	43	17	29	28	31
Cormorant	27	26	37	22	7	24
Grey heron	33	24	23	28	18	25
Coot	504	307	321	432	368	386
Lapwing	87	66	41	59	82	67
Black-headed gull	209	155	243	292	339	248
Lesser black-backed gull	2	69	16	4	4	23

Results

Breeding Birds – West Midlands Interchange

- 4.4.26 A full list of the BTO two letter codes of the bird species recorded, together with their Latin names and their breeding status on Site (including an assessment of breeding status and where possible an estimate of breeding pairs/territories) is provided in Annex 10.1.4. The list is based on a combination of the morning and evening surveys in 2016 and 2017. Figures 10.1.401 to 10.1.417 present species maps of the species of conservation concern / s41 and LBAP records.
- 4.4.27 Sixty-two species of birds were recorded in the breeding bird survey of the Site: a full list of the birds recorded during the survey is presented in Annex 10.1.4. The birds recorded included one Schedule 1 species (see Paragraph 4.4.36), 12 UKBAP/s41 species of principal importance, 10 Red List species (all of which except mistle thrush are listed in s41) and 12 Amber List species. There are eight Staffordshire BAP species of which five form part of the Action Plan for Farmland Seed Eating Birds. Table 4.23 presents data on these species; further information on the breeding status of these species on site is provided in the following paragraphs.

Table 4.23: Summary of	Spec	cies	of Co	nser	vation Concern
Species	UK BAP/s41	LBAP	Red List	Amber List	Status on Site
Mallard				*	At least seven pairs, widespread across site.
Kestrel				*	Two birds seen at Woodside Farm in vicinity of suitable building (2016). Two birds flushed from open barns in Heath Farm (2017). Possible nester (1 or 2 pairs).
Lapwing	*	*	*		Five to six pairs, one west of railway, remainder in fields north and south of Vicarage Road
Snipe		*		*	One flushed from set aside on first visit. Likely late wintering bird.
Lesser black- backed gull				*	Birds in flight over site on all three 2016 visits, not nesting.
Stock dove				*	Display seen and pairs/small groups noted. At least six pairs.
Cuckoo	*		*		Two birds seen on one occasion in 2016 south of canal in centre of site, one calling off site in adjacent land on separate visit. Possible breeder, dunnock most likely host.
Tawny owl				*	One bird near Woodside Farm (also seen/heard during bat work). Probable breeder, at least one pair.
Swift				*	Three records of single birds in flight. Unlikely to be nesting on site.
Skylark	*	*	*		At least 14 territories, largely west of the canal, in set aside north of Calf Heath Wood and in arable around Station Road.
Swallow				*	Four birds in and out of barns at Woodside Farm in 2016 (assumed nesting). Other birds associated with Avenue Cottages and Gailey Farm (2016) and seen entering/ suspected of entering two buildings north of Straight Mile (2017) and probable breeders at these properties. Other birds in flight over site.
Yellow wagtail	*		*		Pair noted north of Gravelly Way on second 2016 visit, male plus possible other bird at Gailey on visit 3 2016. Probable breeder, 1-2 pairs.
Dunnock	*			*	Widespread although mostly in the west of the site and south of Station Road. At least twenty pairs.
Song thrush	*		*		c. 12 territories with several in Calf Heath Wood, although widespread across whole site. Seen carrying food into wood on one visit.
Mistle thrush			*		Three to four pairs; pair with two juvenile seen on northern boundary of Calf Heath Wood.
Willow warbler				*	Two clusters and one singing record suggests three pairs in land north of Station Road (2016). A further signing male south of Station Road in 2017.
Starling	*		*		At least two pairs likely breeding in buildings off site (2016); all 2016 records near Croft Lane including five with two juveniles on the second visit. 2017: flock on third visit close to southern boundary of the site, not suspected of breeding in land south of Station Road.
House sparrow	*	* *	*		Seven locations/colonies recorded of which three probably involve nesting off site. Birds noted at Fir Tree Cottage



Species	UK BAP/s41	LBAP	Red List	Amber List	Status on Site
					and Woodside Farm (where seen to enter building, assumed to be visiting nest in 2016). Number of pairs involved is unknown, but no more than 5 pairs suspected north of Station Road. South of Station Road two locations with significant concentration at Heath Farm which has several nest boxes (2017).
Linnet	*	**	*		Four colony locations; at least seven pairs. Concentration of records in set aside fields north of Calf Heath Wood.
Bullfinch	*	**		*	Possible breeder in two locations (potentially off site).
Yellowhammer	*	**	*		At least 13 pairs, notable concentrations north of Calf Heath Wood and fields north of Vicarage Road (2016) and south of Station Road (2017).
Reed bunting	*	* *		*	Singing birds in two locations on single dates, calling bird in third location. Probable breeder, two pairs.

- ** Part of the Action Plan for Farmland Seed Eating Birds
- 4.4.28 The breeding bird assemblage on the Site includes s41/Red List/LBAP farmland birds: lapwing, skylark, yellow wagtail (Motacilla flava), linnet (Carduelis cannabina), yellowhammer (Emberiza citrinella) and reed bunting. This reflects the agricultural landscape and in particular the set aside farmland north of Calf Heath Wood and fields north and south of Vicarage Road were important areas for these species. Yellow wagtails were associated with wheat fields in the west of the Site.
- 4.4.29 Dunnock and song thrush (and mistle thrush and willow warbler) were associated with woodland or hedgerows across the Site, the former two being widespread and reasonably common on Site. Stock dove (Columba oenas) (Amber List) was found largely associated with woodland edges and the old trees in Calf Heath Wood and the fields to the north presumably form the focus of this species' breeding on site. Bullfinch was only recorded in two locations on the edge of the Site and may breed on the Site margins, but more likely off-site.
- 4.4.30 The hole nesting house sparrow (Passer domesticus), starling (both s41 and Red List) and swallow (Hirundo rustica) (Amber List) were found associated with buildings on and off-site, the number of suitable nesting sites probably influencing the numbers of these species. One pair of kestrel (Amber List) was recorded near a building in Woodside Farm and another was at Heath Farm; at least one pair is possibly nesting on site.
- 4.4.31 Tawny owl (Amber List) was recorded in one location although visits earlier in the year would have undoubtedly recorded this widespread species in



- more locations. A single barn owl (Schedule 1 WCA) was recorded on two occasions (5th and 6th July 2017) hunting over a grass field south of Station Road by surveyors carrying out bat surveys. Barn owl is not suspected of breeding on site. No other crepuscular species were recorded on-site.
- 4.4.32 The flashy and periodically wet nature of the Site along with numerous ponds favours mallard (Amber List) and explains their presence across the Site. Geese species were recorded on site; Canada geese (Branta canadensis) were noted on open water in quarry workings and may have nested in the quarry. They were also noted in a field south of the A5 proximal to TN7.
- 4.4.33 It is hard to determine the breeding status of cuckoo (Cuculus canorus) (s41 and Red List) although two seen together suggests possible breeding and suitable host species (dunnock) are present on-site.
- 4.4.34 Of the widespread species there was evidence of nesting recorded, as presented in Table 4.24.

Table 4.24: Evidence of Breeding Birds

Species	Breeding Evidence Recorded
Unknown species	Old nest seen in hedge west of Woodside Farmhouse on boundary with Bericote land
Canada goose	Two adults with four juveniles on open water in flooded excavation in Calf Heath Quarry
Coot	Adult and two juveniles seen south of Vicarage Road in visit 3 2017
Sparrowhawk	Seen carrying prey into Calf Heath Wood, assumed nesting in the wood
Little owl	Adults and juveniles at Heath Farm in 2017 in association with large tree with hole in and seen leaving a barn. Probable breeder.
Swallow	Four birds in and out of barns at Woodside Farm in 2016 (assumed nesting). Other birds associated with Avenue Cottages and Gailey Farm (2016) and seen entering/suspected of entering two buildings north of Straight Mile (2017) and probable breeders at these properties. Other birds in flight over site.
Robin	Juvenile seen south of Gravelly Way in 2016 and juvenile and separate family group seen south of Station Road in 2017.
Blackbird	Juveniles seen, for instance east of the canal, south of the A5. Pair with juveniles in hedge north of Vicarage Road
Pied wagtail	Juvenile seen east of Firtree Cottage, west of railway line
Great tit	Bird seen entering a hole in a tree west of Gailey Magazine, east of the canal. Assumed nest site. Juveniles recorded nearby on subsequent visit and family groups recorded east of Gailey Wharf and in hedge north of Vicarage Road
Blue tit	2016: Bird seen entering a bird box on a building in Firtree Cottage property. Subsequently juvenile bird noted at same location. Family groups recorded in hedge around Police Station on A5, in hedge east of Gailey Wharf, in Reservoir Plantation, south of the quarry workings, two families south of the quarry entrance and three families at eastern-tip of Calf Heath Wood. 2017: Bird carrying food in Heath Farm and family party alongside canal on southern boundary of the site
Long-tailed tit	Family group seen in the centre of the land south of Station Road in 2017.



Species	Breeding Evidence Recorded
Chaffinch	Pair seen with nesting material by canal east of Gravelly Way Farm. Pair with juveniles in hedge north of Vicarage Road
House sparrow	Seven locations/colonies recorded of which three probably involve nesting off site. Birds noted at Fir Tree Cottage and Woodside Farm (where seen to enter building, assumed to be visiting nest in 2016). Number of pairs involved is unknown, but no more than 5 pairs suspected north of Station Road. South of Station Road two locations with significant concentration at Heath Farm which has several nest boxes.
Crow	Old nests recorded in several locations, medium size, assumed corvid nests for instance on boundary of railway line and in woodland north of Gravelly Way and east of the A449
Jackdaw	Three birds seen to enter a property north of A5 (off site) assumed nesting
Rook	Rookery in the eastern part of the site south of Station Road, with approximately 25 nests recorded in woodland there in 2017. Further nests in woodland south of Straight Mile (off site).
Magpie	Juvenile birds at Firtree Cottage

4.4.35 Further noteworthy birds recorded included raven (Corvus corax) with one pair probably breeding in Calf Heath Wood. A hobby (Falco subbbuteo) was seen hunting bats during a bat survey on the 6 September 2016 and another was seen heading north-east high over Calf Heath Reservoir on the third survey visit in 2017. These are the only records of this Schedule 1 species made during the fieldwork in support of this assessment and the bird is considered to be from a nest outside the Site. There were 73 records of this species received, one of which was of possible breeding from 2011 for the grid square southeast of the Site (with another record there in 2014); all of the other records were from Gailey Reservoirs which provide ideal habitat for hobby to hunt dragonflies and small birds.

Breeding Birds – Calf Heath Reservoir

- 4.4.36 Calf Heath Reservoir has a wall along its northern boundary and a concrete landing stage along much of its eastern boundary. For that reason, the other boundaries (i.e. those closest to the Site) provide better habitat for nesting waterbirds. Figures 10.1.418 to 10.1.421 present species maps of the species of conservation concern / s41 and LBAP records.
- 4.4.37 A kingfisher (Schedule 1) was seen on two occasions in the western side of the reservoir (where there are low earth banks that provide some limited nesting habitat). This species may nest at this location, although it is busy with anglers on occasion and the banks may not be sufficiently high to prevent predation of any nests attempted by mammal predators.
- 4.4.38 The reservoir is used by breeding waterbirds, notably mallard (16 males maximum and at least three pairs confirmed breeding) and great crested grebe (up to four pairs displaying and up to three family groups with chicks).



Coot was also confirmed breeding and the Amber List lesser-black backed gull, black-headed gull and common tern were recorded on or over the reservoir.

- 4.4.39 Other waterbirds recorded in the survey were feral/hybrid mallard, cormorant, moorhen and tufted duck.
- 4.4.40 Birds recorded around the margins of the reservoir and in woodland there did not include any species of conservation concern or additional to those recorded in the breeding bird survey for the Site.

Wintering Birds

- 4.4.41 During the habitat survey a group of ten lapwing was observed in the west of the Site and small groups of approximately 20 to 30 fieldfare (*Turdus pilaris*) were recorded during the survey. Small numbers of snipe, mistle thrush, house sparrow and starling were recorded in the arable habitats during the survey. Fieldfare is listed on Schedule 1 of the WCA 1981 but does not nest in the English Midlands and so no consideration of effects on nests of this species need be made.
- 4.4.42 Wintering bird surveys were carried out between November 2016 and March 2017 to determine the birds using the site over winter, and in particular whether there are any important concentrations of wintering birds present. This survey included Calf Heath Reservoir adjacent to the site, Gailey Reservoirs to the east and land south of Station Road not surveyed as part of the breeding bird survey in 2016.
- 4.4.43 Annex 10.1.4 presents the findings of the wintering bird survey and should be read in conjunction with Figures 10.1.422 to 10.1.470.
- 4.4.44 The reservoirs to the north-east of the Site held the expected waterbirds, notably a flock of pink-footed geese on Gailey Lower Reservoir on one date, Canada goose, greylag goose, mallard (also on the Site, for instance 16 mallard on flooded gravel workings) and large numbers of tufted duck on both Gailey Reservoirs. Species and numbers of birds recorded were consistent with WeBS counts for the Gailey Pools. Four records of the Schedule 1 kingfisher were made on Gailey Reservoirs and single oystercatcher records were made on the Site on three occasions.
- 4.4.45 In terms of farmland birds, a flock of 50 lapwings was recorded over the Gailey Reservoirs in the February 2017 visit, however the largest number recorded on the Site during the wintering bird survey was five (also February 2017). Forty lapwing were recorded in a field south of the A5 on the 11th October 2017 during bat survey fieldwork. There were no records of skylark flocks and no records of yellowhammer at all; a flock of 17 linnets was one of the four winter records of this species from the Site. Records of one or two



- reed buntings were made from the main site with similar numbers from the Gailey Reservoir.
- 4.4.46 Wintering thrush flocks were recorded on the Site, for instance flocks of 100, 70 and several flocks of 30 or fewer fieldfare and up to 20 redwing (although a flock of 40 redwing was recorded to the east of the Site by the M6 motorway). Groups of up to three song thrushes were recorded on the Site.
- 4.4.47 Of the more commensal species, house sparrows were noted on the Site in flocks of up to 30, notably around Gailey Wharf, Four Ashes Industrial Estate and the houses south of Station Road. Starling flocks of between 10 and 20 birds were recorded in several places, notably around Gailey, Calf Heath Wood and close to Woodside Farm/Heath Farm.

Ecological Value – Breeding Birds

- 4.4.48 The assemblage of breeding birds includes several declining birds of farmland habitats listed on the Red List and s41 as well as birds listed on the local Biodiversity Action Plan for Farmland Seed Eating Birds (skylark, yellow wagtail, lapwing, yellowhammer, house sparrow, linnet, bullfinch and reed bunting). The status of these species in the Staffordshire context is discussed in the following paragraphs. Trends discussed come from Breeding Bird Survey data²⁵ and number of breeding pairs in a Staffordshire, Warwickshire, Worcestershire and West Midlands context comes from the West Midland Bird Club Annual Report²⁶.
- 4.4.49 Skylark at least 14 pairs breeding on-site. The West Midlands population has declined by 24% in the period 1995 to 2014 although the species is still abundant in the region (25,000+ pairs/50,000+ birds). The 12 pairs represent a very small proportion of this regional total.
- 4.4.50 Yellow wagtail in 2013 there were 31 to 39 pairs of yellow wagtail in Staffordshire and on that basis one or two pairs of yellow wagtails breeding on-site equates to up to 6.5% of the county population; the population in England has declined by 42% in the period 1995 to 2014.
- 4.4.51 Lapwing five to six pairs breeding on-site equates to up to 2.4% of the county population; the West Midlands population has declined by 18% in the period 1995 to 2014.
- 4.4.52 Yellowhammer there are at least 13 pairs breeding on-site. The West Midlands population has declined by 44% in the period 1995 to 2014 and whilst the 2013 bird report lists the species as very common to abundant,

²⁵ Harris S J, Massimino D, Newson S E, Eaton M A, Marchant J H, Balmer D E, Noble DG, Gillings S, Procter D, Pearce-Higgins J W (2016) The Breeding Bird Survey 2015. BTO Research Report 687 British Trust for Ornithology, Thetford

West Midland Bird Club (2016) The Birds of Staffordshire, Warwickshire, Worcestershire and the West Midlands 2013



- the Staffordshire total that year was 45 breeding or probable breeding locations.
- 4.4.53 House sparrow there are six on-site clusters of buildings supporting breeding colonies. The number of pairs present is not suspected of being more than 15 and in the context of the regional population of at least 25,000 this represents a very small proportion.
- 4.4.54 Linnet at least seven pairs of this species are breeding on-site and in 2013 there were 136 recorded breeding territories in Staffordshire (making the site population up to 5% of the county total).
- 4.4.55 Bullfinch this species is a possible breeder on-site with two pairs maximum. There are at least 2,500 pairs in the region and so the Site population if breeding represents a very small proportion of that total.
- 4.4.56 Reed bunting one or two pairs is a small proportion of the Staffordshire population which is present at least 89 breeding sites (which hold more than one pair each on average, for instance 24 pairs at one site).
- 4.4.57 The birds of conservation concern more associated with woodland and scrub include dunnock which is abundant, song thrush (abundant), mistle thrush (common), willow warbler (very common to abundant) and stock dove which is very common in the region.
- 4.4.58 Of the birds recorded that nest in buildings, starling is very common to abundant, swallow is very common and kestrel is fairly common in the region.
- 4.4.59 Tawny owl is fairly common in the region and mallard is common and as a result the breeding birds present represent a very small proportion of these populations.
- 4.4.60 There were 11 confirmed and nine further probable/possible breeding pairs of raven in Staffordshire in 2013. The probable breeding pair in Calf Heath Wood represents 5% of the county total probable population.
- 4.4.61 The birds breeding on-site need to be considered in the context of the surrounding landscape which has similar habitats present to those on-site (i.e. areas of buildings, arable, pasture, woodland, watercourses, waterbodies and quarries). For this reason, the birds recorded on-site are not likely to be restricted to the Site and are likely to be present and breeding elsewhere in the vicinity. This has been demonstrated by records of breeding or probable breeding lapwing and snipe from adjacent land and from records of lapwing and singing skylark, song thrush and dunnock from land beyond the Site in the bird survey carried out by Ramboll.



- 4.4.62 Birds of conservation concern such as willow tit have been recorded breeding in the vicinity of the Site and a heronry is present east of the M6 at Gailey Reservoirs. All this demonstrates that whilst the birds on the Site are of ecological value, the habitats and birds present are not unique or particularly noteworthy in the local area.
- 4.4.63 The restoration of the quarry, were it to happen prior to development of Phases 1, 2 and 4 would improve the habitat quality for birds in these parts of the site, notably for farmland birds through creation of 10 m buffer strips that will be allowed to colonise naturally between reinstated arable fields and field margins (i.e. hedgerows).

Ecological Value – Wintering Birds

- 4.4.64 The Gailey Reservoirs LWS (including Calf Heath Reservoir) support wintering bird assemblages consistent with their designation at the county scale.
- 4.4.65 Farmland birds present in the winter correspond broadly with those breeding on the Site, although yellowhammer was not recorded on the Site, this species presumably flocking elsewhere. A flock of 40 lapwing on site in October 2017 is consistent with records locally (e.g. 50 off site recorded in the wintering bird survey to the east of the site) and unremarkable in the context of sixteen flocks of between 100 and 500 in winter 2013 in Staffordshire²⁶. No notable concentrations of skylark were noted and wading birds (snipe, oystercatcher) seem to use the Site on occasion only.
- 4.4.66 Several flocks of wintering thrushes (fieldfare and redwing) were recorded, although these were typical of the size of flocks of both species recorded across the West Midlands²⁶.
- 4.4.67 House sparrow and starling were recorded in winter in concentrations greater than during the breeding season, reflecting recruitment during the summer. Flocks of 30 house sparrow are not unusual in Staffordshire and the flocks of starling are not significant in a county context (and may have been roosting at Belvide Reservoir where up to 25,000 roosted in winter 2013)²⁶.

Valuation Summary

4.4.68 The farmland bird assemblage of birds of conservation concern/listed on s41 or forming part of the local BAP is of importance at the County scale (due to the significant proportion of the county population of yellow wagtails that breeds on-site). This value is largely due to the breeding bird assemblage; the birds using the Site in the winter do so in number unremarkable in a county context. The assemblage of other birds of conservation concern (including those nesting in buildings or associated with woodland and scrub) are of value at the Local scale, again as a result of the breeding birds present. These are therefore considered as Important Ecological Features.



The other birds are of importance at the site scale and thus considered as Other Ecological Features. As per the methods described in Chapter 10 of the EIA, the impact assessment considers potential effects on Important Ecological Features and therefore effects on Other Ecological Features species are not considered further in the EIA.

4.5 Invertebrates

- 4.5.1 Annex 10.1.5 presents the full invertebrate survey methodology, limitations and findings for the Site that were carried out between May and September 2016 and May to July 2017.
- The methods utilised for the assessment are those recommended in the Natural England guidance document 'Surveying terrestrial and freshwater invertebrates for conservation evaluation' NERR005 (2007)²⁷. Methods used included; sweep netting, spot sampling, grubbing and pitfall traps.
- 4.5.3 The target groups that formed the focus of the assessment are those that are widely used and accepted as of greatest value to site assessment and appraisal and the key indicator groups used in the Natural England Invertebrate assessment software programme ISIS (version 2010) and recommended by NERR005²². The principal groups are likely to include:
 - Bees and wasps (early succession, bare ground, flowery habitats and structural variation);
 - Various fly families including hoverflies (range of habitats types, especially structural habitats);
 - Butterflies and day-flying moths (particularly early succession, short swards and woodland fringe);
 - Heteropteran bugs (range of habitats including bare ground, scrub fringe and grasslands);
 - Beetles including leaf beetles, ground beetles and water beetles (range of habitats including bare ground, structural habitats and flowering plants);
 - Orthoptera (grasshoppers and crickets); and
 - Odonata (dragonflies and damselflies).

Legislation

- 4.5.4 Certain invertebrates are listed under the following legislation, policies and guidance:
 - Bern Convention, Appendix 2 and 3;

²⁷ Drake C M et al. (2007) NERR005. Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England

²⁸ Lott D et al. (2007) ISIS. Invertebrate Species-habitat Information System, 2010 build. Natural England



- Habitats Directive, Annex 2a (designation of protected areas required within the natural range of the animal species listed), Annex 4a (special protection required for the native animal species listed) and Annex 5a (exploitation of listed animal species to be subject to management if necessary in order to maintain their favourable conservation status);
- The Conservation of Habitats and Species Regulations 2017, Schedule 2 (Lists those species of animals included in Annex IV(a) to the Habitats Directive that have a natural range that includes any area in Great Britain);
- Wildlife and Countryside Act 1981, invertebrate species listed on Schedule 5 may be protected under one, some or all of these parts:
 - Part 1 intentional killing, injuring, taking;
 - Part 2 possession or control (live or dead animal, part or derivative);
 - Part 4 (a) intentional damage to or destruction of any structure or place used by a scheduled animal for shelter or protection;
 - Part 4 (b) intentional disturbance of animal occupying such a structure or place;
 - Part 4 (c) obstruction of access to any structure or place used for shelter or protection;
 - Part 5 (a) selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative);
 and
 - Part 5 (b) advertising for buying or selling live or dead animal, part or derivative;
- Biodiversity Lists England NERC s41; and
- Staffordshire LBAP four invertebrate species (not including white-clawed crayfish).

Results

- 4.5.5 A summary of the results of the invertebrate surveys are provided below, full results and details of the surveys are provided in Annex 10.1.5.
- 4.5.6 A total of 420 species were recorded during the invertebrate surveys. Of the total 420 species recorded, 133 invertebrate species from the target groups were recorded in Calf Heath Wood, 90 species from the targeted groups were recorded from the quarry,172 species from the targeted groups were recorded across the wider Calf Heath landscape and 179 species from the targeted groups were recorded in the Land south of Vicarage Road (Sample areas 4 and 5).
- 4.5.7 The habitat diversity is broadly poor in terms of invertebrate assemblage types. The principal assemblages relate to woodland, wood edge and trees,



bare ground and early succession and wetlands. The niches of value are few and not particularly well-developed. The report in Annex 10.1.5 refers to 'mire'; this is in relation to a particular community of invertebrates associated with wet features such as wet ditches and marshy grassland and does not indicate the presence of a mire habitat as defined in the Phase 1 methodology⁵.

4.5.8 Eight species of importance were identified as presented in Table 4.25 (seven Nationally Scarce (NS) or s41) and one group of species are of county, Staffordshire importance. The habitat is considered to be of low to moderate quality and lacking significant niche development. The habitats identified are largely populated by common and localised species indicative of a broad suite of preferences rather than a specialised set of habitat criteria. The habitats present on-site are replicated in the local area.

Table 4.25: Invertebrate Species of Importance Identified

Scientific Name	Vernacular Name	National Status	Habitat Preferences and Species Notes	Sample Location
Bombus rupestris	A cuckoo bumblebee	NS B	No specific habitat preferences. More common than status suggests	Calf Heath wood
Chiasmia clathrata	Latticed heath	s41	Dry grassland, brownfields and heaths with trefoils	Found across the landscape along sparse, fine-leaved grass track verges with trefoils. Specifically along the edges of arable fields.
Diogma glabrata	A cranefly	NS	Damp woodlands	Calf Heath wood
Rhamphomyia micropyga	A dancefly	NS	Shaded woodland floor	Specific to sample area 4
Rhaphium albomaculatum	A dolyfly	NS	Wetlands on peat	Specific to sample area 4
Rhaphium lanceolatum	A dolyfly	NS	Wetlands on peat	Specific to sample area 4
Tyria jacobaeae	Cinnabar	s41	Open habitats where there is ragwort	Found across the landscape
Aculeate hymenoptera	Ground-nesting solitary bees and wasps	Staffordshire Biodiversity Action Plan (SBAP)	Bare ground and flowery swards Structured sites	Quarry (19 sp – all common or local) and landscape (six sp– all common or local)

Valuation Summary

4.5.9 The invertebrate assemblage is of value at a Local scale and will be assessed as an 'Important Ecological Feature' within the EIA.



4.6 Bats

Legislation

- 4.6.1 All 18 British bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (the WCA 1981) and under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (The Habitat Regulations) as European Protected Species (EPS).
- 4.6.2 All EPS are protected under the WCA 1981 and the Habitat Regulations. Under this legislation it is illegal to:
 - i. Deliberately capture, injure or kill any bat;
 - ii. Deliberately disturb bats, in particular where it is likely to:
 - a. Impair their ability to breed or reproduce, or to rear or nurture their young;
 - b. Impair their ability to hibernate or migrate; or
 - c. Affect significantly the local distribution or abundance of bats.
 - iii. Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
 - iv. Damage or destroy a bats breeding site or resting place.
- 4.6.3 Furthermore, several bat species are listed under Section 41 (s41) of the 2006 Natural Environment and Rural Communities (NERC) Act as species of principal importance for the purpose of conserving biodiversity. These include barbastelle (*Barbastella barbastellus*), bechstein's (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auritus*), greater horseshoe (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*).
- 4.6.4 Noctule bats, common pipistrelles (*Pipistrellus pipistrellus*) and soprano pipistrelles are listed in the Staffordshire Biodiversity Action plan as priority species²⁹.

Guidance Notes and Industry Standards

Survey works have been undertaken in line with Bat Conservation Trust's Bat Surveys: Good Practice Guidelines, 3rd Edition (2016)³⁰ hereafter referred to as BCT Guidelines 2016.

²⁹ Staffordshire Biodiversity Action Plan. Action Plan: Species. Available at: http://sbap.org.uk/actionplan/species/index.php [Accessed 14/12/2016]

Bat Conservation Trust, 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition



Methodology

- 4.6.6 Bat surveys have been carried out in 2016 and 2017. Methodologies are presented for those works undertaken in this period.
 - Bat Survey Preliminary Ecological Appraisal
- 4.6.7 A Preliminary Ecological Appraisal (PEA) was undertaken including a desk study with data obtained from SERC and via fieldwork (an extended Phase 1 Habitat Survey). The findings of the PEA are presented in Ramboll report reference UK15-22306_PEA.
- 4.6.8 The objectives of the PEA were to collate and review existing information about the Site and its surroundings to inform the design of subsequent bat surveys and inform the impact assessment for the project.
- 4.6.9 The PEA and Phase 1 Habitat Survey were undertaken by Matt Neale CEcol MCIEEM. The surveyor observed, assessed and recorded habitats suitable for bats to roost, commute and forage both on-site and in the surrounding area. A preliminary assessment of suitability of structures and habitats to support roosting or commuting and foraging bats was made in line with Table 4.26 of the BCT Guidelines 2016 as reproduced below. This assisted in defining the requirement for and scope of further bat surveys.

Table 4.26: Considerations for Assessing the Potential Suitability of the Site for Bats

	Roosting Habitats	Commuting and Foraging Habitats
Negligible	Negligible habitat features on-site likely to be used by roosting bats.	Negligible habitat features on-site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as gappy hedgerow or unvegetated stream, but isolated. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitats but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub grassland or water.



Suitability	Roosting Habitats	Commuting and Foraging Habitats
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Bat Survey - Roost Assessment of Structures

- 4.6.10 The following building types and features are considered to be particularly suitable to support roosting bats:
 - i. Buildings of pre 20th or early 20th century construction;
 - ii. Agricultural buildings of brick, stone or timber construction;
 - iii. Large and complicated roof voids with unobstructed flying spaces;
 - iv. Large (>20 cm) roof timbers with mortise joints, cracks and holes;
 - v. Entrances into buildings that bats could fly through;
 - vi. Poorly maintained buildings such that they provide access points for bats into roofs, walls, bridges, but at the same time not being too cool and draughty;
 - vii. Roofs that are warmed by the sun e.g. south-facing;
 - viii. Weatherboarding and/or hanging tiles with gaps;
 - ix. Undisturbed building roofs and structures;
 - x. Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year; and
 - xi. Buildings and built structures close to good foraging habitat e.g. mature trees, parkland, woodland or wetland.
- 4.6.11 External inspections of buildings on-site were undertaken during daylight hours on multiple dates as access was granted. The inspections were led by Chris Hodsman MCIEEM and supported by Emily McVean ACIEEM. Chris and Emily both hold a BSc in Environmental Science, and Chris holds an MSc in Environmental Monitoring and Assessment. Chris Hodsman holds a Natural England Level 2 licence (Class Licence Registration Number: 2016-22958-CLS-CLS) to survey bats using artificial light, endoscopes, by hand and handheld static nets.
- 4.6.12 The objectives of this survey were to identify if actual or potential roosts are present (where possible identifying species present), identify access points relative to roost (or potential roost) sites and infer likely numbers of bats



- present. The findings relating to the primary objective are then sought to be placed in context by detailing the current arrangement of vegetation and lighting in the immediate vicinity.
- inspecting features, such as gaps around windows, roof tiles, eaves and areas of missing mortar, for any evidence of bat use. These same features were also assessed for their potential to provide crevices for roosting bats, or access points to other parts of the building which may also be used for roosting e.g. roof voids. The surveyor looked for bat droppings, staining by fur oils or urine, prey residues (e.g. moth and butterfly wings) as well as the bats themselves. In accordance with the guidance outlined in BCT Guidelines 2016 each building was assessed for its potential to support bats.
- 4.6.14 Where access was permitted and buildings were safe to enter, an internal inspection was carried out by Ramboll ecologist Chris Hodsman (Class Licence Registration Number: 2016-22958-CLS-CLS), assisted by Emily McVean or James Fraser. These inspections focussed on the roof voids where present, including internal crevices potentially suitable for roosting bats. The areas were systematically searched for signs of bats or bat use, using a high-powered torch. The orientation and construction materials of the buildings were also noted.
- 4.6.15 Bats are very mobile creatures and can occupy buildings at any given time; therefore, this survey does not take into account seasonal differences or the physical changes to a building after the survey date due to weathering, maintenance, deterioration or material replacements. The absence of a particular species cannot definitely be confirmed by a lack of field signs and only concludes that an indication of its presence was not located during the survey effort.

Bat Survey – Preliminary Ground Level Roost Assessment of Trees

4.6.16 A detailed inspection of trees, or groups of trees was undertaken in February 2017 by Chris Hodsman and Emily McVean when leaves were not present on the trees to assist identification of PRFs. The objectives of this survey were to determine the actual or potential presence of bats and the need for further survey and/or mitigation. These surveys covered all trees shown to be lost as a result of the Proposed Development with the exception of trees on the interior of Calf Heath Wood which is dominated by early mature pine. Mature broadleaved trees on the margins of Calf Heath Wood were surveyed. The inspection involved walking around the trees visually inspecting features, such as broken or dead tree limbs, woodpecker holes, lifted bark sections and crevices/scars in the branches or tree trunks for any evidence of bat use. The surveyors looked for bat droppings, staining by fur oils or urine, prey residues (e.g. moth and butterfly wings) as well as the bats themselves. Inspections were assisted by use of close focus binoculars and high powered



torches. In accordance with the BCT Guidelines 2016, each tree or group of trees was assessed for their potential to support bats and classified as negligible, low, moderate or high. Findings are cross referenced to the tree survey schedule (FPCR, 2016).

Bat Survey -Potential Roost Feature Inspection Surveys of Trees

- 4.6.17 The objective of these surveys was to reclassify PRFs identified in the ground level assessment on moderate and high potential trees and determine the presence or absence of bats at the time of the survey.
- 4.6.18 Trees with bat potential that are within areas to be felled in Phase 1 of the proposed development were climbed and inspected where safe to do so.
- development proposals were assessed from the ground for potential to support roosting bats and where safe to do so were further inspected using rope access techniques by licensed/accredited bat ecologists holding City and Guilds certificates in tree climbing and aerial rescue.
- 4.6.20 Potential bat roosting sites in trees were examined visually with high powered torches and endoscopes to ascertain their potential to support bat roosts and whether any bats or their signs are present, such as bats themselves, bat droppings or audible noises made by bats.
- 4.6.21 A programme of tree climbing / survey is detailed in the EMMP to inspect trees to be felled in subsequent phases. It should be noted that the boundary of Phase 1 was enlarged following receipt of Stage 2 consultee comments to enable ecological corridors to be formed from the outset of the project to aid their establishment. As such, the following moderate and high potential trees have not been climbed to date but are scheduled to be climbed prior to any felling taking place; T171, T174, T175, T177, T178, T187, T188, T189, T321, T322, G97, G98 and G99 (D&E).

Bat Survey - Presence/ Absence and Roost Characterisation

- 4.6.22 Emergence and re-entry surveys were undertaken on buildings identified as having potential to support roosting bats (Results of the roost assessment of structures are presented in Annexes 10.1.6 (A O)). The surveys were led by Chris Hodsman BSc MSc MCIEEM and supported by:
 - i. Malcolm Robertson BSc MCIEEM CEnv;
 - ii. Emily McVean BSc ACIEEM;
 - iii. Carl Bailey BSc MCIWEM;
 - iv. James Fraser BSc; and
 - v. Mike Pantling MEnvSci PIEMA



4.6.23 The objective of these surveys was to assess the roosting status of the buildings. The dates and number of surveys undertaken for each building is presented below in Table 4.27. The survey effort employed was in line with the BCT Guidelines 2016.

Table 4.27: Bat Survey Effort

Table 4.27: Bat Survey Building Number	Date	Survey Type	Weather	Surveyor Locations (Figure No)	
	26/05/2016	Dawn re-entry	8.5°C; 100% cloud cover; light breeze; no precipitation		
Woodside Farm	04/08/2016	Dusk emergence	15°C; 10% cloud cover; light breeze; no precipitation	10.1.601	
	07/09/2016*	Dawn re-entry	20°C; 100% cloud cover; calm; no precipitation		
	25/05/2016	Dawn re-entry	8.5°C; 80% cloud cover; light breeze; no precipitation		
Woodside Barn	03/08/2016	Dusk emergence	15°C; 85% cloud cover; moderate breeze; no precipitation	10.1.602	
	06/09/2016	Dawn re-entry	18°C; 90% cloud cover; light breeze; no precipitation		
Fir Tree Cottage	24/05/2016	Dusk emergence	11°C; 10% cloud cover; light breeze; no precipitation	10.1.603	
The Cottage	26/08/2016	Dawn re-entry	15°C; 0% cloud cover; light breeze; no precipitation	10.1.603	
	26/05/2016	Dusk emergence	10°C; 10% cloud cover; calm; no precipitation		
Gailey Magazine	05/07/2016	Dawn re-entry	14°C; 10% cloud cover; calm/light breeze; no precipitation	10.1.604	
The Barn (Gravelly Way)	17/08/2016	Dusk emergence	19°C; 20% cloud cover; calm; no precipitation	10.1.605	
The Farmhouse (Gravelly Way)	25/05/2016	Dusk emergence	10°C; 100% cloud cover; light breeze; occasional rain/light drizzle	10.1.606	
(Graverry way)	19/08/2016	Dawn re-entry	15°C; 100% cloud cover; calm; no precipitation		
The Stables (Gravelly Way)	18/08/2016	Dusk emergence	19°C; 25% cloud cover; calm; no precipitation	10.1.607	
	04/07/2017	Dawn re-entry	13°C; 5% cloud cover calm (F1); no precipitation		
Heath Farm – Main farmhouse	25/07/2017	Dusk emergence	20°C; 50% cloud cover; calm (F1); no precipitation	10.1.609	
	14/09/2017	Dawn re-entry	8°C; 100% cloud cover; light breeze; light to moderate showers		
Heath Farm –	21/06/2017	Dusk emergence	26°C; 10% cloud cover; calm (F1); no precipitation		
Converted Outbuilding	06/07/2017	Dawn re-entry	17°C; 6% cloud cover; light breeze (F2); no precipitation	10.1.610	
	24/07/2017	Dusk emergence	18°C; 20% cloud cover; light breeze (F2); no precipitation		



Building Number	Date	Survey Type	Weather	Surveyor Locations (Figure No)	
Clovelly	04/07/2017	Dusk emergence	16°C; 40% cloud cover; light breeze (F2); no precipitation	10.1.613	
olovelly	26/07/2017	Dawn re-entry	16°C; 40% cloud cover; light breeze (F2); no precipitation	10.1.010	
Ash House	18/05/2017	Dawn re-entry	13°C, no precipitation, partly cloudy, wind speed light (F2).	10.1.612	
ASII nouse	06/07/2017	Dusk emergence	20°C; 75% cloud cover; light breeze (F2); no precipitation	10.1.612	
Stoney Brook Annex	20/06/2017	Dusk emergence	15°C; 100% cloud cover; light breeze (F2); no precipitation	10.1.615	
	16/08/2017	Dawn re-entry	12°C; 80% cloud cover; calm (F1); no precipitation		
	21/06/2017	Dawn re-entry	15°C; 100% cloud cover; light breeze (F2); no precipitation		
Stoney Brook Cottage	16/08/2017	Dusk emergence	18°C; 90% cloud cover; moderate breeze; no precipitation	10.1.614	
Croft House	19/06/2017	Dusk emergence	23°C; 30% cloud cover; light breeze (F2); no precipitation	10.1.608	
Croft House	25/07/2017	Dawn re-entry	14°C; 90% cloud cover; light breeze (F2); no precipitation	10.1.608	
	22/06/2017	Dawn re-entry	21°C; 25% cloud cover; light breeze (F2); no precipitation		
Mile End Cottage	26/07/2017	Dusk emergence	16°C; 40% cloud cover; moderate breeze (F3); no precipitation	10.1.611	

^{*}Extra survey undertaken to remove limitation of lights being on limiting surveyor's vision during previous dusk survey

- 4.6.24 Dawn re-entry surveys were carried out since they can be an efficient method of locating bat roost entrances. Towards dawn, many bat species "swarm" outside their roosts and as a result, this can be an effective means of detecting roosts in large and complex buildings or where there are several potential roosting areas within smaller roosts. A dawn re-entry survey typically begins 90 minutes to 120 minutes before dawn and continues until 15 minutes after sunrise.
- 4.6.25 Dusk emergence surveys typically started approximately 15 minutes before sunset and continued for around 90 minutes to 120 minutes after sunset. The methods are similar to that of the dawn survey; however, bats are slightly more difficult to see emerging from the roost as there is no indication of when they are going to do so. In general, activity levels are greater during dusk surveys, providing a more robust impression of roost size.
- 4.6.26 The equipment used by the surveyors included an Elekon BatloggerM, Wildlife Acoustics Echo Meter Touch and Touch 2 Pro (Used with iPad Minis), Wildlife Acoustics EM3's and supported with two Bat Box Duets. This enabled



surveyors to accurately record the bat echolocation data and to help compile an accurate species list of bats within the vicinity of the survey area. This recorded bat echolocation data was recorded as a .WAC file; converted to .ZCA using Kaleidoscope software and analysed using AnaLook or in the case of data from the Batlogger M analysed with Elekon BatExplorer software. A digital thermometer was also used to get an accurate temperature reading for the activity surveys.

Bat Survey – Bat Activity Surveys

- 4.6.27 According to the guidance set out in the BCT Guidelines 2016, the Site is considered to offer a mixture of 'low' and 'moderate' suitability for bats. As a precautionary approach the entire Site was classified as 'moderate' in defining the scope of the activity surveys. Based on this, one visit per month (May to October) was undertaken, with at least one survey comprising a dusk and following pre-dawn survey. 2016 activity surveys relate to land north of Vicarage Road and activity surveys undertaken in 2017 were on land south of Vicarage Road.
- 4.6.28 The surveys were led by licenced bat ecologist Chris Hodsman BSc MSc MCIEEM and supported by:
 - vi. Emily McVean BSc ACIEEM;
 - vii. Carl Bailey BSc MCIWEM; and
 - viii. James Fraser BSc.
- 4.6.29 The objectives of these surveys were to establish the species of bat present, assess the levels of bat activity, how and when they use the Site and assess the Site in the context of adjacent habitats.
- 4.6.30 Transect routes incorporated all areas of the Site including all habitats likely to be used by foraging and commuting bats including woodland, hedgerows, scattered trees, grassland, arable crops, ponds, canals and ditches. The locations of transects are shown on Figure 10.1.616. Activity surveys in 2016 were undertaken over several consecutive nights to provide adequate coverage due to the size of the Site and diversity of habitats present. The 2017 activity surveys comprised one transect and as such was undertaken on a single night, monthly. Table 4.28 below details the dates and times at which activity surveys were undertaken and associated conditions.



Table 4.28: Ma	inual Bat <i>I</i>	Activity S	Survey De	etails
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Table 4.28: N	<u>/lanual</u>	Bat Activity S	Survey	Details	
Month	Transect Number	Date Undertaken	Dusk/ Dawn Times	Survey Time(s)	Weather
	1	17/05/2016	21:02	21:07 – 23:42	12°C; 100% cloud cover; light breeze; no precipitation
	2	17/05/2016	21:02	21:05 – 23:30	12°C; 100% cloud cover; light breeze; no precipitation
May	3	16/05/2016	21:02	21:02 – 23:44	10°C; 33% cloud cover; calm; no precipitation
May	4	16/05/2016	21:02	21:02 – 23:20	10°C; 33% cloud cover; light breeze; no precipitation
	5	18/05/2016	21:05	21:12 – 23:30	10°C; <10% cloud cover; light breeze; no precipitation
	6	03/05/2017	20:38	20:40- 23:26	10°C; 100% cloud cover; moderate breeze; no precipitation
	1	20/06/2016	21:36	21:40 – 00:25	15°C; 30% - 100% cloud cover; light breeze; no precipitation
	2	20/06/2016	21:36	21:40 – 00:31	15°C; 30% - 100% cloud cover; calm; no precipitation
	3	21/06/2016	21:36	21:36 – 00:22	15°C; 60% cloud cover; calm; no precipitation
June	4	20/06/2016	21:36	21:40 – 11:50	15°C; 30% - 100% cloud cover; calm; no precipitation
	5	21/06/2016	21:36	21:36 – 00:22	15°C; 60% cloud cover; calm; no precipitation
	6	21/06/2017	21:36	21:36- 23:53	26°C; 30% cloud cover; calm; no precipitation
	1	18/07/2016	21:21	21:21 – 23:55	18-21°C; No cloud cover; calm; no precipitation
	2	18/07/2016	21:21	21:21 – 00:12	20°C; No cloud cover; calm; no precipitation
	3	19/07/2016	21:20	21:20 – 23:53	26°C; 30 – 50% cloud cover; calm; no precipitation
July	4	18/07/2016	21:21	21:22 – 00:12	20°C; No cloud cover; calm; no precipitation
	5	19/07/2016	21:20	21:20 – 23:30	24°C; 50% cloud cover; calm; no precipitation
	6	05/07/2017	21:33	21:33- 23:51	20°C; 60% cloud cover; light-moderate breeze; no precipitation
	6	06/07/2017	04:53	02:53- 05:00	16°C; 10% cloud cover; light breeze; no precipitation
	1	10/08/2016	20:43	20:43 - 23:13	14°C; 100% cloud cover; light breeze; light precipitation (Occasional drizzle)
	2	10/08/2016	20:43	20:43 - 23:15	14°C; 100% cloud cover; light breeze; light precipitation (occasional drizzle)
August	3	11/08/2016	20:41	20:41 – 23:18	16 - 18°C; 50/60% cloud cover; calm; no precipitation
	4	10/08/2016	20:43	21:10* - 23:21	14°C; 100% cloud cover; light breeze; light precipitation (occasional drizzle)
	5	11/08/2016	20:41	20:43 – 22:50	16°C; 60% cloud cover; calm; no precipitation



Month	Transect Number	Date Undertaken	Dusk/ Dawn Times	Survey Time(s)	Weather
	6	15/08/2017	20:35	20:35- 23:00	17°C; 5% cloud cover; light breeze; no precipitation
	1	05/09/2016	19:46	19:50 – 22:02	20°C; 10-30% cloud cover; calm; no precipitation
	2	05/09/2016	19:46	19:50 – 22:10	20°C; 30% cloud cover; calm; no precipitation
Sontombor	3	06/06/2016	19:43	19:44 – 22:14	20°C; 40% cloud cover; light breeze; no precipitation
September	4	05/09/2016	19:46	19:57 – 22:18	20°C; 30% cloud cover; light breeze; no precipitation
	5	06/06/2016	19:43	19:45 – 21:51	18-20°C; 40% cloud cover; light breeze; no precipitation
	6	13/09/2017	19:27	19:30- 21:48	11°C; 40% cloud cover; light breeze; no precipitation
	1	19/10/2016	18:03	18:00 – 20:06	13°C; 20% cloud cover; light breeze; no precipitation
	1	20/10/2016	07:42	05:35 – 07:32	8°C; 70% cloud cover; light breeze; no precipitation
	2	19/10/2016	18:03	18:00 – 20:06	11°C; 30% cloud cover; light breeze; no precipitation
	2	20/10/2016	07:42	05:38 – 07:42	8°C; 70% cloud cover; light breeze; no precipitation
	3	20/10/2016	18:01	18:01 - 20:10	12°C; 25% cloud cover; light breeze; no precipitation
October	3	21/10/2016	07:46	05:38 – 07:30	4°C; 85% cloud cover; calm; no precipitation
	4	19/10/2016	18:03	18:04 – 20:12	12°C; 20% cloud cover; calm; no precipitation
	4	20/10/2016	07:42	05:42 – 07:46	8°C; 70% cloud cover; light breeze; no precipitation
	5	20/10/2016	18:01	17:56 – 20:03	12°C; 25% cloud cover; light breeze; no precipitation
	5	21/10/2016	07:46	05:36 – 07:37	5°C; 85% cloud cover; calm; no precipitation
	6	12/10/2017	18:21	18: 21- 20: 35	13°C; 10% cloud cover; light breeze; no precipitation

^{*}Start delayed due to battery failure on detector

4.6.31 In 2016 two or three suitably qualified surveyors were present on-site for each survey, with each surveyor walking a separate transect route. In 2017 one transect was walked. Each transect had between 10 and 12 point counts spread across the route, these were consistent month to month and were selected to represent the different habitat types present. The surveyor stopped for three minutes at each point count and noted any bat activity recorded or observed. Dusk surveys commenced at sunset and concluded approximately two to three hours after. Dawn surveys commenced approximately two hours before sunrise and concluded at sunrise. Weather



conditions (temperature, precipitation and wind speed) were recorded on each survey. The surveyors made a note of bat activity, using both visual observation and bat detectors to identify foraging and/or commuting behaviour. Surveyors recorded the time and a description of any activity. Additionally, where bats could be seen, the patterns/directions of the bats' flight were also recorded. The equipment and analysis used was as specified in Paragraph 4.6.28.

- 4.6.32 Bat activity is inherently variable from night to night. Automated bat surveys over multiple consecutive nights were therefore undertaken in parallel to the manual bat activity surveys. One automatic bat detector (Wildlife Acoustics Song Meter SM 2 or SM 4 detector) was deployed on each transect for a minimum of five consecutive nights per month (May to October).. In 2016 a total of five automated bat detectors were left at the Site each month with a single detector being deployed each month in 2017 covering all habitats represented in the survey area which could be impacted by the proposed development. In habitats of 'moderate' suitability for bats the BCT Guidelines 2016 suggest that automated detectors should be deployed in two locations per transect. The deployment of one (not two) automated detectors per transect was considered a valid and robust approach when combined with the use of Advanced Licence Bat Survey Techniques (ALBSTs), namely bat trapping and radio tracking surveys, the methods for which are described in the sections below.
- 4.6.33 The deployment of the automatic detectors and weather details are presented in Table 4.29 below.

Table 4.29: Weather Conditions During Automated Bat Surveys

Month	Date	Weather*				
	2017					
	03/05/2017	9°C; wind speed 16.7 km/h; overcast				
	04/05/2017	8°C; wind speed 13 km/h; mostly cloudy				
	05/05/2017	8°C; wind speed 16.7 km/h; mostly cloudy				
	06/05/2017	8°C; wind speed 9.3 km/h; overcast				
May	07/05/2017	9°C; wind speed 13 km/h; scattered clouds				
	18/05/2017	10°C; wind speed 3.7 km/h; partly cloudy				
	19/05/2017	9°C; wind speed 5.6 km/h; clear				
	20/05/2017	9°C; wind speed 5.6 km/h; clear				
	21/05/2017	10°C; wind speed 9.3 km/h; clear				
	22/05/2017	14°C; wind speed 14.8 km/h; partly cloudy				



Month	Date	Weather*				
	2016					
	15/06/2016	13°C; wind speed calm; clear				
	16/06/2016	13°C; wind speed 9.3 km/h; rain				
	17/06/2016	13°C; wind speed 20.4 km/h; clear				
	18/06/2016	18°C; wind speed 16.7 km/h; overcast				
	19/06/2016	16°C; wind speed 16.7 km/h; overcast				
	20/06/2016	16°C; wind speed 7.4 km/h; mostly cloudy				
June	21/06/2016	15°C; wind speed 7.4 km/h; mostly cloudy				
	22/06/2016	17°C; wind speed 5.6 km/h; overcast				
	2017					
	21/06/2017	23°C; wind speed 5.6 km/h; clear				
	22/06/2017	15°C; wind speed 5.6 km/h; partly cloudy				
	23/06/2017	16°C; wind speed 11.1 km/h; overcast				
	24/06/2017	15°C; wind speed 11.1 km/h; clear				
	25/06/2017	15°C; wind speed 13 km/h; clear				
	2016	2016				
	19/07/2016	24°C; wind speed 20.4 km/h; clear				
	20/07/2016	19°C; wind speed 13.0 km/h; clear				
	21/07/2016	17°C; wind speed 3.7 km/h; unknown				
	22/07/2016	19°C; wind speed 9.3 km/h; clear				
	23/07/2016	20°C; wind speed 13.0 km/h; partly cloudy				
July	2017					
	05/07/2017	18°C; wind speed 13 km/h; clear				
	06/07/2017	21°C; wind speed 16.7 km/h; clear				
	07/07/2017	18°C; wind speed 9.3 km/h; scattered clouds				
	08/07/2017	19°C; wind speed 9.3 km/h; clear				
	09/07/2017	19°C; wind speed 13.0 km/h; partly cloudy				
August	2016					



Month	Date	Weather*
	11/08/2016	17°C; wind speed 16.7 km/h; mostly cloudy
	12/08/2016	17°C; wind speed 13.0 km/h; scattered clouds
	13/08/2016	17°C; wind speed 13.0 km/h; overcast
	14/08/2016	15°C; wind speed 5.6 km/h; clear
	15/08/2016	15°C; wind speed 13.0 km/h; clear
	16/08/2016	15°C; wind speed 9.3 km/h; clear
	17/08/2016	18°C; wind speed 14.8 km/h; clear
	18/08/2016	17°C; wind speed 16.7 km/h; scattered clouds
	2017	
	16/08/2017	16°C; wind speed 18.5 km/h; overcast
	17/08/2017	17°C; wind speed 16.7 km/h; scattered clouds
	18/08/2017	11°C; wind speed 9.3 km/h; mostly cloudy
	19/08/2017	14°C; wind speed 13.0 km/h; clear
	20/08/2017	13°C; wind speed 13 km/h; partly cloudy
	2016	
	06/09/2016	18°C; wind speed 7.4 km/h; mostly cloudy
	07/09/2016	17°C; wind speed 9.3 km/h; unknown
	08/09/2016	15°C; wind speed 13.0 km/h; clear
	09/09/2016	17°C; wind speed 16.7 km/h; scattered clouds
	10/09/2016	12°C; wind speed 7.4 km/h; clear
Cantanalaan	11/09/2016	11°C; wind speed 9.3 km/h; clear
September	12/09/2016	16°C; wind speed 5.6 km/h; clear
	13/09/2016	18°C; wind speed 11.1 km/h; clear
	2017	
	14/09/2017	10°C; wind speed 9.3 km/h; clear
	15/09/2017	10°C; wind speed 7.4 km/h; clear
	16/09/2017	8°C; wind speed 3.7 km/h; scattered clouds
	17/09/2017	11°C; wind speed 9.3 km/h; mostly cloudy

Month	Date	Weather*			
	18/09/2017	10°C; wind speed 1.9 km/h; clear			
	2016				
	19/10/2016	9°C; wind speed 13 km/h; clear			
	20/10/2016	7°C; wind speed 13 km/h; clear			
	21/10/2016	7°C; wind speed 7.4 km/h; clear			
	22/10/2016	6°C; wind speed 5.6 km/h; clear			
Ootobor	23/10/2016	7°C; wind speed 9.3 km/h; clear			
October	2017				
	11/10/2017	12°C; wind speed 14.8 km/h; clear			
	12/10/2017	11°C; wind speed 13 km/h; partly cloudy			
	13/10/2017	17°C; wind speed 14.8 km/h; overcast			
	14/10/2017	13°C; wind speed 14.8 km/h; clear			
	15/10/2017	13°C; wind speed 9.3 km/h; mostly cloudy			

^{*}Weather data taken at 11:50pm using historical data available at www.wunderground.com

4.6.34 Recordings from the static detectors were analysed to gain further information on the species present and relative amount of activity through the night. Locations of the automated bat detector deployments are shown on Figure 10.1.617.

Bat Survey – Advanced Licence Bat Survey Techniques

- 4.6.35 In line with Chapter 9 of the BCT Guidelines 2016, Davidson-Watts Ecology Ltd were commissioned to undertake bat surveys of the Site and adjacent areas in 2016 and 2017 using advanced techniques to achieve the following objectives:
 - Investigate the status of bats species at the Site with an emphasis on woodland habitat and tree lines during the breeding season (May -August 2016 & 2017);
 - Radio-track key individuals using the Site, to locate breeding colonies of tree roosting bat species, including barbastelle, natterers' bat, noctule, Daubenton's bat, leisler's bat, alcathoe bat, whiskered bat, and the brown long-eared bat, and where possible to determine broad activity patterns and use of the Site to complement the activity surveys described above; and
 - Present a robust data set of the use of the Site and surrounding areas by tree roosting and other bat species to further establish an ecological



baseline, assist the assessment of potential impacts, and support the development of appropriate mitigation including appropriate roost protection measures, lighting design, detailed landscaping/planting inventories and habitat management.

- 4.6.36 Due to the difficult nature of locating bat roosts in trees and assessing the context of bat activity over large areas with bat detector/acoustic surveys, the primary approach to meeting the project aims was to trap free-flying bats and to radio-track individual bats to locate maternity and other roost types.
- 4.6.37 Four survey sessions of approximately one week each were undertaken, including one session in June 2016, one in June 2017, one session in August 2016 and one in August 2017. Each session began with the trapping of bats. Any radio-tagged bats were subsequently followed by radio-tracking for the remainder of the week to locate roost sites. Where access was possible, emergence counts were undertaken at identified roosts to determine the function of the roost and to provide an estimate of population sizes.
- 4.6.38 The following methods were undertaken in line with Chapter 9 (Advanced licensed bat survey methods) in the BCT Guidelines 2016.

Trapping Methods

- 4.6.39 All trapping and tracking were undertaken by licenced bat ecologists under project licences from Natural England, numbers: 2016-23560-SCI-SCI and 2017-28570-SCI-SCI.
- 4.6.40 Bats were caught using 6m or 18m mist nets and 4m² harp traps placed in Calf Heath Wood and other woodland locations on the Site (see Figures 10.1.624 to 10.1.626). Up to six acoustic lures (Sussex Autobats) were used to improve catch efficiency in woodland³¹. The lures emitted synthesised bat social calls. Lures were placed next to mist nets and harp traps and any bats captured were identified, sexed, aged and their breeding status determined.

Tracking Methods

4.6.41 Target bats were fitted with lightweight radio transmitter tags (Biotrack Ltd, Wareham, Dorset, United Kingdom) weighing less than 5% of the weight of the bat using Torbot skin bond adhesive. Tagging of female bats in advanced stages of pregnancy was avoided. Lactating bats were tagged if they met the target weight and were in good condition, although early lactating bats were not tagged for welfare reasons. Bats were processed quickly and released within 30 minutes of capture provided the glue attaching the transmitter had cured sufficiently. All tagged bats were fitted with 3.5 mm or 2.9 mm

Hill D A and Greenaway F G. (2005). Effectiveness of an acoustic lure for surveying bats in British woodlands. Mammal Review, 35, 116-



- aluminium rings (Porzana Ltd, Icklesham, East Sussex, United Kingdom) to allow identification of recaptured individuals and prevent repeated tracking of single animals (pseudoreplication of data and welfare reasons).
- 4.6.42 All tagged bats were tracked using Sika receivers (Biotrack Ltd., Wareham, United Kingdom) and a three-element Yagi antenna (Biotrack Ltd). Tagged bats were tracked predominantly during the day to find roost sites the day after initial capture, using a combination of the "homing-in" method³² and triangulation method, either on foot or by vehicle. Radio-tracking fixes for each individual bat and associated roost were plotted in the field on digitised 1:25,000 scale Ordnance Survey maps in the MemoryMap mobile application. Aerial images in the Google Earth mobile application were used in the field as an additional visual guide when plotting fixes in MemoryMap.

Roost Emergence

4.6.43 Where tagged bats were tracked to roost sites, subsequent roost exit counts were undertaken using infrared cameras (Canon XA25 or Canon XA10) with infrared illuminators to determine roost size and status (e.g. maternity roost). Roost attributes such as location, type of structure and other descriptors were recorded.

Limitations

- 4.6.44 Limited access was made to the quarry area during the manual bat activity surveys due to open workings, standing water and uneven, unconsolidated ground. The survey incorporated the greatest level of coverage of the quarry as possible where safe access allowed. Two surveyors were deployed to this transect on each occasion as a precautionary health and safety measure.
- 4.6.45 Transect 3 in the manual bat activity surveys originally included a parcel of land associated with the Bericote development in the southwest of the Site off Vicarage Road at SJ 92074 08768. This land was removed from the redline boundary. This land was incorporated within Transect 3 between May and August 2016 but was excluded in September and October that year as works associated with the Bericote development had commenced.
- 4.6.46 No safe access was possible to the arable field in the north-western extent of Transect 2 in the September 2016 manual bat activity surveys. Farm machinery was in operation preventing safe passage across the field to complete the transect. Point Counts 2.04 and 2.05 on this transect were therefore not completed in September 2016.

White G C and Garrott R A. (1990). Analysis of wildlife radio-tracking data. Academic Press, San Diego, California

- 4.6.47 The May 2016 manual bat activity survey of Transect 4 was suspended for approximately 15 minutes (approximately 20 minutes into the survey) due to
- 4.6.48 A security light and indoor lights were on during the dusk emergence survey on 4 August 2016 at Woodside Farmhouse. This made it difficult for the surveyor to confidently conclude if any bats emerged. This limitation was overcome with the scheduling of an additional dawn survey where no lights were on.

access issues. No further problems were encountered.

- 4.6.49 Surveys undertaken at Clovelly were partly constrained owing to large 20ft+ hedges/tree lines being present in close proximity to the property on two sides. This reduced visibility and made it difficult for surveyors to get a good vantage point.
- 4.6.50 The weather conditions on the third survey visit (dawn 14/09/2017) at Heath Farmhouse main farmhouse were constrained by two rain showers. Results obtained on this date were not consistent with previous surveys. However, this is not considered to be a notable constraint to defining the roost status as roosting bats had already been confirmed on visits 1 and 2 with comparable results obtained over these two surveys. In addition, surveyors have observed bat activity at this building while surveying the adjacent Heath Farm Outbuilding (3 Visits) and sufficient data exists to classify the roost.
- 4.6.51 Weather conditions were appropriate on all trapping sessions except the last night of trapping in June and August both in 2016 and 2017. Both tracking sessions in June and August 2016 and 2017 were hampered on one night each by rain, however tracking continued throughout these nights as the bats remained active despite the conditions, albeit for more limited periods of time.
- 4.6.52 Radio transmitters can fail for a variety of reasons due to weather and damage from the bats. During the August surveys tags were also scratched off by one bat after a couple of days, limiting data. Where applicable, these events are recorded in the results.
- 4.6.53 Where reference is made to 'big bats' this could include noctule, leisler's bat or serotine. These bats have calls with low peak frequencies and typically, with distinctive rhythms. However, the call are variable and are very difficult (sometimes impossible) to distinguish from each other, particularly in woodland, when the peak frequency is raised and the distinctive rhythms tend to disappear.
- 4.6.54 Bats are mobile species and may use a variety of roosts, commuting routes and foraging areas during their yearly lifecycle, which is influenced by a range of factors such as breeding status, energetic requirements and the



availability of prey. These surveys are considered suitable for providing a sufficient sampling effort (without disturbing the population adversely) to obtain information to assist the location of roosts potentially affected by the proposed development proposals. The methods used are unable to provide a full account of all bat activity in the survey at all times and the sample size is too low to provide a sufficient baseline at other times of the year. The work is therefore confined to providing information for the summer season and for roosting behaviour only.

Desk Study

- 4.6.55 SERC holds records of bats at three classification levels (family, genus and species) within 2 km of the Site.
- 4.6.56 SERC provided records of seven species of bat within 2 km of the Site namely common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, brown long-eared bat, Daubenton's bat (*Myotis daubentonii*), noctule, Brandt's bat (*Myotis brandtii*) and whiskered bat (*Myotis mystacinus*). Whiskered bat have been recorded in the north-west of the Site. The other species have been recorded with 200 m of the Site boundary. Several further records were returned for genus *Myotis* where identification had not been made to species level. Likewise, records were received for pipistrelle genus but there was no identification to species level.
- 4.6.57 A search of statutory designated sites within 10 km of the Site was undertaken. Two designated sites reference the presence of bats though they are not the primary reason for their designation. These sites include Cannock Chase Site of Special Scientific Interest (SSSI) which references bats as animals of note (presence of five species) and Smestow Valley Local Nature Reserve (LNR) which states there have been records of Daubenton's bats using the reserve and the adjacent canal.

Results

Bat Survey - Preliminary Ecological Appraisal

4.6.58 The PEA completed by Ramboll in 2016 (Reference UK15-22306_PEA) identified the habitats within the Site as offering 'low' to 'moderate' suitability for foraging and commuting bats (in accordance with the BCT Guidelines 2016). This was determined due to the matrix of habitats present within the Site boundary comprising woodland, hedgerows, scattered trees, grassland, arable crops, ponds, canals and ditches.

Bat Survey – Roost Assessment of Structures

4.6.59 Fifteen buildings present on the Site have been identified as having potential to support roosting bats during the Roost Assessment of Structures Surveys.



A summary of the assessment of these buildings are provided in Table 4.30 below. Full details of the inspections are provided in Annexes 10.1.6 (A-O) as referenced in Table 4.30. Several buildings are pending inspection where they have been brought into the red line boundary. This table and the inspection survey information will be updated when further assessment has been undertaken.

Table 4.30: Considerations for Assessing the Potential Suitability of the Site for Bats

Building	Potential for Support Roosting Bats	Inspection Survey Information
Woodside Farmhouse	Moderate	Annex 10.1.6 A
Woodside Barn	High	Annex 10.1.6 B
Fir Tree Cottage	Moderate	Annex 10.1.6 C
Gailey Magazine	Moderate	Annex 10.1.6 D
The Barn (Gravelly Way)	Low	Annex 10.1.6 E
The Farmhouse (Gravelly Way)	Moderate	Annex 10.1.6 F
The Stables (Gravelly Way)	Low	Annex 10.1.6 G
Heath Farm – Main Farmhouse	High	Annex 10.1.6 H
Heath Farm – Converted Outbuilding	High	Annex 10.1.6 I
Clovelly	Moderate	Annex 10.1.6 J
Ash House	Moderate	Annex 10.1.6 K
Stoney Brook Annex	Moderate	Annex 10.1.6 L
Stoney Brook Cottage	Moderate	Annex 10.1.6 M
Croft House	Moderate	Annex 10.1.6 N
Mile End Cottage	Moderate	Annex 10.1.6 O

Bat Survey – Preliminary Ground Level Roost Assessment of Trees

4.6.60 The ground level roost assessment of trees undertaken in February 2017 identified a number of mature trees on the Site as being suitable for roosting bats.

The records of the assessment of roosting potential of individual trees are provided in Annex 10.1.7. The suitability of each mature tree identified as being lost as a result of the Proposed Development for roosting bat is presented in Figure 10.1.627 (moderate and high value trees only).

4.6.61 Findings are cross referenced to the tree survey schedule (FPCR, 2016).



Bat Survey -Potential Roost Feature Inspection Surveys of Trees

PRF Inspection Surveys Tree climbing surveys were undertaken over three days in August 2017. The survey resulted in several trees valuation being reclassified following the detailed off-ground inspection. These changes are summarised below in Table 4.31 and are detailed in Annex 10.1.7 and presented in Figure 10.1.627. One soprano pipistrelle roost was confirmed in T97-Oak via DNA testing of droppings. No bats were using the roost at the time of the survey.

Table 4.31: Changes to Roost Potential Valuation Following Climbing

Tree Reference and Species	Valuation Prior to Climb	Valuation After Climb
G48 Alder	Moderate	Negligible
T117 Oak	High	Moderate
T115 Oak	Moderate	Negligible
T301 Ash	High	Negligible
T159 Oak	High	Moderate
T153 Oak	Moderate	Negligible
T150 Ash	Moderate	Negligible
T182 Oak	High	Moderate
G15 Ash	Moderate	Low
W1 Oak	Moderate	Negligible
W1A Oak	Moderate	Low
T131 Oak	High	Moderate
G26 Oak	Moderate	Negligible
T20 Oak	High	Low
T25 Oak	Moderate	Negligible
T32 Oak	Moderate	Low
307 Oak	Moderate	Low
309 Silver Birch	High	Moderate
311 Oak	Moderate	Negligible
314 Oak	Moderate	Low
316 Oak	High	Moderate
317 Silver Birch	Moderate	Negligible



Tree Reference and Species	Valuation Prior to Climb	Valuation After Climb
319 Oak	Moderate	Low

4.6.62 In summary, following tree climbing 58 trees were classified to be of low suitability for roosting bats, 32 trees were classified as offering moderate suitability for roosting bats and 13 trees were classified as being of high suitability for roosting bats. The remaining trees offered negligible potential. Ten trees which were identified as offering potential for roosting bats were downgraded to negligible having been climbed and subject to close inspection.

Bat Survey - Presence/Absence and Roost Characterisation

4.6.63 Bat emergence and re-entry surveys were undertaken between May and September in 2016 and 2017. The results of these surveys are presented below in Table 4.32 to Table 4.46 (below) and on Figures 10.1.601 to 10.1.615.

Table 4.32: Summary of Emergence and Re-entry Surveys at Woodside Farmhouse

Date	Survey Type	Sunrise /Sunset	Survey Findings
26/05/2016	Dawn re-entry	05:00	 O3:08 - two Myotis passes, bats seen flying up access way to Woodside Farmhouse in the direction of Calf Heath Wood from Vicarage Road O3:39 - Myotis heard not seen. Likely Daubenton's based on call analysis O3:42 - bat seen flying behind Woodside Farmhouse towards barn. Did not register on detector – possible brown long-eared O3:45 - Common pipistrelle flying behind Woodside Farmhouse towards barn O3:51 - Common pipistrelle heard not seen O4:06 - Myotis heard not seen. Likely Daubenton's based on call analysis No bats were seen to re-enter the property Survey end: 05:15
04/08/2016	Dusk emergence	20:55	 Survey start 20:40 21:19 - suspected brown long-eared (seen not heard) flying south along farm track 21:23 - Noctule heard not seen 21:33 - Common pipistrelle heard not seen 21:35 - Myotis heard not seen



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 21:36 to 21:45 - Common pipistrelle foraging around rear garden (two bats) 21:48 - <i>Myotis</i> flying low over wall between farmhouse outbuilding and barn yard. Possible emergence – view hampered by lighting 21:55 - Soprano pipistrelle, heard not seen 21:56 to 22:23 - on/off foraging by common pipistrelle over barn and Farmhouse rear garden foraging around rear garden (one bat) 22:09 - <i>Myotis</i> two passes, bat foraging along lane in from of Woodside Farmhouse 22:23 - <i>Myotis</i> foraging/commuting up lane 22:23 - Brown long-eared – not seen 22:26 - Common pipistrelle heard not seen No bats were confirmed to emerge from the property
07/09/2016	Dawn re-entry	06:28	Survey end: 23:00 Survey start 04:45 04:53 - Common pipistrelle with social calls 04:58 - Myotis heard not seen 05:00 - 05:02 - Myotis heard not seen 05:08 - Common pipistrelle heard not seen 05:08 - Myotis heard not seen 05:14 - faint not recorded - possible brown long-eared 05:22 - Myotis heard not seen. Brief 05:25 - Common pipistrelle with social calls 05:28 - Soprano pipistrelle heard not seen 05:38 - Common pipistrelle with social calls 05:42 - 05:45 - Two noctules flying over and around Farmhouse and Courtyard 05:55 - two common pipistrelles flying over main roof and around chimney with social calls 06:09 - Noctule 06:23 - Noctule No bats were seen to re-enter the property Survey End: 06:45

Table 4.33: Summary of Emergence and Re-entry Surveys at Woodside Barn

Date	Survey Type	Sunrise /Sunset	Survey Findings
25/05/2016	Dawn re-entry	04:58	 Survey start: 03:00 03:00 - Common pipistrelle heard not seen 03:15 - Common pipistrelle flying between barn and outbuilding adjacent arable field



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 03:17 - Myotis circled over yard then over Farmhouse garden (away from barn) 03:30 - Common pipistrelle heard not seen 03:40 - Common pipistrelle heard not seen 03:42 - Common pipistrelle heard not seen 04:17 - Common pipistrelle flying along rear of barn then down access track towards Vicarage Road 04:24 - Common pipistrelle seen to re-enter the barn through the 'portal' on the north elevation 04:27 - Common pipistrelle seen to re-enter the barn through the 'portal' on the north elevation Survey end: 05:04
03/08/2016	Dusk emergence	20:43	 21:20 - probable emergence from portal over open barn to rear, no echolocation – Possible brown long-eared based on DNA dropping analysis. 21:35 - emergence out of barn door, no echolocation. Possible brown long-eared based on DNA dropping analysis. 21:37 - Common pipistrelle flying over barn roof towards Woodside Farmhouse 21:38 - bat heard on detector but not recorded. Bat not seen 21:40 - 21:50 – Common pipistrelle foraging over back garden of Woodside Farmhouse 21:53 - Myotis heard not seen 22:34 - Myotis heard not seen 22:19 - Common pipistrelle foraging over yard to barn, three passes 22:23 - Common pipistrelle heard not seen 22:33 - Common pipistrelle heard not seen 22:37 - 22:38 - Common pipistrelle heard not seen
06/09/2016	Dawn re-entry		 Survey start: 04:30 04:32 and 04:35 - Common pipistrelle with social calls 04:37 - Common pipistrelle flying around portal and barn doors, multiple passes – re-entry not confirmed 04:42 - Noctule heard not seen 04:44 - Noctule and common pipistrelle heard not seen 04:48 - Common pipistrelle along rear of barn from the east 04:49 - Myotis two passes 04:55 - Common pipistrelle with social calls heard not seen 05:07 - probable re-entry of Myotis (likely natterer's) through barn doors on north elevation 05:07 and 05:09 - Soprano pipistrelle heard not seen 05:18 - Soprano pipistrelle heard not seen 05:26 - Noctule heard not seen 05:34 - Soprano pipistrelle re-entry through barn doors



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 05:38/05:40 - two Common pipistrelle flying along back side of barn - likely past barn 05:48 - 05:56 - Common pipistrelle foraging over garden 05:56 - two noctules observed flying from field over barn at height curving back south towards Vicarage Road 06:02 - Common pipistrelle heard not seen. Survey end: 06:45

Table 4.34: Summary of Emergence and Re-entry Surveys at Fir Tree Cottage

Tuble 4.04. 0	difficiently of Effici	genee a	and Re-entry Surveys at Fir Tree Cottage
Date	Survey Type	Sunrise /Sunset	Survey Findings
24/05/2016	Dusk emergence	21:00	 Survey start: 21:53 21:54 - Common pipistrelle from east over garden towards house then north along A449 21:58 - Common pipistrelle pass over road to north 22:10 - Noctule heard not seen 22:17 - Common pipistrelle heard not seen 22:52 - Common pipistrelle heard not seen No bats were seen to emerge from the property Survey end: 22:59
26/08/2016	Dawn re-entry	06:10	 Survey start: 04:20 04:27 - Common pipistrelle over rear garden heading towards Station Drive No bats were seen to re-enter the property Survey end: 06:25

Table 4.35: Summary of Emergence and Re-entry Surveys at the Barn Gravelly Way

Date	Survey Type	Sunrise /Sunset	Survey Findings
17/08/2016	Dusk emergence	20: 29	 Survey start: 20:16 20:46 - Noctule seen commuting over house/field from rear of premises 20:50 - Noctule heard not seen multiple bats or passes 21:00 - Soprano pipistrelle foraging around driveway 21:22 - Common pipistrelle commuting from field over driveway and house 21:33 - Noctule heard not seen 21:37 - Common pipistrelle heard not seen



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 21:46 - Soprano pipistrelle heard not seen 21:52 - Common pipistrelle heard not seen 21:56 - Soprano pipistrelle heard not seen 22:02 - Common pipistrelle heard not seen with social calls No bats were seen to emerge from the property Survey end: 22:05

Table 4.36: 5	ummary of I	<u>-merge</u> i	nce and Re-entry Surveys at The Stables Gravelly Way
Date	Survey Type	Sunrise /Sunset	Survey Findings
18/08/2016	Dusk emergence	20: 25	 Survey start: 20:10 20:55 - Noctule heard not seen 21:05 - Noctule foraging over house and field 21:06 - Soprano pipistrelle heard not seen 21:10 - Common pipistrelle single quick pass 21:15 - Soprano pipistrelle commuting from canal direction along the hedge to adjacent arable field 21:20 - Noctule heard not seen 21:40 - Common and soprano pipistrelle 21:45 - Common pipistrelle heard not seen 21:47 - Soprano pipistrelle heard not seen, one pass 21:54 - Big bat seen – call with characteristics of Leisler's bat 21:57 - Common pipistrelle heard not seen No bats were seen to re-enter the property Survey end: 22:00

Table 4.37: Summary of Emergence and Re-entry Surveys at The Farmhouse Gravelly Way

Date	Survey Type	Sunrise /Sunset	Survey Findings
25/05/2016	Dusk emergence	21:14	 Survey start: 21:00 21:36 - Common pipistrelle flew from arable field across the driveway and over the barn 21:50 - 21:55 - Common pipistrelle on/off activity foraging along canal and into courtyard/driveway area 21:59 - Common pipistrelle heard not seen 22:08 - heard not seen No bats were seen to re-enter the property Survey end: 22:50



Date	Survey Type	Sunrise /Sunset	Survey Findings
19/08/2016	Dawn re- entry	05:59	 O4:28 - Common pipistrelle one pass with social calls O4:30 - Soprano pipistrelle, three passes over courtyard then back towards the canal between the barn and the farmhouse O4:37 - Noctule heard not seen. Recorded only by surveyor in rear garden adjacent canal O4:39 - brown long-eared heard not seen. Recorded only by surveyor in rear garden adjacent canal O4:39 - O4:47 - Common pipistrelle foraging over courtyard/drive area - multiple passes O4:50 - 05:10 - two common pipistrelles chasing each other over and around courtyard/driveway. Social calls recorded - multiple passes O5:11 - O5:13 - Bat observed flying around chimney of farmhouse - no registration on detectors no re-entry noted O5:15 - 05:36 - Common pipistrelles foraging / socialising over courtyard/driveway area - multiple passes. O5:18 - Common pipistrelles seen investigating (but flying away from) ridge tile area of southwest elevation of the Farmhouse. No re-entry noted O5:36 - light rain started O5:46 - Common pipistrelle two passes; bat observed approaching and temporarily landing on the adjacent barn building (no PRFs in this location - no re-entry noted). O5:57 - Common pipistrelle - foraging over courtyard area O5:57 - Common pipistrelle observed landing on front of fascia board of the adjacent stable building (No PRFs in this location - no re-entry noted) O6:00 - Common pipistrelle seen flying at and momentarily pausing on southern gable end of the barn three times. No PRFs noted in this location, considered investigating, no re-entry noted O6:05 - one common pipistrelle noted approaching and clinging to the southern gable end of the stables building. No PRFs noted in this location, considered investigating, no re-entry noted No bats were seen to re-enter the property



Table 4.38: Summary of Emergence and Re-entry Surveys at Gailey Magazine				
Date	Survey Type	Sunrise /Sunset	Survey Findings	
26/05/2016	Dusk emergence	21:16	 Survey start: 21:00 21:38 - Soprano pipistrelle heard not seen 21:38 - probable emergence of common pipistrelle from half pitched store building (most easterly adjacent arable field) from soffit 21:39 - Common pipistrelle heard not seen 21:45 - three noctule bats seen foraging over arable field at height 21:47 - Common pipistrelle heard not seen 21:54 - Soprano pipistrelle heard not seen 21:56 - Common pipistrelle heard not seen 22:08 - Common pipistrelle heard not seen 22:09 to 22:23 - Several noctule passes, heard not seen 22:11 - Common pipistrelle heard not seen 22:22 - Common pipistrelle heard not seen 22:22 - Common pipistrelle heard not seen 22:24 - Noctule commuting from woodland, over arable field towards canal 22:27 - Common pipistrelle heard not seen 22:27 - Common pipistrelle from but likely over roof of dilapidated building in bund also foraging along hedgerow from direction of woodland towards canal 22:32 - Common pipistrelle heard not seen 22:34 - Common pipistrelle heard not seen 22:34 - Common pipistrelle heard not seen 22:44 - Common pipistrelle heard not seen 22:49 - Common pipistrelle heard not seen 	
05/07/201	6 Dawn re-entry	05:35	 Survey start: 03:38 03:53 - Common pipistrelle foraging along hedge line adjacent linking canal and Calf Heath Wood. 03:54 - Likely brown long-eared heard not seen 03:55 - Myotis (likely Daubenton's) heard not seen 03:55 and 03:58 - Soprano pipistrelle heard not seen 03:56 - Common pipistrelle heard not seen 04:04 and 04:06 - Soprano pipistrelle foraging along hedge line adjacent linking canal and Calf Heath Wood 04:06 - Common pipistrelle heard not seen 04:12 - Common pipistrelle heard not seen 04:27 - Myotis foraging along hedge line adjacent linking canal and Calf Heath Wood 04:31 - Soprano pipistrelle heard not seen - three passes 04:33 - Common pipistrelle from direction of Calf Heath Wood over Gailey Magazine buildings and then bearing north 04:38 - Soprano pipistrelle several approaches made prior to re-entry on west elevation behind fascia board 04:40 - Common pipistrelle heard not seen 04:44 and 04:47 - Common pipistrelle heard not seen 	



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 04:45 - Soprano pipistrelle re-enter building behind fascia/gap in tile on western elevation 04:52 - Common pipistrelle heard not seen 04:56 - 'Big bat' heard not seen 05:01 - Soprano pipistrelle re-entry – clear daylight, confirmed access point as fascia/tile gap on corner of west elevation. Photograph (still from a video) below shows bat about to re-enter building

Table 4.39: Summary of Emergence and Re-entry Surveys at Heath Farm – Main Farmhouse

Table 4.39: 5	ummary of Eme	ergence	and Re-entry Surveys at Heath Farm – Main Farmhouse
Date	Survey Type	Sunrise /Sunset	Survey Findings
05/07/2017	Dawn re-entry	04:51	 O3:08 - Soprano pipistrelle heard not seen O3:13 - Common pipistrelle heard not seen O3:14 - Soprano pipistrelle heard not seen O3:17 - Common and soprano pipistrelle heard not seen O3:32 - Soprano pipistrelle foraging over the garden to the west of the property O3:38 - Common pipistrelle – seen over Vicarage Road to frontage of property O3:42 - Common pipistrelle foraging along hedgerow to Vicarage Road O3:51 - Soprano pipistrelle commuting between farmhouse and outbuilding. O3:52 - Noctule flying over fields on edge of quarry at height (north of Vicarage Road) O3:55 - Soprano pipistrelle heard not seen O3:57 - Brown long-eared (x3) seen circling around eastern end of farmhouse over area with hole in roof and eastern chimney. Re-entry likely. O3:58 - Bat seen flying over east end of farmhouse – not recorded on detector, likely brown long-eared.



Date	Survey Type	Sunrise /Sunset	Survey Findings
25/07/2017	Dusk emergence	21:11	 04:00 - Brown long-eared re-entry very likely – Access point likely in roof valley running north west to south east. 04:40 - Noctule heard not seen Survey end: 05:07 Survey start: 20:55 21:46 - Noctule heard not seen 21:50 - Noctule heard not seen 21:52 - Soprano pipistrelle heard not seen 21:53 - Common pipistrelle commuting appeared over ridge of eastern end of farmhouse 21:57 - Noctule two passes heard not seen 21:58 - Two bats not picked up on detector seen flying around / in large hole in roof and courtyard to eastern elevation 21:59 - Brown long-eared probable emergence from roof valley over roof, courtyard then flew west – seen not heard 21:59 - 22:02 - Common pipistrelle foraging over garden to the west and courtyard 22:01 - Common pipistrelle commuting 22:04 - Soprano pipistrelle heard not seen 22:05 - Common pipistrelle flew over ridge beam on eastern end of farmhouse then west over courtyard 22:08 - 2 common pipistrelle foraging over courtyard 22:12 - Bat seen over hole in roof on eastern part of farmhouse from direction of roof valley – bat not heard, likely brown long-eared. 22:12 - Soprano pipistrelle foraging in courtyard. 22:13 - Common pipistrelle heard not seen 22:24 - 22:31 Common pipistrelle heard not seen 22:24 - Bat seen ont heard 22:24 - Bat seen ont heard 22:24 - Bat seen ont heard 22:25 - Common pipistrelle foraging over courtyard 22:26 - Common pipistrelle heard not seen 22:27 - 22:33 - Noctule heard not seen 22:28 - Common pipistrelle heard not seen 22:36 - 22:43 - Noctule foraging, 3 passes 22:37 - Noctule and soprano pipistrelle heard not seen 22:38 - Common pipistrelle heard not seen 22:39 - 22:41 - Soprano pipistrelle heard not seen 22:39 - 22:45 Common pipistrelle heard not seen 22:40 - C
14/09/2017	Dawn re-entry	06:40	 22:50 - Faint brown long-eared Survey end: 22:45 Survey start: 04:40 Moderate rain starting 04:45 - surveyors sought cover until 04:57. Rain 05:07 - 05:10 Light rain from 05:35



Date	Survey Type	Sunrise /Sunset	Survey Findings
			No bats detected - constrained survey.
			Survey end: 06:00

Table 4.40: S	ummary of Em	ergence	and Re-entry Surveys at Heath Farm – Converted Outbuilding
Date	Survey Type	Sunrise /Sunset	Survey Findings
21/06/2017	Dusk emergence	21:36	 Survey start: 21:17 21:21 - Soprano pipistrelle heard not seen 22:10 - Noctule heard not seen 22:12 - Noctule commuting in south west direction high over courtyard 22:24 - 22:34 - Soprano pipistrelle foraging over courtyard, 20+ passes. Arrived from west and left in easterly direction 22:34 - Common pipistrelle foraging in courtyard 10+ passes 22:34 - Bat - very quick and feint heard not seen 22:36 - 22:37 Soprano pipistrelle heard not seen - 2 passes 22:40 - Noctule heard not seen 22:43 - 22:53 - Common pipistrelle foraging over courtyard 22:49 - Noctule heard not seen 22:57 - Common pipistrelle heard not seen 23:03 - Soprano pipistrelle heard not seen 23:05 - Soprano pipistrelle foraging 23:06 - 22:13 - Common pipistrelle heard not seen 23:10 - 23:16 - Common pipistrelle heard not seen 23:23 - Myotis heard not seen 23:29 - Soprano pipistrelle heard not seen 23:33 - Common pipistrelle heard not seen
06/07/2017	Dawn re-entry	04:52	 Survey start: 02:54 02:55 - Common pipistrelle foraging over courtyard 02:59 - 03:10 - Common and soprano pipistrelles foraging over courtyard (sustained) 03:13 - 03:26 - Common and soprano pipistrelles foraging over courtyard (sustained) 03:31 - Brown long-eared seen not heard commuting from direction of Heath Farm farmhouse. 03:48 - Soprano pipistrelle, three passes came from direction of Heath Farm farmhouse. 03:53 - Myotis commuting 03:54 - Brown long-eared from road between Heath Farm farmhouse and outbuilding. 03:55 - Myotis heard not seen.



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 04:03 - Brown long-eared swooping between Heath Farm farmhouse and outbuilding - seen not heard. 04:15 - Common pipistrelle flying over and around roof – not re-seen. Survey end: 05:09
24/07/2017	Dusk emergence	21:13	 Survey start: 20:55 22:03 - Common pipistrelle heard not seen – 2 passes 22:06 - Soprano pipistrelle commuting across courtyard between Heath Farm farmhouse and outbuilding (W – E). 22:09 - Common pipistrelle heard not seen – 2 passes 22:13 - Common pipistrelle heard not seen – foraging (feeding buzzes) 22:17 - 22:26 Common pipistrelle from south heading east and foraging – Total 3* bats 22:27 - Noctule heard not seen 22:36 - Common pipistrelle foraging over courtyard 22:37 - Brown long-eared heard not seen 22:38 - Common pipistrelle heard not seen 22:40 - Soprano pipistrelle heard not seen Survey end: 22:50

Table 4.41: Summary of Emergence and Re-entry Surveys at Clovelly

Date	Survey Type	Sunrise /Sunset	Survey Findings
04/07/2017	Dusk emergence		 22:06 - 22:14 - Soprano pipistrelle foraging over garden. Sustained activity 22:11 - Common pipistrelle foraging over paddock behind house - 3 passes 22:12 - Common pipistrelle foraging over north west corner of garden 22:15 - 22:21 - Common pipistrelles *4 heard not seen (Other surveyor confirmed foraging over garden) 22:28 - Soprano pipistrelle heard not seen 22:29 - Soprano pipistrelle foraging over paddock behind house - >10 passes 22:30 - Soprano pipistrelle foraging over garden 22:31 - Common pipistrelle – foraging over garden then foraging over paddock behind house 22:33 - Common pipistrelle heard not seen 22:36 - Common pipistrelle heard not seen 22:43 - Common pipistrelle heard not seen 22:48 - Myotis - two passes 22:52 - Brown long-eared multiple passes gleaning from ash



Date	Survey Type	Sunrise /Sunset	Survey Findings
			tree at rear of property to the south west adjacent horse paddock 22:53 - Noctule heard not seen 22:55 - Soprano pipistrelle heard not seen 22:57 & 22:59 - Common pipistrelle heard not seen 23:09 - Common and soprano pipistrelle foraging along rear of house 23:21 - Common pipistrelle foraging over garden to A5 and paddock behind house Survey end: 23:25 Survey start: 03:15
26/07/2017	Dawn re-entry	05:18	 03:23 - Common pipistrelle heard not seen 03:28 - Soprano pipistrelle foraging over paddock – several passes 03:28 - 03:31 – Brown long-eared heard not seen 03:40 - Brown long-eared – 3 passes, heard not seen 03:43 - Soprano pipistrelle heard not seen 03:48 - Common pipistrelle foraging 04:10 - Bat seen not heard or recorded 04:16 - Brown long-eared – two bats circled over house, seen not heard 04:19 - 04:20 – single bat circled roof of house. Seen not heard 04:20 - Common pipistrelle foraging along tree line at rear of house 04:23 - Common pipistrelle foraging along tree line at rear of house then over house. 04:27 - Bat flying low in rear corner of garden (south east). Seen not heard 04:44 - Bat – seen not heard

Table 4.42: Summary of Emergence and Re-entry Surveys at Ash House

Date	Survey Type	Sunrise /Sunset	Survey Findings
20/06/2017	Dawn re-entry	04:44	 Survey start: 02:44 02:55 - Common pipistrelle – heard not seen security light on 02:57 - 03:12 - Common pipistrelle foraging, heard not seen 03:06 - Soprano pipistrelle foraging, heard not seen 03:07 - Common pipistrelle foraging, heard not seen 03:12 - Common pipistrelle foraging, heard not seen 03:18 - Common pipistrelle foraging, heard not seen 03:23 - Soprano pipistrelle foraging, heard not seen 03:23 - Brown long-eared, brief, heard not seen



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 03:28 - Noctule heard not seen 03:29 - Common pipistrelle foraging, heard not seen 03:36 - Common pipistrelle commuting flying over property 03:33 - 03:35 - Common pipistrelle foraging, heard not seen 03:36 - Noctule heard not seen
06/07/2017	Dusk emergence	21:33	Survey end: 05:00 Survey start: 21:18 21:58 - Noctule commuting high above garden 22:03 - Noctule heard not seen 22:20 - Common pipistrelle heard not seen 22:26 - Common and soprano pipistrelle heard not seen 22:27 - Noctule heard not seen 22:29 - Common pipistrelle foraging, three passes 22:32 - Brown long-eared heard not seen 22:36 - Common and soprano pipistrelle heard not seen 22:46 - Common pipistrelle heard not seen 22:51 - Soprano pipistrelle heard not seen 22:59 - Common and soprano pipistrelle heard not seen 22:59 - Common pipistrelle foraging over garden then headed south 23:00 - Soprano pipistrelle heard not seen 23:06 - Common pipistrelle heard not seen

Table 4.43: Summary of Emergence and Re-entry Surveys at Stoney Brook Annex

Table 4.43: 3	ummary or Eme	ergence	and Re-entry Surveys at Stoney Brook Annex
Date	Survey Type	Sunrise /Sunset	Survey Findings
20/06/2017	Dusk emergence	21:36	 Survey start: 21:15 22:09 - Common pipistrelle from west over garden then sharp turn north around rear of property 22:19 - Noctule heard not seen 22:29 - Common pipistrelle from north behind house then flew east over garden 22:31 - Common pipistrelle heard not seen 22:33 - Common pipistrelle heard not seen 22:35 - Soprano pipistrelle from west over garden then sharp turn north around rear of property 22:37 - Soprano pipistrelle heard not seen 22:38 - Common pipistrelle heard not seen 22:45 - Common pipistrelle heard not seen Survey end: 23:10



Date	Survey Type	Sunrise /Sunset	Survey Findings
16/08/2017	Dawn re-entry	05:51	 Survey start: 04:15 04:48 - Brown long-eared heard not seen 04:52 - Common pipistrelle heard not seen 04:54 - Common pipistrelle from west over garden then sharp turn north around rear of property 05:07 - Soprano pipistrelle heard not seen 05:20 - Soprano pipistrelle heard not seen Survey end: 06:06

Table 4.44: Summary of Emergence and Re-entry Surveys at Stoney Brook Cottage

Date	Survey Type	Sunrise /Sunset	Survey Findings
21/06/2017	Dawn re-entry	04:44	 Survey start: 03:14 03:29 - Common pipistrelle heard not seen 03:33 - Common pipistrelle heard not seen 03:35 - Common pipistrelle heard not seen 04:23 - Noctule heard not seen 04:24 - Noctule over field at height to north heading east then turning back south over horse paddocks to south 04:26 - Noctule heard not seen Survey end: 05:00
16/08/2017	Dusk emergence	20:35	Survey start: 20:20 • 20:43 - Noctule heard not seen • 21:02 - Common pipistrelle heard not seen Survey end: 22:05

Table 4.45: Summary of Emergence and Re-entry Surveys at Croft House

Date	Survey Type	Sunrise /Sunset	Survey Findings
19/06/2017	Dusk emergence	21:36	 Survey start: 21:20 22:17 - Common pipistrelle – flew over house roof from north to south 22:30 - Noctule heard not seen 22:52 - Soprano pipistrelle and common pipistrelle heard not seen 22:58 - Noctule heard not seen 22:59 - Common pipistrelle foraging along field/house boundary in the north towards yard past street lights



Date	Survey Type	Sunrise /Sunset	Survey Findings
			 23:01 - Noctule heard not seen 23:07 - Pipistrelle hard not seen 23:22 - Common pipistrelle and soprano pipistrelle heard not seen, brief 23:24 - Common pipistrelle heard not seen 23:35 - Common pipistrelle foraging over rear garden 23:32 - Common pipistrelle commuting, heard not seen, brief Survey end: 23:36
25/07/2017	Dawn re-entry	05:14	 Survey start: 03:20 03:48 - Noctule heard not seen, commuting 03:51 - Common pipistrelle heard not seen 04:15 - Common pipistrelle heard not seen 04:17 - 04:19 - Bat, possible brown long-eared. Seen not heard circling over apex of roof 04:20 - 2 bats seen chasing each other over the garden. Seen not heard 04:23 - Soprano pipistrelle heard not seen 04:32 - Common pipistrelle five passes circling outside rear of house then re-entry into hole between the tiles and the fascia/soffit box on south west corner 04:43 - Common pipistrelle seen flying loops around roof and garden, no re-entry noted Survey end: 05:30

Table 4.46: Summary of Emergence and Re-entry Surveys at Mile End Cottage

Date	Survey Type	Sunrise /Sunset	Survey Findings
22/06/2017	Dawn re-entry	04:44	 Survey start: 03:00 03:05 - Common pipistrelle heard not seen 03:15 - Common pipistrelle heard not seen, 2 passes 03:31 - Common pipistrelle, 2 passes flying over garden heading south 03:32 - Soprano pipistrelle heard not seen 03:39 - Common pipistrelle heard not seen 03:41 - Common pipistrelle foraging over Vicarage Road and garden 03:44 - Common pipistrelle 4 loops over garden to west of property then re-entry behind tile hung westerly aspect (nearest Vicarage Road) 03:56 - Common pipistrelle heard not seen 04:05 - Common pipistrelle heard not seen



Date	Survey Type	Sunrise /Sunset	Survey Findings
26/07/2017	Dusk emergence	21:12	 Survey start: 20:55 21:35 - Common pipistrelle emerged from tile hung aspect on western elevation (northern end) turned quickly east and flew along Vicarage Road 21:41 - Common pipistrelle emerged from tile hung aspect on western elevation (southern end) bat flew north crossing Vicarage Road narrowly avoiding impact with lorry 21:45 - Noctule observed flying at height over field to the north 22:18 - Common pipistrelle commuting from north to south 22:19 - Soprano pipistrelle heard not seen 22:20 - Common pipistrelle heard not seen 22:38 - Common pipistrelle heard not seen Survey end: 22:45

Bat Survey - Bat Activity Surveys

4.6.64 A summary of results of the manual and automated bat activity surveys are presented below by month. The text below should be read in conjunction with Figures 10.1.616 and 10.1.628 to 10.1.633 and 10.1.617 and 10.1.618 to 10.1.623.

May

- 4.6.65 A moderate level of bat activity was recorded during this survey, with six species of bat recorded; common pipistrelle, soprano pipistrelle, noctule, serotine, brown long-eared and Myotis (likely to be Daubenton's). Refer to Figure 10.1.628 for a plan showing the bat activity at the Site during the survey.
- 4.6.66 The surveys were undertaken by two surveyors (Chris Hodsman and Emily McVean) over three days. Transects 3 and 4 were undertaken on 16 May 2016. The first bat, a soprano pipistrelle, was recorded at 21.23, 21 minutes after sunset. This bat was seen commuting through a woodland wayleave in Calf Heath Wood on Transect 3. Further bats identified foraging or commuting in Calf Heath Wood included one further soprano pipistrelle pass, four records of common pipistrelle and a single serotine pass. The woodland edge of Calf Heath Wood was used for foraging by a similar assemblage of bat species as recorded within the canopy with high levels of activity along



- the southern edge. This activity extended along the woodland block of Calf Heath Wood associated with the adjacent Bericote development.
- 4.6.67 The highest level of bat activity recorded was along the canal in the northwest of Transect 3 with commuting and foraging common pipistrelle and *Myotis* (Considered likely Daubenton's based on habitat, behaviour and call parameters).
- 4.6.68 Lower levels of activity were recorded on Transect 4 with four species of bat recorded but in low numbers; common pipistrelle (five registrations), soprano pipistrelle (one registration), noctule (one registration) and brown long-eared (one registration).
- 4.6.69 Surveys of Transects 1 and 2 were undertaken on 17 May 2016. Three species of bat were recorded on Transect 1; common pipistrelle, soprano pipistrelle and noctule. Common pipistrelle was the most frequently observed foraging or commuting along tree/hedge lines associated with field boundaries. Three species of bat were recorded on Transect 2; common pipistrelle, soprano pipistrelle and *Myotis* (Likely Daubenton's). The first bat recorded on Transects 1 and 2 was at 21:17, a common pipistrelle 15 minutes after sunset. This was in the southwest of the Site adjacent the railway line. Levels of bat activity across Transect 2 (away from the canal) were generally quite low with two registrations of soprano pipistrelle and four registrations of common pipistrelle. There were, however, high levels of activity observed along the canal with significant foraging and commuting by *Myotis* (Daubenton's) and common pipistrelle observed.
- 4.6.70 The survey of Transect 5 was undertaken on 18/05/2016. The first bat, a noctule was observed adjacent to Vicarage Road at 21:39, 34 minutes after sunset. Five species of bat were observed / recorded including common and soprano pipistrelle, noctule, *Myotis* and a likely brown long-eared. The majority of pipistrelle activity occurred along the woodland edge (southeast of Calf Heath Wood) and the established tree / hedge line which runs southwest to northeast connecting the woodland to Calf Heath Reservoir. A bat was seen along this hedge / tree line but not recorded on the detectors; this was recorded as a likely brown long-eared. A single *Myotis* was recorded over standing water associated with quarrying activities to the northeast of Calf Heath Wood. With the exception of the noctule observed early in the survey, no bat activity was observed along Vicarage Road.
- 4.6.71 The most frequently recorded bat was the common pipistrelle.

2017

4.6.72 A moderate level of bat activity was recorded during the survey of Transect 6, with four species of bat recorded; common pipistrelle, soprano pipistrelle,



- noctule and *Myotis*. Refer to Figure 10.1.628 for a plan showing the bat activity at the Site during the survey.
- 4.6.73 The surveys were undertaken by two surveyors (Chris Hodsman and James Fraser) on 03/05/2017. The first bat, a soprano pipistrelle was observed foraging on the leeward side of a tree/hedge line running northwest to southeast in the east of the site parallel with Stable Lane at 20:57, 19 minutes after sunset. Pipistrelle species were most frequently observed foraging or commuting along tree/hedge lines associated with field boundaries. This was most notable in the east of the Site adjacent a woodland block and tree line off Woodlands Lane and Stable Lane and the hedgerow running north west to south east between Vicarage Road and Straight Mile (This includes Point Count 6.07). Noctule were observed foraging over improved grassland at the east of this transect, near Point Count 6.02. Two *Myotis* were recorded (heard not seen) along the woodland adjacent the canal in the south which runs broadly west to east.
- 4.6.74 Bat activity away from the locations described above was limited to single passes by pipistrelle species which were recorded in low numbers. The most frequently recorded bats were common and soprano pipistrelle.
- 4.6.75 Table 4.46 below provides a summary of data obtained by static monitoring by transect in May to provide additional context to the manual bat activity surveys undertaken. A total of 10,012 common pipistrelle passes, 1,149 soprano pipistrelle passes, 2 nathusius pipistrelle passes, 297 *Myotis* passes, 90 noctule passes, 12 big bat passes and 41 brown long-eared passes were recorded in May across the six transects. The locations where the static detectors were deployed and levels of associated activity are shown in Figure 10.1.618.

Table 4.47: May Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
	18/05/2017	Common pipistrelle	12
	19/05/2017	-	-
	20/05/2017	Common pipistrelle	1
	21/05/2017	Common pipistrelle	15
		Myotis	2
	22/05/2017	-	-
	18/05/2017	Common pipistrelle	44
2		Soprano pipistrelle	7
	19/05/2017	Common pipistrelle	38



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	2
	20/05/2017	Common pipistrelle	39
		Soprano pipistrelle	4
	04/05/0047	Common pipistrelle	36
	21/05/2017	Soprano pipistrelle	15
	22/05/2017	Common pipistrelle	35
	22/05/2017	Soprano pipistrelle	20
		Common pipistrelle	4
	18/05/2017	Soprano pipistrelle	2
		Noctule	2
	19/05/2017	Common pipistrelle	1
		Noctule	5
		Common pipistrelle	1
	20/05/2017	Soprano pipistrelle	3
		Noctule	1
3		Common pipistrelle	6
	21/05/2017	Soprano pipistrelle	22
		Myotis	2
		Noctule	2
		Common pipistrelle	2
	22/05/2017	Soprano pipistrelle	42
	22/05/2017	Myotis	4
		Noctule	3
		Common pipistrelle	509
		Soprano pipistrelle	45
4	18/05/2017	Nathusius pipistrelle	1
		Myotis	26
		Noctule	5



Transect	Date	Species	Number of Passes
		Brown long-eared	3
		Common pipistrelle	884
		Soprano pipistrelle	17
	19/05/2017	Myotis	26
		Noctule	4
		Brown long-eared	3
		Common pipistrelle	1105
		Soprano pipistrelle	231
	20/05/2017	Myotis	47
		Noctule	3
		Brown long-eared	4
		Common pipistrelle	1226
	21/05/2017	Soprano pipistrelle	67
		Myotis	27
		Noctule	1
		Brown long-eared	2
		Common pipistrelle	101
		Soprano pipistrelle	4
	22/05/2017	Myotis	7
	22/05/2017	Noctule	1
		Big bat	5
		Brown long-eared	1
		Common pipistrelle	509
		Soprano pipistrelle	45
E	18/05/2017	Nathusius pipistrelle	1
5		Myotis	26
		Noctule	5
		Brown long-eared	3



Transect	Date	Species	Number of Passes
		Common pipistrelle	884
		Soprano pipistrelle	17
	19/05/2017	Myotis	26
		Noctule	4
		Brown long-eared	3
		Common pipistrelle	1105
		Soprano pipistrelle	231
	20/05/2017	Myotis	47
		Noctule	3
		Brown long-eared	4
		Common pipistrelle	1226
		Soprano pipistrelle	67
	21/05/2017	Myotis	27
		Noctule	1
		Brown long-eared	2
		Common pipistrelle	734
		Soprano pipistrelle	18
	22/05/2017	Myotis	21
	22/05/2017	Noctule	2
		Big bat	5
		Brown long-eared	12
		Common pipistrelle	154
	02/05/2017	Soprano pipistrelle	38
	03/05/2017	Myotis	1
6		Noctule	7
		Common pipistrelle	10
	04/05/2017	Soprano pipistrelle	32
		Myotis	1



Transect	Date	Species	Number of Passes
		Common pipistrelle	37
	05/05/2017	Soprano pipistrelle	20
		Noctule	7
		Common pipistrelle	704
	06/05/2017	Soprano pipistrelle	59
		Myotis	20
		Noctule	3
	07/05/2017	Common pipistrelle	586
		Myotis	4
		Noctule	13
		Big bat	2
		Brown long-eared	1

June

- 4.6.76 A low to moderate level of bat activity was recorded during this survey, with four species of bat recorded in the manual bat activity surveys; common pipistrelle, soprano pipistrelle, noctule and *Myotis*. Refer to Figure 10.1.629 for a plan showing the bat activity at the Site during the survey. The automated (static) surveys also identified brown long-eared as present in low numbers.
- 4.6.77 The surveys were undertaken by three surveyors (Chris Hodsman, Emily McVean and Carl Bailey) over two days. Transects 1, 2 and 4 were undertaken on 20 June 2016. The first bat, a common pipistrelle, was recorded at 21.58, 22 minutes after sunset. This bat was seen foraging under the tree canopy overhanging the canal on Transect 2. The level of activity observed along the canal was much reduced than that observed in May. The surveyor was present earlier in the evening than in May having reversed the transect route. A greater level of activity was observed away from the canal with common and soprano pipistrelles being observed or recorded along internal field boundaries north and south of Croft Lane. A limited amount of common pipistrelle activity was noted in the northwest of the Site along the A449 Stafford Road and the rear of the police station off the A5 as shown in Figure10.1.629. These areas are subject to moderate / high levels of light spill from the police station, road lighting and the Gailey



Highways Depot. Several registrations for foraging and/or commuting common and soprano pipistrelle were recorded on the northern margin of Calf Heath Wood and the hedgerow/ditch which connects the woodland to the canal (adjacent Gailey Magazine).

- 4.6.78 The highest level of bat activity recorded was by common pipistrelle foraging/commuting along the field boundaries in the southern part of Transect 1 (south of Gravelly Way). Two registrations for soprano pipistrelle were also obtained in this location adjacent the railway.
- 4.6.79 Surveys of Transects 3 and 5 were undertaken on 21 June 2016. Four species of bat were recorded; common pipistrelle, soprano pipistrelle, noctule and Myotis. The first bat recorded on 21 June 2016 (Transects 3 and 5) was recorded at 21:51, a common pipistrelle approximately 15 minutes after sunset. This was recorded along the hedgerow to the south of Gailey Magazine between Calf Heath Wood and the canal. Gailey Magazine was later confirmed as a pipistrelle roost, the bat recorded is likely to have emerged from this building. Common pipistrelle were recorded commuting and foraging along the canal, woodland edge/wayleaves in Calf Heath Wood and along hedgerows running from the Bericote development site towards the convergence of Vicarage Road and Mile End Road. A noctule and soprano pipistrelle were also recorded in this location. The majority of bat activity observed on Transect 5 was on the southern edge of Calf Heath Wood and the wayleave which runs southwest to northeast within the wood with common and soprano pipistrelle, a noctule and a Myotis bat being recorded. Four further registrations of common pipistrelle and a single soprano pipistrelle registration were noted proximal to Woodside Farm. No bats were recorded in the east of the Site along the hedgerow linking Calf Heath Wood and Reservoir as was observed in May.
- 4.6.80 The most frequently recorded bat was the common pipistrelle.

- 4.6.81 A moderate level of bat activity was recorded during the survey of Transect 6, with five species of bat recorded; common pipistrelle, soprano pipistrelle, noctule, brown long-eared and *Myotis*. Refer to Figure 10.1.629 for a plan showing the bat activity at the Site during the survey.
- The surveys were undertaken by one surveyor (Chris Hodsman) on 21/06/2017. The first bats, three soprano pipistrelles were observed foraging (sustained) within wet woodland in the south of the Site adjacent to Straight Mile at Point Count 6.03 at 21:53, 17 minutes after sunset. Pipistrelle species were most frequently observed foraging or commuting along tree/hedge lines or within woodland most notably at Point Count 6.03 and on the western margin of the Site north of Point Count 6.05. Noctule were observed foraging



over horse paddocks south of Straight Mile and over arable field just south of Vicarage Road. A brown long-eared was recorded in the same location. Two Myotis were recorded (heard not seen) adjacent the canal at Point Count 6.05 and at Point Count 6.10 near Heath Farm on an oak lined track.

- 4.6.83 The most frequently recorded bats were common and soprano pipistrelle. Noctule activity was sustained over the horse paddocks south of Vicarage Road.
- 4.6.84 Table 4.48 below provides a summary of data obtained by static monitoring by transect in June to provide additional context to the manual bat activity surveys undertaken. A total of 2793 common pipistrelle passes, 636 soprano pipistrelle passes, 123 *Myotis* passes, 92 noctule passes and 36 brown longeared passes were recorded in June across the six transects. The locations where the static detectors were deployed and levels of associated activity are shown in Figure 10.1.619.

Table 4.48: June Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
	17/06/2016	Common pipistrelle	106
		Soprano pipistrelle	6
		Common pipistrelle	682
		Soprano pipistrelle	50
	18/06/2016	Brown long-eared	1
		Myotis	20
		Noctule	1
	19/06/2016	Common pipistrelle	119
1		Soprano pipistrelle	11
		Brown long-eared	1
		Myotis	3
	20/06/2016	Common pipistrelle	30
		Soprano pipistrelle	4
		Myotis	3
		Common pipistrelle	36
	21/06/2016	Soprano pipistrelle	4
		Myotis	8



Transect	Date	Species	Number of Passes
		Noctule	1
		Common pipistrelle	97
	17/06/2016	Myotis	2
		Common pipistrelle	334
	18/06/2016	Soprano pipistrelle	43
		Myotis	4
		Common pipistrelle	113
2	19/06/2016	Soprano pipistrelle	1
		Myotis	2
		Common pipistrelle	81
	20/06/2016	Soprano pipistrelle	1
		Myotis	1
	21/06/2016	Common pipistrelle	128
	21/00/2010	Myotis	5
		Common pipistrelle	2
	17/06/2016	Myotis	2
		Noctule	2
		Common pipistrelle	4
	18/06/2016	Soprano pipistrelle	1
		Noctule	1
2		Common pipistrelle	13
3	19/06/2016	Soprano pipistrelle	2
		Noctule	11
		Common pipistrelle	10
	20/06/2016	Soprano pipistrelle	1
	20/00/2010	Myotis	10
		Noctule	1
	21/06/2016	Common pipistrelle	30



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	12
		Myotis	3
		Noctule	4
		Brown long-eared	2
		Common pipistrelle	147
	17/06/2016	Soprano pipistrelle	11
		Myotis	1
		Common pipistrelle	234
	10/0//201/	Soprano pipistrelle	61
	18/06/2016	Myotis	3
		Brown long-eared	2
		Common pipistrelle	121
	19/06/2016	Soprano pipistrelle	33
		Myotis	1
4		Noctule	3
		Brown long-eared	5
	00/07/0047	Common pipistrelle	43
		Soprano pipistrelle	9
	20/06/2016	Myotis	4
		Brown long-eared	1
		Common pipistrelle	7
	21/07/2017	Soprano pipistrelle	1
	21/06/2016	Noctule	2
		Brown long-eared	1
		Common pipistrelle	8
E	17/04/2014	Soprano pipistrelle	7
5	17/06/2016	Myotis	3
		Noctule	11



Transect	Date	Species	Number of Passes
		Brown long-eared	3
		Common pipistrelle	42
		Soprano pipistrelle	30
	18/06/2016	Myotis	8
		Noctule	10
		Brown long-eared	4
		Common pipistrelle	142
	10/0//201/	Soprano pipistrelle	25
	19/06/2016	Myotis	32
		Brown long-eared	2
		Common pipistrelle	211
	20/06/2016	Soprano pipistrelle	301
		Noctule	32
		Brown long-eared	9
		Common pipistrelle	46
	21/06/2016	Soprano pipistrelle	16
	21/06/2016	Myotis	2
		Brown long-eared	3
		Soprano pipistrelle	1
	21/06/2017	Myotis	1
		Noctule	6
		Common pipistrelle	2
4	22/06/2017	Myotis	2
6		Noctule	1
		Common pipistrelle	1
	23/06/2017	Soprano pipistrelle	1
		Noctule	3
	24/06/2017	Common pipistrelle	2



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	3
		Myotis	1
		Noctule	1
	25/06/2017	Common pipistrelle	2
		Soprano pipistrelle	1
		Myotis	2
		Noctule	2
		Brown long-eared	2

July

- 4.6.85 A moderate level of bat activity was recorded during this survey, with four species of bat recorded; common pipistrelle, soprano pipistrelle, noctule and brown long-eared. Refer to Figure 10.1.630 for a plan showing the bat activity at the Site during the survey. The automated (static) surveys also identified *Myotis* as present.
- 4.6.86 The surveys were undertaken by three surveyors (Chris Hodsman, Emily McVean and Carl Bailey) over two days. Transects 1, 2 and 4 were undertaken on 18 July 2016. The first bat, a noctule, was recorded at 21.34, 13 minutes after sunset. This bat was observed commuting at height from the direction of the railway over arable fields and over Gravelly Way Farmhouse towards the canal. Three species of bat; common pipistrelle, soprano pipistrelle and noctule were observed on Transects 1, 2 and 4. The most frequently recorded species were noctule and common pipistrelle. Significant noctule activity was observed over arable fields in the north of the Site (north of Gravelly Way and Calf Heath Wood). A single noctule pass was observed in the south of the Site in fields adjacent the existing industrial estate. Common pipistrelle activity was encountered across all three transects but was concentrated along the canal. Five observations of soprano pipistrelle were recorded on 18 July 2016, two on Transects 1 and 4 and one on Transect 2.
- 4.6.87 Surveys of Transects 3 and 5 were undertaken on 19 July 2016. Four species of bat were recorded on Transect 3; common pipistrelle, soprano pipistrelle, noctule and brown long-eared. The first bat recorded on 19 July 2016 (Transects 3 and 5) was recorded at 21:22, a noctule approximately 1



minute after sunset. This bat was heard and not seen while surveyors were walking down the access road to Woodside Farmhouse (Off Vicarage Road). As on the preceding evenings surveys, significant noctule activity was observed, particularly over arable fields south of Calf Heath Wood where a maximum of 4 noctule bats were observed at the same time seemingly socialising. Common pipistrelles were recorded commuting and foraging along the canal, in wayleaves/along paths in Calf Heath Wood and along hedgerows (and over standing water in the quarry) between the woodland and Calf Heath Reservoir. Soprano pipistrelle were recorded twice in Calf Heath Wood along the main wayleave/access track, once commuting from the wood towards the canal and a single pass adjacent Vicarage Road in the southwest. Two registrations or observations of brown long-eared bats were made along the main access track and northern wayleave through Calf Heath Wood on Transect 3.

4.6.88 Noctule and common pipistrelle were the most frequently recorded or observed bats.

- 4.6.89 A moderate level of bat activity was recorded during the survey of Transect 6, with five species of bat recorded; common pipistrelle, soprano pipistrelle, noctule, brown long-eared and *Myotis*. Refer to Figure 10.1.630 for a plan showing the bat activity at the Site during the survey.
- 4.6.90 Surveys were undertaken at dusk and pre-dawn. The surveys were undertaken by two surveyors (Chris Hodsman and James Fraser) on the dusk of 05/07/2017 and the dawn of 06/07/2017. The first bats, a soprano pipistrelle, a common pipistrelle and a noctule were observed foraging (sustained) along a tree line and over the arable field (noctule) at Point Count 6.08 at 22:06, 33 minutes after sunset. Pipistrelle species were most frequently observed foraging or commuting along tree/hedge lines most notably at Point Count 6.07 near a pond and along the woodland edge adjacent the canal. Noctules were observed foraging over horse paddocks and arable fields across the Site. Four brown long-eared bats were recorded. Two were in the east of the Site in a woodland block off Woodlands Lane (Point Count 6.02) and the wet woodland in the south of the Site adjacent Staright Mile (Point Count 6.03). Two further registrations were recorded on Deepmore Lane and in the sheep grazed field near Point Count 6.06. Two Myotis were recorded (heard not seen).
- 4.6.91 The most frequently recorded bats during the dusk survey were common pipistrelle, soprano pipistrelle and noctules.
- 4.6.92 The pre-dawn survey recorded common pipistrelle, soprano pipistrelle (Most frequently recorded), noctule and a *Myotis*. Activity was reduced relative to



the dusk survey. Greater activity was recorded in the east of the Transect notably at Point Counts 6.02 and 6.03.

4.6.93 Table 4.49 below provides a summary of data obtained by static monitoring by transect in July to provide additional context to the manual bat activity surveys undertaken. A total of 1508 common pipistrelle passes, 853 soprano pipistrelle passes, 2 pip social calls, 95 *Myotis* passes, 931 noctule passes, 43 'big bat' passes, 48 brown long-eared passes were recorded in July across the six transects. The locations where the static detectors were deployed and levels of associated activity are shown in Figure 10.1.620.

Table 4.49: July Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
		Common pipistrelle	33
		Soprano pipistrelle	4
	19/07/2016	Myotis	3
		Noctule	8
		Common pipistrelle	34
		Soprano pipistrelle	10
	20/07/2016	Brown long-eared	2
		Myotis	1
		Noctule	5
		Common pipistrelle	58
	21/07/2016	Soprano pipistrelle	7
1		Brown long-eared	2
		Myotis	1
		Noctule	2
		Common pipistrelle	48
		Soprano pipistrelle	11
	22/07/2016	Myotis	3
		Brown long-eared	4
		Noctule	2
		Common pipistrelle	3
	23/07/2016	Soprano pipistrelle	3
		Myotis	3
2	19/07/2016	Common pipistrelle	2

Transect	Date	Species	Number of Passes
		Noctule	7
		Common pipistrelle	3
	20/07/2016	Noctule	1
	20,07,20.0	Myotis	1
		Common pipistrelle	22
	21/07/2016	Soprano pipistrelle	4
		Noctule	1
		Common pipistrelle	34
		Soprano pipistrelle	9
	22/07/2016	Noctule	1
		Common pipistrelle	13
	00/07/004/	Soprano pipistrelle	11
	23/07/2016	Myotis	1
		Noctule	4
	19/07/2016	Common pipistrelle	62
		Soprano pipistrelle	10
		Myotis	4
		Big bat	3
		Noctule	41
		Common pipistrelle	68
		Soprano pipistrelle	25
	20/07/2016	Brown long-eared	2
2		Myotis	10
3		Noctule	28
		Common pipistrelle	110
		Soprano pipistrelle	42
		Pipistrelle social	1
	21/07/2016	Brown long-eared	4
		Myotis	19
		Noctule	32
		Common pipistrelle	127
		Soprano pipistrelle	56



Transect	Date	Species	Number of Passes
	22/07/2016	Pipistrelle social	1
		Brown long-eared	5
		Myotis	13
		Big bat	2
		Noctule	23
		Common pipistrelle	113
		Soprano pipistrelle	49
	00/07/004/	Brown long-eared	4
	23/07/2016	Myotis	8
		Big bat	25
		Noctule	56
		Common pipistrelle	28
		Soprano pipistrelle	8
	19/07/2016	Brown long-eared	1
		Big bat	2
		Noctule	437
	20/07/2016	Common pipistrelle	60
		Soprano pipistrelle	27
		Noctule	26
		Brown long-eared	5
		Common pipistrelle	52
4		Soprano pipistrelle	21
	21/07/2016	Myotis	2
		Noctule	14
		Brown long-eared	4
		Common pipistrelle	66
		Soprano pipistrelle	36
	22/07/2016	Myotis	1
		Noctule	1
		Brown long-eared	4
	23/07/2016	Common pipistrelle	5
		Soprano pipistrelle	5



Transect	Date	Species	Number of Passes
		Brown long-eared	1
		Common pipistrelle	10
		Soprano pipistrelle	1
	19/07/2016	Myotis	1
		Big bat	3
		Noctule	96
		Common pipistrelle	13
		Soprano pipistrelle	2
	20/07/2016	Big bat	4
		Noctule	17
		Brown long-eared	2
5		Common pipistrelle	12
	21/07/2016	Soprano pipistrelle	1
	217 0 77 20 10	Noctule	54
	22/07/2016	Common pipistrelle	12
		Soprano pipistrelle	4
		Noctule	21
		Myotis	1
		Brown long-eared	2
		Common pipistrelle	6
	23/07/2016	Myotis	2
		Noctule	6
		Common pipistrelle	448
		Soprano pipistrelle	447
	05/07/2017	Noctule	8
		Myotis	7
		Brown long-eared	1
6		Common pipistrelle	19
		Soprano pipistrelle	16
	06/07/2017	Noctule	26
		Big bat	2
		Myotis	3



Transect	Date	Species	Number of Passes
		Common pipistrelle	12
		Soprano pipistrelle	6
	07/07/2017	Noctule	6
	07/07/2017	Big bat	1
		Myotis	4
		Brown long-eared	1
		Common pipistrelle	30
		Soprano pipistrelle	24
	00/07/0047	Noctule	3
	08/07/2017	Big bat	1
		Myotis	6
		Brown long-eared	3
		Common pipistrelle	5
		Soprano pipistrelle	14
	09/07/2017	Noctule	5
		Myotis	1
		Brown long-eared	1

August

- 4.6.94 A low to moderate level of bat activity was recorded during this survey, with five species of bat recorded; common pipistrelle, soprano pipistrelle, brown long-eared, noctule and *Myotis*. Refer to Figure 10.1.631 for a plan showing the bat activity at the Site during the survey.
- 4.6.95 The surveys were undertaken by three surveyors (Chris Hodsman, Emily McVean and Carl Bailey) over two days. Transects 1, 2 and 4 were undertaken on 10 August 2016. The first bat, a noctule, was recorded at 21.11, 17 minutes after sunset. This bat was heard not seen while the surveyor was walking along the canal on Transect 2. A moderate level of activity was observed along the canal with common pipistrelle being the most frequently recorded, with a single registration of *Myotis* (likely Daubenton's over water) and soprano pipistrelle also being recorded. Common pipistrelle were also recorded foraging under street lights on Croft Lane, in the northwest of the Site along the A449 Stafford Road and the rear of the police



station off the A5 and along field boundaries adjacent to the A449 in the south of the Site. Several registrations for soprano pipistrelle were recorded on Transects 1 (south of Gravelly Way) and 4 along field boundaries. Two registrations for brown long-eared bats were recorded on Transect 4, one near Calf Heath Reservoir and one along an arable field boundary running east to west in the centre of the transect plot. A further observation of brown long-eared bat was made on Transect 1 adjacent the railway line (where it is closest to the canal).

- 4.6.96 The highest level of bat activity recorded was by common pipistrelle foraging/commuting along the canal (Transects 2 and 3).
- 4.6.97 Surveys of Transects 3 and 5 were undertaken on 11 August 2016. Four species of bat were recorded on Transects 3 and 5; common pipistrelle, soprano pipistrelle, noctule and brown long-eared. The first bats recorded on 11 August 2016 were common and soprano pipistrelle recorded at 21:13. These were recorded emerging from Gailey Magazine on Transect 3 approximately 32 minutes after sunset. A total of five pipistrelles were seen to emerge from behind the deteriorated soffit board on the western elevation. Two noctule bats were observed foraging over the field between Calf Heath Wood and the canal on Transect 3 and a further registration (heard not seen) at an arable field margin on Transect 5 south of Calf Heath Wood. Common and soprano pipistrelle were recorded commuting and foraging along the canal, the woodland edge and in wayleaves in Calf Heath Wood and along hedgerows running from the Bericote development site/ Calf Heath Wood towards Vicarage Road. A single brown long-eared bat was recorded in the south of the Site on the Site perimeter of the Bericote development. A single soprano pipistrelle was recorded in the east of the Site along the hedgerow linking Calf Heath Wood and Reservoir.
- 4.6.98 The most frequently recorded bat was common pipistrelle.

- 4.6.99 A moderate level of bat activity was recorded during the survey of Transect 6, with four species of bat recorded; common pipistrelle, soprano pipistrelle, noctule and brown long-eared. Refer to Figure 10.1.631 for a plan showing the bat activity at the Site during the survey.
- 4.6.100 The surveys were undertaken by two surveyors (Chris Hodsman and James Fraser) on 15/08/2017. The first bats, two soprano pipistrelles and two common pipistrelles were observed foraging (sustained) within woodland in the east of the Site adjacent Woodlands Lane at Point Count 6.02 at 20:50, 15 minutes after sunset. Pipistrelle species were most frequently observed foraging or commuting along tree/hedge lines or within woodland most notably at Point Count 6.02, on the western margin of the Site north of Point Count 6.05 and on the woodland edge adjacent the canal between Point



Counts 6.04 and 6.05. Noctule bats were observed foraging over semiimproved grassland and arable fields between Straight Mile and Vicarage Road. Three brown long-eared bats were recorded, two in the east along the access track to Heath Farm and one near Point Count 6.08.

4.6.101 The most frequently recorded bats were common and soprano pipistrelle.

4.6.102 Table 4.50 below provides a summary of data obtained by static monitoring by transect in August to provide additional context to the manual bat activity surveys undertaken. A total of 2697 common pipistrelle passes, 532 soprano pipistrelle passes, 289 pipistrelle social calls (individual and component), 166 *Myotis* passes, 128 noctule passes, 22 'Big bat' passes and 208 brown longeared passes were recorded in August across the six transects. The locations where the static detectors were deployed and levels of associated activity are shown in Figure 10.1.621.

Table 4.50: August Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
		Common pipistrelle	4
	11/08/2016	Soprano pipistrelle	15
		Noctule	1
	12/08/2016	Common pipistrelle	36
	12/08/2016	Soprano pipistrelle	2
		Common pipistrelle	64
1	13/08/2016	Myotis	2
1		Noctule	2
	14/08/2016	Common pipistrelle	107
		Soprano pipistrelle	3
		Myotis	3
		Common pipistrelle	17
	15/08/2016	Soprano pipistrelle	3
		Myotis	2
	11/00/2014	Common pipistrelle	10
	11/08/2016	Noctule	2
2		Common pipistrelle	230
	12/08/2016	Noctule	4
		Myotis	2



Transect	Date	Species	Number of Passes
		Common pipistrelle	42
	13/08/2016	Soprano pipistrelle	1
		Myotis	2
		Common pipistrelle	18
		Soprano pipistrelle	2
	14/08/2016	Myotis	2
		Common pipistrelle	9
	45 /00 /004 /	Soprano pipistrelle	6
	15/08/2016	Myotis	10
		Noctule	2
		Common pipistrelle	26
	11/08/2016	Soprano pipistrelle	19
		Pipistrelle social	22
		Brown long-eared	3
	12/08/2016	Common pipistrelle	89
		Soprano pipistrelle	59
		Pipistrelle social	82
		Myotis	1
		Common pipistrelle	30
		Soprano pipistrelle	80
3		Pipistrelle social	92
	13/08/2016	Myotis	1
		Noctule	1
		Brown long-eared	3
		Common pipistrelle	2
		Soprano pipistrelle	88
	14/08/2016	Myotis	3
		Noctule	2
	15/00/2017	Common pipistrelle	12
	15/08/2016	Soprano pipistrelle	89

Transect	Date	Species	Number of Passes
		Pipistrelle social	93
		Myotis	7
		Common pipistrelle	178
	11/08/2016	Soprano pipistrelle	8
		Noctule	2
		Common pipistrelle	637
	12/00/201/	Soprano pipistrelle	9
	12/08/2016	Myotis	1
		Brown long-eared	1
4		Common pipistrelle	959
	12/00/201/	Soprano pipistrelle	24
	13/08/2016	Myotis	3
		Noctule	2
	14/08/2016	Common pipistrelle	120
		Soprano pipistrelle	5
		Noctule	4
	15/08/2016	Common pipistrelle	1
		Common pipistrelle	7
	11/08/2016	Soprano pipistrelle	13
		Myotis	2
	12/00/201/	Soprano pipistrelle	15
	12/08/2016	Noctule	1
		Common pipistrelle	18
5	13/08/2016	Soprano pipistrelle	17
	13/08/2016	Myotis	7
		Noctule	43
		Common pipistrelle	7
		Soprano pipistrelle	22
	14/08/2016	Brown long-eared	1
		Myotis	4



Transect	Date	Species	Number of Passes
		Noctule	31
	45 (00 (004 (Soprano pipistrelle	1
	15/08/2016	Myotis	2
		Common pipistrelle	6
		Soprano pipistrelle	6
	16/08/2017	Myotis	5
	16/08/2017	Noctule	4
		Big bat	3
		Brown long-eared	53
		Common pipistrelle	18
		Soprano pipistrelle	9
	17/08/2017	Myotis	34
		Noctule	6
		Big bat	2
		Brown long-eared	64
		Common pipistrelle	5
6		Soprano pipistrelle	3
		Myotis	6
	18/08/2017	Noctule	4
		Big bat	2
		Brown long-eared	10
		Common pipistrelle	9
		Soprano pipistrelle	9
	19/08/2017	Myotis	6
		Big bat	6
		Brown long-eared	25
		Common pipistrelle	36
	20/08/2017	Soprano pipistrelle	24
		Myotis	61



Transect	Date	Species	Number of Passes
		Noctule	17
		Big bat	9
		Brown long-eared	48

September

- 4.6.103 A moderate level of bat activity was recorded during this survey, with six species of bat recorded; common pipistrelle, soprano pipistrelle, brown longeared, noctule, serotine and *Myotis*. Refer to Figure 10.1.632 for a plan showing the bat activity at the Site during the survey.
- 4.6.104 The surveys were undertaken by three surveyors (Chris Hodsman, Emily McVean and James Fraser) over two days. Surveys of Transects 1, 2 and 4 were undertaken on 05/09/2016. The first bats, common and soprano pipistrelle were recorded at 20.19, 33 minutes after sunset on Transect 1 at Point Count 1.02. The most frequently recorded bat on Transect 1 was common pipistrelle with approximately 15 registrations, all were along field boundaries. There were 4 registrations of soprano pipistrelle and two registrations of *Myotis* species. These were equally distributed in the north and south of the transect i.e. either side of Gravelly Way. A moderate level of activity was observed along the canal in Transect 2, this was considered to be three bats foraging and included; two common pipistrelles and a single Myotis (likely Daubenton's over water). Common pipistrelle bats were again recorded foraging under street lights on Croft Lane and two noctule bats were observed foraging over the street lights in this location. Two noctule bats were recorded on Transect 4, one near Calf Heath Reservoir and one along an arable field boundary running east to west in the centre of the Transect plot. Four species of bat were recorded along the hedge/tree line between Croft Lane and a woodland block to the south which abuts the canal. Species recorded included; common and soprano pipistrelle, brown long-eared (seen not heard foraging in the tree canopy) and a single registration for a 'big bat', likely a Serotine. Common pipistrelles were the most commonly recorded bat on Transect 4. Where observed these bats were noted to be foraging along the tree and hedge lines.
- 4.6.105 The highest level of bat activity recorded was by a range of species foraging/commuting along the hedge and tree line linking Croft Lane and crossing the canal towards Calf Heath Wood (past Gailey Magazine).



4.6.106 Surveys of Transects 3 and 5 were undertaken on 6 September 2016. Five species of bat were recorded on Transect 3 and 5; common pipistrelle, soprano pipistrelle, noctule, *Myotis* and brown long-eared. The first bat recorded on 6 September 2016 was a noctule recorded at 19:46 approximately two minutes after sunset. This was recorded flying high over a quarried field east of Transect 3 and over towards Calf Heath Wood. A further noctule was recorded flying over arable fields in close proximity to Gailey Magazine where appreciable common and soprano pipistrelle foraging and commuting activity was once more observed. A single pass from a *Myotis* species was also recorded in this location, this bat was heard not seen. Five further *Myotis* species bats were recorded commuting along the field boundary south of the canal (near Gravelly Way Bridge) towards Calf Heath Wood (two registrations) and to the east of Calf Heath Wood over standing water associated with quarrying activates (the latter considered likely to be Daubenton's – three registrations). Three noctule bats were observed at height over the arable field immediately to the east of Woodside Farm. A hobby was noted interacting with these bats (hunting them). A further noctule was noted foraging over the quarry south of Calf Heath Wood. Two registrations (heard not seen) of noctule were also recorded on the southern margin of Calf Heath Wood. Common and soprano pipistrelle were recorded along the boundary line of the Bericote development, the southern woodland edge of Calf Heath Wood and the tree/hedge line which joins the wood to Calf Heath Reservoir. Two brown long-eared bats were recorded/observed, one on Transect 5 adjacent the woodland next to Calf Heath Reservoir and one on Transect 3 within the wayleave adjacent the main access track running northwest to southeast in Calf Heath Wood.

4.6.107 The most frequently recorded bat was common pipistrelle.



- 4.6.108 A low level of bat activity was recorded during the survey of Transect 6, with four species of bat recorded; common pipistrelle, soprano pipistrelle, noctule and brown long-eared. Refer to Figure 10.1.632 for a plan showing the bat activity at the Site during the survey.
- Fraser) on 13/09/2017. The first bat, a noctule was heard and not seen over improved grassland south of Point Count 6.08 at 20:04, 27 minutes after sunset. Soprano pipistrelle and noctule were most frequently recorded species with most activity recorded in the south east of the Site in/near the wet woodland at Point Count 6.03 and centrally near a pond at Point Count 6.08. Two common pipistrelles were recorded, one foraging along Vicarage Road and one foraging along Straight Mile. Two brown long-eared bats were recorded, one in the east adjacent woodland off Woodlands Lane (Point Count 6.02) and one at the wet woodland adjacent Straight Mile at Point Count 6.03.
- 4.6.110 The most frequently recorded bats were soprano pipistrelle and noctule.
- 4.6.111 Table 4.51 below provides a summary of data obtained by static monitoring by transect in September to provide additional context to the manual bat activity surveys undertaken. A total of 258 common pipistrelle passes, 165 soprano pipistrelle passes, 20 pipistrelle social calls, 22 *Myotis* passes, 152 noctule passes, 18 'big bats' and 44 brown long-eared passes were recorded in September across the six transects. A nathusius pipistrelle was also detected on the 12th September 2016. The locations where the static detectors were deployed and levels of associated activity are shown in Figure 10.1.622.

Table 4.51: September Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
		Common pipistrelle	8
	0.4.400.400.4.4	Soprano pipistrelle	2
1	06/09/2016	Myotis	1
		Noctule	1
	07/09/2016	Common pipistrelle	3
		Soprano pipistrelle	4
	08/09/2016	Common pipistrelle	12
	09/09/2016	Common pipistrelle	31



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	15
		Common pipistrelle	10
		Soprano pipistrelle	2
	10/09/2016	Brown long-eared	2
		Myotis	1
		Common pipistrelle	6
		Soprano pipistrelle	2
	06/09/2016	Brown long-eared	4
		Myotis	1
		Noctule	17
		Common pipistrelle	6
		Soprano pipistrelle	6
2	07/09/2016	Brown long-eared	2
		Noctule	11
		Common pipistrelle	2
	08/09/2016	Soprano pipistrelle	2
		Myotis	1
	09/09/2016	-	-
	10/09/2016	-	-
		Common pipistrelle	8
		Soprano pipistrelle	5
	06/09/2016	Brown long-eared	5
3		Myotis	2
		Noctule	10
		Common pipistrelle	2
	07/00/201/	Soprano pipistrelle	4
	07/09/2016	Brown long-eared	2
		Big bat	2



Transect	Date	Species	Number of Passes
		Noctule	2
	08/09/2016	Common pipistrelle	17
		Soprano pipistrelle	10
		Brown long-eared	4
		Myotis	1
		Big bat	1
		Noctule	12
	09/09/2016	Soprano pipistrelle	7
		Brown long-eared	1
		Myotis	4
		Noctule	4
	10/09/2016	Brown long-eared	1
		Noctule	2
4	06/09/2016	Common pipistrelle	9
		Soprano pipistrelle	2
		Noctule	4
	07/09/2016	Common pipistrelle	7
		Soprano pipistrelle	9
		Pipistrelle social	2
		Noctule	13
	08/09/2016	Common pipistrelle	2
		Soprano pipistrelle	9
		Pipistrelle social	9
		Myotis	2
	09/09/2016	Common pipistrelle	1
		Soprano pipistrelle	2
		Noctule	1
	10/09/2016	Common pipistrelle	3
		•	



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	9
		Pipistrelle social	9
5	06/09/2016	Common pipistrelle	4
		Soprano pipistrelle	8
		Noctule	4
	07/09/2016	Common pipistrelle	18
		Soprano pipistrelle	8
		Brown long-eared	4
		Myotis	2
		Noctule	14
	08/09/2016	Common pipistrelle	10
		Soprano pipistrelle	8
		Brown long-eared	1
		Big bat	1
		Noctule	3
	09/09/2016	Soprano pipistrelle	11
		Brown long-eared	2
		Big bat	4
		Myotis	1
		Noctule	2
	10/09/2016	Common pipistrelle	10
		Soprano pipistrelle	5
		Myotis	2
		Noctule	11
6	14/09/2017	Common pipistrelle	15
		Soprano pipistrelle	8
		Myotis	1
		Noctule	2



Transect	Date	Species	Number of Passes
		Big bat	2
		Brown long-eared	11
		Common pipistrelle	22
		Soprano pipistrelle	11
	15/09/2017	Myotis	1
		Noctule	6
		Big bat	4
		Brown long-eared	3
		Common pipistrelle	40
	16/09/2017	Soprano pipistrelle	11
		Myotis	3
		Noctule	23
		Big bat	1
		Brown long-eared	1
		Common pipistrelle	6
	17/09/2017	Soprano pipistrelle	4
		Noctule	4
	18/09/2017	Common pipistrelle	6
		Soprano pipistrelle	1
		Myotis	1
		Noctule	6
		Big bat	2
		Brown long-eared	1

October

2016

4.6.112 A low to moderate level of bat activity was recorded during this survey, with five species of bat recorded; common pipistrelle, soprano pipistrelle, brown



- long-eared, a 'big bat' and *Myotis*. Refer to Figure 10.1.633 for a plan showing the bat activity at the Site during the survey.
- 4.6.113 The surveys were undertaken by three surveyors (Chris Hodsman, Emily McVean and James Fraser) over two days. Surveys were undertaken at dusk and pre-dawn. Transects 1, 2 and 4 were undertaken on 19 October 2016 into 20/10/2016. The first bat, a common pipistrelle, was recorded at 18.25, 23 minutes after sunset. This bat was heard not seen at Point Count 2.03 on Transect 2. A low to moderate level of activity was observed along the canal with common pipistrelle being the most frequently recorded, with a single registration of *Myotis* (likely Daubenton's over water). Common pipistrelle were also recorded foraging under street lights on Croft Lane, along field boundaries on Transect 1 and 4 and along the woodland edge (Calf Heath Wood) on Transect 4. Soprano pipistrelle were recorded foraging along field boundaries on Transect 1 (south of Gravelly Way) and on Transect 4 around Gailey Magazine and field boundaries proximal to Point Count 4.05 and at Point Count 4.06. A 'big bat' was recorded in the approximate location of Point Count 4.05 on Transect 4. Brown long-eared registrations were recorded in two locations along field boundaries on Transect 4 to the north of Calf Heath Wood on the dusk survey and a further brown long-eared observed foraging in the tree canopy on Transect 2 proximal to Point Count 2.10 during the pre-dawn survey.
- 4.6.114 The highest level of bat activity recorded was by common and soprano pipistrelle foraging/commuting along the canal and along field boundaries on Transects 1 and 4.
- October 2016. A reduced level of activity was observed relative to the previous evening. Four species of bat were recorded on Transect 3 and 5; common pipistrelle, soprano pipistrelle, *Myotis* and a 'big bat'. The first bat recorded on 20/10/2016 was a common pipistrelle recorded at 19:06. This was recorded at Point Count 5.07 commuting along the eastern woodland edge of Calf Heath Wood. Common and soprano pipistrelles were noted commuting and foraging along the tree line between Calf Heath Wood and the canal at Gravelly Way. A Myotis bat, likely a natterer's was recorded on the northern woodland edge of Calf Heath Wood proximal to Point Count 3.01. A single registration of a 'big bat' was recorded within Calf Heath Wood on the main access track from Woodside Farm to the northwest.
- 4.6.116 The most frequently recorded bat was common pipistrelle.

2017

4.6.117 A low level of bat activity was recorded during the survey of Transect 6, with three species of bat recorded; common pipistrelle, soprano pipistrelle and



- noctule. Refer to Figure 10.1.633 for a plan showing the bat activity at the Site during the survey.
- 4.6.118 The surveys were undertaken by two surveyors (James Fraser and Carl Bailey) on 12/10/2017. The first bat, a noctule was seen not heard flying high from south to north along a hedgeline from the wet woodland at Point Count 6.03. This bat was recorded at 18:35, 14 minutes after sunset. A further noctule was recorded but not seen in the paddocks south of Straight Mile proximal to Poinct Count 6.04 at 18:57. A common pipistrelle was recorded at Point Count 6.09, this bat was heard not seen. The final bat recorded was a soprano pipistrelle along the tree/hedgeline running along Stable Lane south of Point Count 6.11.
- 4.6.119 The most frequently recorded bat was noctule but bat activity was very low.
- 4.6.120 Table 4.52 below provides a summary of data obtained by static monitoring by transect in October to provide additional context to the manual bat activity surveys undertaken. A total of 125 common pipistrelle passes, 640 soprano pipistrelle passes, 371 pipistrelle social calls, 965 *Myotis* passes, 10 noctule passes, 1 'big bat' and 9 brown long-eared passes were recorded in October across the transects. The locations where the static detectors were deployed are shown in Figure 10.1.623.

Table 4.52: October Automated (Static) Detector Results

Transect	Date	Species	Number of Passes
	10/10/2017	Common pipistrelle	6
	19/10/2016	Soprano pipistrelle	8
		Common pipistrelle	10
1	20/10/2016	Soprano pipistrelle	6
1		Myotis	1
	21/10/2016	-	-
	22/10/2016	-	-
	23/10/2016	-	-
	19/10/2016	Common pipistrelle	8
		Myotis	1
	20/10/2016	Myotis	1
2	21/10/2016	Common pipistrelle	1
	22/10/2016	-	-
	23/10/2016	-	-
3	19/10/2016	Common pipistrelle	3



Transect	Date	Species	Number of Passes
		Soprano pipistrelle	9
		Pipistrelle Social	7
		Brown long-eared	1
		Myotis	1
		Noctule	1
		Soprano pipistrelle	5
	20/10/2016	Myotis	1
		Noctule	3
	21/10/2016	Soprano pipistrelle	249
		Pipistrelle Social	190
		Brown long-eared	1
		Myotis	1
		Noctule	1
	22/10/2016	Soprano pipistrelle	1
		Myotis	2
	23/10/2016	Soprano pipistrelle	2
		Brown long-eared (social)	2
		Big bat	1
	19/10/2016	Common pipistrelle	33
		Soprano pipistrelle	120
		Pipistrelle Social	84
		Myotis	56
		Common pipistrelle	4
	20/10/2016	Soprano pipistrelle	48
		Pipistrelle Social	2
4		Myotis	243
	21/10/2016	Soprano pipistrelle	10
		Myotis	62
		Noctule	2
		Common pipistrelle	4
	22/10/2016	Soprano pipistrelle	3
		Pipistrelle Social	1



Transect	Date	Species	Number of Passes
		Myotis	80
	00/40/004/	Soprano pipistrelle	1
	23/10/2016	Myotis	50
		Common pipistrelle	33
	10/10/001/	Soprano pipistrelle	113
	19/10/2016	Pipistrelle Social	82
		Myotis	62
		Common pipistrelle	5
	00/10/001/	Soprano pipistrelle	47
	20/10/2016	Pipistrelle Social	3
		Myotis	242
5		Soprano pipistrelle	6
	21/10/2016	Myotis	49
		Noctule	2
		Common pipistrelle	4
	00/40/004/	Soprano pipistrelle	3
	22/10/2016	Pipistrelle Social	2
		Myotis	67
	00/40/004/	Soprano pipistrelle	1
	23/10/2016	Myotis	43
	11/10/2017	Soprano pipistrelle	2
	12/10/2017	Myotis	1
	12/10/2017	Brown long-eared	2
	13/10/2017	Common pipistrelle	2
		Soprano pipistrelle	4
6		Noctule	1
	14/10/2017	Common pipistrelle	5
		Brown long-eared	3
	15/10/2017	Common pipistrelle	7
		Soprano pipistrelle	2
		Myotis	2



Summary of Bat Activity

- 4.6.121 Levels of bat activity (from the static detectors) were greatest in May. Levels of activity were relatively consistent between June and August. Reduced levels of activity were recorded in September and October. Common pipistrelles were the most frequently encountered species and accounted for approximately 67% of the registered passes on the static automated detectors. Soprano pipistrelle were the second most frequently recorded species accounting for approximately 15% of the registered passes on the static detectors. A further 2% of calls were pipistrelle social calls. Myotis and noctule were also frequently encountered. These species made up approximately 6.5% and 5.5% of the total registered passes on the static detectors respectively. Ninety-six bat passes were classified a 'Big bat, this equates to approximately 0.4% of total registrations on the static detectors. Common and soprano pipistrelle, Myotis species, brown long-eared and noctule bats were recorded on every transect (1-6). Brown long-eared bats accounted for approximately 3% of the total registered passes on the static detectors. Two nathusius pipistrelle bats were recorded in May. Summaries of bat activity (from static detectors) and composition are provided in Figures 10.1.618 to 10.1.623.
- 4.6.122 Significant noctule activity was recorded on both the manual and static automated bat activity surveys in July 2016. Approximately 66% of all noctule calls recorded on the static detectors were obtained in this month. The apparent interseasonal difference in activity may be caused by the weather and the species biology, juvenile noctule bats were captured during trapping in August. Their presence would increase the number of recorded individuals. The temperature during the July bat activity surveys was also the highest of any month (between 21°C and 26°C) which may have positively influenced the food supply targeted by this species such as moths, beetles (mainly chafer and dung beetles) and winged ants which are most plentiful in July³³.
- 4.6.123 Soprano pipistrelle numbers recorded during the automated activity surveys were highest in the northeast of the Site and were the only bat captured around Calf Heath Reservoir indicating that the riparian and woodland habitats provide foraging resources for these species.
- 4.6.124 Bat activity was recorded across the Site; however, the following key commuting and foraging areas were noted and as shown on Figure 10.1.634. These have been revised since the draft Environmental Statement was issued where areas of greatest activity were presented by transect. Some of these areas whilst having the most commuting or foraging activity on a given transect are not considered to be key areas for bats given levels of activity were still generally limited when considering with the baseline established

³³ Bat Conservation Trust (BCT) Noctule Bat. Available at: http://www.bats.org.uk/publications_download.php/217/noctule.pdf



across the Site and not just on a given transect. This is particularly true of Transect 1 in the west of the Site:

- i. Staffordshire and Worcestershire Canal;
- ii. Calf Heath Wood (Interior and woodland edge);
- iii. Ditch / hedgerow past Gailey Magazine linking the Staffordshire and Worcestershire Canal and Calf Heath Wood;
- iv. Access track past Woodside Farm leading into the wayleave/track running north west south east in Calf Heath Wood;
- v. Hedgerow running east to west in centre of Transect 4 including Point Count 4.11;
- vi. Hedge / tree line running southwest to northeast between Calf Heath Woodland and Reservoir;
- vii. Hedgerow running north-west to south-east between Vicarage Road and Straight Mile;
- viii. Hedgerow / bund running north to south in the far south west of the Site between the canal and Straight Mile;
- ix. Hedge / treeline in location of Pond 24;
- x. Wet woodland in south of the Site adjacent Straight Mile and the tree line extending north from this to the wooded copse off Woodlands Lane; and
- xi. The canal and woodland habitats in the south of the Site have been shown to support foraging, commuting and roost sites for a range of species.

Bat Survey – Advanced Licence Bat Survey Techniques

Bat Trapping

- 4.6.125 Four bat trapping survey sessions were undertaken; two each during midsummer and late summer of 2016 and 2017. The primary aim of trapping was to capture tree roosting and/or breeding bats for radio tracking, therefore once sufficient bats had been captured, trapping ceased. All trapping data is contained in Annex 10.1.8.
- 4.6.126 A total of 19 bats of seven species were captured during 26 June to 1 July 2016 survey session. The majority of bats were captured in Calf Heath Wood, with checks of breeding status (pregnant or lactating) identifying common pipistrelle, soprano pipistrelle and brown long-eared confirmed as breeding in the locality (No maternity roosts identified on-site). Non breeding female natterer's bat, whiskered, Brandt's and Daubenton's male bats were also present.
- 4.6.127 A total of 22 bats were captured during 22 August to 26 August 2016 survey session. In addition to the species captured in June 2016, male adult serotine, male adult noctule and juvenile female noctule bats were also



- confirmed at Calf Heath Wood. The surveys also confirmed that breeding whiskered bats were using Calf Heath Wood (no maternity roost identified on-site).
- 4.6.128 A total of 41 bats were captured over four nights of trapping in 2016 with nine species confirmed. Soprano pipistrelle were the most frequently captured species in 2016, with Brown long-eared being the second most frequently captured species.
- 4.6.129 A total of 22 bats of six species of bats were captured during the 25th -26th June 2017 trapping session. Species were common pipistrelle (males only), soprano pipistrelle (breeding females), brown long-eared (breeding females), Natterer's bat (breeding females), whiskered bat (breeding females), and Daubenton's (male bats).
- 4.6.130 A total of 37 bats were captured during the 27th 28th August 2017 trapping survey session. A similar range of species were captured during this survey session as June 2017 with the addition of noctule bat (which included a female juvenile and two male bats). No whiskered bats were captured during the August 2017 survey session. A number of female Daubenton's bats were also captured (two adults and three juveniles).
- 4.6.131 A total of 59 bats were captured over four nights of trapping in 2017 with nine species confirmed. Brown long-eared were the most frequently captured species in 2017, with Daubenton's bat being the second most frequently captured species.

Radio Tracking and Roosting Patterns

26 June to 1 July 2016

4.6.132 Trapping data in Annex 10.1.8 show that during the June 2016 survey session, three bats were marked with radio transmitters to assist in locating their roosting sites. This included a male Daubenton's bat (Bat1), female non-breeding brown long-eared bat (Bat2) and female non-breeding natterer's bat (Bat3). Figures 10.1.635 and 10.1.636 show the location of the roosts with images of the roosts, and a summary of the bats' movements is provided below.

Bat1 - Male Daubenton's bat

4.6.133 Bat1 was tagged on 27 June 2016 in Calf Heath Wood (trap 5, Figure 10.1.624). On 28 June Bat1 was found roosting in a hollow birch tree in the western part of Calf Heath Wood (outside the Site) at OSGrid SJ 91928 09442 (Roost 1, Figure 10.1.635). The entrance to the roost was approximately 4.5 m high and south facing.



- 4.6.134 Prior to the evening emergence survey, social calling from the tree hole indicated multiple bats were present. Weather conditions for the survey were light drizzle with 100% cloud cover. The temperature was 13°C and sunset was at 21:36. A Canon XA25 IR camera was used to observe emergence. The first Daubenton's bat emerged at 22:06, with a total of 15 bats emerging until 22:40. Bat1 emerged at 22:38 in moderate rain and flew east towards Calf Heath Reservoir.
- 4.6.135 On 29 June 2016, Bat1 returned to Roost 1. The second emergence survey of Roost 1 commenced prior to sunset (21:36). Weather conditions for the survey were dry with a light breeze and 50% cloud cover. The temperature was 14°C. The bats occupying the roost made a number of social calls prior to emergence and the first bat emerged at 22:21. To confirm the status of the roost, a hand net on a 5 m pole was used to capture a sample of bats (approximately one bat captured in every three bats that emerged). Twenty-four bats emerged with the last emergence at 23:40. A total of six bats were captured during the emergence, and all bats were confirmed as adult male Daubenton's bats.
- 4.6.136 On 30 June 2016 Bat1 returned Roost 1. No emergence survey was undertaken on 30 June as resources were utilised for other tagged bats. However, Bat1 moved to another roost in Calf Heath Wood on 1 July 2016 located in a large split in another birch tree at OS Grid SJ 92161 09295 (Figure 10.1.635, Roost 2, again outside the Site). The roost was on its western side approximately 3.5 m in height. The emergence survey was undertaken in poor weather conditions 11°C, light to moderate rain, light wind, with some strong gusts during showers, cloud 100%. The first bat emerged at 22:34, with Bat1 emerging at 22:41. A total of 16 bats emerged with the last bat emerging at 22:59.
 - Bat 2- Female brown long-eared bat (non-breeding)
- 4.6.137 Bat2 was captured on 27 June 2016 in Calf Heath Wood (trap6) and marked with a radio transmitter. On 28 June 2016 Bat2 was located in a brick outbuilding of Woodview cottage located at OS Grid SJ 92260 08727 (Roost 3, Figure 10.1.636). This roost which is outside the site was used by Bat2 for the entire survey period.
- 4.6.138 An emergence survey of Woodview on 28 June 2016 was unable (due to access limitations) to determine the exit point of the roost. However, through radio tracking, it was possible to confirm that Bat2 emerged at 22:11. Bat2 flew to the south over the nearby canal and returned to the roost at 22:40.
- 4.6.139 Bat2 emerged from Woodview at 21:25 on 30 June (sunset was 21:20). It flew to the woodlands to the south by the canal and then returned to Woodview after around 30 minutes. Bat2 appeared to be moving around



various buildings within the roosting complex (Woodview) for the next two hours. No further evening survey of Bat2 was undertaken during the survey session; however Bat2 was found roosting in the same roost location on 1 July 2016 as she had done since capture.

Bat3 – Female natterer's bat (non-breeding)

- 4.6.140 Bat3 was caught in trap5 on 27 June 2016 and found day roosting in a large barn at Somerford Grange Farm located at OS Grid SJ 89990 08706 (Roost 4, Figure 10.1.636). Bat3 roosted at this site (outside the site) all week and made regular foraging bouts to Calf Heath Wood until the end of the survey session on 1 July 2016.
- 4.6.141 Access to the barn was restricted due to it being located on private property. One emergence survey was done from a public road on 29 June 2016, where Bat3 was recorded flying within the barn (moving around) from 22:25, and then emerged from the barn at 22:31, and flew in a direct line to Calf Heath Wood.

22 to 26 August 2016

- 4.6.142 Trapping data in Annex 10.1.8 show that during the August 2016 survey session, three bats were marked with radio transmitters to assist in locating their roosting sites. This included a female post lactating whiskered/Brandt's (Bat4), female post lactating brown long-eared bat (Bat5) and an adult male brown long-eared bat (Bat6). Figures 10.1.625 shows the August trapping locations and 10.1.637 show the location of the roosts with images of the roosts, and a summary of their movements is provided below.
 - Bat4 Female post-lactating (breeding) whiskered/Brandt's
- 4.6.143 Captured on the evening of 22 August 2016 in trap1, Bat4 was tagged and found roosting in a house located at SJ9187206400 (Roost 5, Figure 10.1.637) on 23 August. Due to private property outside the site, the roost position was not recorded, however the roof area of the building was suitable to support this species and a strong signal was recorded on the western side of the roof area. Bat4 emerged at 21:05 on 23 August and flew south.
- 4.6.144 On 24 August 2016, Bat4 was found roosting in a downy birch tree located in a small woodland adjacent to a canal SJ9223707166 outside the site (Roost 6, Figure 10.1.637). The woodland is situated immediately north of Laches Wood Outdoor Education Centre. The bat did not emerge (bad weather may have been responsible due to rain), and on 25 August the tagged was located at the base of the tree, indicating the tag had been scratched off.



Bat5 – Female post lactating brown long-eared bat

4.6.145 Captured at trap2 and marked with a radio transmitter on 22 August 2016, Bat5 was found roosting in the same building outside the site at Woodview as Bat2 had been in June 2016 (Roost 3, Figures 10.1.636 and 10.1.637), and is likely part of the same population. Bat5 used this roosting site throughout the entire survey period and was recorded occasionally in Calf Heath Wood.

Bat6 - Male adult brown long-eared bat

4.6.146 Bat6 was captured in Calf Heath Wood in trap6. On 24, 25 and 26 August 2016 Bat6 was found to be roosting in a small bungalow outside the site (Roost 7, Figure 10.1.637) at OS Grid SJ93510 09137. Bat6 emerged at 21:20 on 24 August and flew to the north.

25 June to 26 June 2017

4.6.147 Trapping data in Annex 10.1.8 show that during the June 2017 survey session, four bats were marked with radio transmitters to assist in locating their roosting sites. This included a lactating female natterer's (Bat106), a male Daubenton's bat (Bat206), a female lactating whiskered/brandt's bat (Bat306) and a male brown long-eared bat (Bat406). Figures 10.1.626 shows the June 2017 trapping locations and 10.1.638 show the location of the roosts with images of the roosts, and a summary of their movements is provided below.

Bat106 – Female lactating (breeding) natterer's bat

- 4.6.148 Bat106 was caught in the woodland strip on the north bank of the Staffordshire and Worcestershire Canal on 25 June 2017 and found day roosting in a barn conversion at Standeford approximately located at OS Grid SJ 9133107653 (Roost 8, Figure 10.1.638). Bat106 roosted in the roof of this building and the core foraging area for this bat was along the canal beyond the south of the Site and over/in adjacent woodland.
- 4.6.149 One emergence survey was done from a public road. Bat106 was recorded emerging; a total of 31 bats emerged from the gable end. The access point was shown to be a hole around a steel roof joist on the north east elevation. This has been classified as a maternity roost.

Bat206 - Male Daubenton's bat

4.6.150 Bat 206 was caught in the woodland strip on the north bank of the Staffordshire and Worcestershire Canal on 25 June 2017 and found day roosting in a tree within woodland next to the canal approximately 90m south of the Site at OS Grid SJ 9329508723 (Roost 9, Figure 10.1.638). Bat 206 roosted in a hole in this tree and the core foraging area for this bat



- was along the canal beyond the south of the Site and over/in adjacent woodland.
- 4.6.151 An emergence survey was undertaken and Bat206 was recorded emerging, a total of 22 bats emerged from the hole in the tree.
 - Bat 306 Female lactating (breeding) Whiskered/Brandt's
- 4.6.152 Bat 306 was caught in the woodland strip on the north bank of the Staffordshire and Worcestershire Canal on 26 June 2017 and found night roosting in a tree within woodland south of the canal approximately 45m south of the Site at OS Grid SJ 9254308614 (Roost 10, Figure 10.1.638). Bat 306 also used two houses as day roosts. The first, is located on Stable Lane, approximately 200m east from the Site at OS Grid SJ 9357208985 (Roost 11, Figure 10.1.638). The second is located in a house in Slade Heath, approximately 2.1km south west of the Site at OS Grid SJ 9185806549 (Roost 12, Figure 10.1.638). This is considered likely to be a maternity roost.
- 4.6.153 The core foraging area for this bat was over Woodlands Lane and Stable Lane and over the south east of the Site in what is proposed to be Calf Heath Community Park. The second core foraging area for this bat was to the north of Vicarage Road in woodland to the east between Vicarage Road and Calf Heath Reservoir where the access track for the reservoir is located.
 - Bat 406 Male Brown Long-eared
- 4.6.154 Bat 406 was caught in the wooded copse off Woodlands Lane on 26 June 2017 and found day roosting in a house on Stable Lane approximately 25m east of the Site at OS Grid SJ 9349909098 (Roost 13, Figure 10.1.638). The core foraging area for Bat 406 was very localised to the roost location over Woodlands Lane and Stable Lane.
 - 27 August to 28 August 2017
- 4.6.155 Trapping data in Annex 10.1.8 show that during the August 2017 survey session, four bats were marked with radio transmitters to assist in locating their roosting sites. This included a juvenile female brown long-eared (Bat108), juvenile female noctule bat (Bat208), a male juvenile natterer's bat (Bat308) and a non-reproductive adult female Daubenton's bat (Bat408). Figure 10.1.639 show the location of the roosts with images of the roosts, and a summary of their movements is provided below.
 - Bat 108 Juvenile Female Brown Long-eared
- 4.6.156 Bat 108 was caught in woodland on the south bank of the Staffordshire and Worcestershire Canal on 27 August 2017 and was found day roosting in a



house on Vicarage Road approximately 20m south of the Site at OS Grid SJ 9227408734 (Roost 3, Figure 10.1.639). This property is Woodview Cottage which was identified as being a maternity or satellite roost in 2016. The core foraging area for Bat108 was very localised to the roost location and a field to the south of the property.

Bat 208 - Juvenile Female Noctule

- 4.6.157 Bat208 was caught in the woodland strip on the north bank of the Staffordshire and Worcestershire Canal on 27 August 2017 and was found roosting in two trees. The first is located near Somerford approximately 1400m west of the Site at OS Grid SJ 8987508667 (Roost 14, Figure 10.1.639). The second is located in woodland approximately 40m south of the Site adjacent the Staffordshire and Worcestershire Canal at OS Grid SJ 9330008773 (Roost 15, Figure 10.1.639).
- 4.6.158 Emergence surveys were undertaken at both roosts. Roost 14 (In Somerford) had 16 bats emerge and Roost 15 south of the Site had 13 bats emerge. Both Roosts 14 and 15 have been classified as noctule maternity roosts.
- 4.6.159 The four core foraging area for Bat208 were over arable fields and plantation woodland next to the River Penk near the Roost 14, over woodland and arable fields over Saredon Brook to the immediate south of Four Ashes Industrial Estate, over the canal and woodland south of the Site in close proximity to Roost 15 and in the west of Calf Heath Wood mostly over the retained Bericote woodland.

Bat 308 - Juvenile Male Natterer's

4.6.160 Bat308 was caught in the woodland in the south of the Site adjacent Straight Mile on 28 August 2017 and was found day roosting in the same barn conversion at Standeford as Bat106 located at OS Grid SJ 9133107653 (Roost 8, Figure 10.1.638). Bat308 roosted in the roof of this building and the core foraging area for this bat was over woodland and arable fields over Saredon Brook to the immediate south of Four Ashes Industrial Estate, over the canal and fields between the energy from waste plant off Enterprise Drive and Deepmore Lane and within the north of Calf Heath Wood. Roost 8 has been classified as a maternity roost.

Bat 408 – Non-reproductive Female Daubenton's

4.6.161 Bat 408 was caught in the broadly triangular wooded copse off Woodlands Lane in the east of the Site on 28 August 2017 and was found roosting in a tree adjacent quarry workings located approximately 1300m to the south east of the Site at OS Grid SJ 9442208061 (Roost 16, Figure 10.1.639). The core foraging area for this bat was near to the roost location over arable



fields between the Staffordshire and Worcestershire Canal and Latherford Lane.

4.6.162 An emergence survey was undertaken and Bat408 was recorded emerging, a total of 9 bats emerged from the hole in the tree. This has been classified as a maternity roost.

Trapping and Radio Tracking Summary

- 4.6.163 Fourteen bats of five species were tagged, from which sixteen separate roost sites/structures were located. Eight roosts were located in trees, with four of these supporting Daubenton's bats. Two Daubenton's day roosts were located in the western side of Calf Heath Wood (off-site), one day roost in woodland adjacent to the canal located 90m south of the Site and the fourth, a maternity roost adjacent quarry workings approximately 1300m to the south east of the Site. Two noctule maternity roosts were found in trees, one near Somerford approximately 1400m west of the Site and the second 40m south of the Site adjacent the Staffordshire and Worcestershire Canal. Two whiskered/brandt's roosts were identified, one day roost at woodland north of Laches Wood Outdoor Education Centre and a night roost located within woodland south of the canal approximately 45m south of the Site. No tree roosts were established within the Site boundary via radio-tracking.
- 4.6.164 Eight building roosts were identified including two maternity roosts (for natterer's and brown long-eared) all located within approximately 2 km from the Site.
- 4.6.165 Species specific accounts are provided below; no roosts were found within the Site as a result of trapping and radio-tracking, however, two building roosts and five tree roosts including two breeding populations are located within 20-100m from the boundary of the Site.
- 4.6.166 The majority of bats were trapped in Calf Heath Wood and in woodland adjacent the canal in the south of the Site, and the number of bats captured and the range of species does suggest a locally important role of the habitat in this woodland for the species present, including foraging, roosting and potentially other social related behaviour including mating.

Roosting Summary

4.6.167 A total of twenty-two roosts were identified. Nine bat roosts were identified in 2016 and 13 bat roosts were identified in 2017 via a combination of survey methods. Six of these were on-site and sixteen were off-site. Of the sixteen off-site roosts, seven were identified within 100m of the Site boundary. Nine tree roosts and thirteen building roosts were identified. The



roosts identified are summarised below in Table 4.53 and presented in Figures 10.1.635 to 10.1.641.

Table 4.53: Confirmed Bat Roosts

Table 4.53: Confirmed Bar			
Roost Name	Distance and Orientation from Site	Species	Roost Classification
Gailey Magazine	On-site	Common pipistrelle Soprano pipistrelle	Day roost
Woodside Barn	On-site	Natterer's Common pipistrelle Soprano pipistrelle Brown long-eared	Day roost Night roost Probable feeding perch
Mile End Cottage	On-site	Common pipistrelle	Day roost
Croft House	On-site	Common pipistrelle	Day roost
Heath Farm – Main Farmhouse	On-site	Brown long-eared	Day roost
T97 –Oak	On-site	Soprano pipistrelle	Day roost
Calf Heath Wood Birch 2 Roost 2	Approximately 20 m west	Daubenton's	Day roost
Woodview Cottage Roost 3	20 m south	Brown long-eared	Maternity roost or satellite roost
Stable Lane Building Roost 13	25 m east	Brown long-eared	Day roost
Tree Roost 15	40 m south	Noctule	Maternity roost
Tree Roost 10	45 m south	Whiskered/brandt's	Night roost
Calf Heath Wood Birch 1 Roost 1	Approximately 80 m west	Daubenton's	Day roost
Tree Roost 9	90 m south	Daubenton's	Day roost
Bungalow – Stable Lane Roost 7	120 m east	Brown long-eared	Day roost
Stable Lane Building Roost 11	200 m east	Whiskered/brandt's	Day roost
Standeford Barn Conversion Roost 8	1000 m south	Natterer's	Maternity roost
Somerford Grange Farm Roost 4	1250 m west	Natterer's	Day roost
Quarry Tree Roost 16	1300 m south east	Daubenton's	Maternity roost
Somerford Tree Roost 14	1400 m west	Noctule	Maternity roost
Woodland north of Laches Wood Outdoor Education Centre – Birch. Roost 6	1500 m south west	Whiskered/brandt's	Day roost
Slade Heath Building Roost 12	2100 m south west	Whiskered/brandt's	Day roost / Possible maternity roost
House – Old Stafford Road Roost 5	2350 m south west	Whiskered/brandt's	Day roost



Bat Species Evaluation

4.6.168 Ten species of bat were confirmed to be present in the survey area and individual bat species are evaluated below.

Daubenton's bat

- 4.6.169 This species was captured in June 2016 in Calf Heath Wood and in June and August 2017 in woodland off Woodland Lane and on the canal towpath. The tracking of a tagged male in 2016 led to the location of two birch tree roosts within the western part of Calf Heath Wood. Unusually the male appears to have roosted with 20+ other males, which is not a widely reported phenomena with male bats generally, and if bats were not captured and checked during the emergence survey, the number of bats present would normally be assumed as a maternity roost.
- 4.6.170 The tracking of a male in June 2017 located a further tree roost supporting 20+ individuals 90m south of the Site adjacent the canal. The tracking of a non-reproductive female in August 2017 located a further roost (a maternity roost) in a tree adjacent quarry workings located approximately 1300m to the south east of the Site.
- 4.6.171 Daubenton's were the most frequently encountered Myotis species on emergence and re-entry surveys and the manual bat activity surveys with numbers being greatest along the canal and over open water associated with quarrying activities. While Myotis species recorded elsewhere away from water have not been defined to species level, investigation of the call parameters suggest that the majority of calls are indeed attributable to Daubenton's. Myotis species were recorded across the Site with highest numbers being noted on Transect 5 and 4 (largely attributable to significant activity in October 2016 where detectors were left near areas of standing water associated with quarrying activity). Transects 3 and 6 had broadly equivalent levels of Myotis activity both comprising woodland proximal to standing water. Limited Myotis activity was recorded on Transect 1. The lowest level of Myotis activity was recorded on Transect 2 though this would not likely be the case if a static detector was placed along the canal (Not deployed in this location due to security concerns). Significant Daubenton's activity was noted here on manual activity surveys.
- 4.6.172 Daubenton's bats are considered relatively common and widespread across the UK, with increasing populations. In Staffordshire records of this species are numerous and are therefore considered widespread and locally abundant. These species are generally associated with water and riparian habitats and roost in woodlands and buildings.



- 4.6.173 The results of the surveys suggest that Calf Heath Wood is likely to provide an important roosting resource for this species, especially given the proximity to the potential foraging habitats associated with the canal and reservoir locally. Due to the mobility of tree roosting bat species, it is likely that further tree roosts will be used within the Calf Heath Wood area than currently known, and it should be assumed that trees within the Site and especially Calf Heath Wood, with suitable roosting cavities are likely to form part of this roosting resource. Significant use of the canal habitats and woodland adjacent the canal was noted by this species.
- 4.6.174 Daubenton's bats are a relatively common species, however notwithstanding the slightly lower conservation status usually associated with male bats, the Daubenton's bat population roosting in Calf Heath Wood and foraging in the standing water and canal habitats on the Site is considered to be of District importance. Whilst 2017 surveys identified breeding populations of this species they are located more than 1km from the Site and as such, valuation at District importance is considered to remain valid.

Whiskered/Brandt's bat

4.6.175 Small *Myotis* species, which include Brandt's, whiskered and alcathoe (*Myotis alcathoe*) bats are often grouped together due the difficulty of identifying these species from morphological features. It is confirmed that both Brandt's and whiskered bats were captured at Calf Heath Wood, as males of both species with clear identification features were examined (identified through the differences in male sexual organs). However as alcathoe bat has not been recorded in Staffordshire, and many previous records of whiskered and Brandt's bat are likely to be unreliable, these species are evaluated together because roosting behaviour and habitat use of these species have not been reliably established.



- 4.6.176 The trapping data shows that whiskered/brandt's bats were a frequently captured species and consistently captured during all surveys with the exception of August 2017. Data from August 2016 shows that a higher number of breeding whiskered/brandt's bats were captured, indicating the presence of a nearby breeding roost. These species regularly use tree roosts and could be roosting in trees bordering or within the Site. The tagging of the single post lactating female on site in August 2016 (breeding), confirmed the use of both a building and a tree roost approximately 1.5 km south of the Site when the bat's activity was tracked. Trapping and tracking data from 2017 of a single lactating female identified three further roosts; a night roost in a tree 45m south of the Site and two building roosts, one on Stable Lane, approximately 200m east from the Site and one in Slade Heath, approximately 2.1km south west of the Site which is a likely maternity roost.
- 4.6.177 Myotis species were recorded across the Site with highest numbers being noted on Transect 5 and 4 (largely attributable to significant activity in October 2016 where detectors were left near areas of standing water associated with quarrying activity). Transects 3 and 6 had broadly equivalent levels of Myotis activity both comprising woodland proximal to standing water. Limited Myotis activity was recorded Transect 1. The lowest level of Myotis activity was recorded on Transect 2 though this would not likely be the case if a static detector was placed along the canal.
- 4.6.178 Whiskered/Brandt's bats have a wide distribution across the UK with a stable population³⁴, whiskered/Brandt's bat is considered one of the 'rarer' bats³⁵.

 Brandt's bat is thought to be slightly less common and widespread than the whiskered bat³⁶.
- 4.6.179 The likely presence of a nearby breeding population however is significant and as this species was captured during all bar one trapping surveys, it is likely that the Site has a role is supporting foraging and commuting, and possibly roosting bats from this breeding population. Therefore, the local whiskered population is considered to be of District value.

Natterer's bat

4.6.180 Natterer's bats were captured in Calf Heath Wood in 2016 and in woodland adjacent the canal and in woodland off Woodlands Lane in 2017. The 2017 surveys confirmed breeding bats and a maternity roost was identified in a barn conversion in Standeford 1km to the south of the Site (Bat106 and

³⁴ Bat Conservation Trust (2016). National Bat Monitoring Programme Report. London

Wray S, Wells D and Mitchell-Jones A M. (2010). Valuing Bats in Ecological Impact Assessment. In: In Practice, 70. Institute of Ecology and Environmental Management. Winchester

Bat Conservation Trust (BCT) Whiskered bat. Species Info Sheet. Available online at: http://www.bats.org.uk/data/files/Species_Info_sheets/whiskered_bat.pdf



- Bat308). In 2016 anon-breeding female tagged in June (Bat3), roosted in a large barn in Somerford approximately 1.2km west of the Site.
- 4.6.181 A *Myotis* species was noted occupying Woodside Barn (Hung on wall high up in the gable end) when an inspection was made after the October manual bat activity survey of Transect 3. Due to the height at which the bat was located it was not possible to accurately identify the bat but based on observations made it was considered likely to be a natterer's bat. DNA testing of droppings underneath this area confirmed the identification (See Annex 10.1.9). The presence of this bat and feeding remains suggest that Woodside Barn is a night roost for natterers. A *Myotis* bat with call parameters in line with a natterer's was recorded re-entering (probable) Woodside Barn in September suggesting a summer day roost as being present.
- 4.6.182 As detailed above, *Myotis* species were recorded across the Site with highest numbers being noted on Transect 5 and 4. Transects 3 and 6 had broadly equivalent levels of *Myotis* activity and limited *Myotis* activity was recorded Transect 1. The lowest level of *Myotis* activity was recorded on Transect 2.
- 4.6.183 This *Myotis* species has a wide distribution across Staffordshire³⁷ and the UK with an increasing population³⁸. This species is known to roost in trees and buildings, especially outbuildings and barns.
- 4.6.184 The confirmed presence of a nearby breeding population (two bats trapped from same population) and likely presence of a day and night roost within Woodside Barn is of note and as this species was captured during all trapping surveys, it is likely that the Site has a role in supporting foraging and commuting, and possibly roosting bats of this species. Therefore, the natterer's bat population is considered to be of District value.

Brown long-eared bat

4.6.185 Brown long-eared bats were captured on every trapping survey and included a mix of adult male, female, breeding and juvenile bats. In 2016 two female bats, including a post lactating female, were tagged and both used a building roost just beyond the southern boundary of the Site in June and August (Roost 3 – Woodview Cottage). A juvenile female was tagged in 2017 and used the same roost. This indicates that this roost is either a satellite or full maternity roost for this species. In addition, two male adults were also tagged (one in 2016 and one in 2017) and were found to be roosting in two properties on Stable Lane approximately 25m (Roost 13) and 130m (Roost 7) to the east of the Site. DNA tests of droppings in Woodside barn confirmed this species as present and roosting in this building on site. DNA tests of

³⁷ Staffordshire Ecological Record (2016). Staffordshire Mammal Atlas. Retrieved from http://www.staffs-ecology.org.uk/atlas/atlas.php?atlasid=M&page=m-intro&menu=M

³⁸ Bat Conservation Trust (2016). National Bat Monitoring Programme Report. London



droppings sampled at Clovelly were also confirmed as being from brown long-eared, however, these were few and degraded and no active roost was confirmed in surveys undertaken at this building on site in 2017 (See Annex 10.1.9).

- 4.6.186 Brown long-eared bats were recorded across the Site and in greatest number on Transect 6. The majority of records for this species were from the static detector deployed within the wet woodland in the south of the site adjacent Straight Mile in August 2017. Very limited brown long-eared activity was recorded on Transect 1 and 2. Levels of activity were broadly similar across the remaining transects.
- 4.6.187 Brown long-eared bats are a relatively common species with stable populations, and widespread over the UK and in Staffordshire³⁹⁴⁰. They are generally considered a woodland bat, using trees and a wide variety of building types for roosting.
- 4.6.188 The presence of an adjacent breeding population is important, and as this species was captured during all trapping surveys, it is likely that the Site, especially woodland, has a role in supporting foraging and commuting, and possibly roosting bats of this species. Therefore, the local brown long-eared bat population is considered to be of Local value.

Common, soprano and nathusius pipistrelle bats

- 4.6.189 Common and soprano pipistrelle bats were regularly captured throughout the trapping surveys in 2016 and 2017. Soprano pipistrelles were the only bat captured around Calf Heath Reservoir. Both male bats and breeding females were captured indicating that the riparian and woodland habitats provide foraging resources for these species.
- 4.6.190 Davidson-Watts et al (2006) found that the common pipistrelle is a generalist forager using a wider variety of mainly woodland habitats for foraging, whereas soprano pipistrelle bats prefer riparian habitats.
- 4.6.191 The regular and high levels of captures including breeding bats of these species on the Site during the surveys, indicates that common and soprano pipistrelle bats forage and commute regularly across the site, and it is likely the Site supports animals from a nearby breeding population. Five pipistrelle (Common and soprano) summer day roosts were confirmed on-site at; Woodside Barn, Gailey Magazine, Mile End Cottage, Croft House and T97-Oak. Common pipistrelle populations are considered to be increasing and soprano pipistrelle bats are considered stable nationally. DNA tests of droppings in Woodside barn confirmed this species as present (See Annex

³⁹ Staffordshire Ecological Record (2016). Staffordshire Mammal Atlas. Retrieved from http://www.staffs-ecology.org.uk/atlas/atlas.php?atlasid=M&page=m-intro&menu=M

 $^{^{}m 40}$ Bat Conservation Trust (2016). National Bat Monitoring Programme Report. London



10.1.9). Both species are locally common and widespread in Staffordshire. Three nathusius pipistrelle passes were recorded during the static automated activity surveys, two in May 2017 and one in September 2016. Nathusius' pipistrelle are rare in Staffordshire (SER, 2016) and rare but widespread in the British Isles. Nathusius pipistrelle has not been recorded roosting on-site. The pipistrelle species populations recorded are of Local value.

Serotine bat

- 4.6.192 Two male serotine bats were captured in Calf Heath Wood during the August 2016 surveys. Both were captured on woodland rides and may have been captured whilst foraging. This species generally roosts in buildings, however woodland edge habitat is known to be a foraging habitat.
- 4.6.193 Serotine bats were infrequently encountered during manual and static bat activity surveys.
- 4.6.194 Serotines are rare in Staffordshire (SER, 2016) and uncommon throughout their range, which is known to be southern England and parts of the Midlands region. Serotine bats are considered stable in population⁴¹, but Staffordshire is likely to be near their northern extent, so their presence is significant. Although no breeding populations were confirmed, given their general rarity in the County, the population of serotine bats at the Site (assumed roosting elsewhere) is considered of District value.

Noctule bat

- 4.6.195 A male adult and two female juvenile noctule bats were captured in Calf Heath Wood, during the August 2016 surveys. All were captured on woodland rides and may have been captured whilst foraging. In 2017 surveys a juvenile female (Bat208) and adult male were trapped in the linear woodland north of the canal (in the south of the Site) and a juvenile female and adult male were trapped within woodland copses in the east of the Site south of Vicarage Road. Tracking data from Bat208 identified two maternity roosts for this species in trees, one (Tree Roost 15) located 40m south of the Site within woodland adjacent the canal and a second (Somerford Tree Roost 14) located approximately 1400m to the west.
- 4.6.196 This species generally roosts in trees and open space, riparian and woodland habitats are known to be foraging habitat for noctule bats.
- 4.6.197 Noctule bats were recorded and observed across the Site, often with several bats being seen at the same time. Manual and static activity surveys in July demonstrated significant noctule activity.

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⁴¹ Bat Conservation Trust (2016). National Bat Monitoring Programme Report. London



4.6.198 Noctule bats are widespread in Staffordshire (SER, 2016), and although they are found throughout the UK, they are likely to be relatively scarce due to the large home ranges they occupy. Noctule bats are considered stable in population. A breeding population was confirmed with the nearest maternity roost being located 40m south of the Site within woodland adjacent the canal. Given the presence of a breeding population near the Site, the population of noctule bats at the Site is considered of District value.

Valuation Summary

- 4.6.199 As an assemblage of bats the species presence described above is considered significant as there are 12 species recorded in Staffordshire (SER, 2016) and the Site appears to support to a greater or lesser extent the majority of these species. Only lesser horseshoe (*Rhinolophus hipposideros*) and Leisler's bat which have been recorded in Staffordshire, were not recorded/confirmed on the Site.
- 4.6.200 It is clear from fieldwork carried out (particularly radio-tracking) that the bats recorded on the Site form part of populations using habitats at the landscape scale. Surveys have demonstrated that bats roosting off site are commuting to and using habitats within the Site to forage. Similarly, bats recorded roosting on-site have been recorded commuting off-site and foraging in habitats in the local landscape. The habitats on the site are not unique in the context of the surrounding areas. Other areas in the locality include habitats associated with quarrying activity, canals, farmland, woodland and buildings. It has not been possible in the fieldwork carried out to determine the relative importance of habitat on the site for bats to that in the surrounding areas but it is unlikely that it is any more important than any other areas, given the similarities in habitats present.
- 4.6.201 The bat assemblage present on-site is considered to be of value at the District scale and is to be considered as an 'Important Ecological Feature' within the EIA.

4.7 Badger

Full details of badger surveys and results are provided in Confidential Technical Appendix 10.2 to the ES.

⁴² Bat Conservation Trust (2016). National Bat Monitoring Programme Report. London.

⁴³ Staffordshire Ecological Record (2016). Staffordshire Mammal Atlas. Retrieved from http://www.staffs-ecology.org.uk/atlas/atlas.php?atlasid=M&page=m-intro&menu=M



4.8 Water Vole

Legislation

- Water voles (*Arvicola amphibius*) are protected under Section 9 of the WCA 1981. Legal protection makes it an offence to:
 - i. Intentionally kill, injure or take (capture) a water vole;
 - ii. Possess or control a live or dead water vole, or any part of a water vole;
 - iii. Intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place; and
 - iv. Sell, offer for sale or advertise for live or dead water voles.

Methodology

Water vole surveys were carried out in four ditches on the Site (as shown by TN 6, TN 7, TN 8 and TN 12 on Figure 10.1.002) and the Staffordshire and Worcestershire Canal. Water vole field signs were searched for at ponds onsite but these were considered largely unsuitable for this species. The surveys were undertaken in line with methods set out in the Water Vole Conservation Handbook⁴⁴ and Water Vole Mitigation Handbook⁴⁵ (Strachan et al, 2011). Each ditch was surveyed twice; once in late May and once in October 2016. The canal was surveyed in May 2017 and July 2017 and the survey was extended to the canal banks 200 m beyond the Site boundaries. Both banks of the ditches and canal were surveyed for signs of water vole such as latrines, feeding stations/lawns, droppings, burrows and prints and in accordance with best practice guidance. In addition, observations in relation to habitat suitability, value and likely sources of disturbance were recorded.

Limitations

4.8.3 Although October is generally considered to be outside the optimal survey season (except in southeast England), the October 2016 survey was considered to be valid due to the preceding good, stable and mild weather experienced in the survey area. It was noted that surface water levels throughout the Site varied considerably based on rainfall during midsummer, therefore field signs from early in the breeding season may have been washed away throughout the summer following heavy rainfall and not been evident during the October 2016 survey.

Strachan R, Moorhouse T, Gelling M. 2011. Water Vole Conservation Handbook. 3rd edition. Wildlife Conservation Research Unit: Oxford

Dean M, Strachan R, Gow D, Andrews R. 2016. The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series). Eds. Fiona Mathews and Paul Chanin. The Mammal Society, London



Desk Study

- 4.8.4 SERC provided a record of water vole (*Arvicola terrestris*) on the Site's northern boundary from 1998. This record was accurate to a 100m grid square (i.e. a six figure OS grid reference was provided), and was noted as located in Gailey Wharf, which is at the intersection of the Staffordshire and Worcestershire Canal and the A5 main road. SERC hold an additional four records within 2 km of the Site. These date from 1997 to 2002 with location details given as Coven, Staffordshire and Worcestershire Canal and River Penk all locations apart from Coven are approximately 500 m to 2 km north of the site.
- 4.8.5 Coven is approximately 2.5 km south of the site and close to the Staffordshire and Worcestershire Canal. The Coven general area is also identified as water vole alert area (an area of water vole presence/potential dispersal identified as part the National Water Vole Database and Mapping project)⁴⁶ and local key area (area for which the alert area is more than 6km²).
- Hall The American mink (*Neovison vison*) is a non-native predator of water vole. Between 1989 and 1998, following the spread of American mink, the population of water vole fell by almost 90%⁴⁷. American mink has been recorded as present within the region of the Site (within 10km grid square) in the last 10 years⁴⁸.

Results

- 4.8.7 The findings of the water vole surveys on ditches are presented in Table 4.54 below. No evidence of water vole presence was observed within any of the ditches surveyed. Feeding stations from a vole species were found on three of the four ditches (TN6, TN7 and TN8). No conclusive field signs for water vole such as water vole burrows, droppings/latrines, prints and/or lawns were identified. Small burrows (approximately 2 cm diameter: too small for water vole), small droppings and short lengths (relative to those typically encountered for water vole) of chewed vegetation forming the feeding stations were recorded. These feeding signs were considered to be attributed to field vole (*Microtus agrestis*).
- Two of the ditches showed signs of existing human influence (other than management): the TN7 ditch is adjacent to the A5 layby, this was well-used

McGuire, C, Whitfield D, Perkins H and Owen C. (2014) National Water Vole Database and Mapping Project. Guide to the Use of Project Outputs to End of 2012

⁴⁷ People's Trust for Endangered Species (PTES) Water Vole [online] Available at: https://ptes.org/get-informed/facts-figures/water-vole/ [Accessed 04/11/16]

McGuire C, Whitfield D, Perkins H and Owen C. (2014) National Water Vole Database and Mapping Project. Guide to the Use of Project Outputs to End of 2012



by lorry drivers and had evidence of eutrophication and large numbers of bottles/cans in the water and on the banksides. The TN12 ditch runs between the A449 and the Four Ashes Industrial Estate, this ditch held approximately 5 cm of water had an oily film on the surface of the water and a smell of petrochemicals. Rats (likely brown rat (*Rattus norvegicus*)) and voles (likely field voles) were directly observed in this ditch.

4.8.9 The remaining two ditches were found to be partly or wholly dry later in the season after holding small amounts on water in May (the TN6 and TN8 ditches). The TN6 ditch runs south from the A5 on the northern boundary of the Site and is bounded by arable fields with significant scrub and vegetation grown on the ditch. It was found to have vole feeding signs (not considered to be water vole). TN8 runs east from the railway along arable field boundaries. The ditch comprised grasses, ruderal vegetation, scrub and trees. Small mammal feeding signs were found but were considered to be attributed to bank vole (*Myodes glareolus*).

Table 4.54: Water Vole Survey Findings for Ditches

Ditch	TN6	. LINT	TN8	TN12
Survey dates	20/05/2016 and 20/10/2016	26/05/2016 and 20/10/2016	20/05/2016 and 20/10/2016	26/05/2016 and 20/10/2016
Description	 Ditch with earth banks Bare earth, bankside trees and short grass present. Tall ruderal vegetation and scrub growth in ditch by October No aquatic vegetation Adjacent land use of arable crop Banks sides steep Water static. Level of disturbance low to medium Water depth 3 cm Water depth 3 cm DRY DURING OCTOBER SURVEY 	 Ditch with earth banks Herbs and tall grass present Aquatic marginal present Adjacent land use of arable crop and trunk road (including lorry layby) Banks sides steep Water static Level of disturbance high, significant litter in ditch Water depth 1 m 	Ditch with earth banks Herbs, bankside trees, shrubs, short and tall grass present No aquatic vegetation Adjacent land use of arable crop Banks sides steep in places (mostly shallow banks) Water static Level of disturbance low to medium Water depth 1 cm to 3 cm DRY DURING OCTOBER SURVEY	 Ditch with earth banks Bare earth, herbs, bankside trees and shrubs present. No aquatic vegetation Adjacent land use of arable crop, gardens and grassland Banks sides steep to vertical Water flow slow Level of disturbance low to medium Water depth 5 cm
Image				
Observations	Evidence of vole species feeding stations – small cut lengths not consistent with water vole. Small burrows and bolt-holes (approximately 2 cm diameter). No latrines, lawns.	100% duckweed cover (likely Lemna sp.), also litter from layby. Smell of urine. Culverted under access tracks. Typha sp and reeds to the western end. Small vole holes and grass grazing- cut at 90°. Small feeding stations. No latrines.	Water approximately 1 cm to 3 cm Poor water quality (oily film, smell deep. Some parts completely dry. of petrochemicals), approximately Small mammal feeding signs, not 5 cm depth. Burrows of rat, rabbit characteristic of water vole. No and bank vole present. Rat and latrines.	Poor water quality (oily film, smell of petrochemicals), approximately 5 cm depth. Burrows of rat, rabbit and bank vole present. Rat and bank vole sightings.
Presence / likely absence	Likely absence of water vole	Likely absence of water vole	Likely absence of water vole	Likely absence of water vole

- 4.8.10 Three of the four ditches were found to hold shallow depths of water (<5 cm) at the time of survey. This has implications for water vole's predator avoidance but does not preclude water vole presence. Only the ditch adjacent to the A5 road (at TN7) was found to have water depths of more than 5 cm throughout both survey visits. This ditch is largely within an area of high disturbance with strong human influence.
- 4.8.11 The ponds on-site were considered sub-optimal for water vole, no field signs were identified during any surveys (for instance the amphibian surveys) and this species is considered absent from ponds present on-site.
- 4.8.12 Of the 3.5 km of canal surveyed, approximately 85-90% comprised intact engineered banks with steep, sheet-piled sides (occasional degraded parts of the bank were present and were inspected for water vole field signs). The remaining 10-15% had at least one bank that had 'soft edges'. The most naturalised part of the canal corridor surveyed was off-site (200 m stretch north of the A5). A 400 m stretch of the canal is adjacent to the Bericote land and the chemical works. The western bank which included the canal tow path comprised amenity grassland. Small areas of 'soft bank' ' were identified however these areas were mainly due to erosion behind (and degradation of) the sheet piles, which allowed water ingress and access to soil substrate being retained. This was largely evident south of the bridge for Vicarage Road.
- 4.8.13 Large rodent droppings were observed adjacent to the chemical works on both surveys in 2017, however, these were not present as a typical latrine, were large and not consistent with water vole droppings. The presence of a dead brown rat nearby and the size and form of the droppings indicated that droppings were likely to be attributed to the rat population. No water vole latrines, lawns or other feeding signs were evident during the survey of the canal
- 4.8.14 Water Voles are considered to be likely absent from the Site. Despite the current human influences on the ditches and the seasonal drying of parts of these, the potential for the ditches to support water vole persists due to the suitable feeding resource. However, many of the ditches have shallow water (<5 cm depths) during the summer and therefore provide limited defence from predators for water voles. Additionally, the presence of water vole in the wider landscape, and therefore potential connectivity to a current population, is undetermined. The potential connectivity to water vole populations outside the Site is also limited due to the presence of culverts under roads (i.e. the M6, the A5 and the A449) which present a partial or complete barrier to movement to ditches offsite. The most recent record in the study area was in 2002 and the key predator, American mink, has been present in the region (10 km grid square) since this time.

Valuation Summary

4.8.15 Water vole are considered absent from the Site based on 2016 and 2017 survey findings and therefore are not a receptor considered in the impact assessment.

4.9 European Otter

Legislation

- 4.9.1 The primary legislative mechanism for the protection of otters (*Lutra lutra*) is its designation as a European Protected Species (EPS). All EPS are protected under the WCA 1981 and the Habitat Regulations. Under this legislation it is illegal to:
 - Intentionally or deliberately capture, kill or injure EPS;
 - Intentionally, deliberately or recklessly damage, destroy or obstruct access to any place used for shelter or protection including resting and breeding places, whether occupied or not; and
 - Deliberately, intentionally or recklessly disturb listed species when in a place of shelter (and elsewhere for European protected species).
- 4.9.2 The European otter is a near threatened priority species, included within the following designations:
 - Bern Convention, Appendix 2;
 - EC Cites, Annex A:
 - Habitats Directive, Annex 2 and Annex 4;
 - Biodiversity Lists England NERC s41;
 - The Conservation of Habitats and Species Regulations 2017, Schedule 2:
 - Global Red list status Near Threatened
 - Biodiversity Action Plan UK list of priority species;
 - Wildlife and Countryside Act 1981, Schedule 5 Sections 9.4b, c and 9.5a; and
 - Staffordshire Biodiversity Action Plan.

Methodology

4.9.3 Otter surveys were carried out in four ditches on the Site and on the Staffordshire and Worcestershire Canal at the same time as water vole surveys (see section water vole section 4.8) the location of the ditches is shown by TN 6, TN 7, TN 8 and TN 12 on Figure 10.1.002), and otter field signs were searched for at ponds on-site. Each ditch was surveyed twice; once in late May and once in October 2016. The canal was surveyed in May

Roos A, Loy A, de Silva P, Hajkova P & Zemanová B. (2015) Lutra lutra. The IUCN Red List of Threatened Species 2015:
 e.T12419A21935287. http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T12419A21935287.en. Downloaded on 13 December 2016

2017 and July 2017 and the survey was extended to the canal banks 200 m beyond the site boundaries. Both banks of the canal and ditches were surveyed for signs of otter such as holts, spraints, feeding remains and prints and in accordance with best practice guidance. In addition, observations in relation to habitat suitability, value and likely sources of disturbance were recorded. Infra-red camera traps were deployed, monthly on-site from July to September 2017. The locations of the cameras were primarily focused on suitable polecat habitat (see section 4.10) but the footage was analysed for records of otter also – the deployment locations are shown in Figure 10.1.901.

Limitations

No limitations to survey are noted.

Desk Study

- SERC provided ten records of otter on the Staffordshire and Worcestershire Canal, six of which may be considered within or directly adjacent to the Site. These records were from between 2004 and 2014. A further 20 records of otter presence were within 2 km of the Site, the records were made from 1996 to 2013 and comprise field signs, road fatalities or unspecified observations (i.e. no direct, live sightings). The records indicate that otters are present in the Staffordshire and Worcestershire Canal, the River Penk, and Saredon Brook (at Standeford and Deepmore Farm, 500 m to 600 m south of the Site). The road fatalities occurred on the A449, approximately 850 m north of the Site, and on Four Ashes Road (Brewood), approximately 1.9 km west of the Site, near the River Penk. These were recorded in September 2013 and October 2005 respectively. Staffordshire Wildlife Trust provided records of otter field signs from a survey of Wryley-Saredon Brook undertaken on 22 May 2017. These included nine otter spraints (1 fesh, 2 recent and 6 old). These were recorded at SJ 91763 07827 located approximately 750m to the south of the Site at its closest point.
- 4.9.5 Five national Otter surveys of England have been conducted by the Environment Agency since 1977. The most recent of these covered the period 2009-10⁵⁰. The survey found that of all the 3,327 sites surveyed across England, 1,874 showed signs of otter presence (i.e. 56%). A 50 km grid square covering the Site was surveyed (OS grid square 'SJ s/e'), this area included 148 survey sites, of which 93 (62.8%) had positive signs of otter presence. The long term observations indicate that the region's otter population is increasing and expanding its range, as 0% of sites surveyed had otter presence in 1977 to 1979 and 47.9% of the sites had otter presence in 2000 to 2002.

⁵⁰ Andrew Crawford (Environment Agency) (2010) Fifth otter survey of England 2009 – 2010. Technical report, October 2010

4.9.6 Harris et al (1995)⁵¹ estimated the density of otters in England as one adult per 27 linear km of river, which would allow for a single otter to affect the district-wide distribution if it experienced a change in its home range.

Results

- 4.9.7 The broad-leaved woodland habitat on-site that adjoin the canal are suitable for otter resting up, although the hard engineered sides that have been constructed throughout most of the canal potentially reduce the amount of access for otters into the adjacent areas.
- 4.9.8 No otter holts were identified during Phase 1 Habitat Survey of the Site. Inspections of the Gravelly Way road bridge and the Gravelly Way footbridge were undertaken monthly from May to October 2016 (following bat activity transects) and identified staining possibly caused by spraint in May (no other indicators such as smell or prey remnants were present due to the apparent age and weathering of the field sign), with no fresh signs for the following months. An otter footprint was observed in the very north of the Site during the badger survey; it was by the ditch south of the A5, approximately 100 m east of the Staffordshire and Worcestershire canal in March 2017. The canal was subjected to full survey in 2017 and no tracks, slides, feeding remains or spraint were observed. The Canal and River Trust confirmed that the Staffordshire and Worcestershire Canal provides important habitat for otter, therefore they are assumed to be present. It is considered canal forms part of an otter territory, and otters are likely to use the stretch of canal that passes through the Site, using the terrestrial parts of the Site on occasion.

Valuation Summary

- 4.9.9 Otters are a near threatened priority species but with an increasing population. The habitats that support the species at the Site are common and widespread. The animals within the Site are well within their known range and have good connectivity to offsite areas of similar habitat, but due to the relatively low density of otters in English watercourses, any otter(s) that may be present within the Site has potential to influence distribution at a District scale.
- 4.9.10 Otters are considered to be of value at the District scale and are to be considered as an 'Important Ecological Feature' within the EIA.

West Midlands Interchange

⁵¹ Harris S, Morris P, Wray S and Yalden D. 1995. A review of British mammals: population estimates and conservation status of British mammals other than cetaceans. Joint Nature Conservation Committee, Peterborough, UK

4.10 Other Notable Mammals

Legislation

- 4.10.1 This section addresses other mammal species that are of note due to their protection under legislative or policy drivers. The legislation and policy relevant to each species is listed below.
- 4.10.2 Brown hare (*Lepus europaeus*): is a Priority species included within the following designations and lists:
 - Biodiversity Lists England NERC s41;
 - · Biodiversity Action Plan UK list of priority species; and
 - Staffordshire Biodiversity Action Plan.
- 4.10.3 Polecat (*Mustela putorius*): is Priority species included within the following designations and lists:
 - Bern Convention, Appendix 3;
 - Habitats Directive, Annex 5;
 - The Conservation of Habitats and Species Regulations 2017, Schedule 4 (animals that must not be captured or killed in certain ways);
 - Wildlife and Countryside Act 1981 (as amended) Schedule 6;
 - Global Red list status Least concern; Biodiversity Lists England NERC s41; and
 - Biodiversity Action Plan UK list of priority species.
- 4.10.4 West European hedgehog (*Erinaceus europaeus*): is a Priority species included within the following designations and lists:
 - Bern Convention, Appendix 3;
 - Global Red list status Least concern; Biodiversity Lists England NERC s41; and
 - Biodiversity Action Plan UK list of priority species.
- 4.10.5 Harvest mouse (*Micromys minutus*): is a Priority species included within the following designations and lists:
 - Biodiversity Lists England NERC s41; and
 - Biodiversity Action Plan UK list of priority species.

Methodology

4.10.6 Surveys for mammal species comprised the deployment of three infra-red camera traps across the site, primarily focussing on areas of habitat suitable for polecat. These were deployed in the late summer period, when the young

polecat would have dispersed and the number of active individuals is at its peak. The three cameras were therefore deployed monthly from July to September 2017. The monthly locations of the cameras are shown on Figure 10.1.901.

4.10.7 Direct observation or field sign surveys for the mammals mentioned in Paragraphs 4.10.1 to 4.10.5 were not undertaken. Any observations of the mammals were noted by ecologists during the regular ecological monitoring surveys that have been undertaken on the Site in 2016 and 2017. These included nocturnal surveys that may reasonably be expected to record hedgehog and hare if present in surveyed areas, e.g. around the monitored ponds and throughout approximately 30 km of the Site walked for bat transect surveys that have been undertaken monthly from May to October in 2016 and 2017. Any notable mammals were also recorded during daytime surveys such as the reptile surveys, badger survey and bird surveys. These surveys were not reasonably expected to encounter harvest mice or polecat due to the small, unobtrusive size and the low density within their range respectively.

Limitations

4.10.8 Specific surveys for brown hare, hedgehog and harvest mouse were not undertaken; however, over 300 hours of field observations were documented. Therefore, the likelihood of encounter of species such as brown hare and hedgehog were considered to be high. The surveys were not considered suitable for encountering harvest mice.

Desk Study

- 4.10.9 Brown hare: brown hares are widespread in the lowlands of England, Wales and Scotland⁵². SERC provided 12 records of hare within 2km of the Site ranging from 2001 to 2010. Many of the records are accurate to 10km grid squares only, but locational information indicates that no records have been made within the Site; the closest record is 1km north of the Site boundary. Despite cereal crops forming part of brown hares' diet (along with other tender grass shoots), modern farming is known to cause threats to brown hares, as arable crops provide little or no food in late summer/autumn and modern machinery and pesticides may kill hares. The status of brown hares in Staffordshire has been classed as 'very common'⁵³.
- 4.10.10 Polecat: SERC provided nine records of polecat within the study area, dating from 2001 to 2012. All records relate to animals dead on a road. Five of the records relate to the A449 and three relate to the A5 (the remaining record is missing accurate location data). One record from 2007 is for the A5 on the

⁵² The Mammal Society (2016) Brown Hare – *Lepus europaeus*. [online Available at: http://www.mammal.org.uk/species-hub/full-species-hub/full-species-hub/full-species-hub/full-species-brown-hare/ [Accessed 12/12/2015].

⁵³ Staffordshire Ecological Record (2014) The Mammals of Staffordshire by Staffordshire Mammal Group. Data last updated: March 2014

northern boundary of the Site – two additional records from 2001 and 2009 have potential to overlap the southwest of the Site (but the exact location is uncertain due to generalised coordinate data). A national polecat survey was undertaken in 2014 to 2015⁵⁴. A total of 1,761 records of polecats and polecat-ferrets were collected from mainland Britain in two years. The study confirmed that polecats are maintaining their historical stronghold (including the West Midlands) and have increased their range substantially in the southeast of Britain: polecats are now more widespread in Britain than at any time in the last 100 years. The status of polecat in Staffordshire has been classed as 'frequent'⁵⁵.

- 4.10.11 Polecat territories vary in size depending on the habitat and food availability. Male territories vary from 16 ha to 500 ha and females vary from 25 ha to 375 ha⁵⁶. Due to presence of the preferred habitats (farmlands, hedgerows and small woods) and the abundance of preferred prey species (rabbits and rats) throughout the Site and the adjacent areas, the landscape is considered to have a higher carrying capacity. The local polecat population is therefore considered to be resilient and have more dense territories throughout the Site and wider landscape.
- 4.10.1 Hedgehog: SERC provided 31 records of European hedgehog within a 2 km radius of the Site, ranging from 1999 to 2015. The closest record being 10 m to the north of the assessment area along the A5 road corridor. Rural populations of hedgehogs halved between 2000 and 2015⁵⁷. The relative hedgehog abundance in the West Midlands is estimated to be approximately 0.6 when compared to the mean abundances across England (where 0 is lowest mean abundance in England and 1 is the highest mean relative abundances of hedgehog are generally in the East of England, with those in the region of the Site being mid-to-low relative to the nation. The status of hedgehogs in Staffordshire has been classed as 'common but declining'⁵⁵; such is the case for many areas across the country.
- 4.10.2 Harvest mouse: SERC provided seven records of harvest mouse within a 2 km radius of the Site, ranging from 2004 to 2010. All records are from 1 km to the north of the Site. The British distribution of harvest mouse is generally south of a line between the Bristol Channel to the Humber, with an extension northwards to Yorkshire. The density of harvest mice in cereal fields is typically 0.05-0.4 individuals per ha⁵⁸. Harvest mice have been recorded throughout Staffordshire, but no records have been made within

Croose E. (2016) The Distribution and Status of the Polecat (Mustela putorius) in Britain 2014-2015. 7 April 2016.

⁵⁵ Staffordshire Ecological Record (2014) The Mammals of Staffordshire by Staffordshire Mammal Group. Data last updated: March 2014

The Mammal Society (2016) Species Factsheet: Polecat (Mustela putorius). [online] Available at: http://www.mammal.org.uk/sites/default/files/factsheets/polecat_complete.pdf [Accessed 19/12/2016]

⁵⁷ Wembridge D and Langston S (2015) The State of Britain's Hedgehogs 2015. People's Trust for Endangered Species/British Hedgehog Preservation Society, London

⁵⁸ Macdonald D W & Tattersall F. (2001) Britain's Mammals: The Challenge for Conservation. People's Trust for Endangered Species, London

the 2 km grid squares covering the Site, or the adjacent 2km grid squares, in the last sixyears⁵⁵.

Results

4.10.3 The results from analysis of camera trap footage are displayed in Table 4.55. Only results for notable mammals are presented. The results for specific species are presented in the paragraphs below. The camera that was deployed near the canal in the south of the Site in July recorded images of an unidentifiable nocturnal mammal moving within the undergrowth. This mammal was observed via reflection from its eyes, but the full outline of its form was not fully discernible. The mammal was considered larger than a brown rat (also caught on this camera trap) but is inconclusive.

Table 4.55: Infra-red Camera Trap Notable Mammal Observations

Trap	July	August	September
1	Calf Heath Wood Southern Wayleave	Woodland - Calf Heath Reservoir	Field boundary northeast of Gailey Magazine
	None	None	None
2	North Calf Heath Wood None	Woodland Straight Mile Two records of hedgehogs – separate evenings	Woodland off of A449 None
3	Woodland by Canal, South Unidentified nocturnal mammal – obscured by vegetation	Croft Lane Pond 5/6 None	Woodland off of Woodlands Lane None

4.10.4 Brown Hare: No brown hares were observed on site during the course of the regular ecological monitoring surveys that have been undertaken in 2016 and 2017. The farmland and pasture present within the Site are considered suitable habitat for brown hare and if a resident population of brown hare was present, it would be expected that this species would have been recorded by the ecological surveyors during the 2016 and 2017 monitoring. The linear features that surround and intercept the site (i.e. main roads, railway, canal) present partial boundaries to land mammals, which may hinder movement of any resident population in the wider landscape (no

- brown hares have been recorded within 2km) or across the entire site. It is concluded likely that brown hares are absent from the Site.
- 4.10.5 Polecat: a single polecat or ferret-polecat sighting was made outside the Site while ecologists were returning from great crested newt torch surveys at approximately 01:00 on 07 June 2016. The sighting was approximately 200m northeast of the Site, at the A5-M6 junction roundabout, and confirmed that polecat readily cross the A5, as the animal was seen to be running north across the road A5 west of the M6 junction roundabout. For the purpose of this baseline report and the subsequent EIA the sighting is assumed to be a polecat rather than a ferret-polecat as a precautionary measure. Polecat is a priority species but with an increasing population and an expanding range. The habitats that support these species at the Site (farmland and woodland) are common and widespread. It is likely that at least one polecat's territory overlaps with the Site, specifically the northeast section. The animal(s) within the Site are well within their known range have good connectivity to offsite areas of similar habitat.
- 4.10.6 Hedgehog: four hedgehog sightings were made across the site in total. Two of the hedgehog sightings were made within the Site during the night-time ecological surveys on the 16th May 2016 and 17th May 2016. The sightings were within 300m of each other on arable field boundaries between Croft Lane and the A5, in the central-northern section of the Site. The two remaining hedgehog sightings were made via the infra-red camera deployed in the Woodland by Straight Mile in August 2017 (Camera 2 August on Figure 10.1.901). This area is separated from the other sighting locations by the canal and roads. The mosaic of scrubby hedgerows, broadleaf woodland, field margins and grassland throughout the site are considered suitable foraging and hibernation habitat for hedgehogs. However, the arable farmland is less suitable and the movement from the area in which the hedgehog(s) were observed to the rest of the site is limited due to the canal to the east and south, and the railway to the west, as well as the A5 main road to the north. The population of hedgehogs on site is considered to be small, and within the species' core range.
- 4.10.7 Harvest Mouse: no harvest mouse field signs were observed during the course of the regular ecological monitoring surveys that have been undertaken. The regular ecological monitoring was not considered appropriate to determine likely absence of harvest mouse. The field margins, hedgerows and dry ditches, and cereal crops are considered suitable habitat for harvest mouse, though limited to narrow linear strips. Similar quality habitats are prevalent throughout the region, although those on Site are bounded by linear features such as roads, the railway and the canal which present significant boundaries to harvest mice and fragment the habitats on Site, lessening their value. Since the likely absence of harvest mice on Site cannot be ruled out, the species is assumed to be present. Due to the habitats on Site presenting similar or lesser value to those throughout the

region, it is considered that no significant concentrations of harvest mouse are likely to occur within the Site compared to the wider region and national range.

Valuation Summary

- 4.10.8 Brown hare are considered absent and are therefore not considered as a receptor in the EIA.
- 4.10.9 Polecat(s) are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.
- 4.10.10 Hedgehog(s) are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.
- 4.10.11 Harvest mice are considered to be of value at the Local scale and are to be considered as an 'Important Ecological Feature' within the EIA.

4.11 Summary of Species Valuation

4.11.1 The table below (Table 4.56) summarises the ecological value of the species receptors and notes whether they are important or other ecological features. Impacts on important ecological features are assessed in the EIA Ecology and Nature Conservation chapter.

Table 4.56: Summary of Species Valuations

Species	Geographic Value	'Important' or 'Other' Ecological Feature
Amphibians - GCN	Local	Important Ecological Feature
Amphibians – Common toad	Local	Important Ecological Feature
Amphibians – Smooth newt	Site	Other Ecological Feature
Amphibians – Common frog	Site	Other Ecological Feature
Reptiles	Absent	Not a Receptor
Other aquatic species – white clawed crayfish	County	Other Ecological Feature (Outside of zone of influence)
Other aquatic species – fish	Negligible	Other Ecological Feature
Birds	County	Important Ecological Feature
Invertebrates	Local	Important Ecological Feature
Bats	District	Important Ecological Feature
Badger	Local	Important Ecological Feature
Water Vole	Absent	Not a Receptor

Species	Geographic Value	'Important' or 'Other' Ecological Feature
Otter	District	Important Ecological Feature
Other mammals – Brown hare	Absent	Not a Receptor
Other mammals –Polecat	Local	Important Ecological Feature
Other mammals – Hedgehog	Local	Important Ecological Feature
Other mammals – Harvest mice	Local	Important Ecological Feature

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FIGURES

Appendix 10.1 Figures

Series 000: Location, Vegetation and Habitats

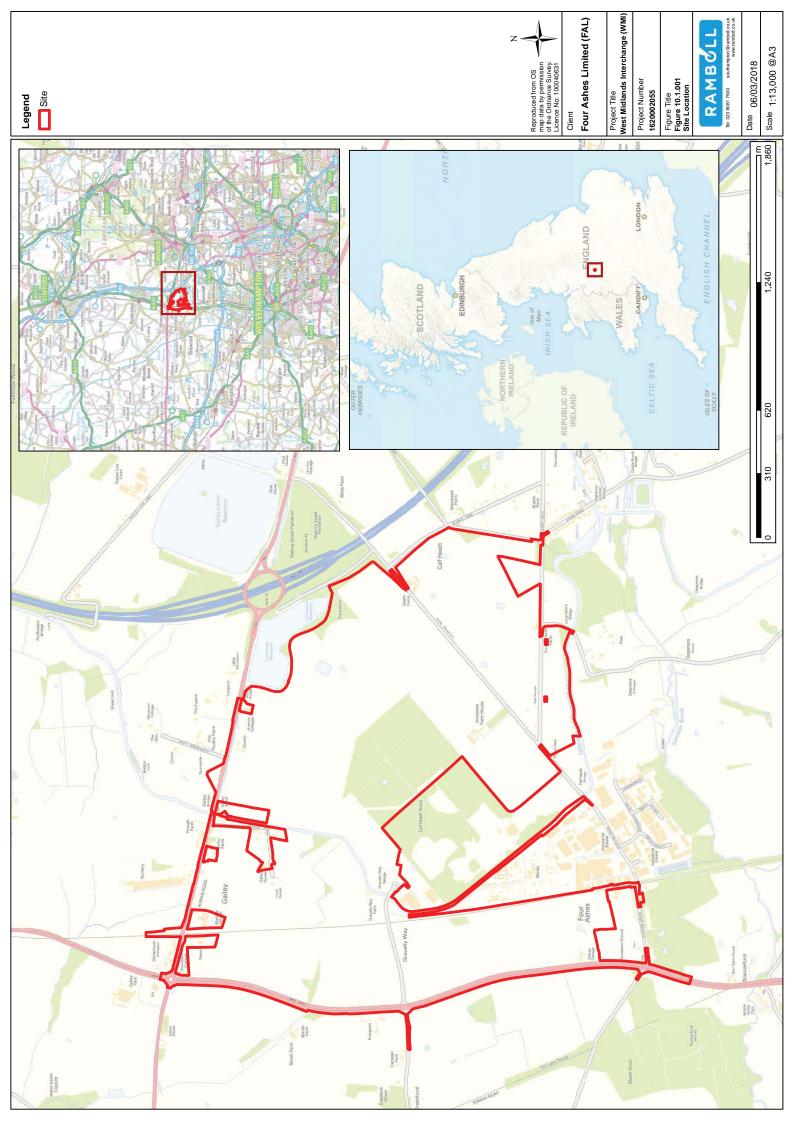
Series 100: Amphibians Series 200: Reptiles Series 300: Not used Series 400: Birds Series 500: Not used Series 600: Bats

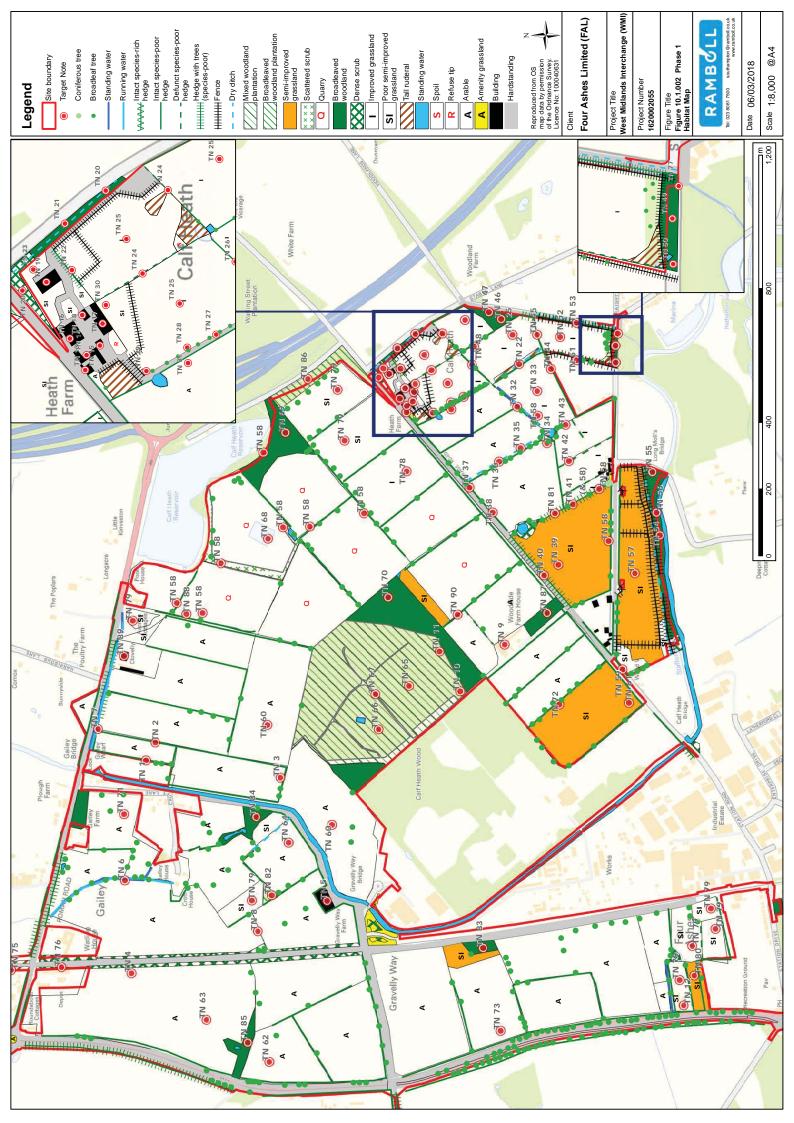
Series 700: Not used Series 800: Not used

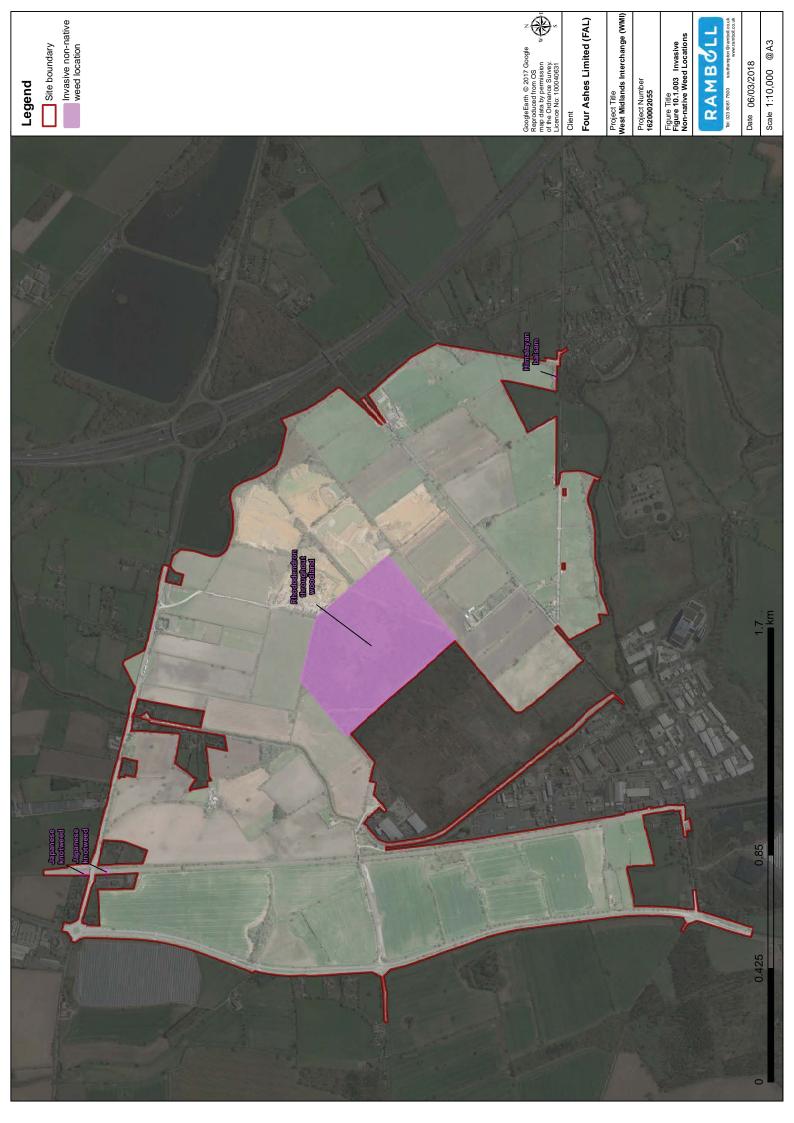
Series 900: Terrestrial Mammals (excluding badger)

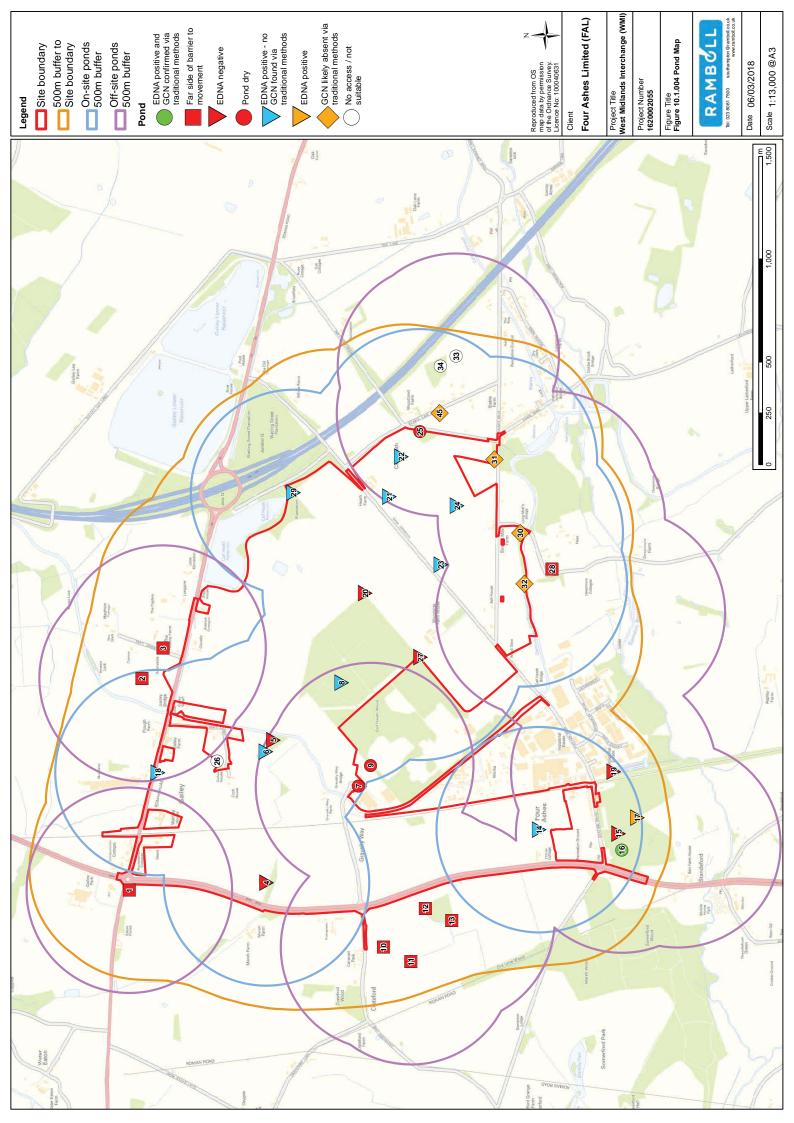
FIGURE SERIES 000: LOCATION, VEGETATION AND HABITATS

10.1.001	Site Location
10.1.002	Phase 1 Habitat Map
10.1.003	Invasive Plant Species
10.1.004	Pond Map
10.1.005	Veteran Trees and Important Hedrows Figure from Tree and Hedgerow Survey Report









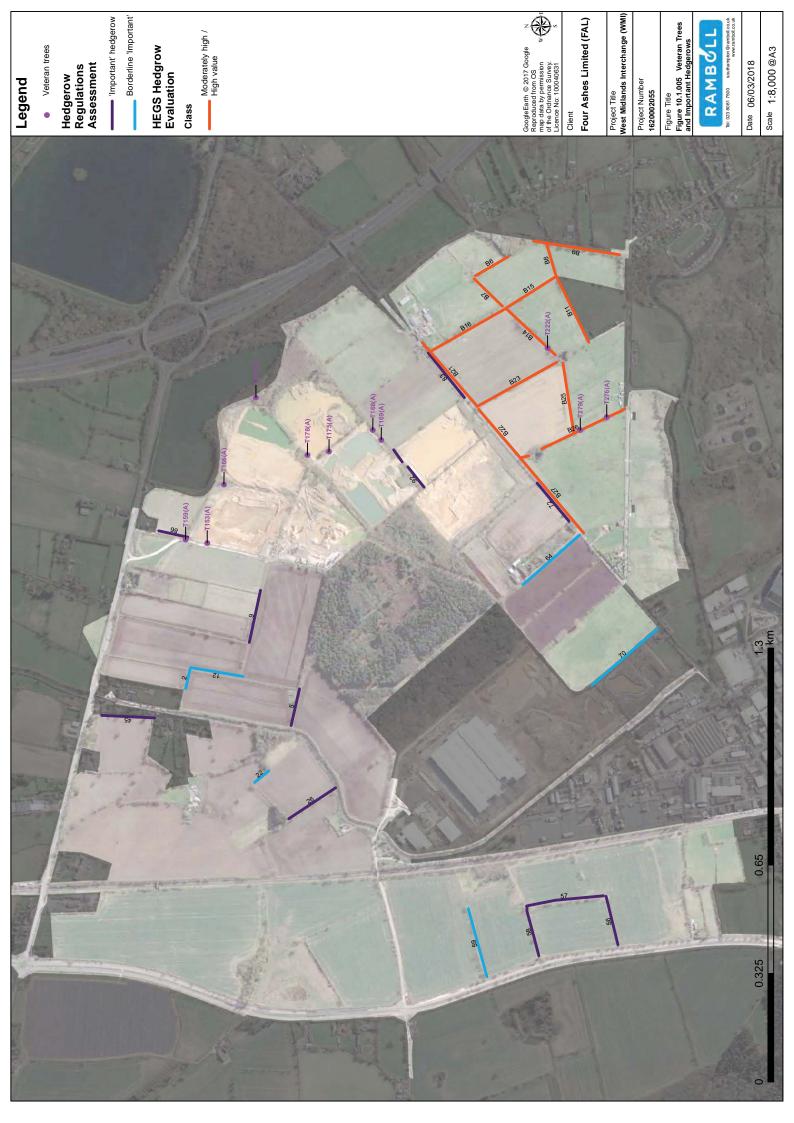


FIGURE SERIES 100: AMPHIBIANS

10.1.101 Amphibian Species in Ponds

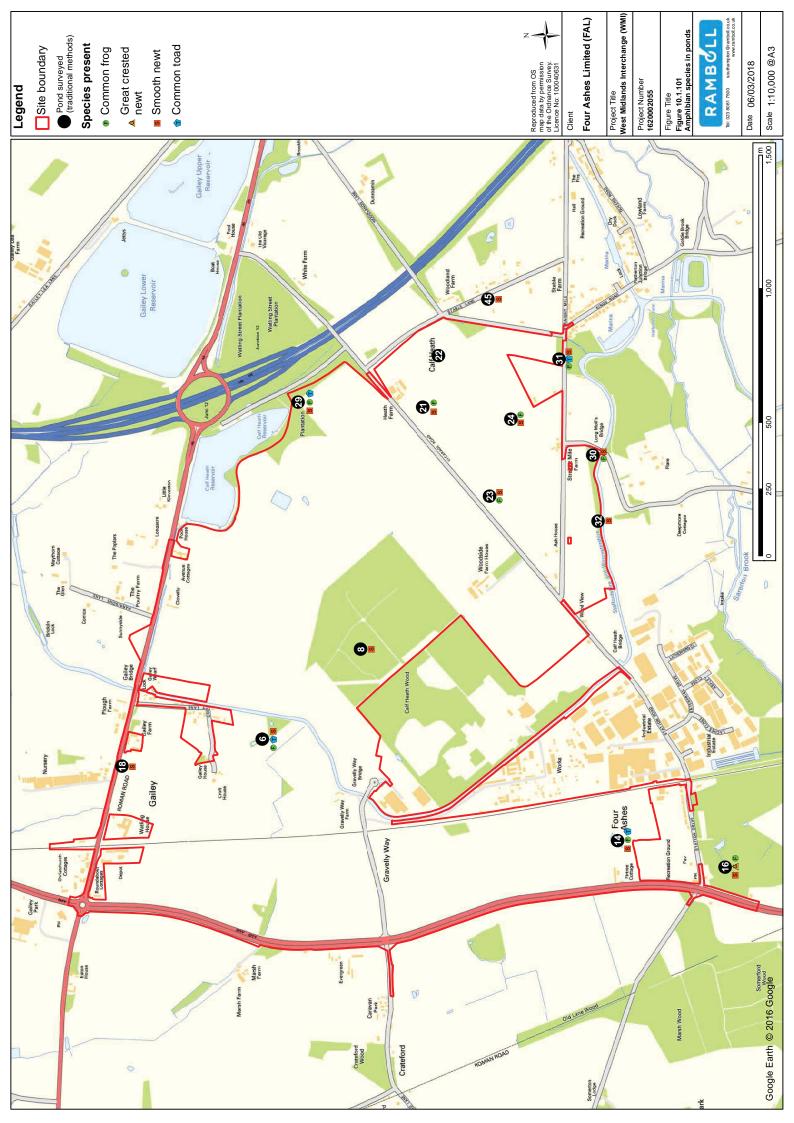


FIGURE SERIES 200: REPTILES

10.1.201 Reptile Refugia

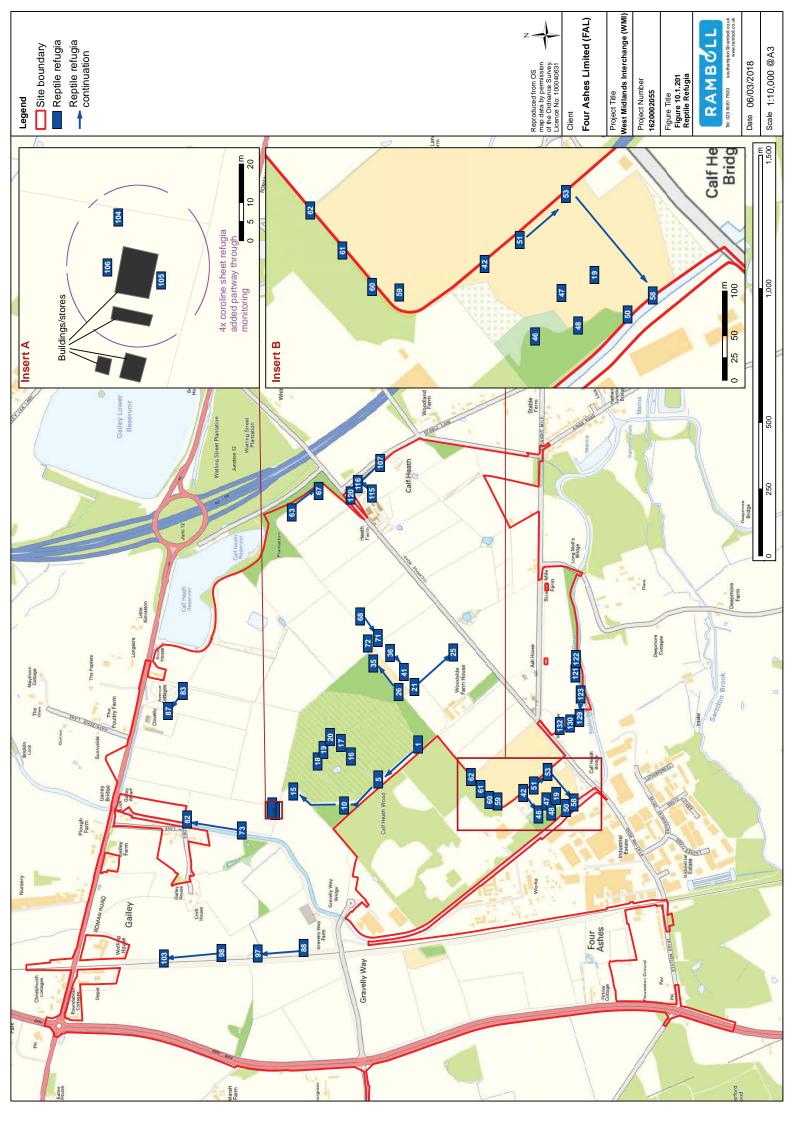
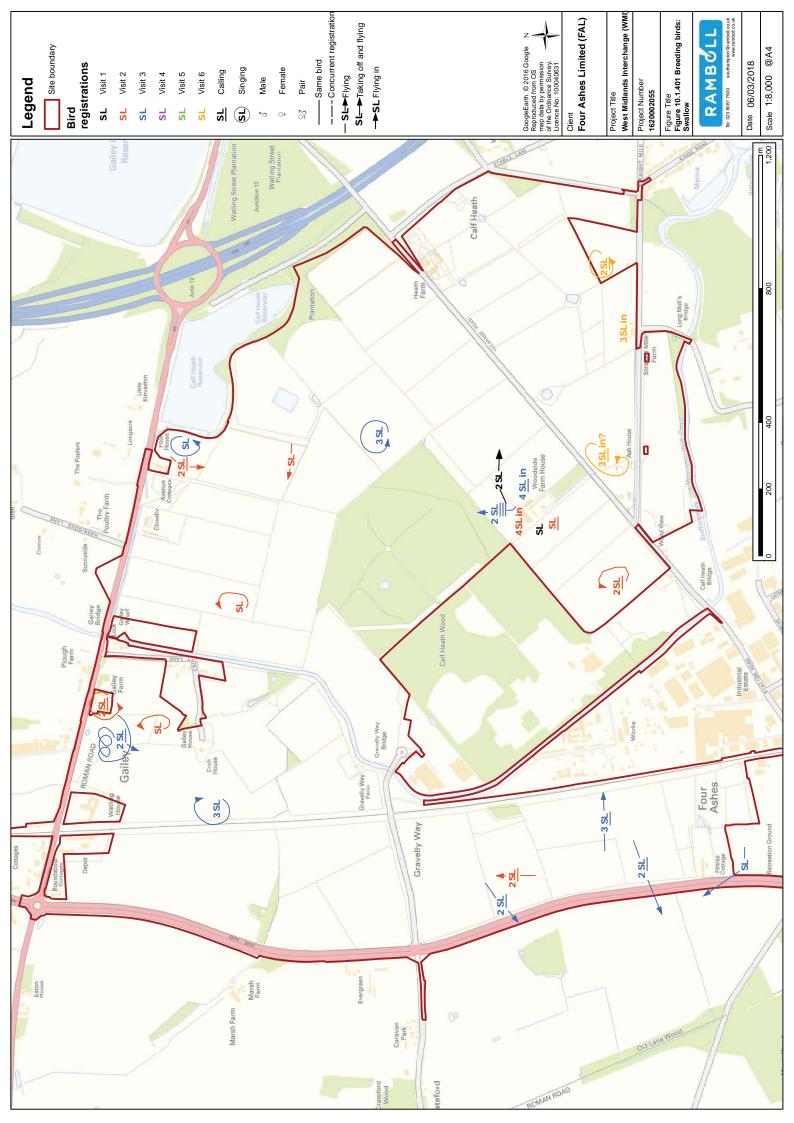
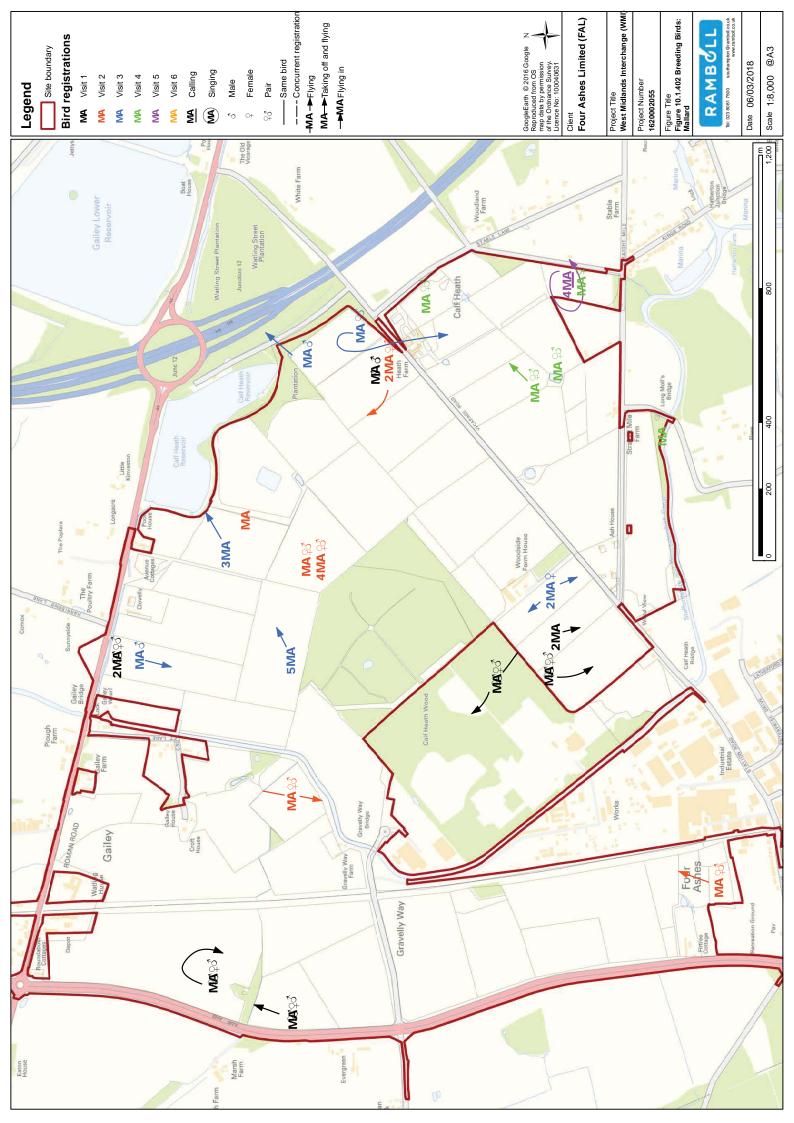


FIGURE SERIES 400: BIRDS

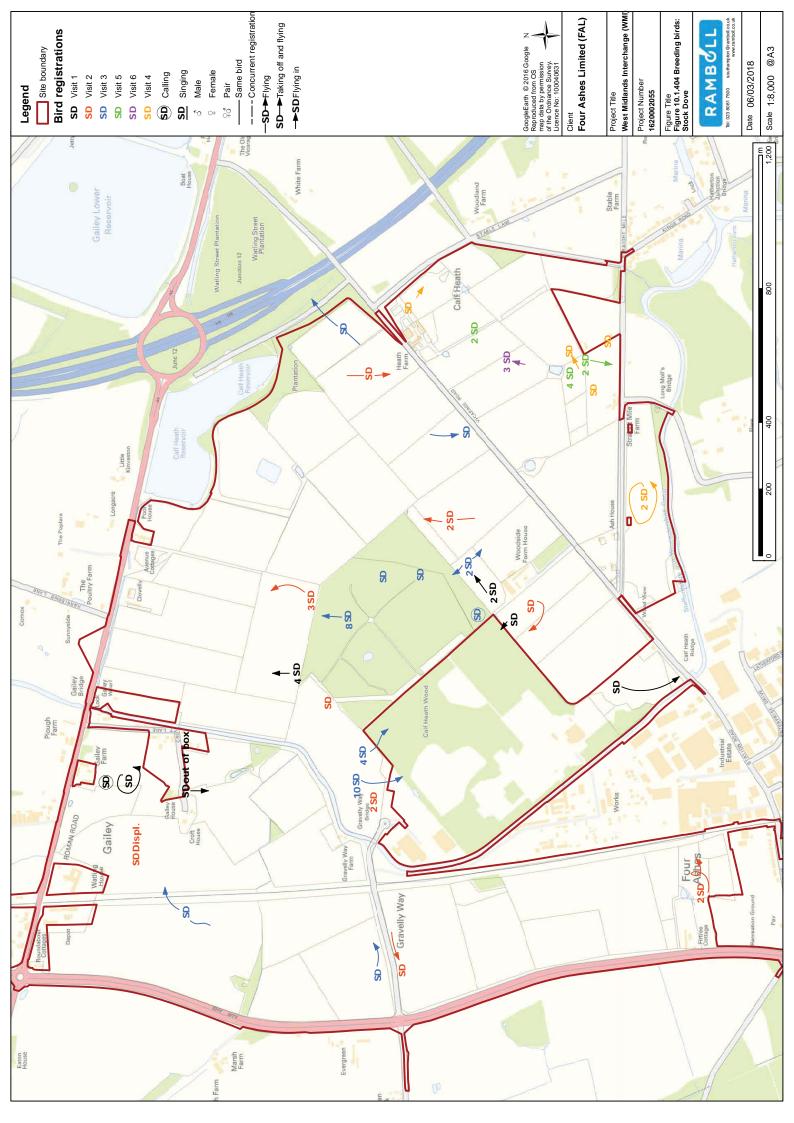
10.1.401	Breeding Birds: Swallow
10.1.402	Breeding Birds: Mallard
10.1.403	Breeding Birds: Lesser Black-Backed Gull
10.1.404	Breeding Birds: Stock Dove
10.1.405	Breeding Birds: Cuckoo, Tawny Owl, Little Owl and Barn Owl
10.1.406	Breeding Birds: Waterbirds
10.1.407	Breeding Birds: Skylark
10.1.408	Breeding Birds: Song Thrush and Mistle Thrush
10.1.409	Breeding Birds: House Sparrow
10.1.410	Breeding Birds: Yellow Wagtail
10.1.411	Breeding Birds: Lapwing
10.1.412	Breeding Birds: Yellowhammer
10.1.413	Breeding Birds: Starling
10.1.414	Breeding Birds: Bullfinch & Reed Bunting Various
10.1.415	Breeding Birds: Dunnock
10.1.416	Breeding Birds: Willow Warbler
10.1.417	Breeding Birds: Linnet
10.1.418	Breeding Birds: Calf Heath Reservoir - Kingfisher, Oystercatcher and Hobby
10.1.419	Breeding Birds: Calf Heath Reservoir - Mallard
10.1.420	Breeding Birds: Calf Heath Reservoir - Gulls and Terns
10.1.421	Breeding Birds: Calf Heath Reservoir – Other Waterbirds – Evidence of Nesting Birds in
	Suitable Habitat
10.1.422	Wintering Bird Distribution - Blackheaded gull
10.1.423	Wintering Bird Distribution - Bullfinch
10.1.424	Wintering Bird Distribution - Common gull
10.1.425	Wintering Bird Distribution - Dunnock
10.1.426	Wintering Bird Distribution - Fieldfare
10.1.427	Wintering Bird Distribution - Greylag
10.1.428	Wintering Bird Distribution - House sparrow
10.1.429	Wintering Bird Distribution - Lapwing
10.1.430	Wintering Bird Distribution - Lesser black-backed gull
10.1.431	Wintering Bird Distribution - Linnet
10.1.432	Wintering Bird Distribution - Mallard
10.1.433	Wintering Bird Distribution - Mistle thrush
10.1.434	Wintering Bird Distribution - Oystercathcer
10.1.435	Wintering Bird Distribution - Redwing
10.1.436	Wintering Bird Distribution - Reed bunting
10.1.437	Wintering Bird Distribution - Skylark
10.1.438	Wintering Bird Distribution - Song thrush
10.1.439	Wintering Bird Distribution - Starling
10.1.440	Wintering Bird Distribution: Calf Heath Reservoir - Blackheaded gull
10.1.441	Wintering Bird Distribution: Calf Heath Reservoir - Common gull
10.1.442	Wintering Bird Distribution: Calf Heath Reservoir - Fieldfare
10.1.443	Wintering Bird Distribution: Calf Heath Reservoir - Greylag
10.1.444	Wintering Bird Distribution: Calf Heath Reservoir - House sparrow
10.1.445	Wintering Bird Distribution: Calf Heath Reservoir - Kingfisher
10.1.446	Wintering Bird Distribution: Calf Heath Reservoir - Lesser black-backed gull
10.1.447	Wintering Bird Distribution: Calf Heath Reservoir - Linnet
10.1.448	Wintering Bird Distribution: Calf Heath Reservoir - Mallard
10.1.449	Wintering Bird Distribution: Calf Heath Reservoir - Mistle thrush
10.1.450	Wintering Bird Distribution: Calf Heath Reservoir - Oystercatcher

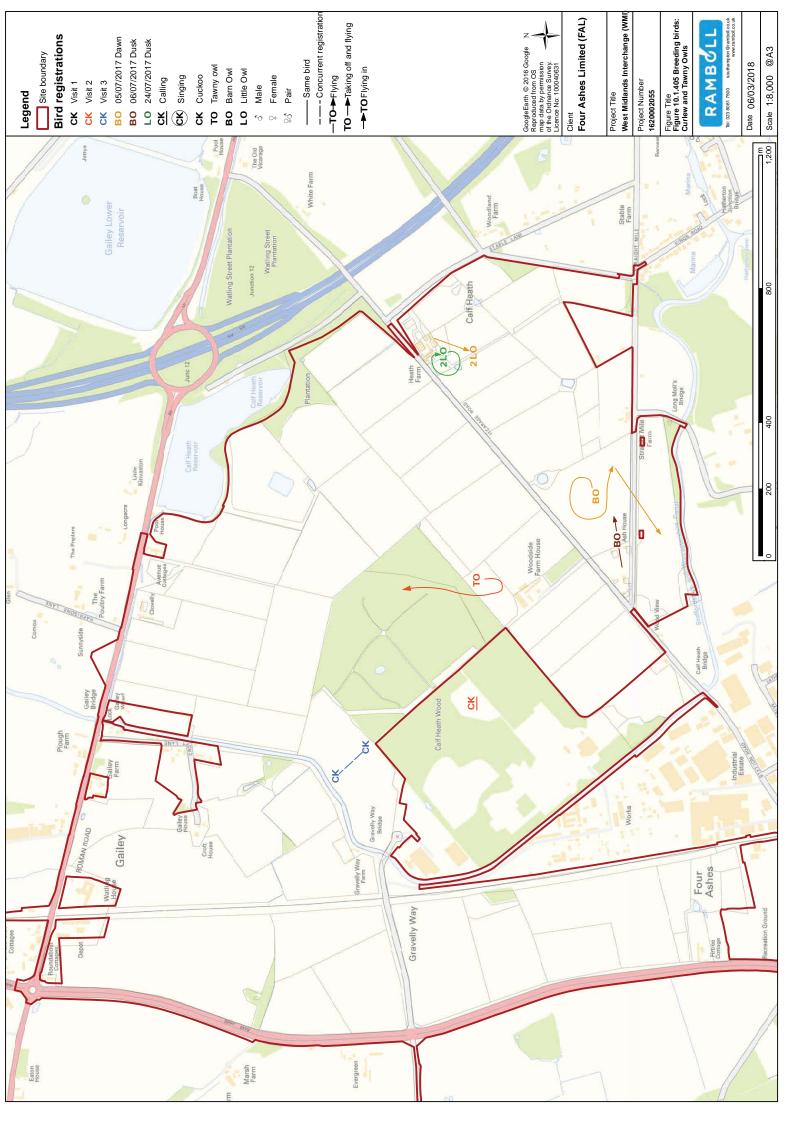
10.1.451	Wintering Bird Distribution: Calf Heath Reservoir - Song thrush
10.1.452	Wintering Bird Distribution: Calf Heath Reservoir - Starling
10.1.453	Wintering Bird Distribution: Gailey Reservoir - Black-headed gull
10.1.454	Wintering Bird Distribution: Gailey Reservoir - Common gull
10.1.455	Wintering Bird Distribution: Gailey Reservoir - Fieldfare
10.1.456	Wintering Bird Distribution: Gailey Reservoir - Greylag
10.1.457	Wintering Bird Distribution: Gailey Reservoir - Kestrel
10.1.458	Wintering Bird Distribution: Gailey Reservoir - Lapwing
10.1.459	Wintering Bird Distribution: Gailey Reservoir - Leser black-backed gull
10.1.460	Wintering Bird Distribution: Gailey Reservoir - Linnet
10.1.461	Wintering Bird Distribution: Gailey Reservoir - Mallard
10.1.462	Wintering Bird Distribution: Gailey Reservoir - Mediterranean gull
10.1.463	Wintering Bird Distribution: Gailey Reservoir - Mistle thrush
10.1.464	Wintering Bird Distribution: Gailey Reservoir - Mute swan
10.1.465	Wintering Bird Distribution: Gailey Reservoir - Oystercatcher
10.1.466	Wintering Bird Distribution: Gailey Reservoir - Pink-footed goose
10.1.467	Wintering Bird Distribution: Gailey Reservoir - Reed bunting
10.1.468	Wintering Bird Distribution: Gailey Reservoir - Skylark
10.1.469	Wintering Bird Distribution: Gailey Reservoir - Starling
10.1.470	Wintering Bird Distribution: Gailey Reservoir - Whooper swan

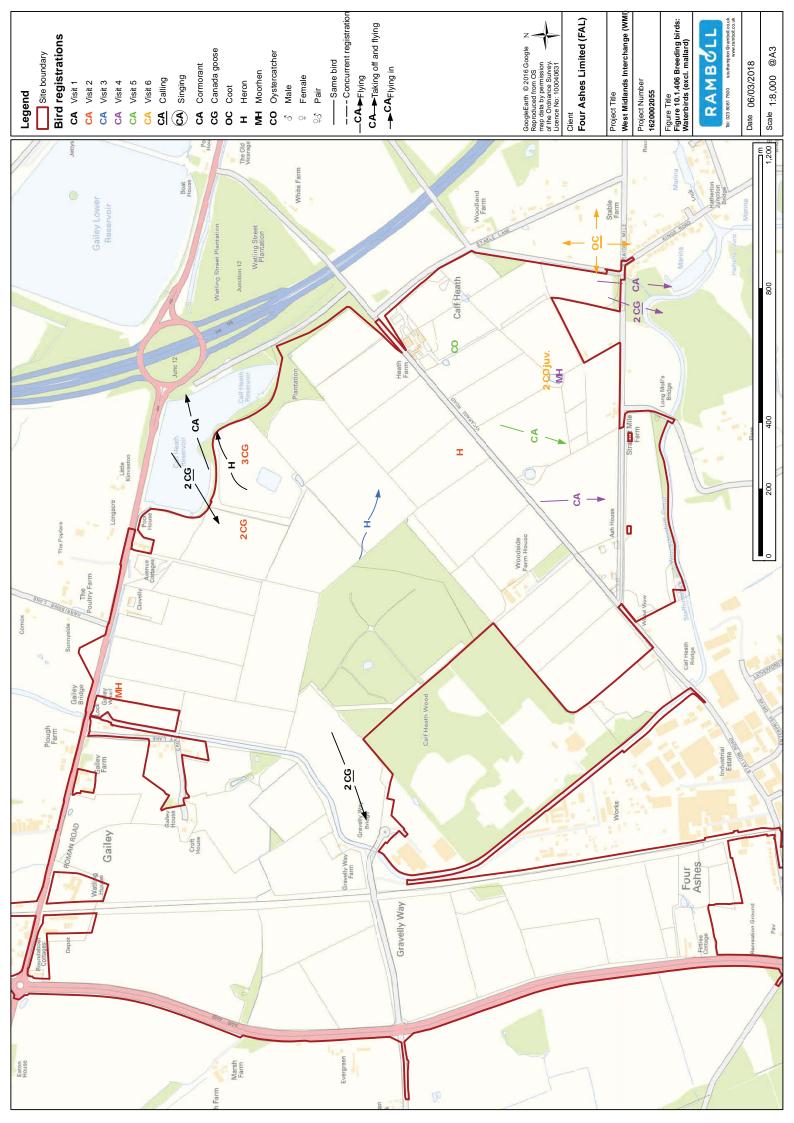


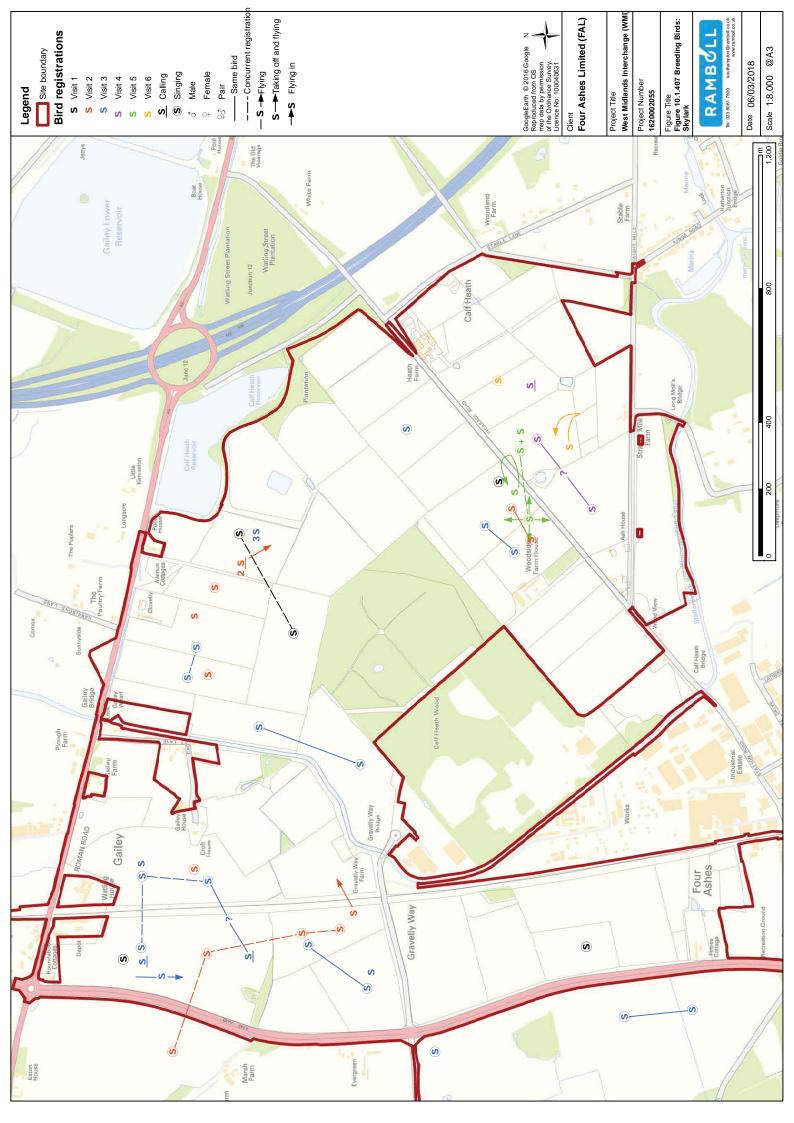


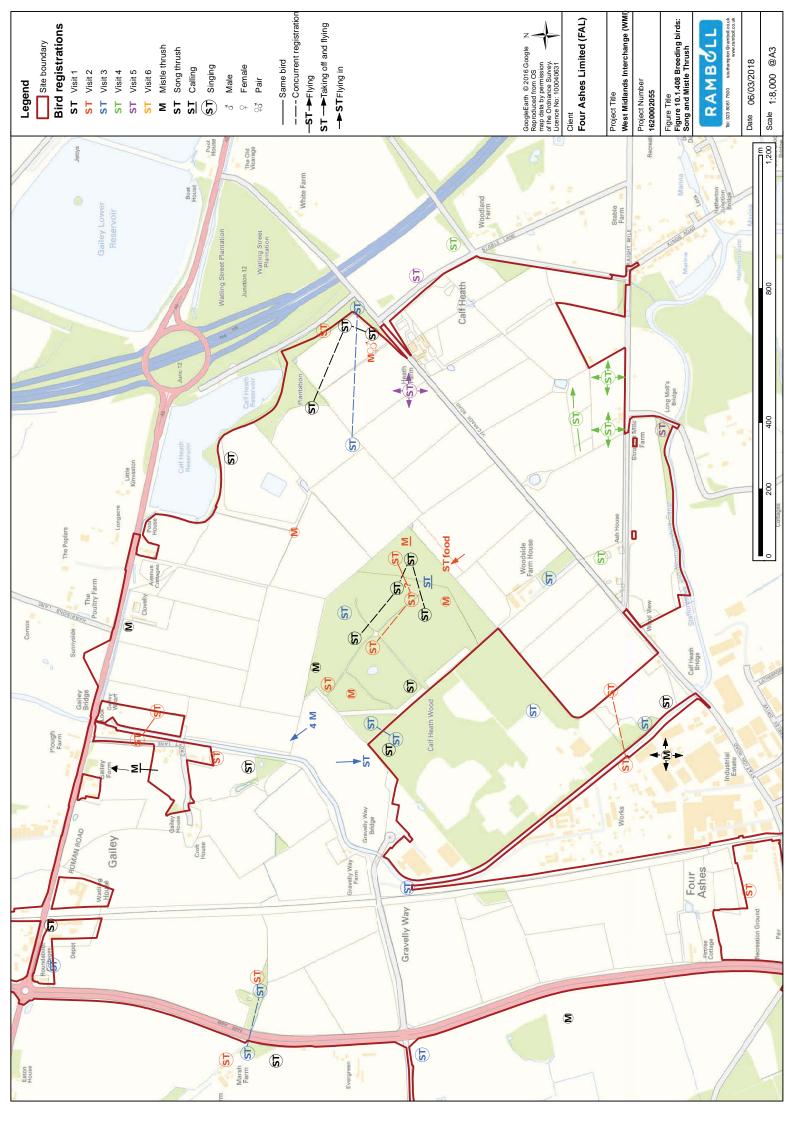


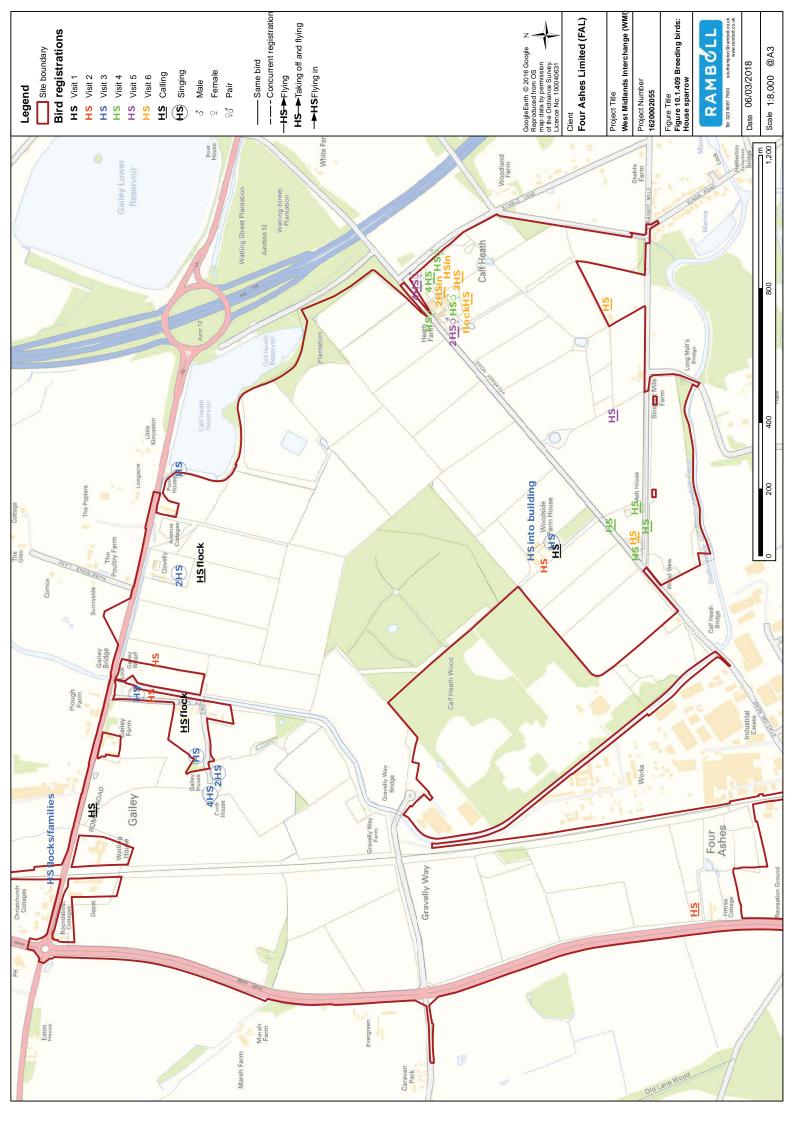


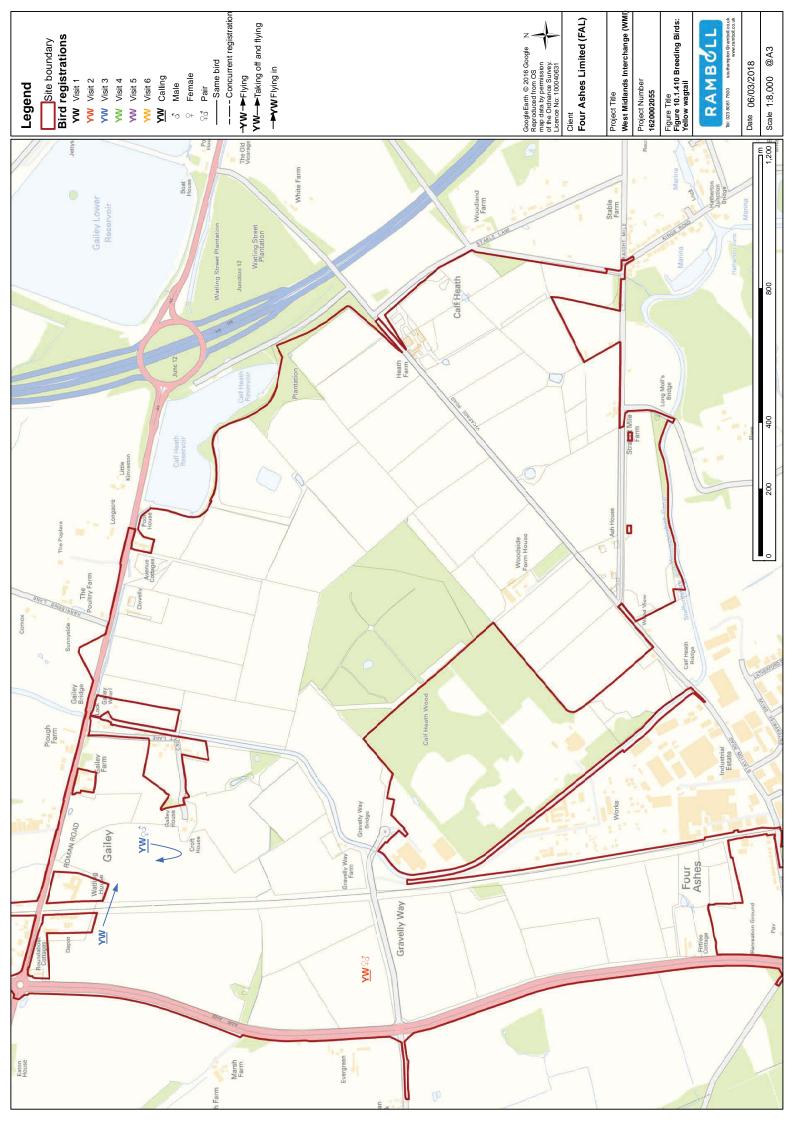


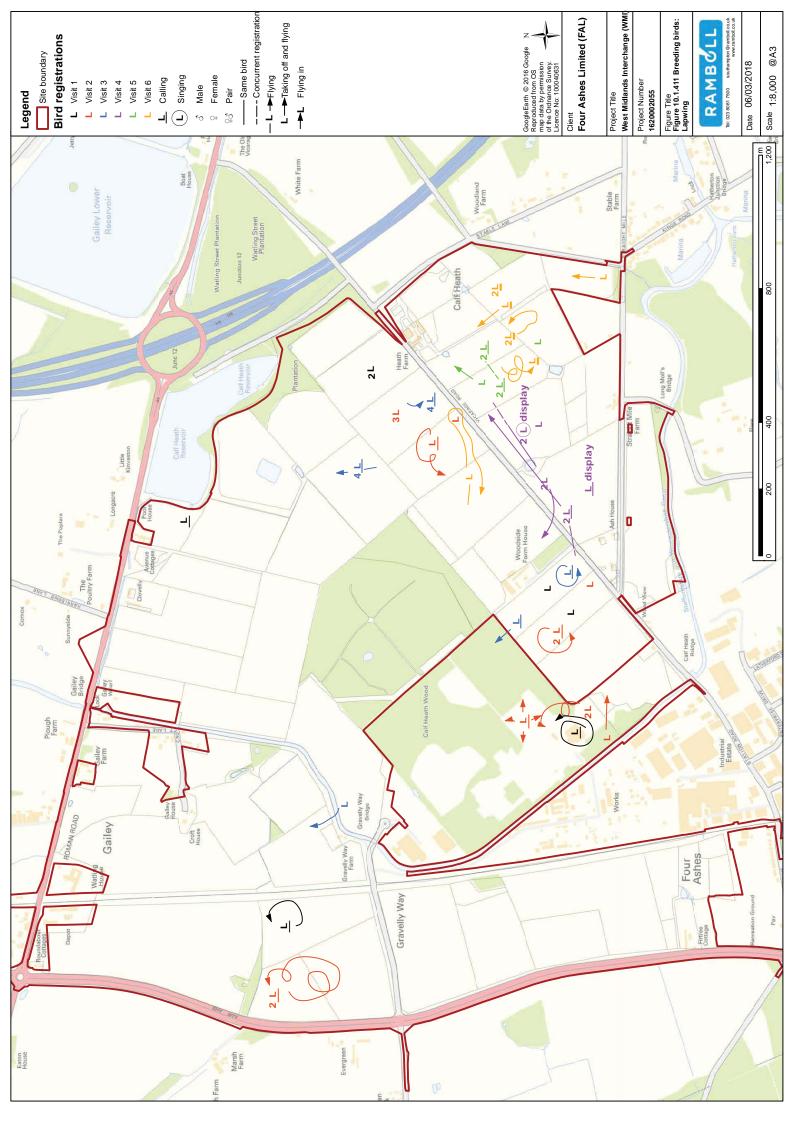


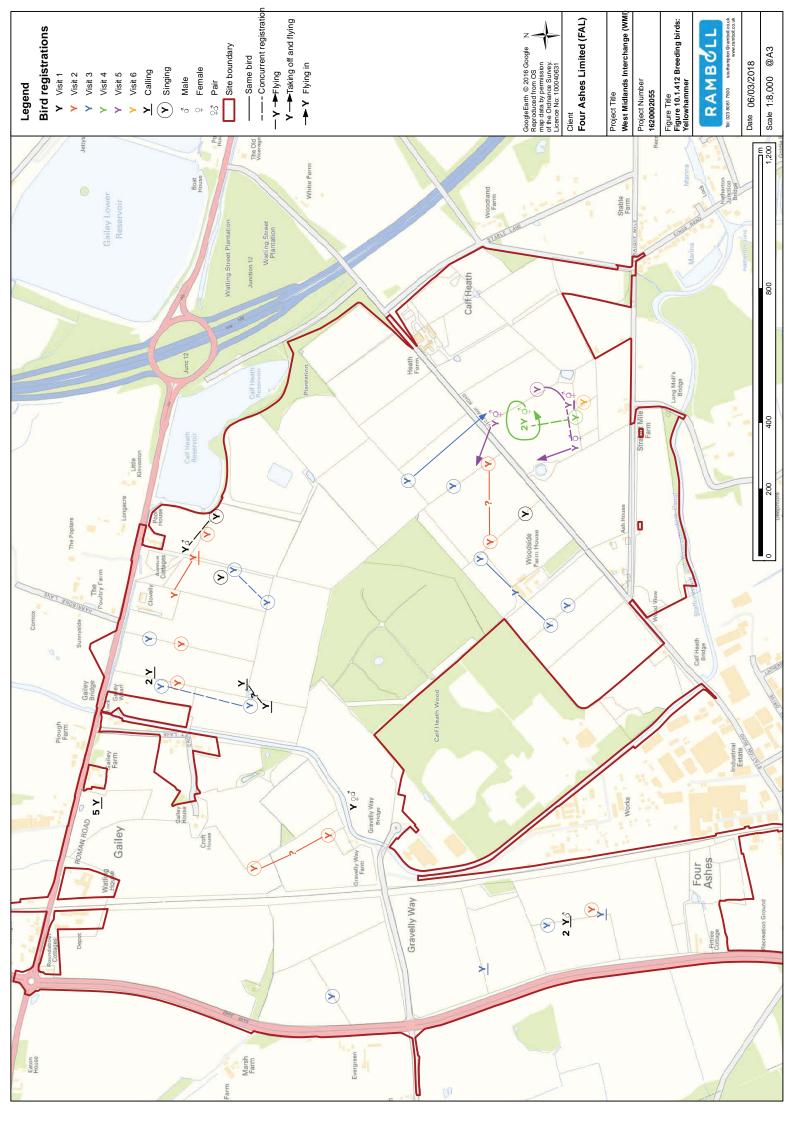


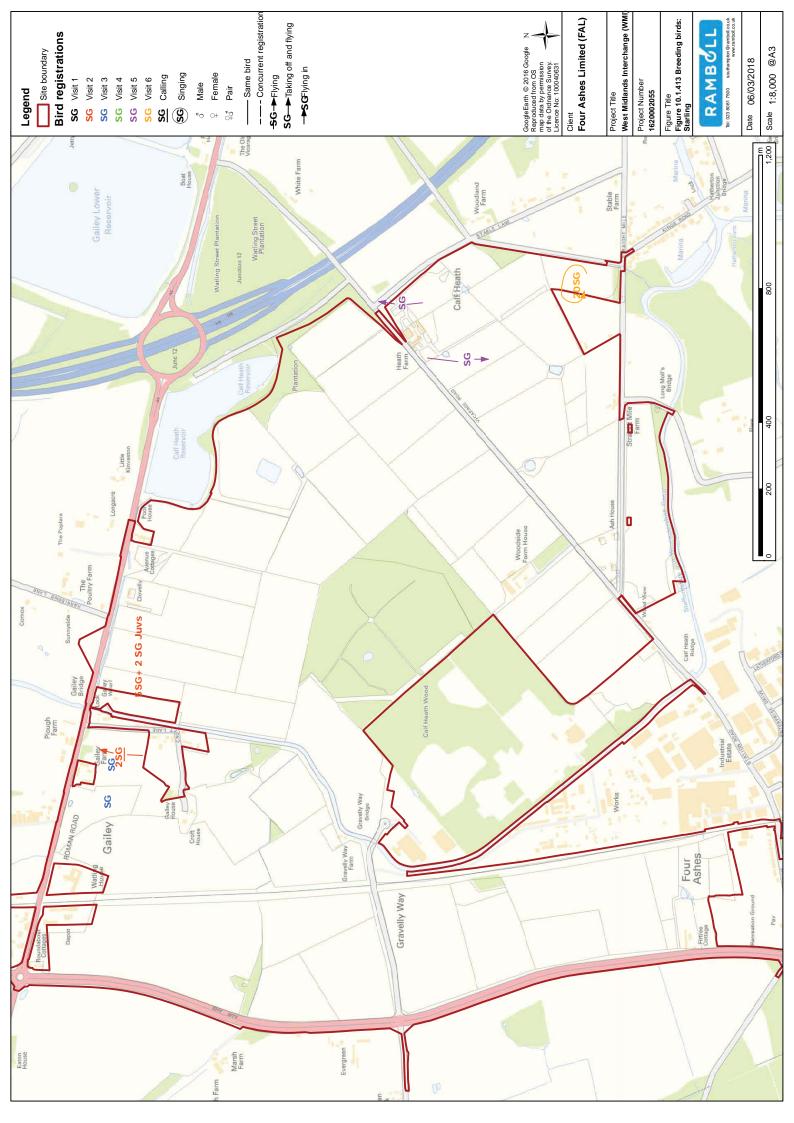


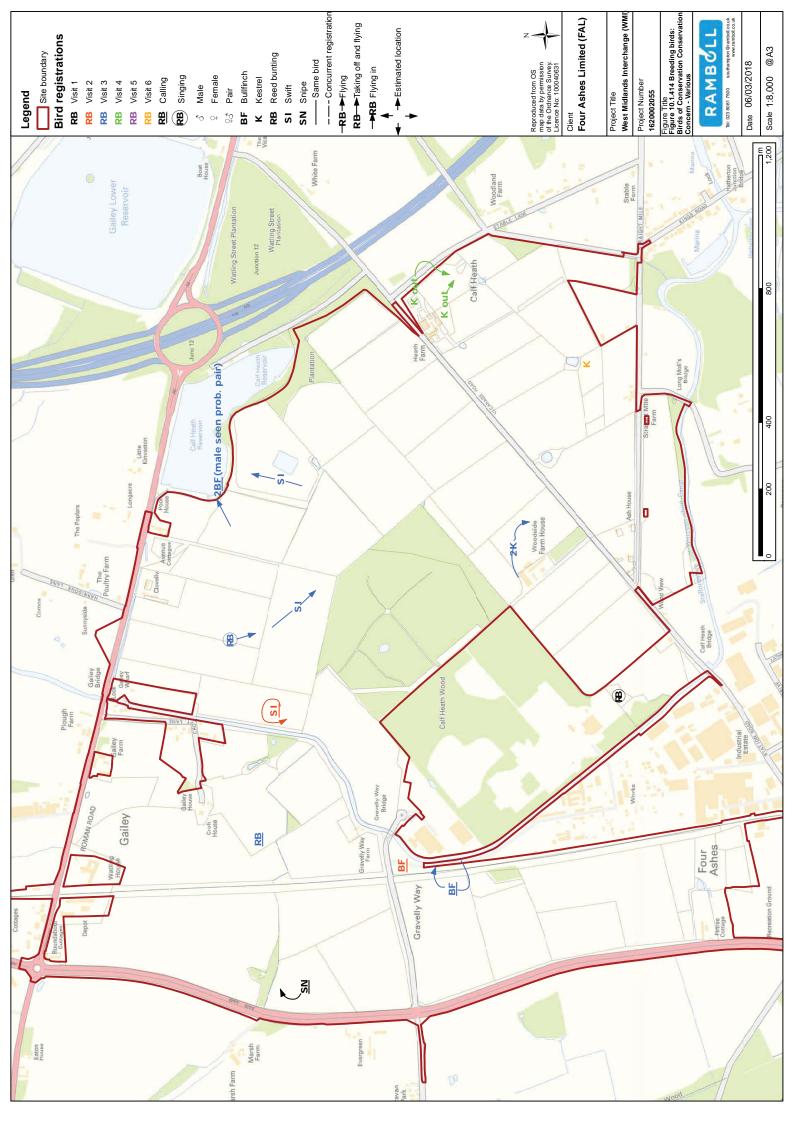


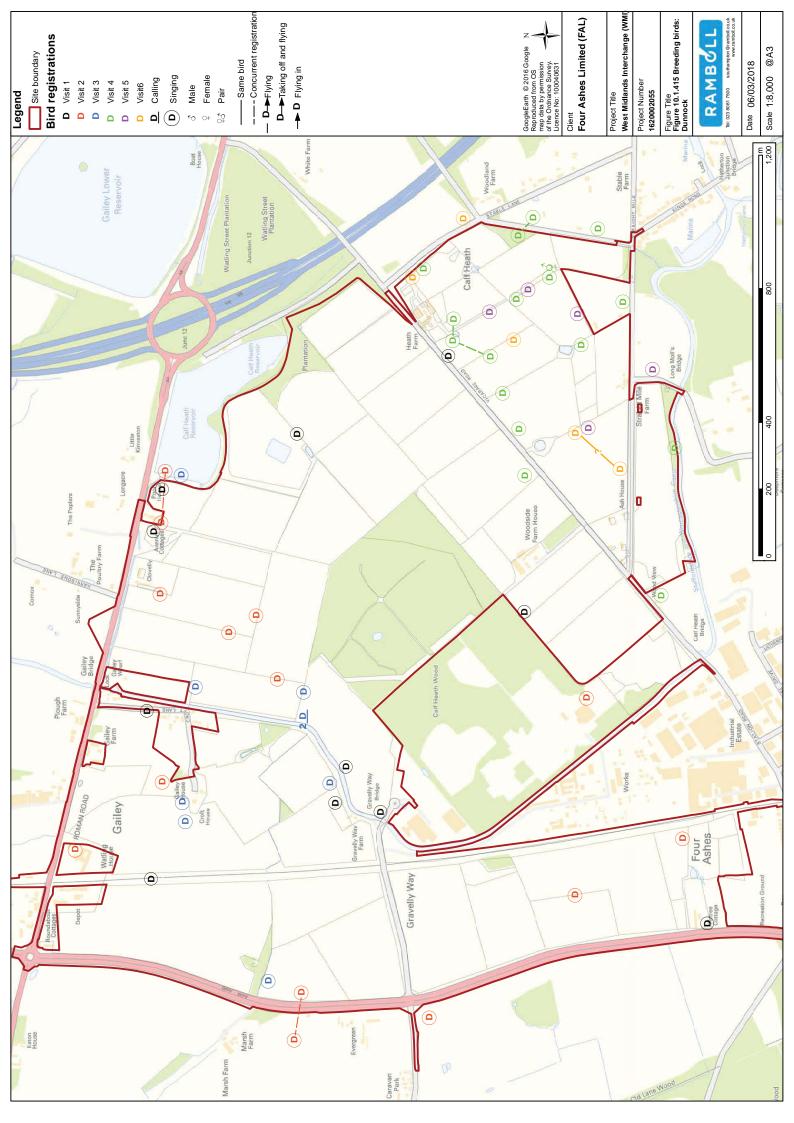


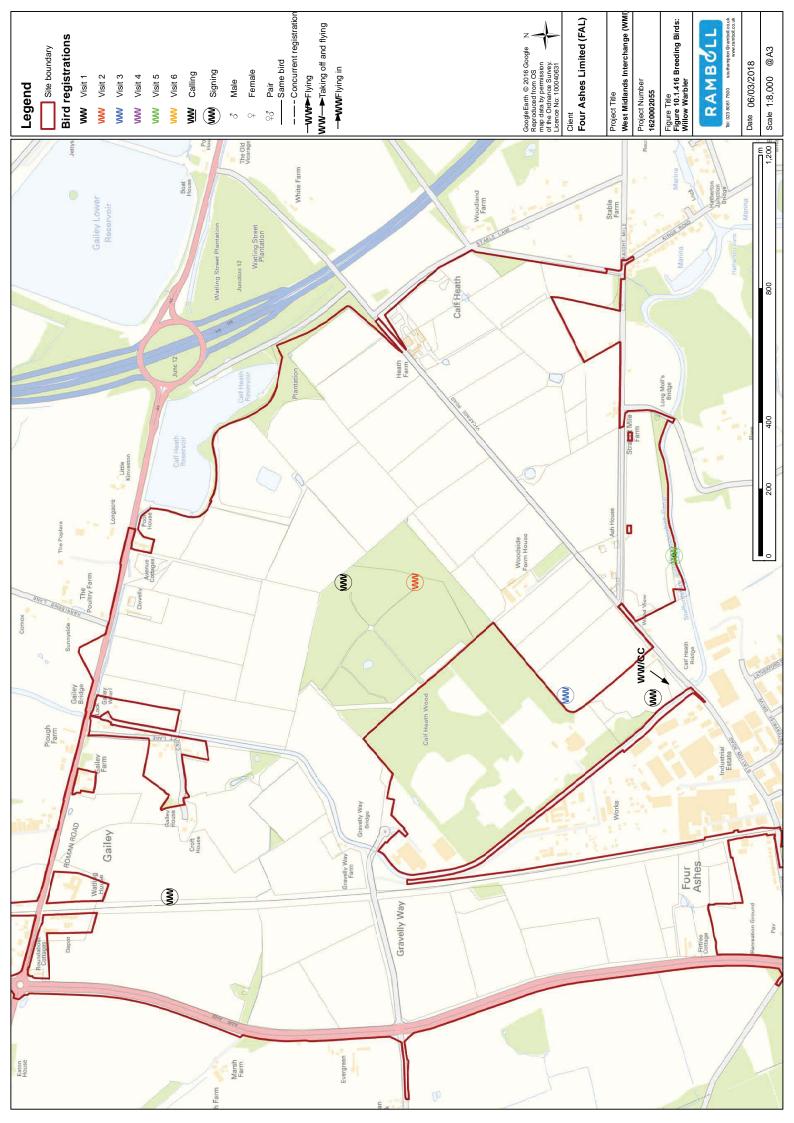


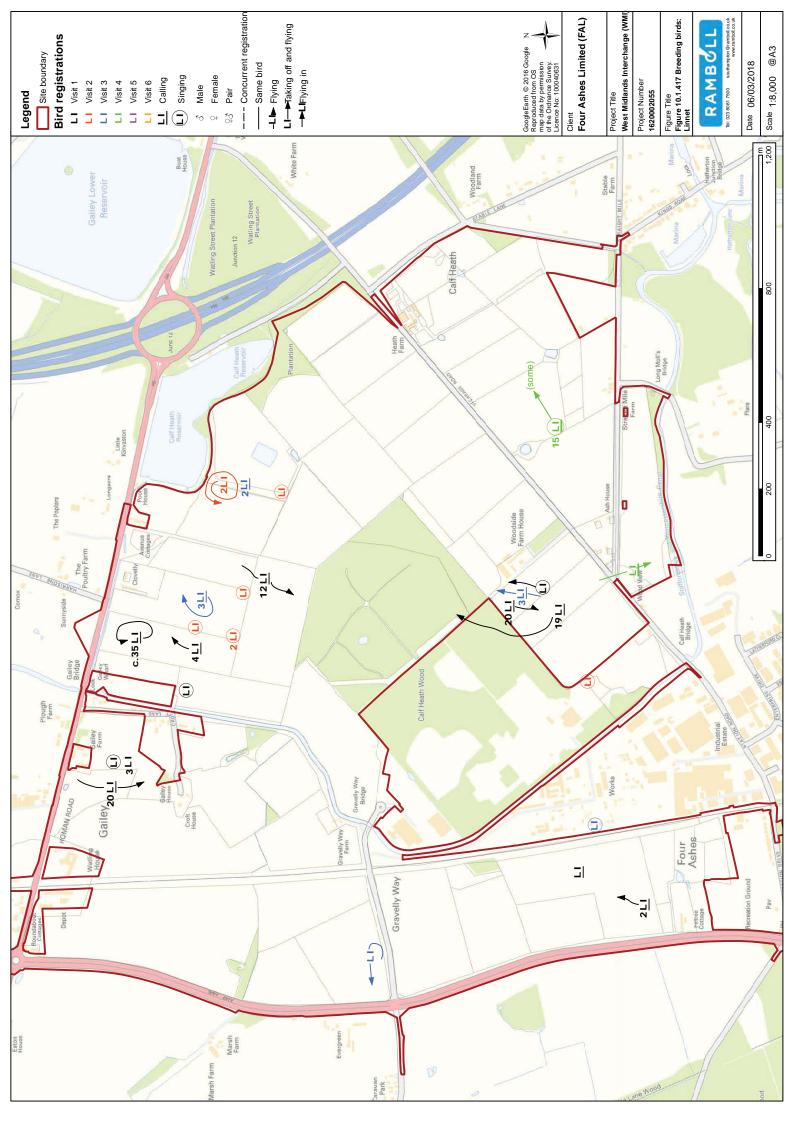


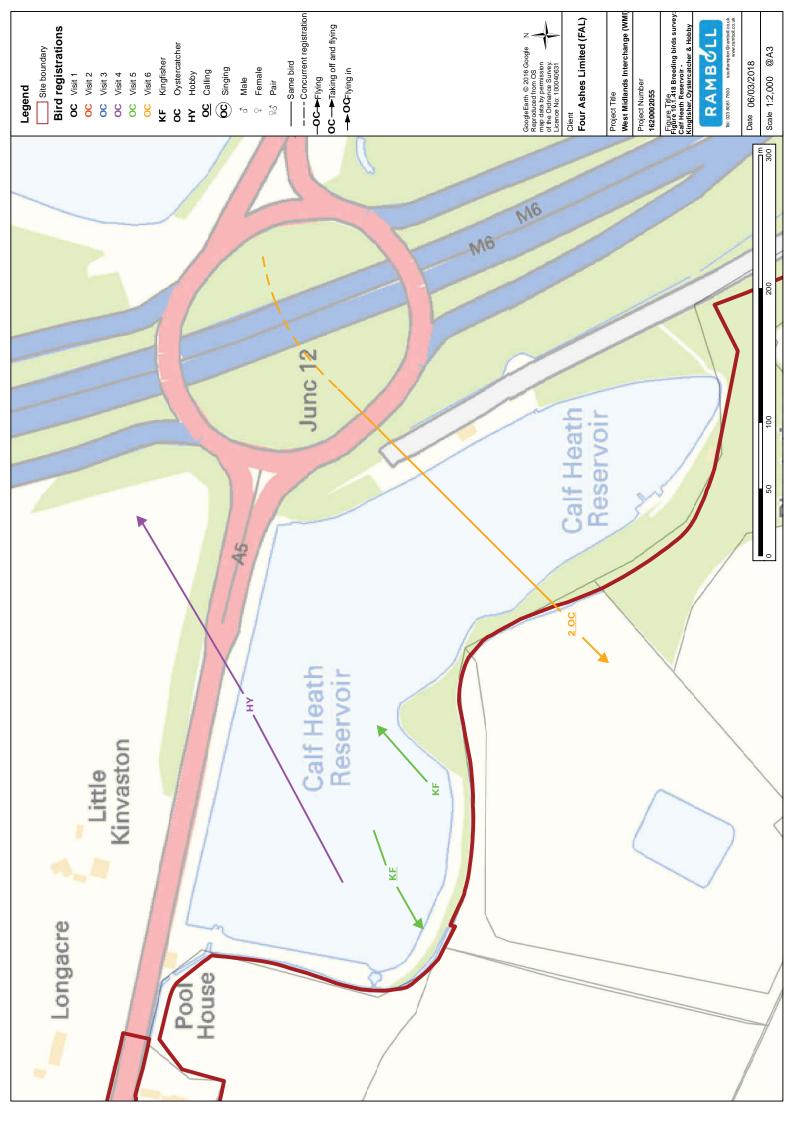


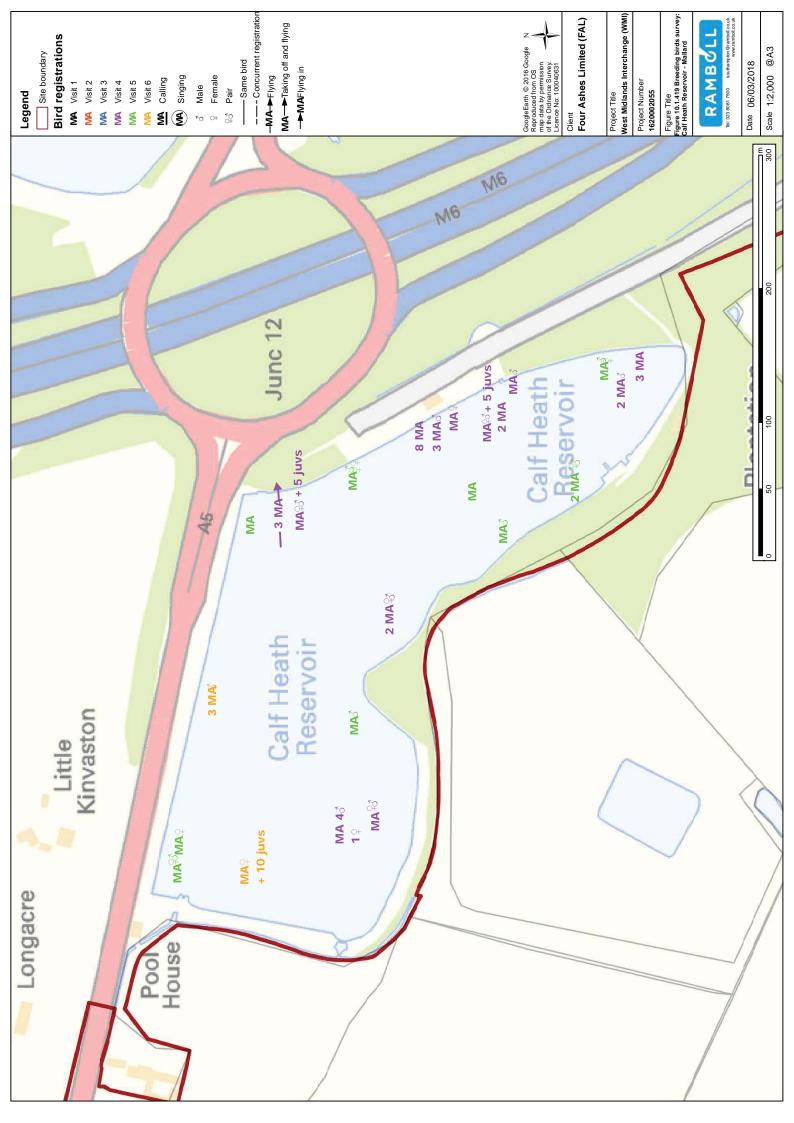


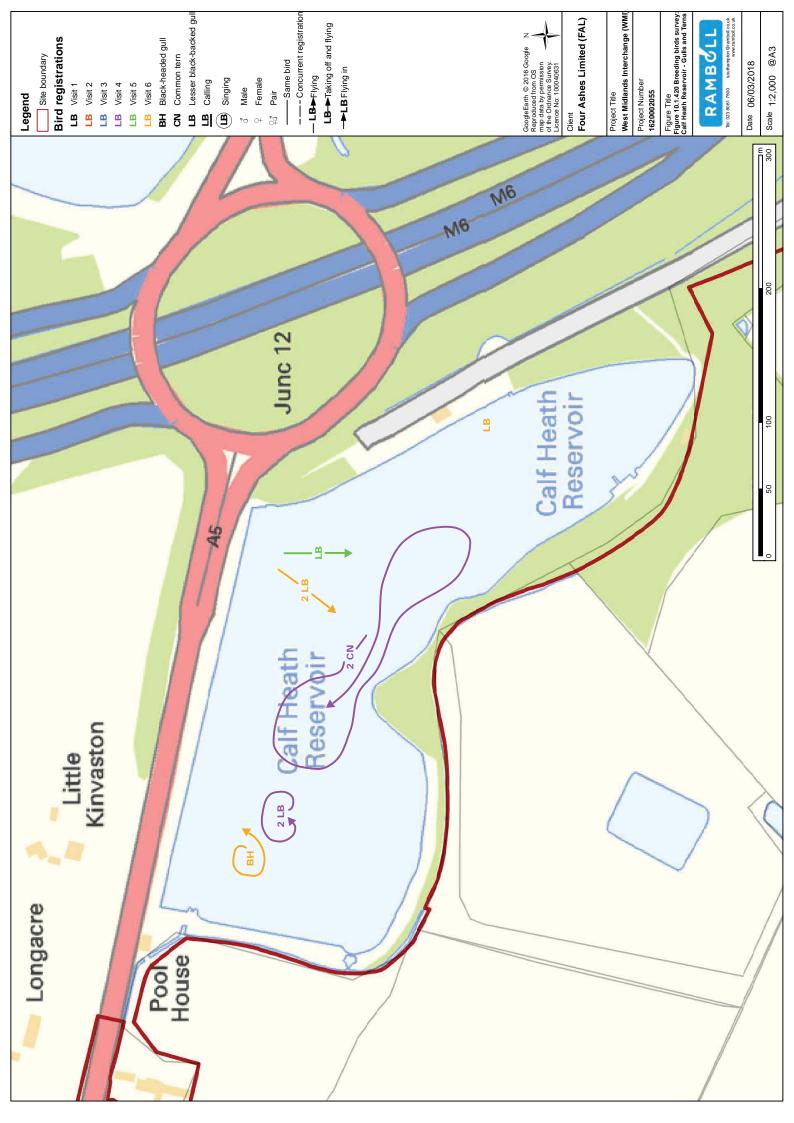


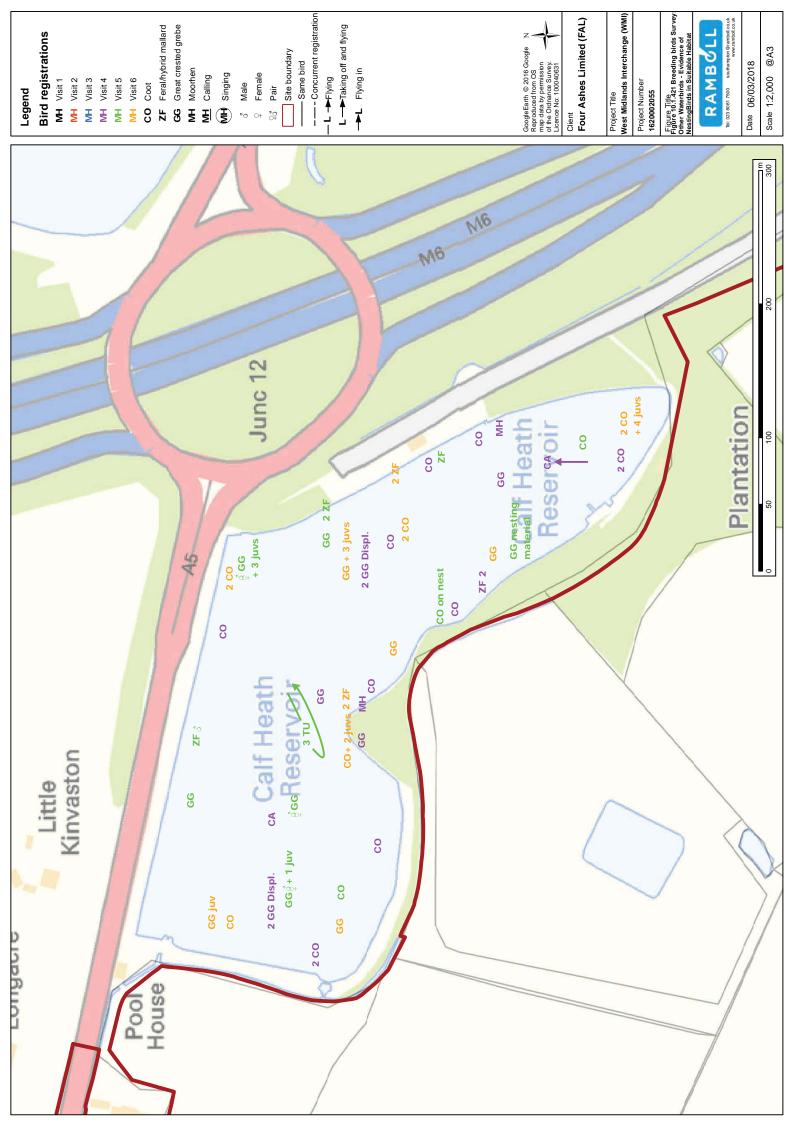


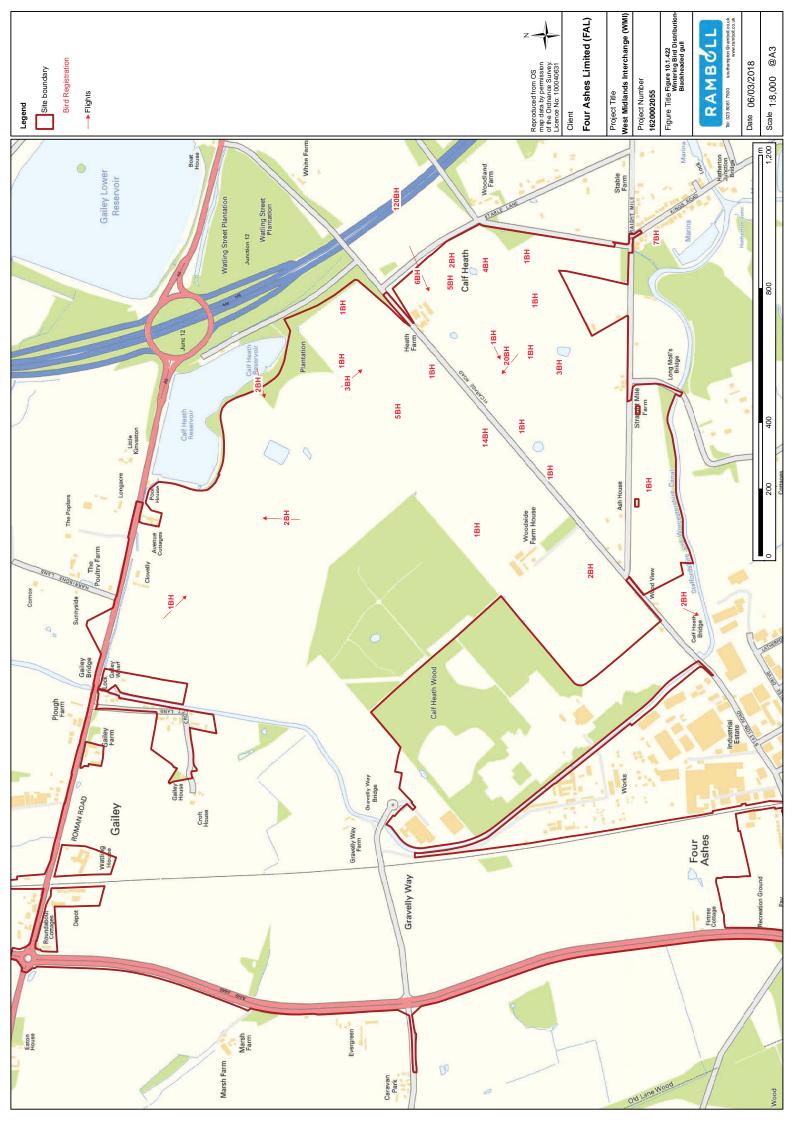


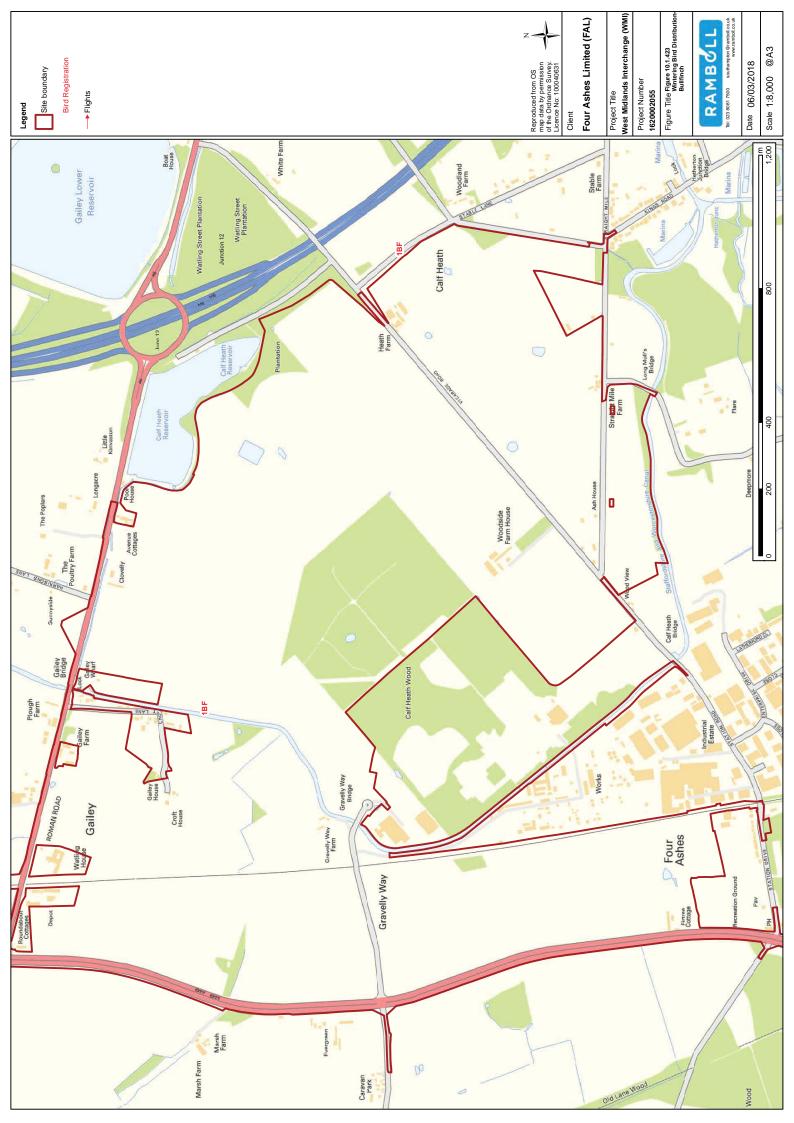


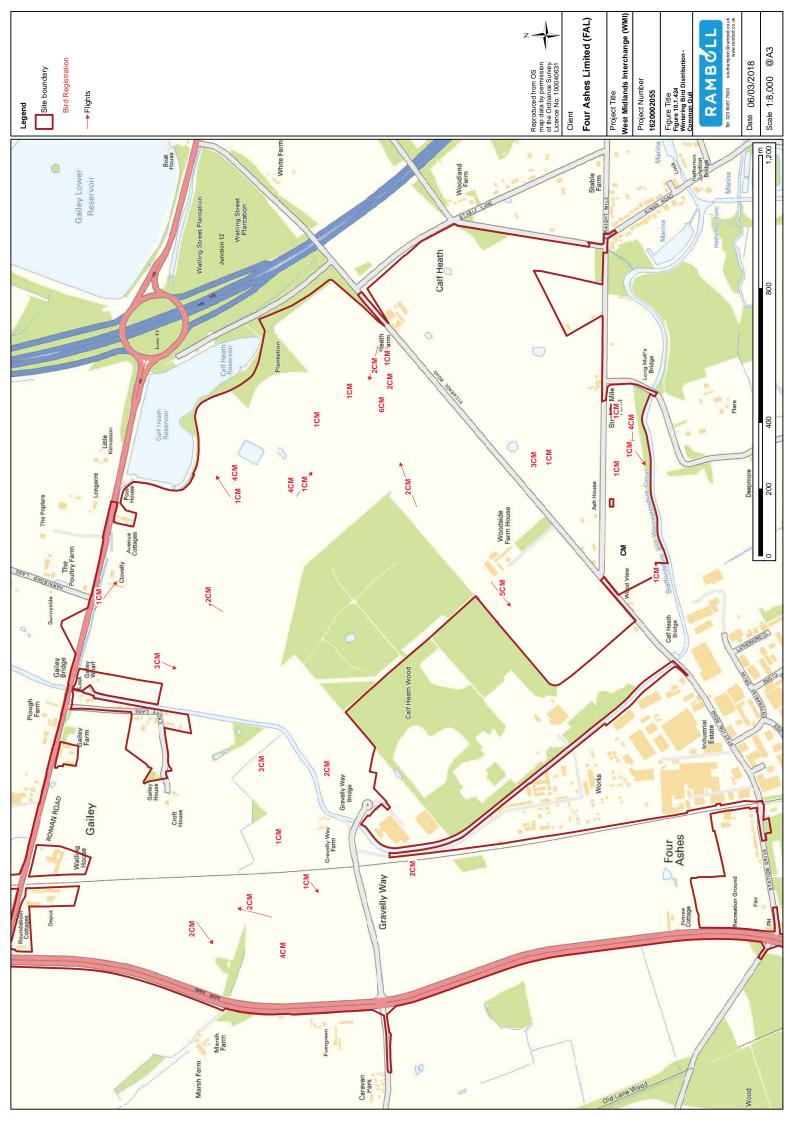


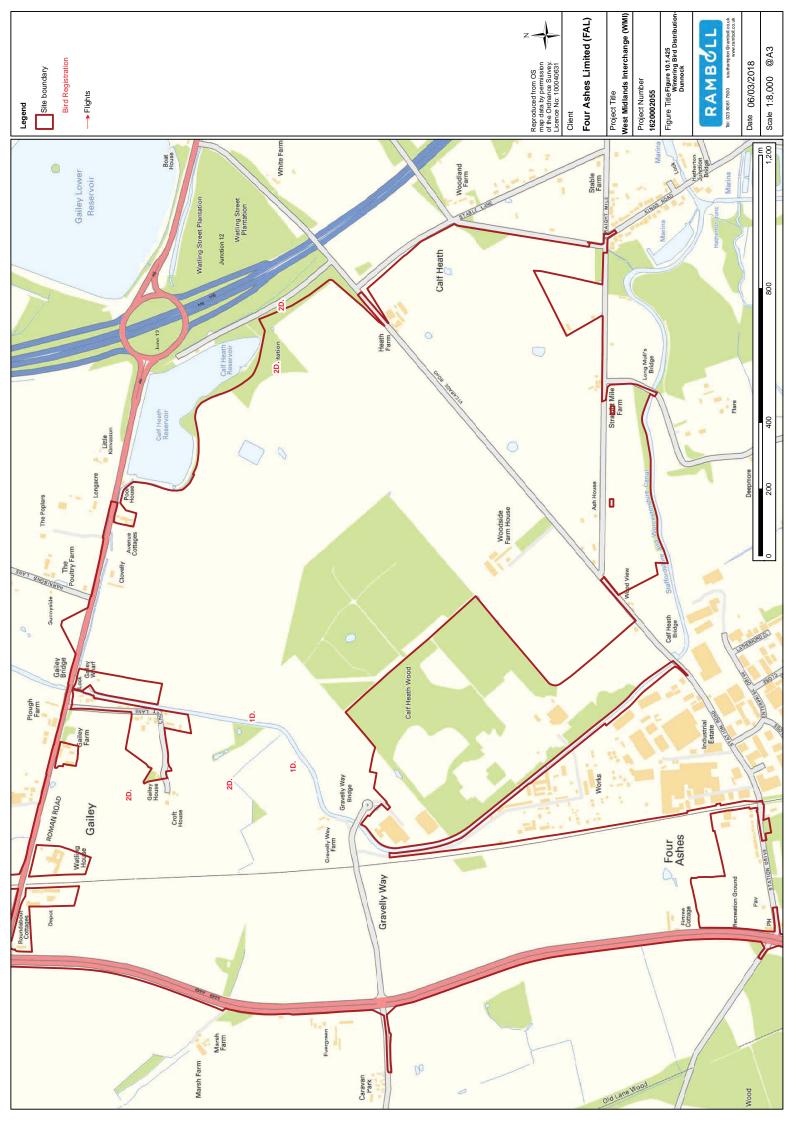


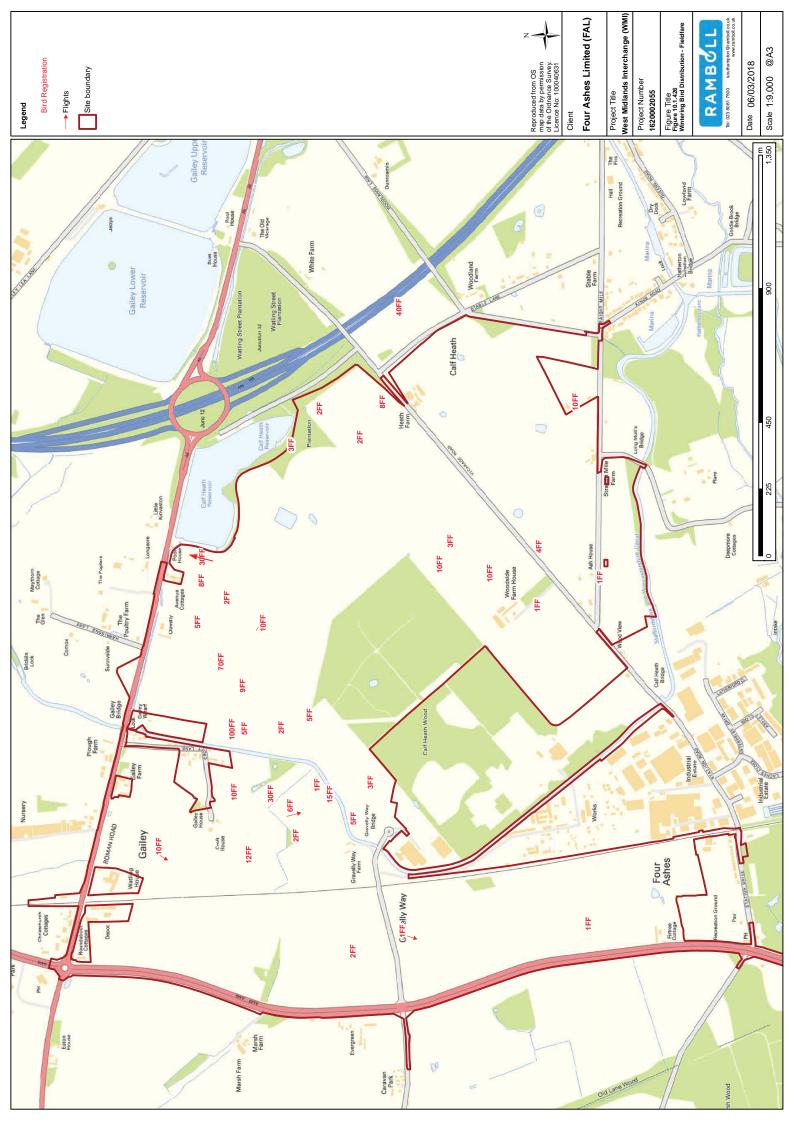


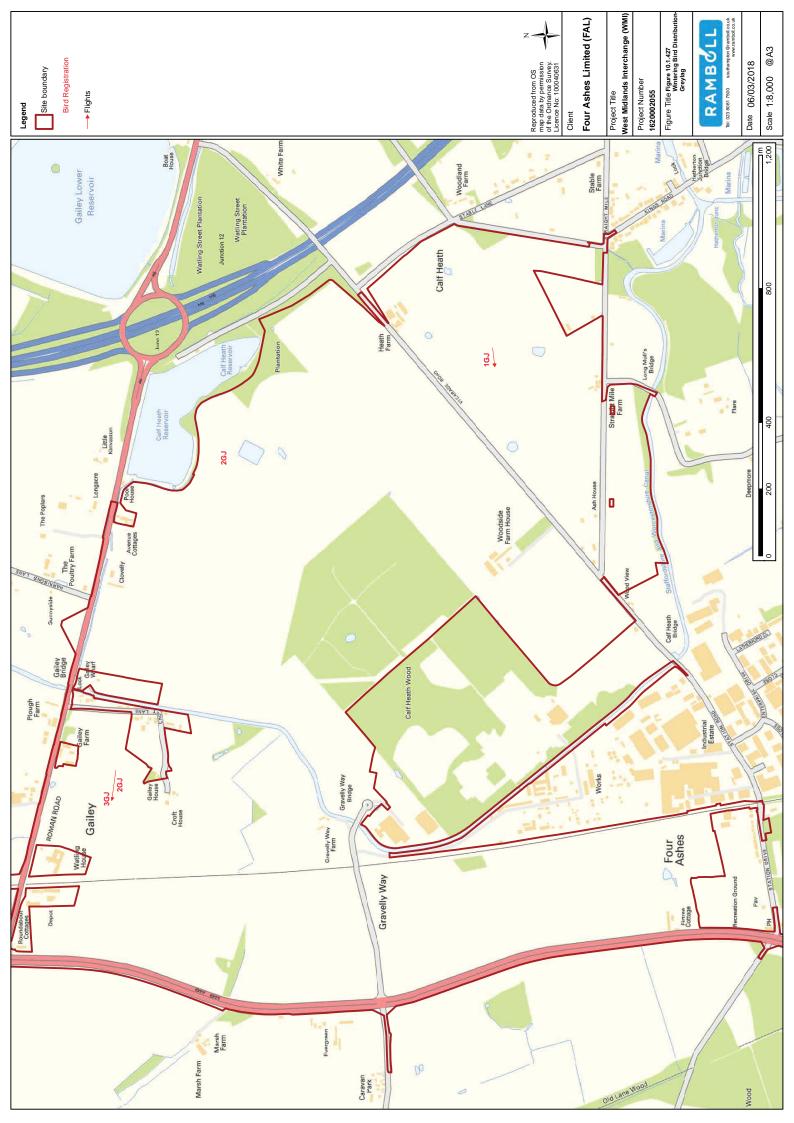


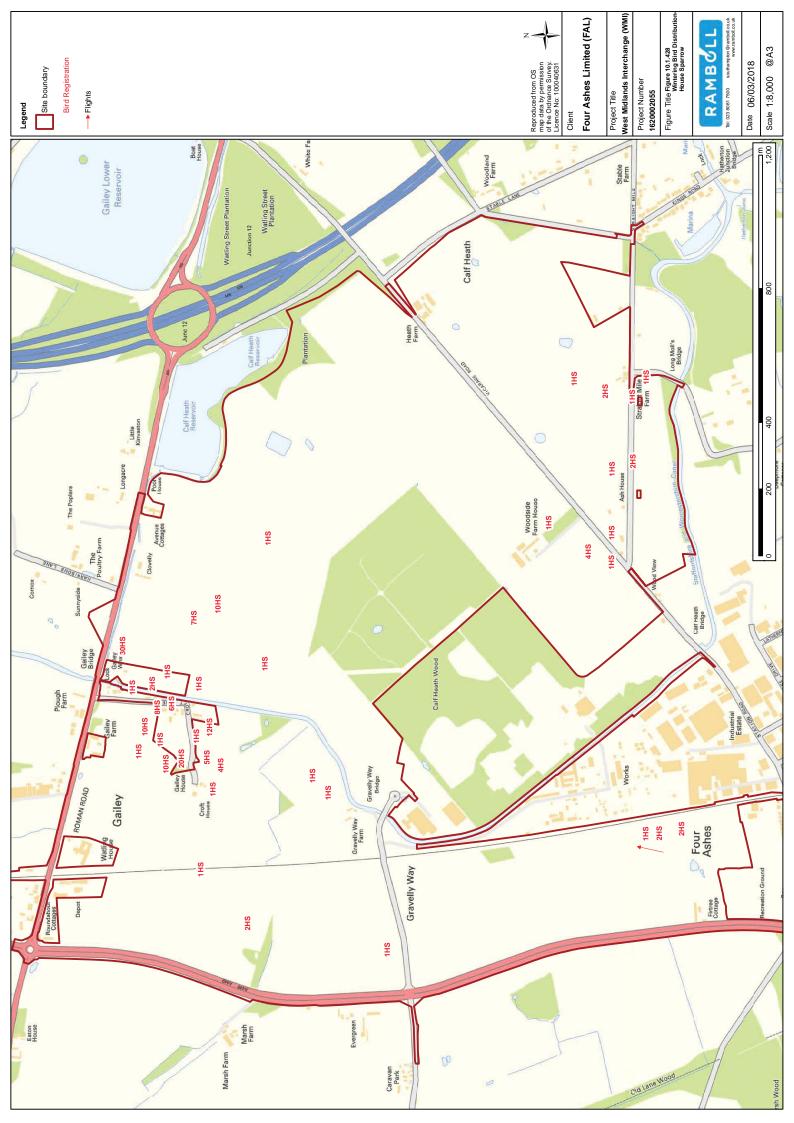


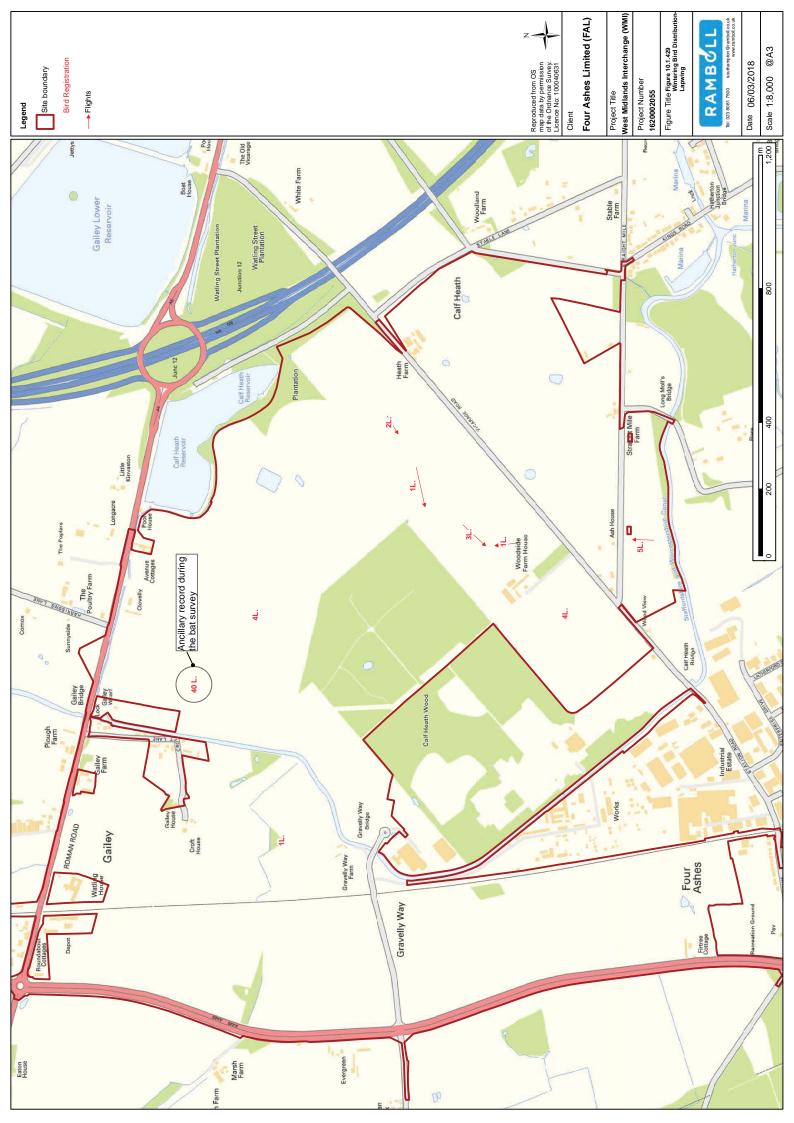


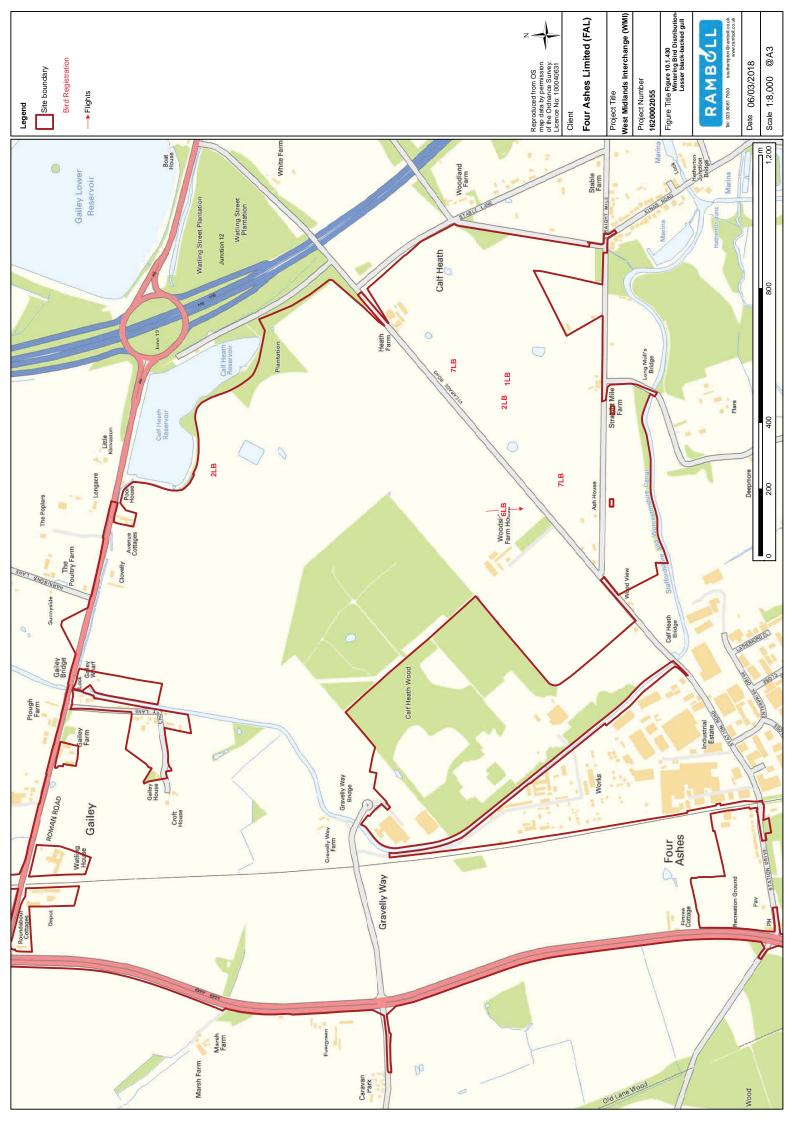


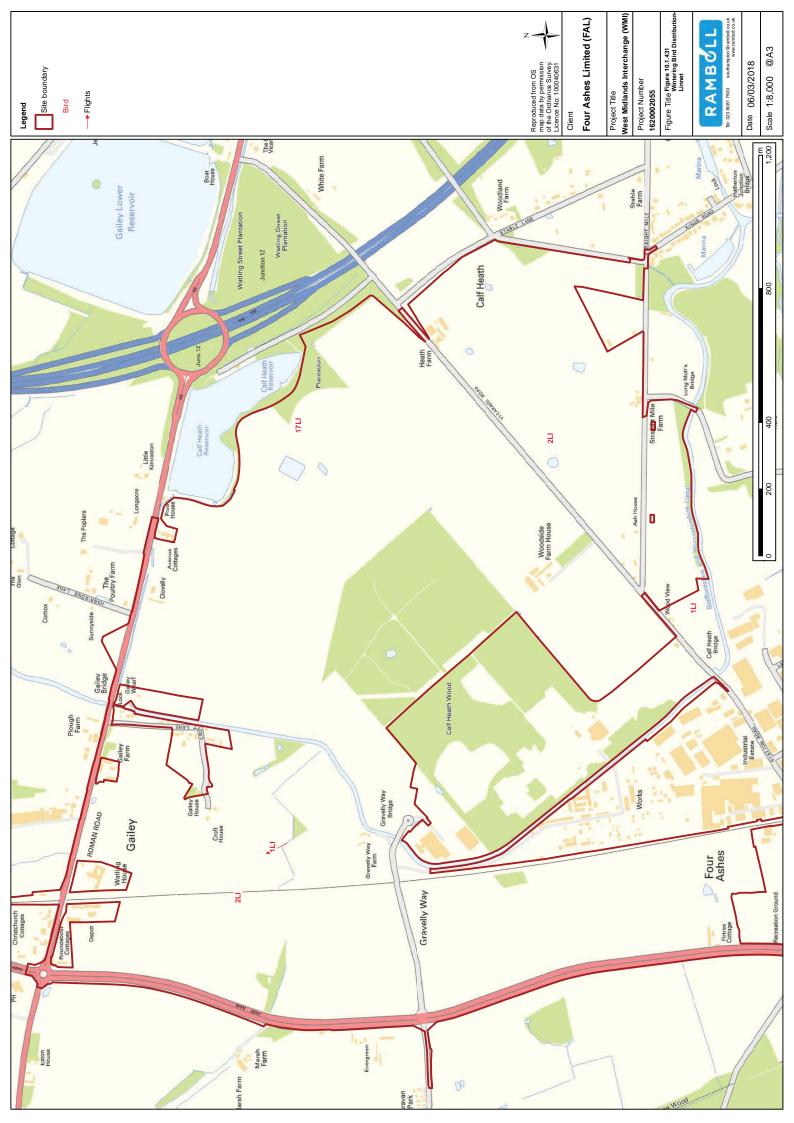


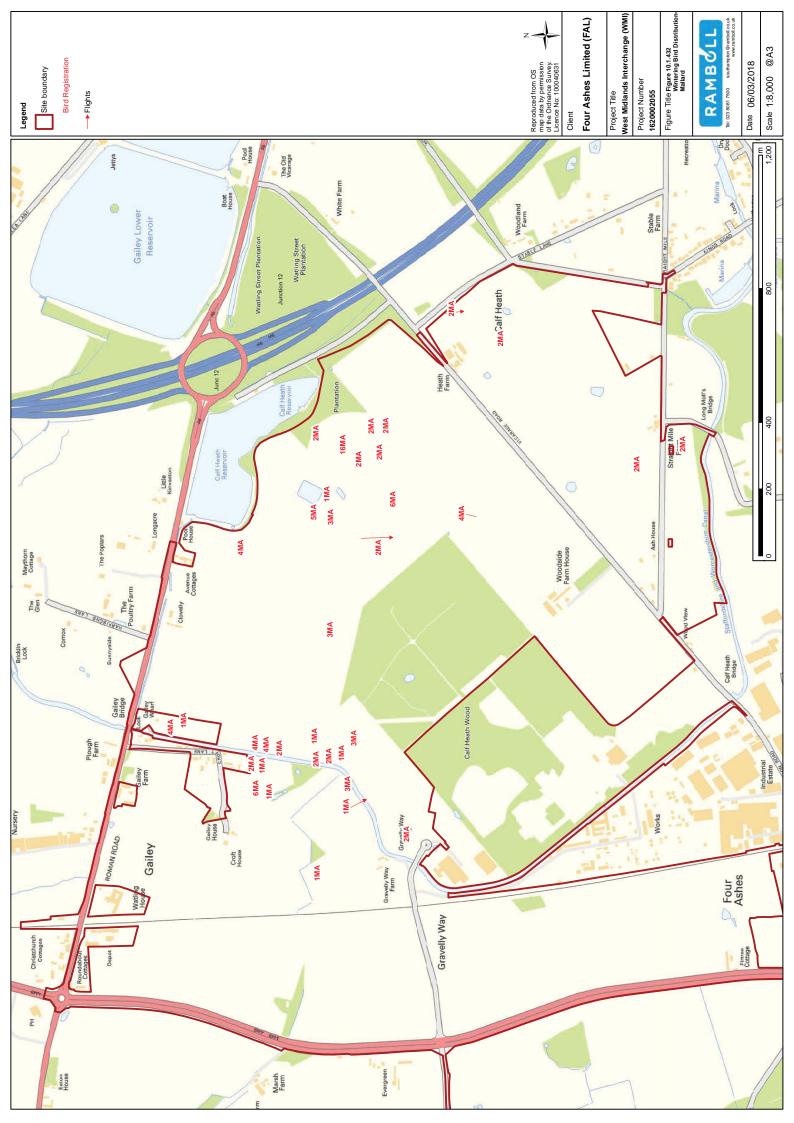


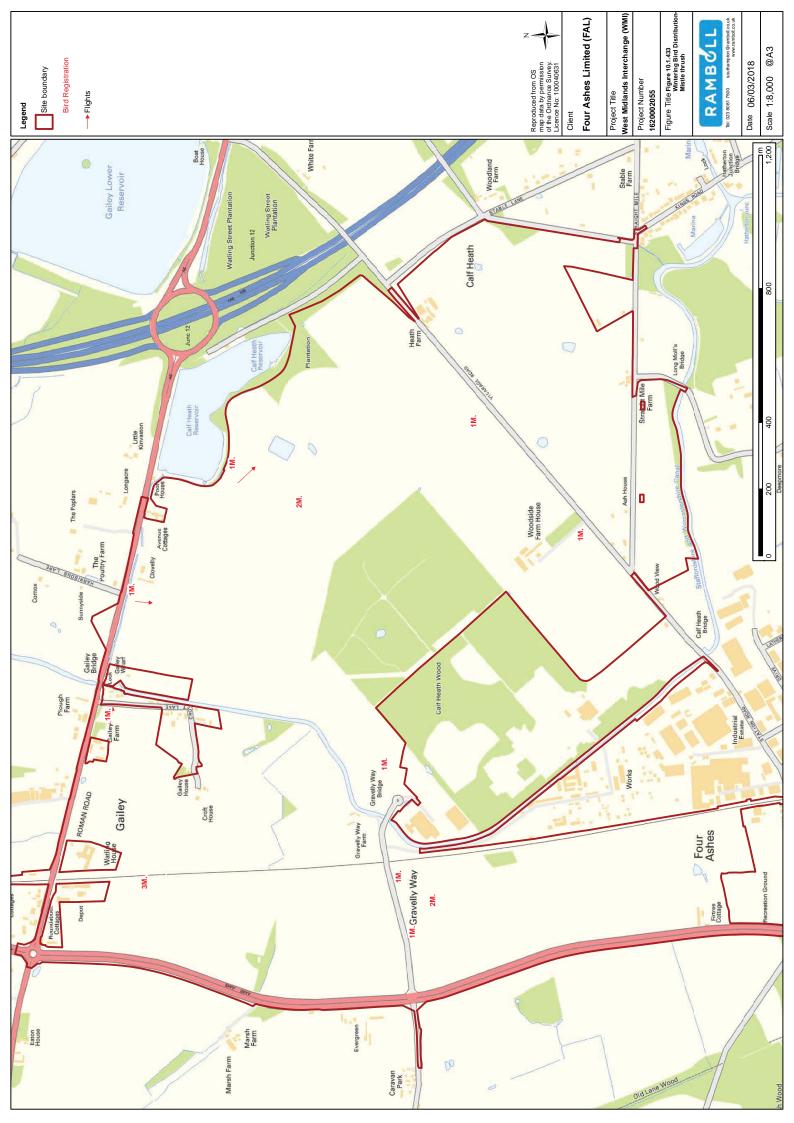


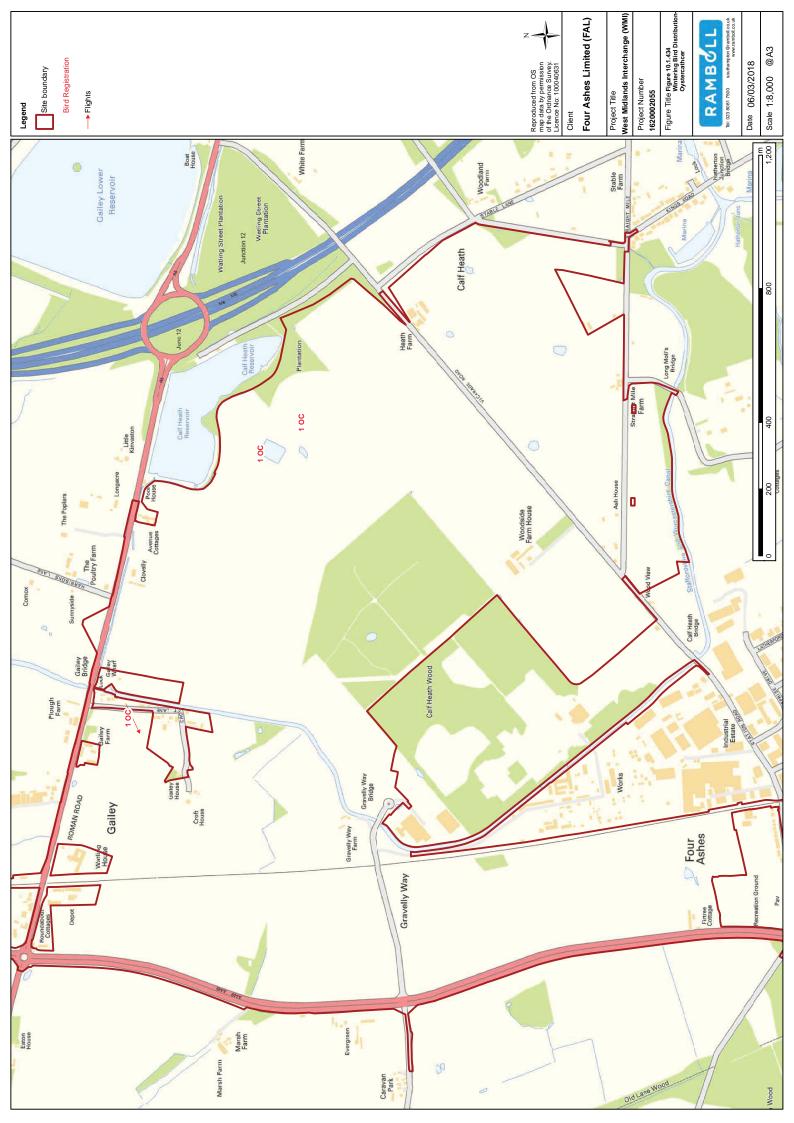


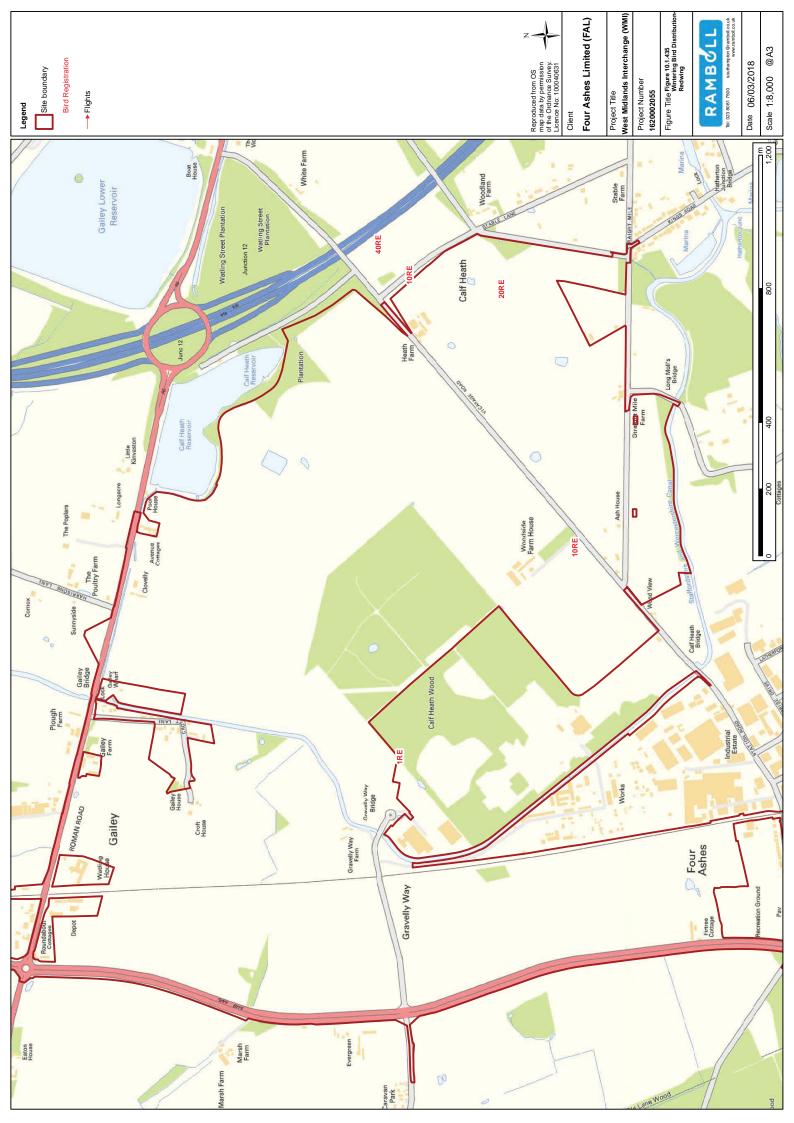


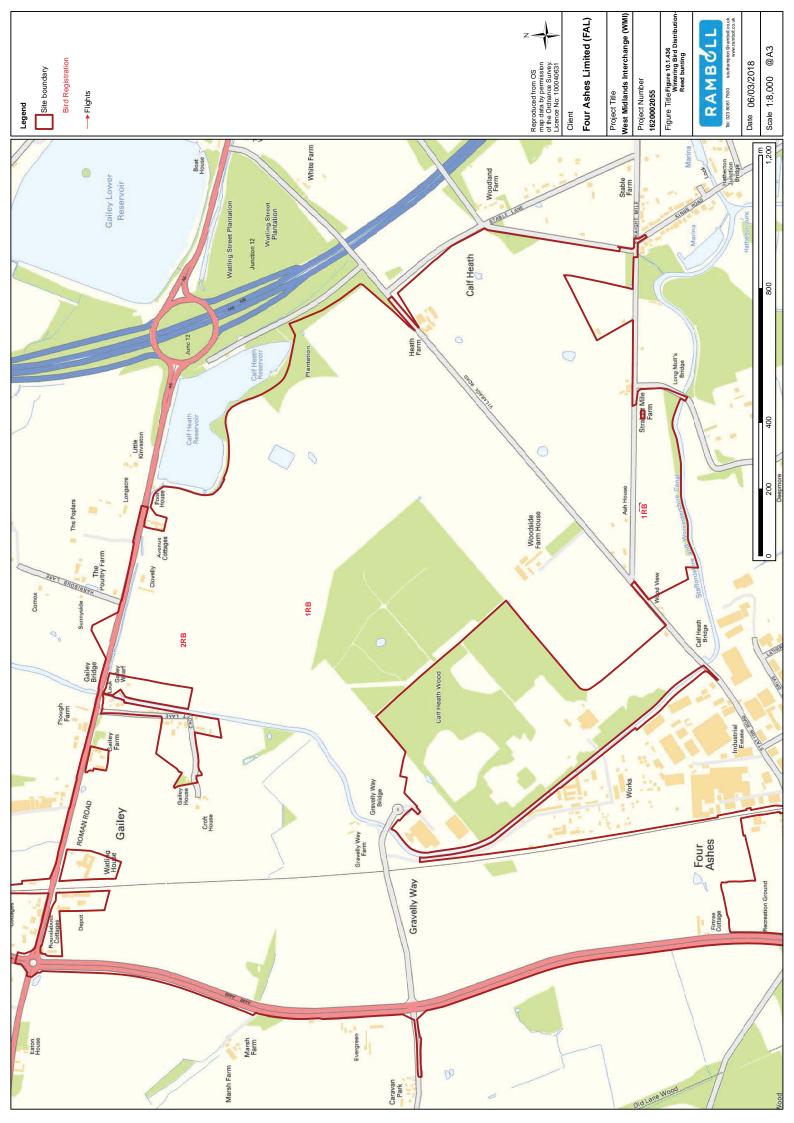


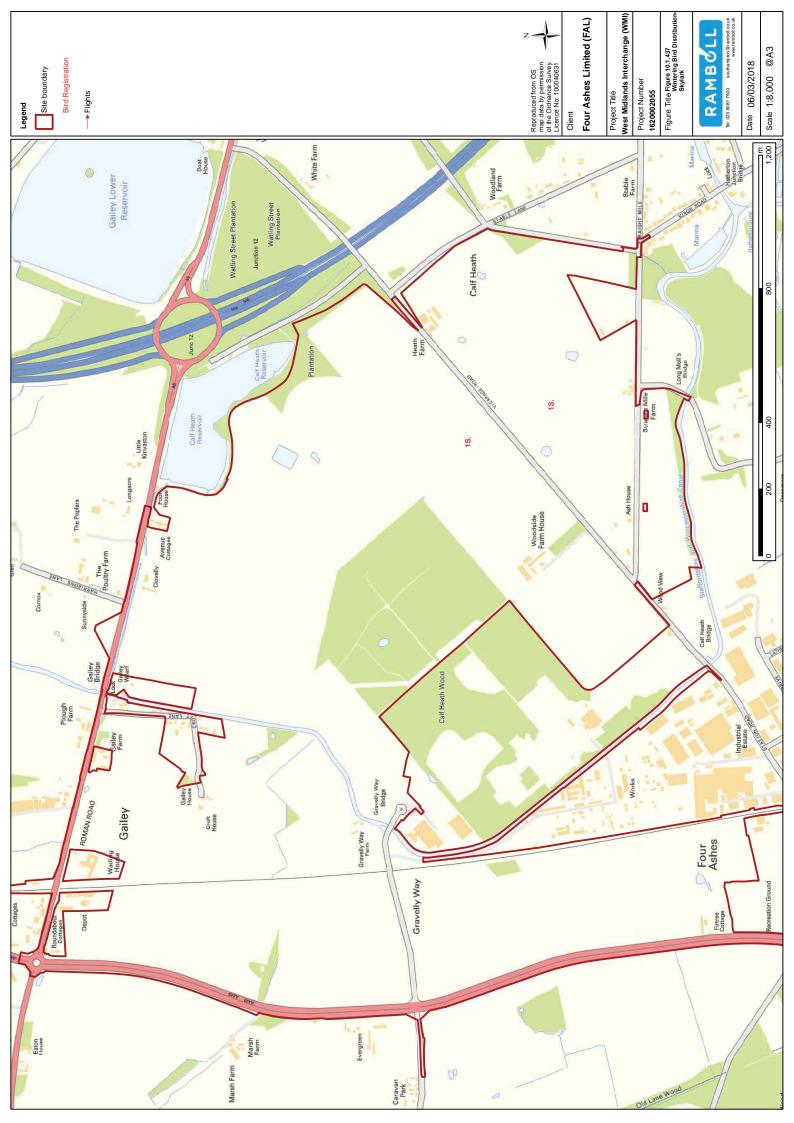


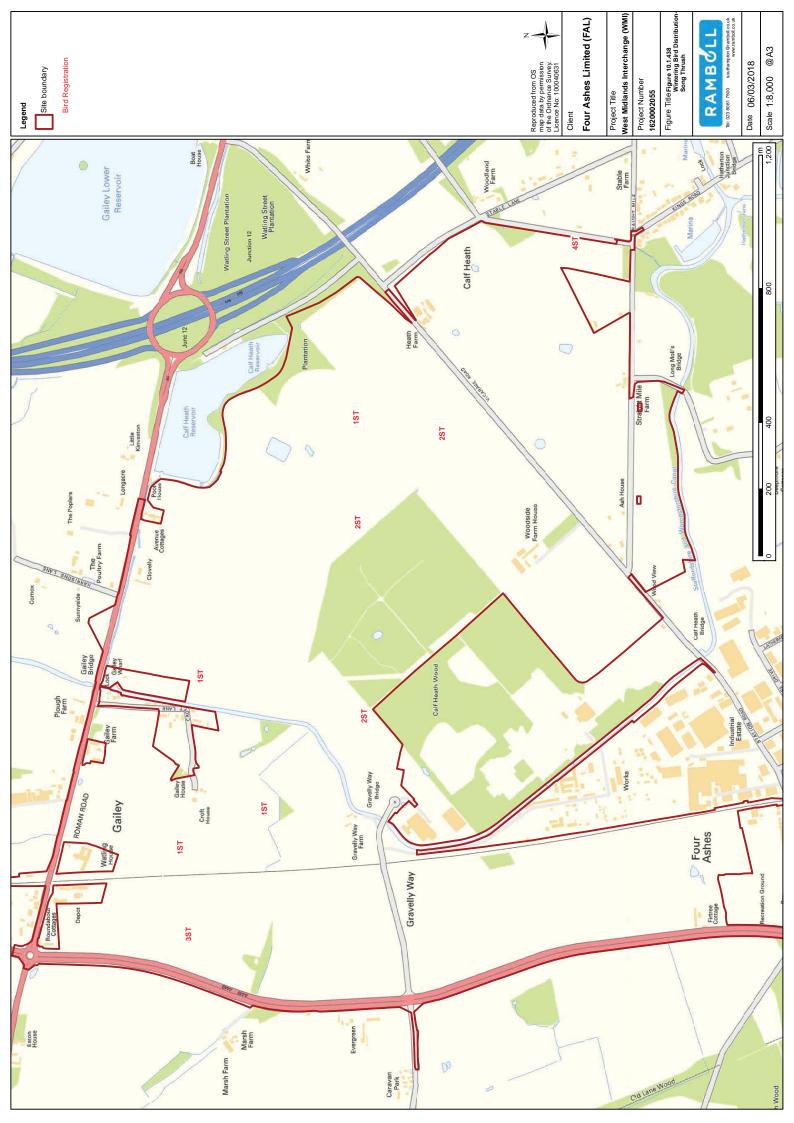


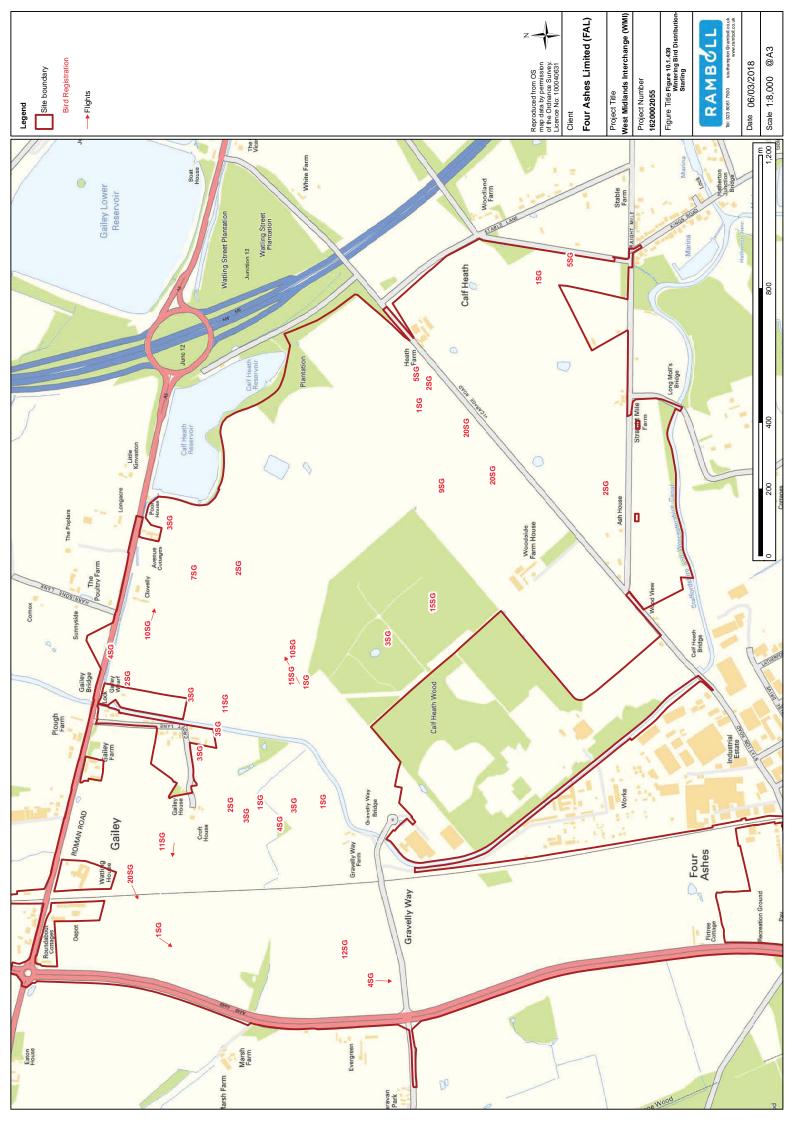


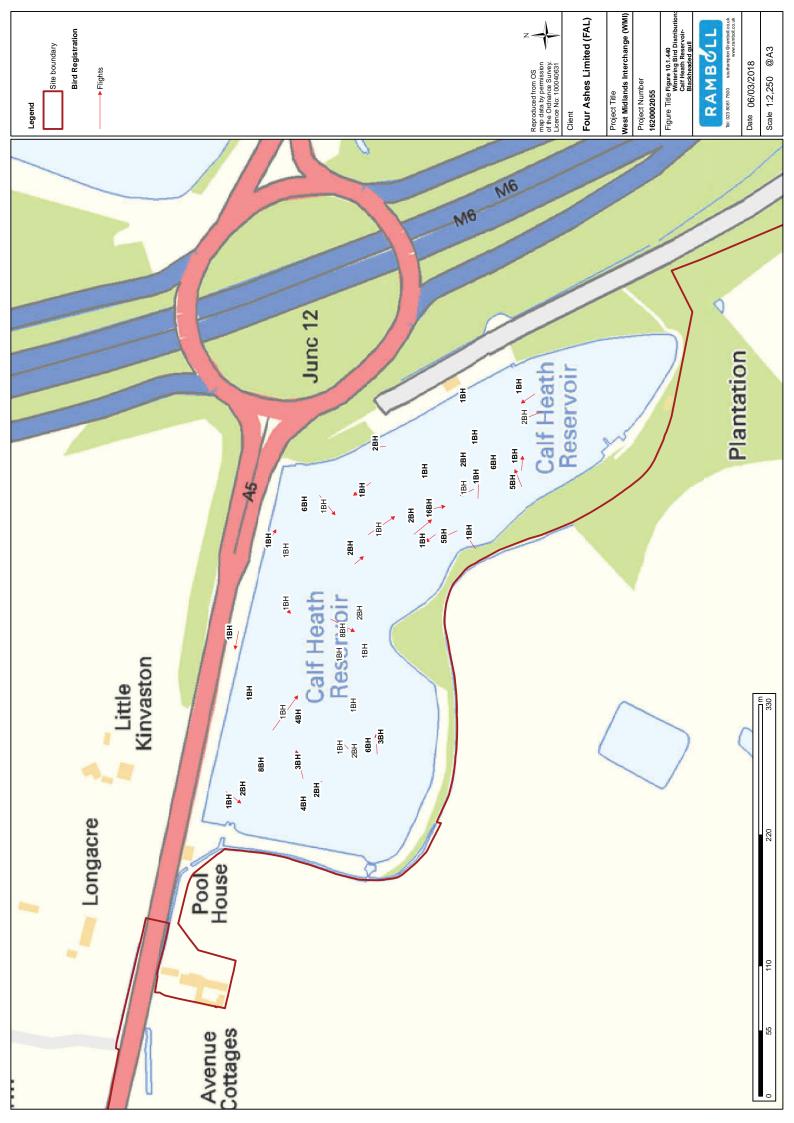


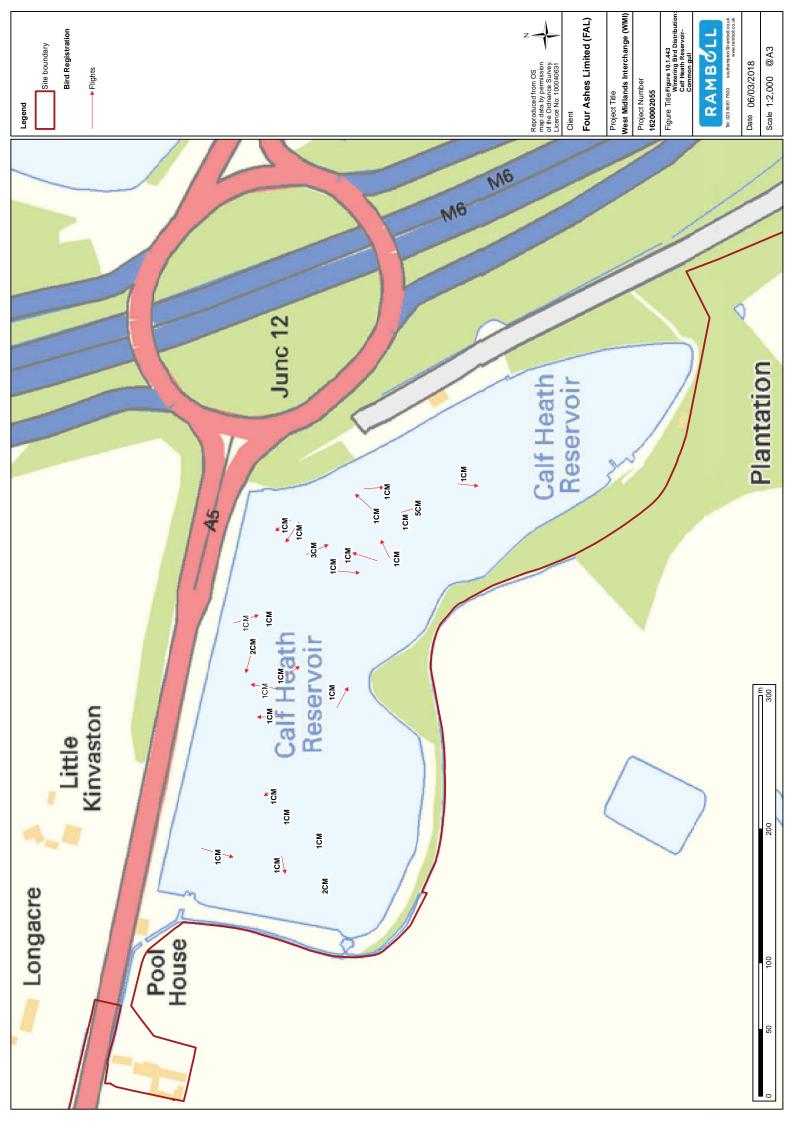


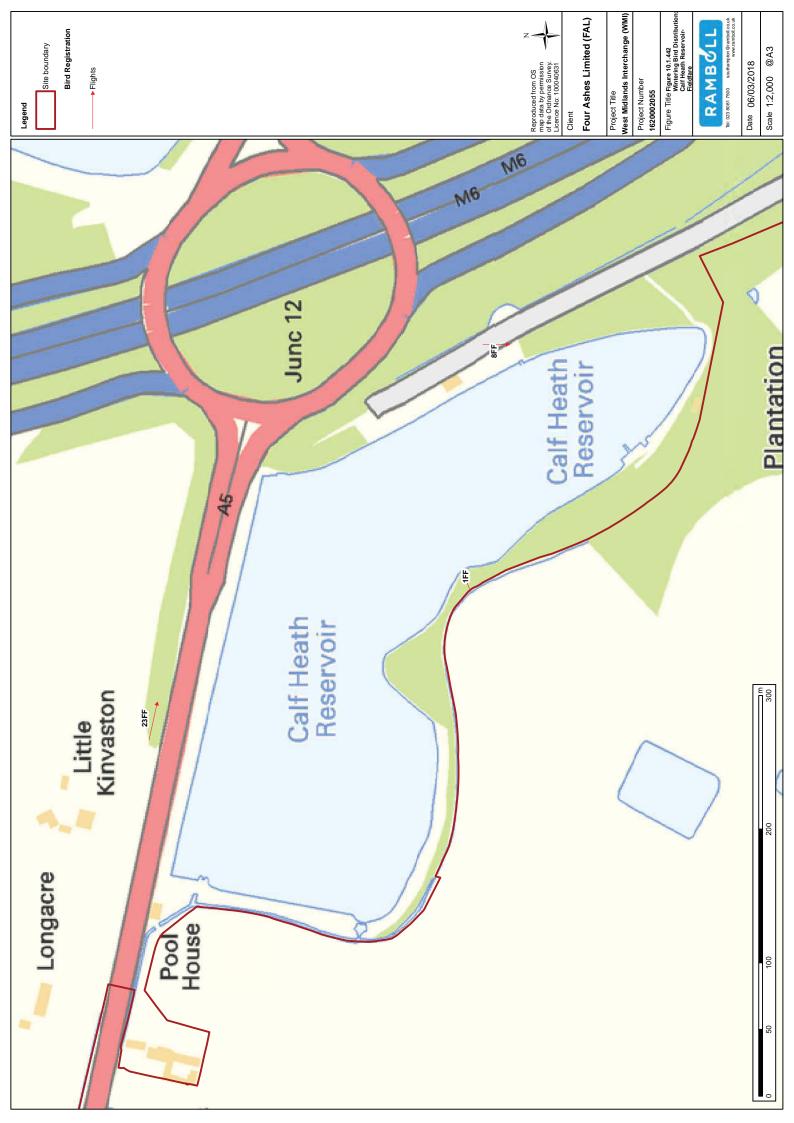


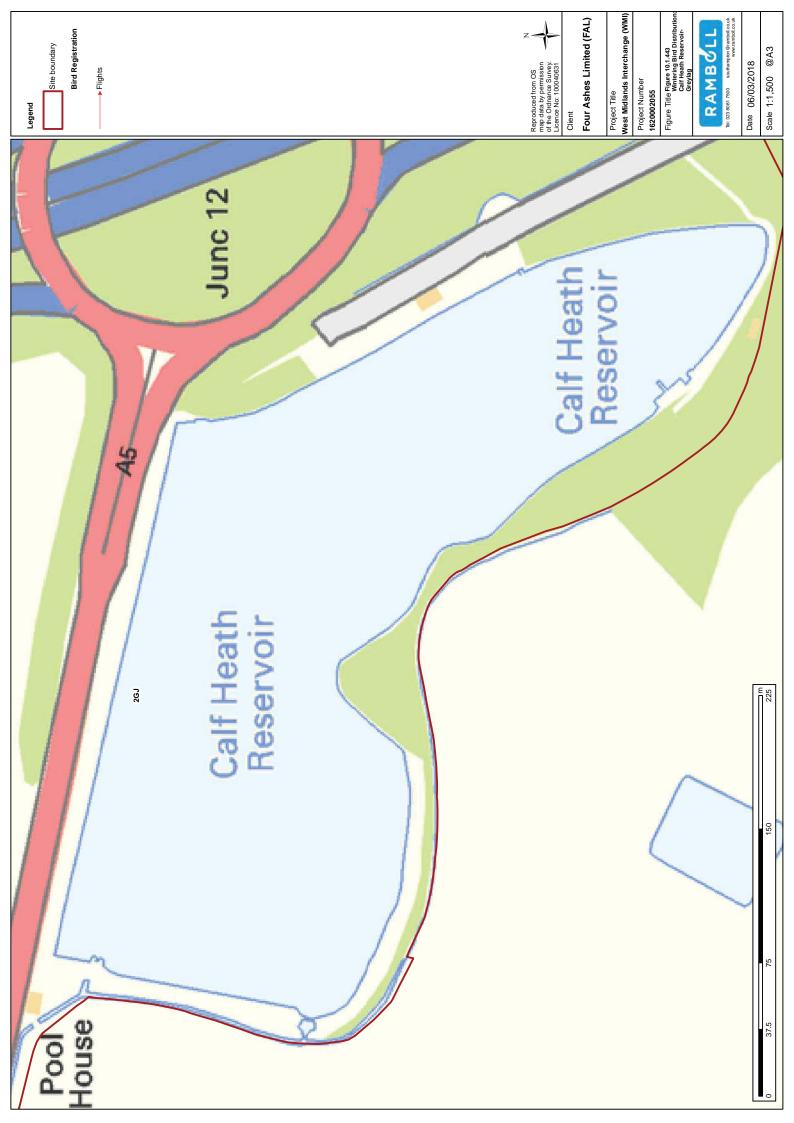


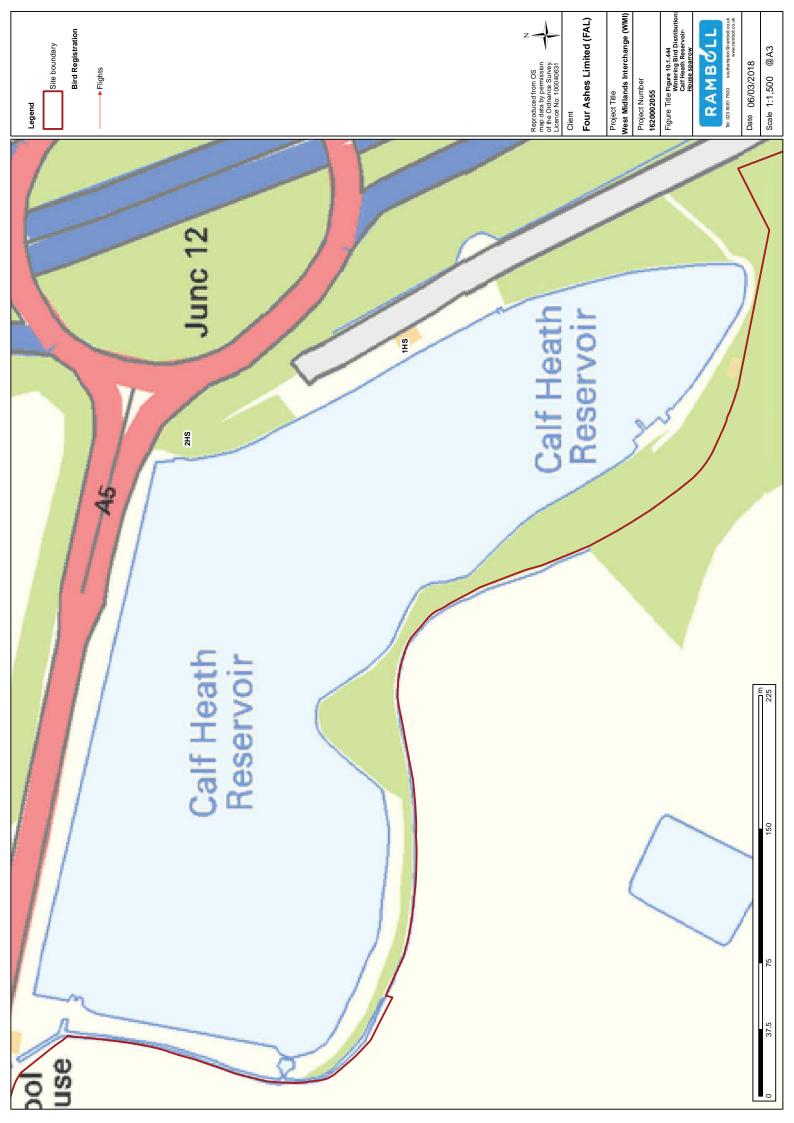


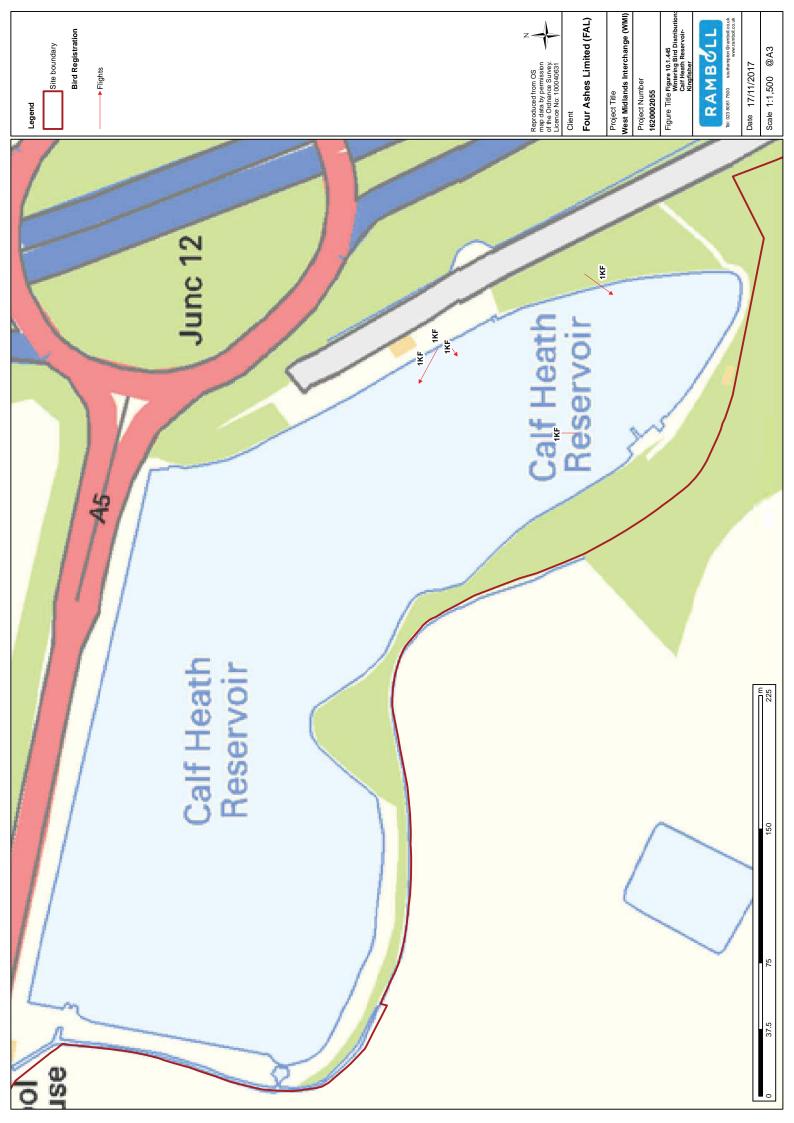


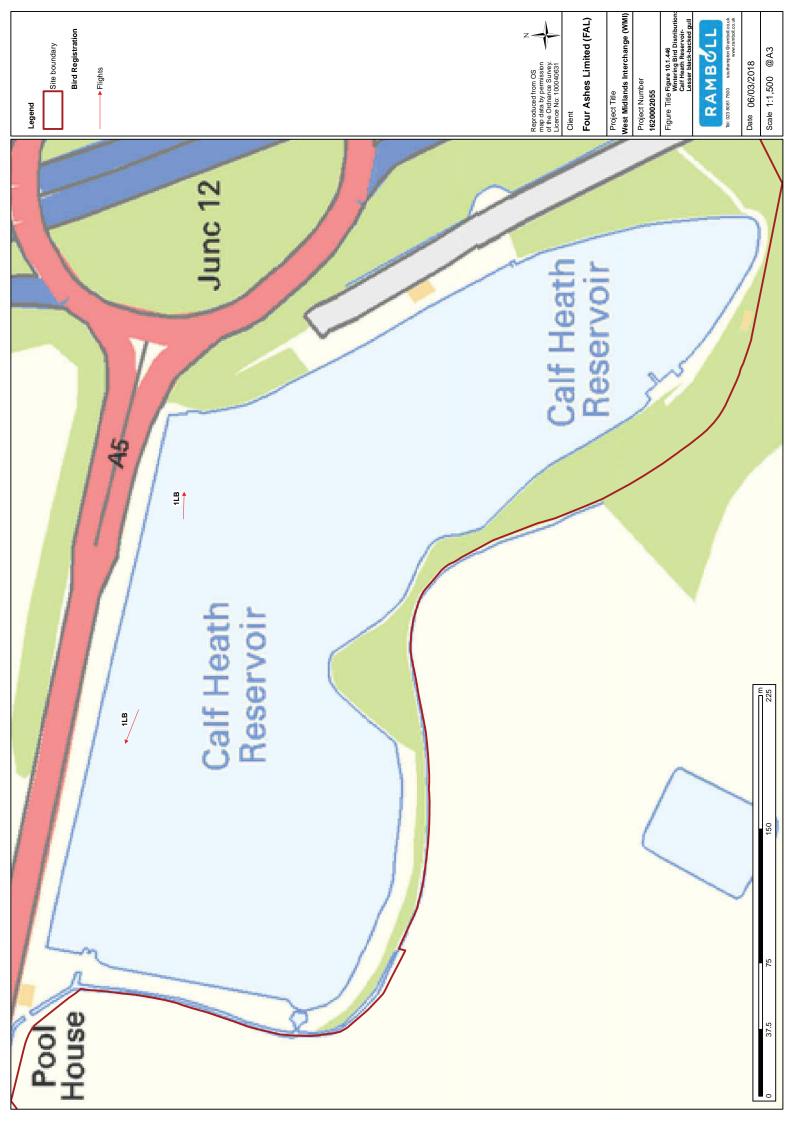


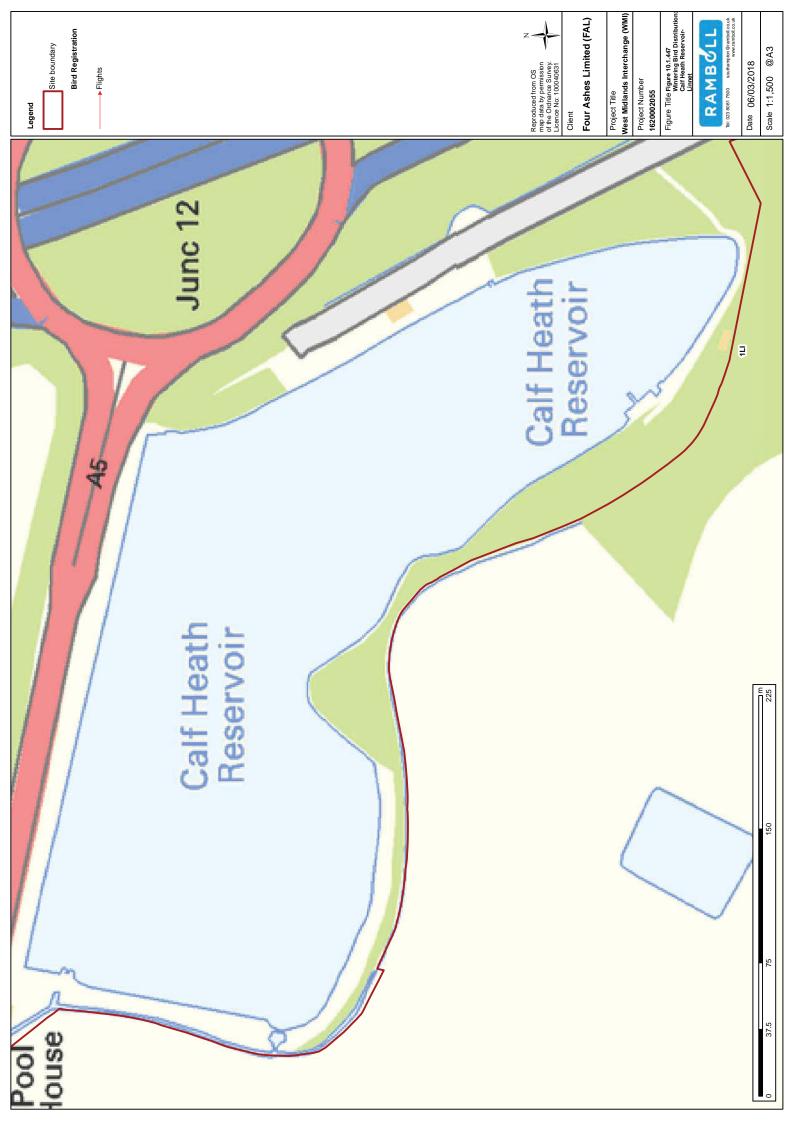


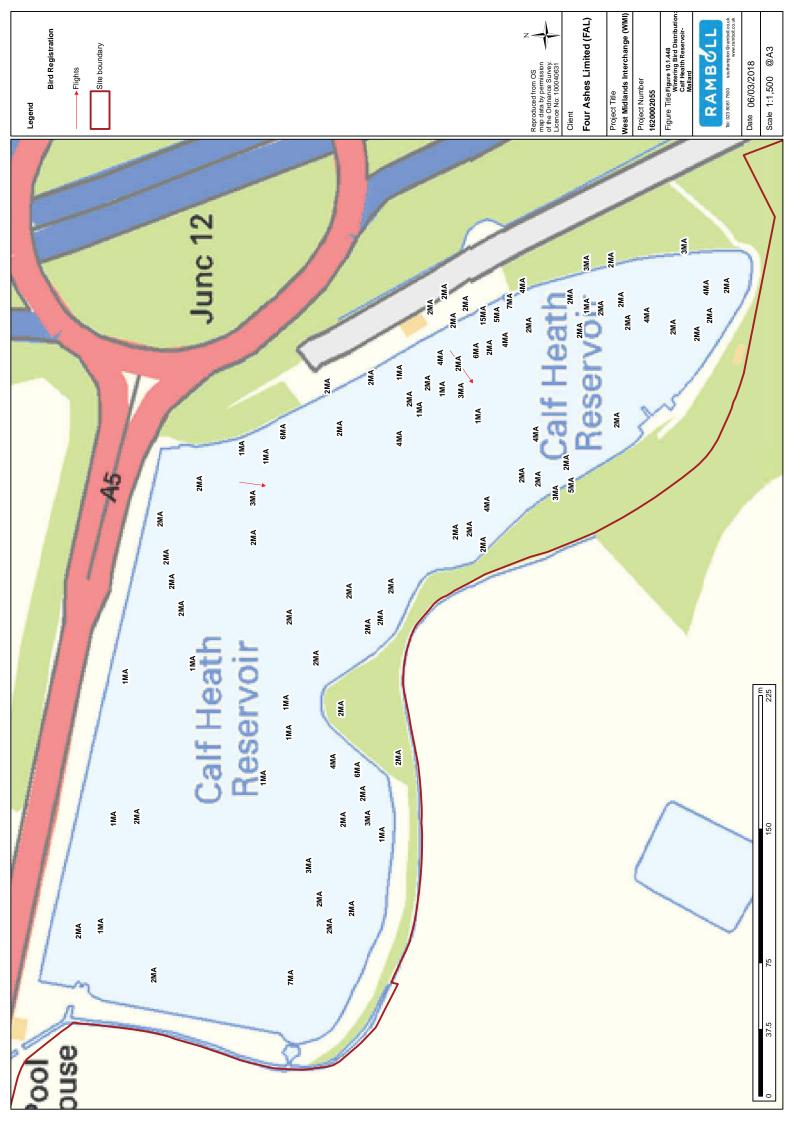


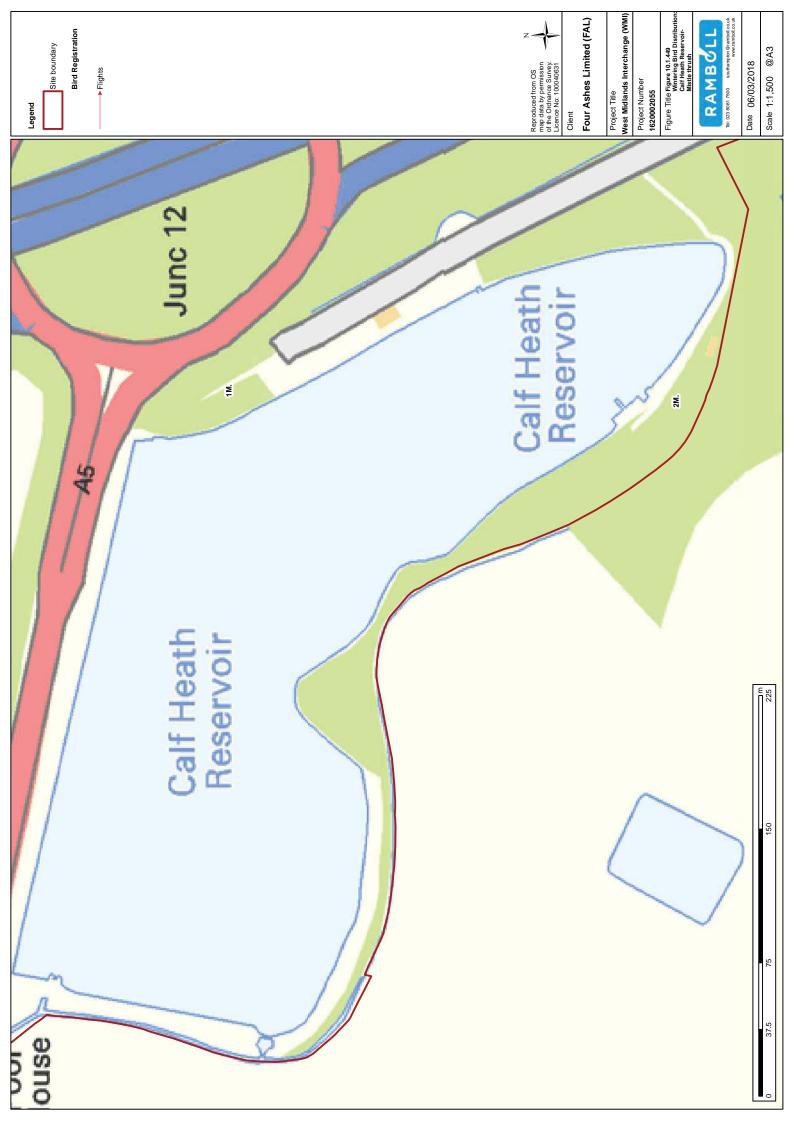


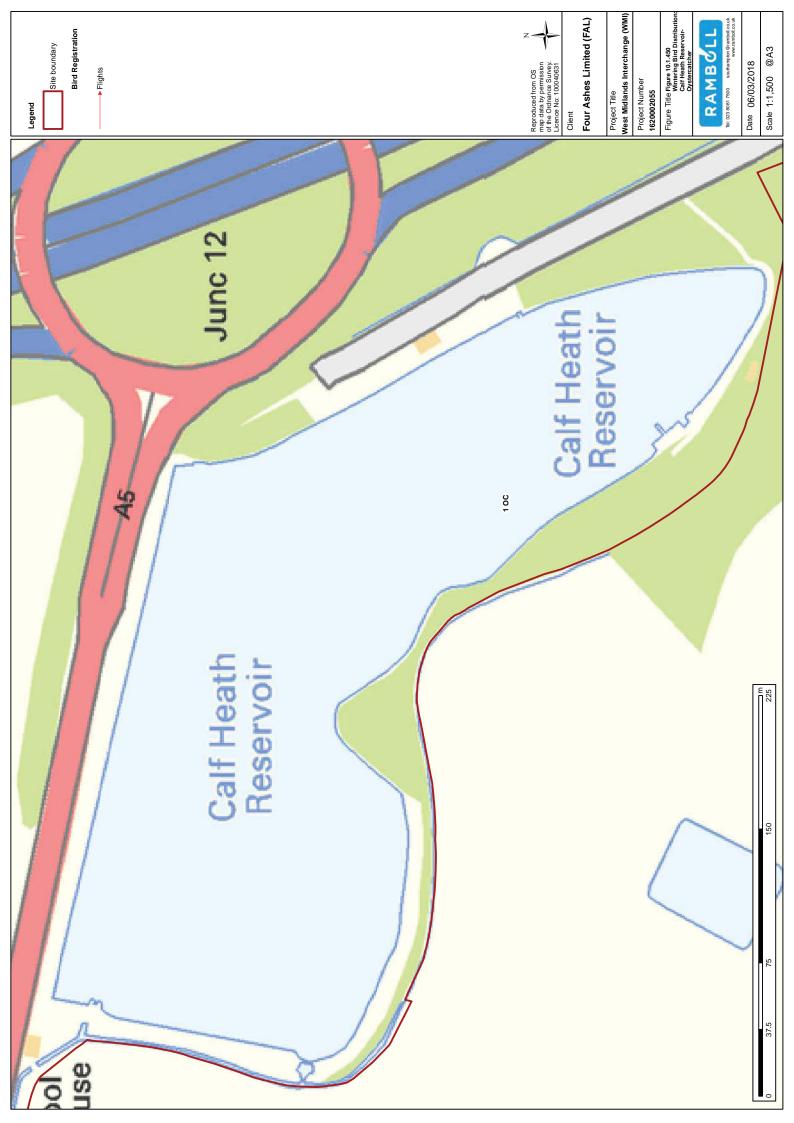


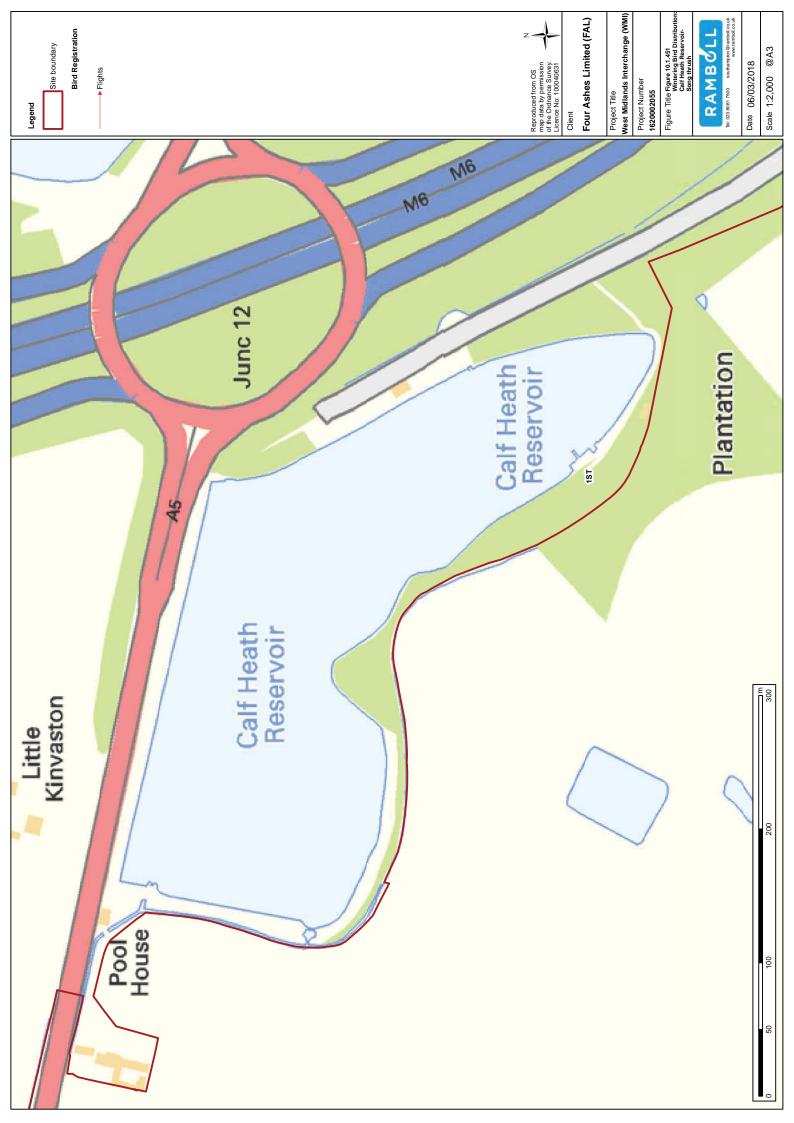


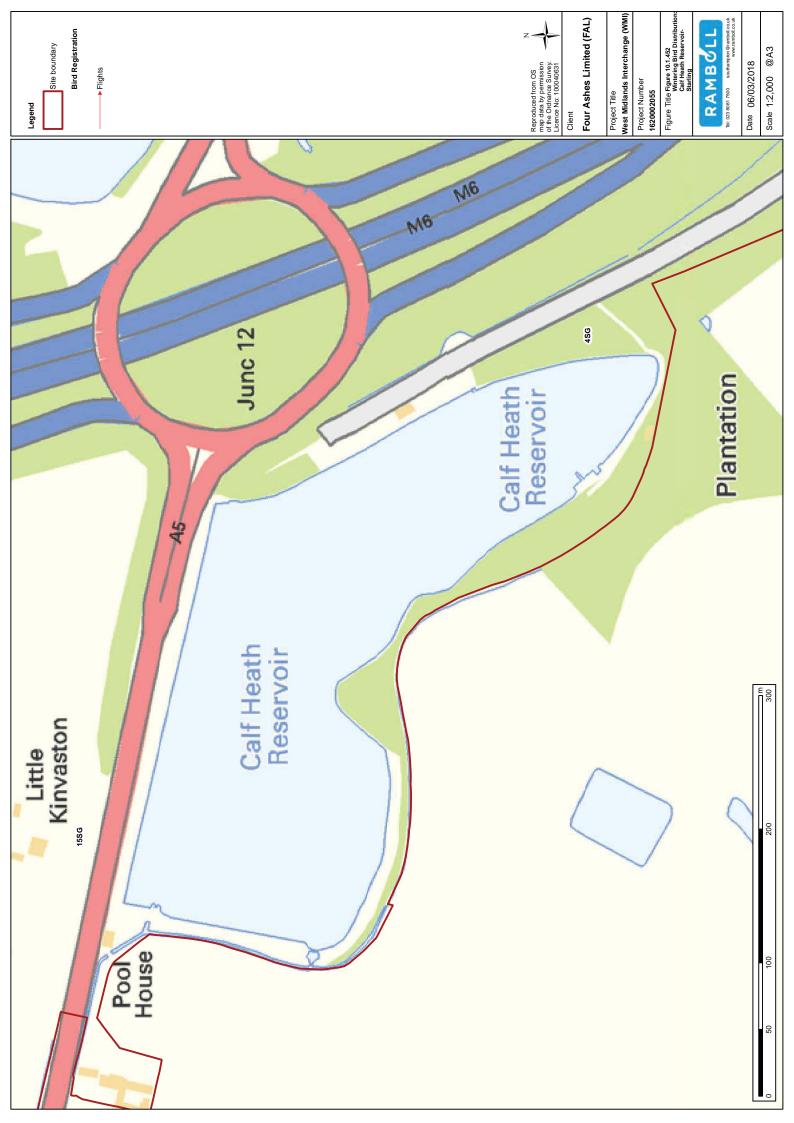


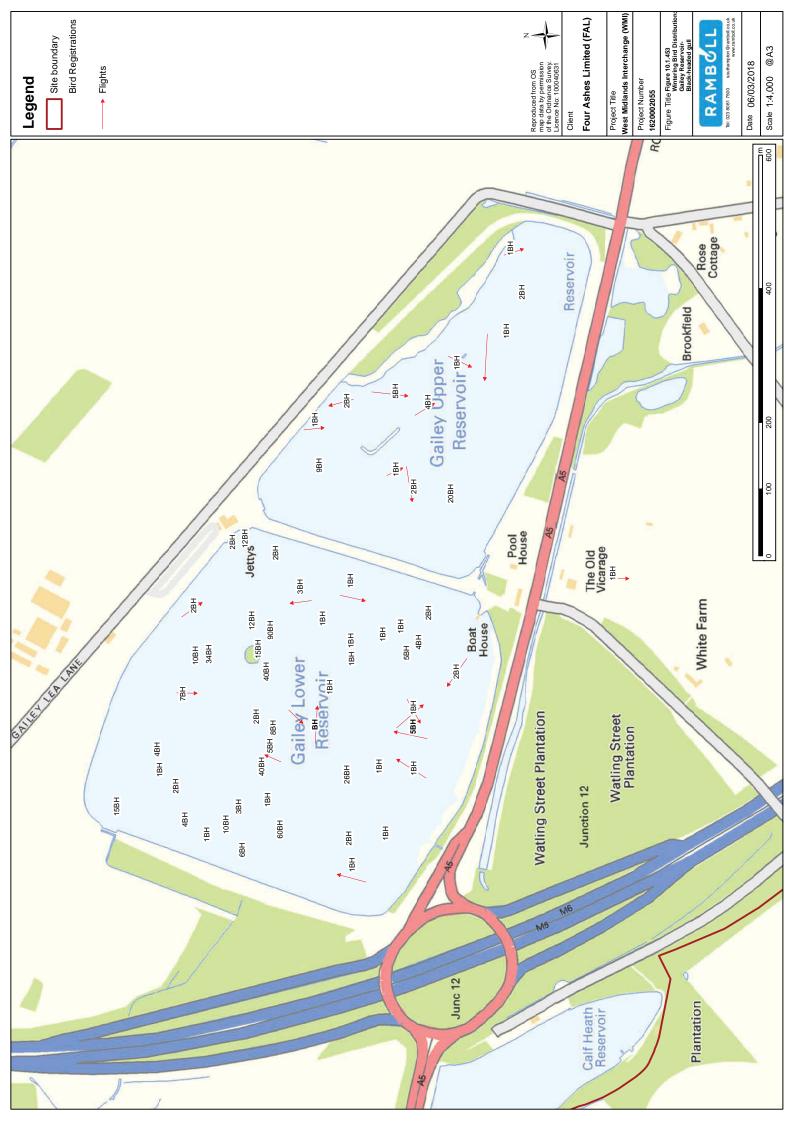


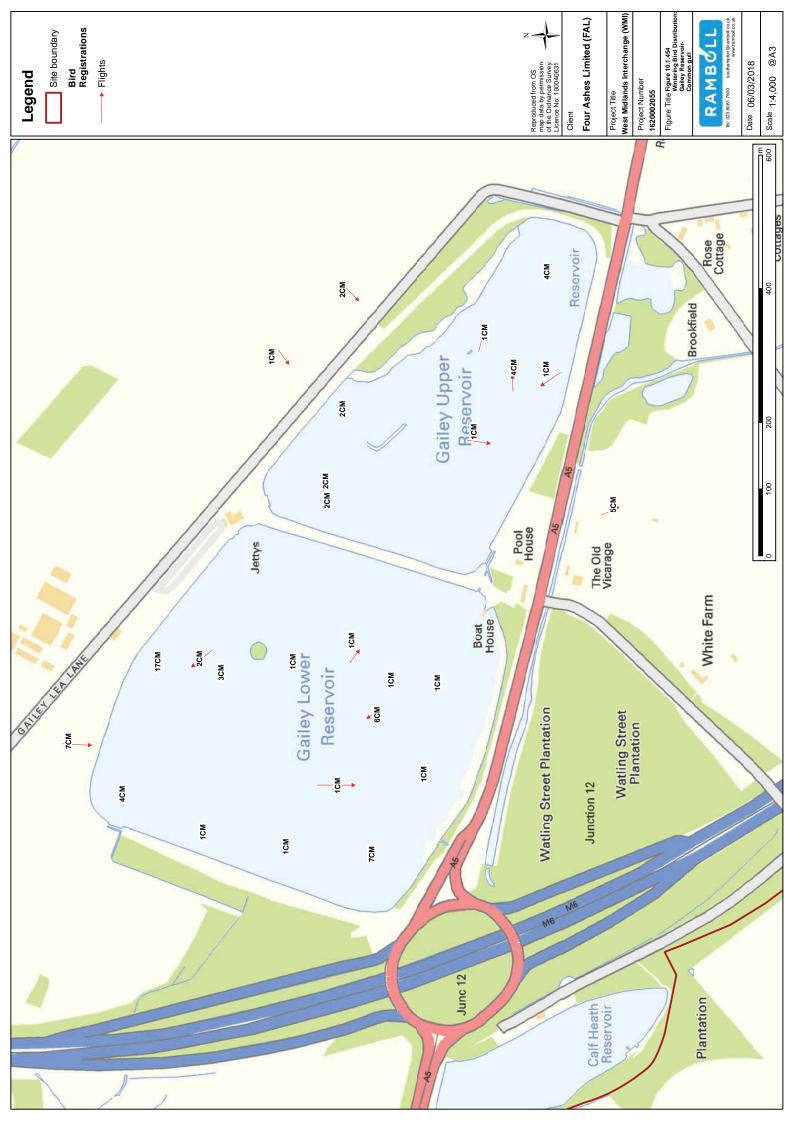


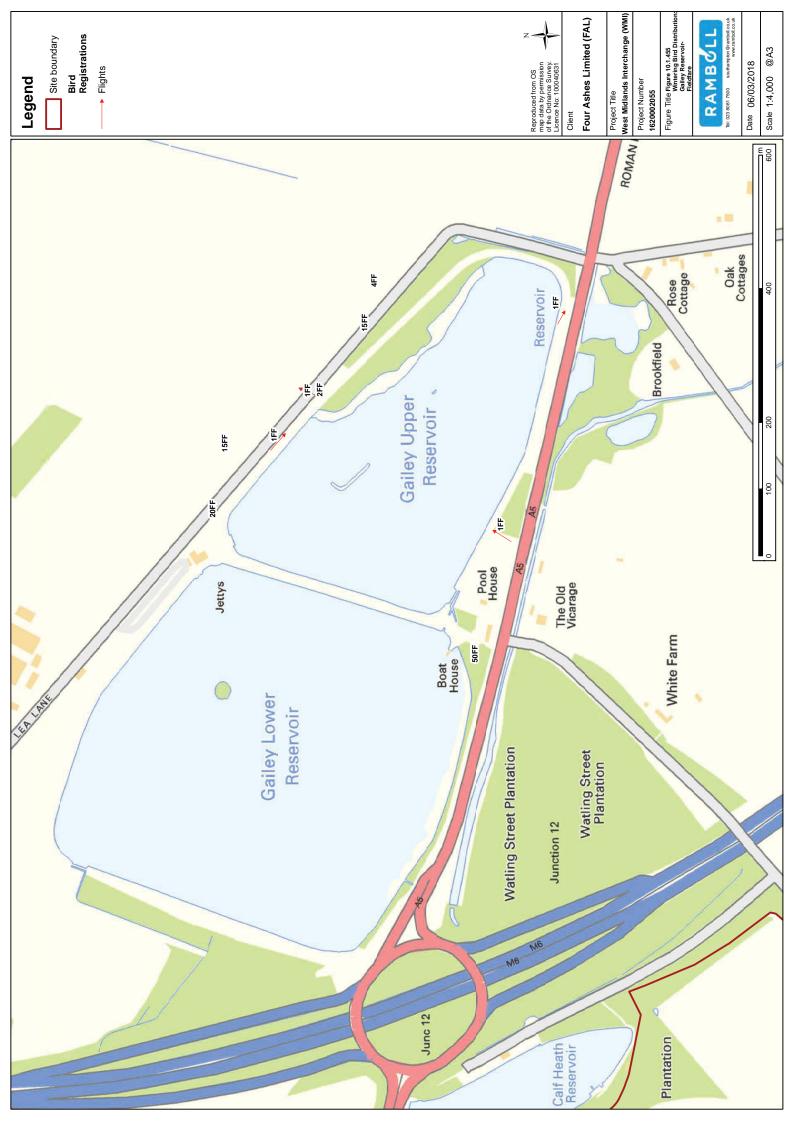


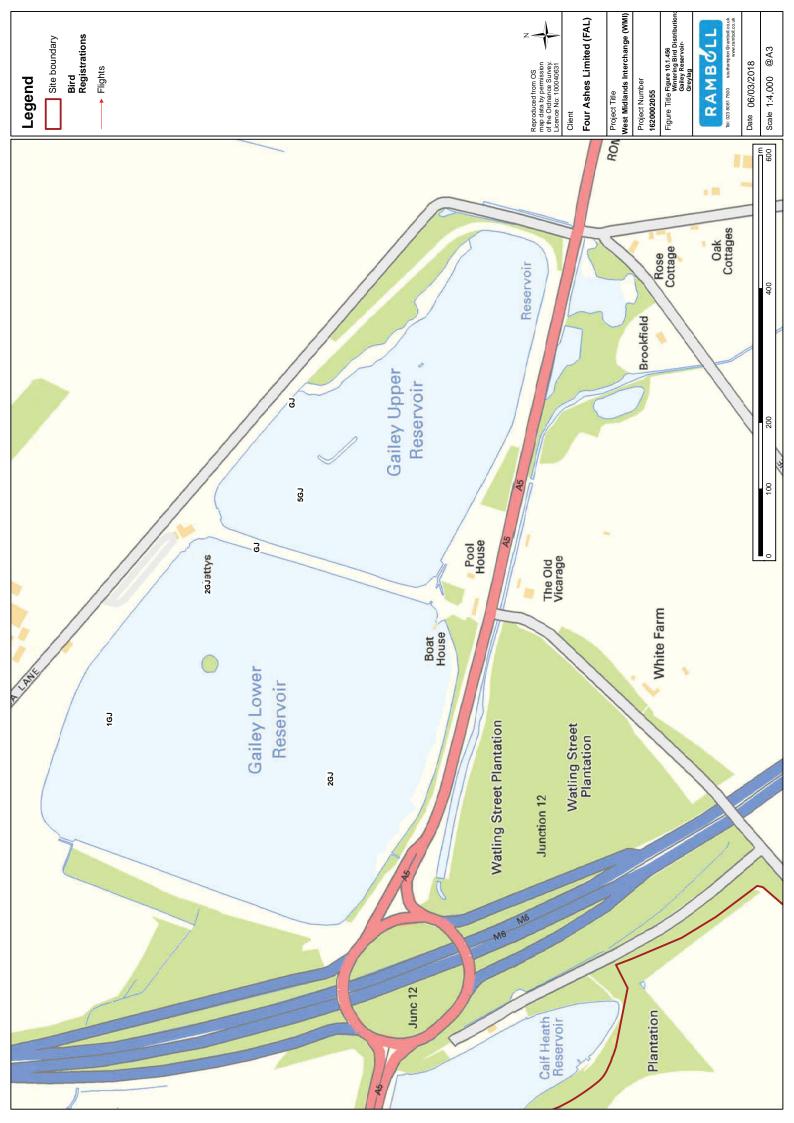


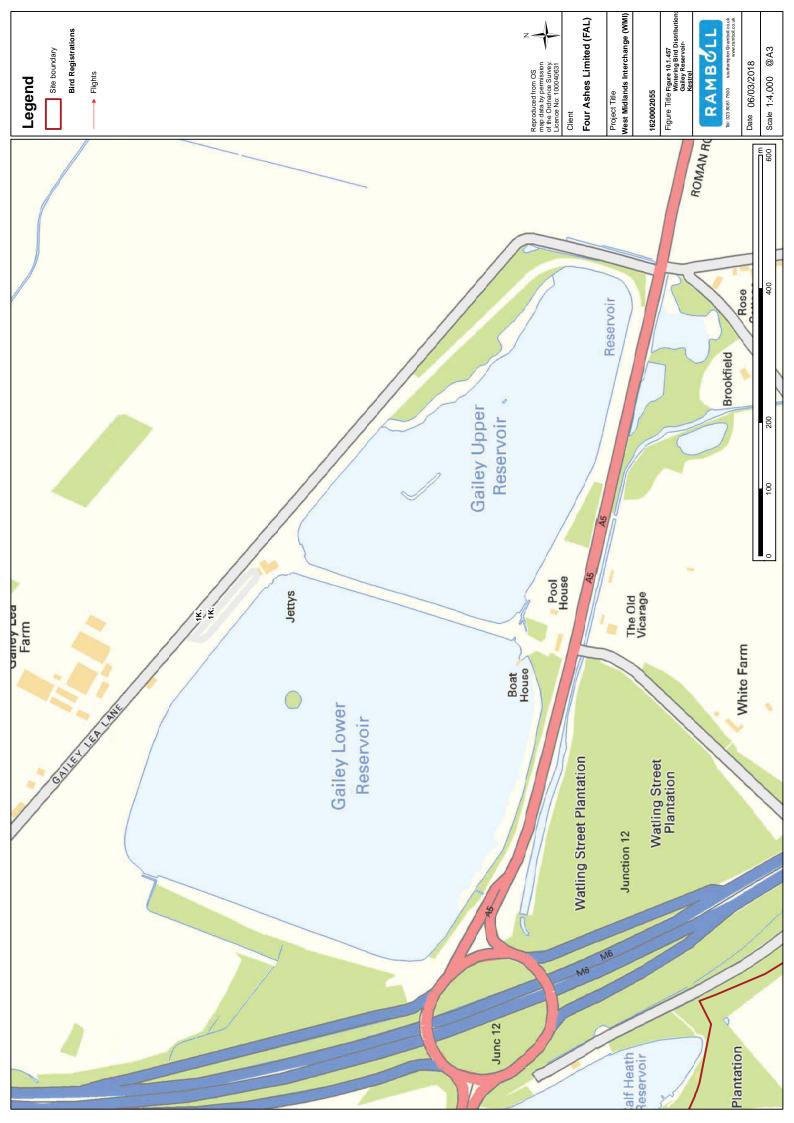


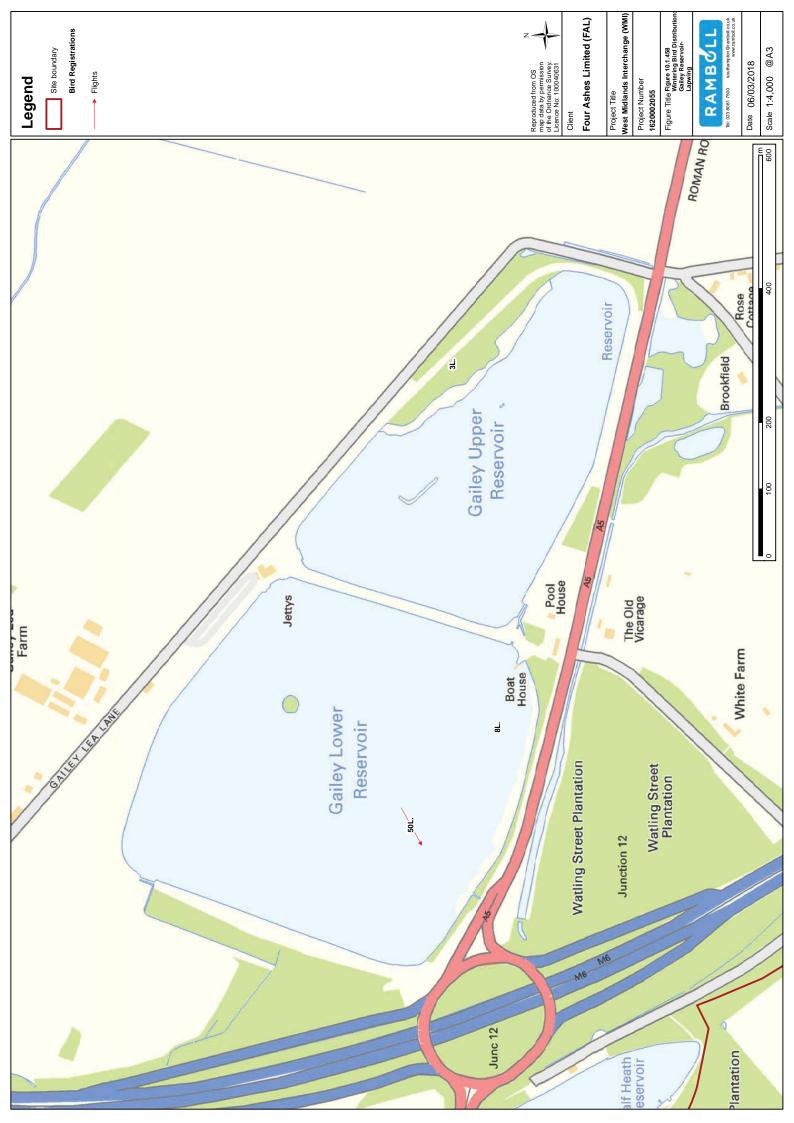


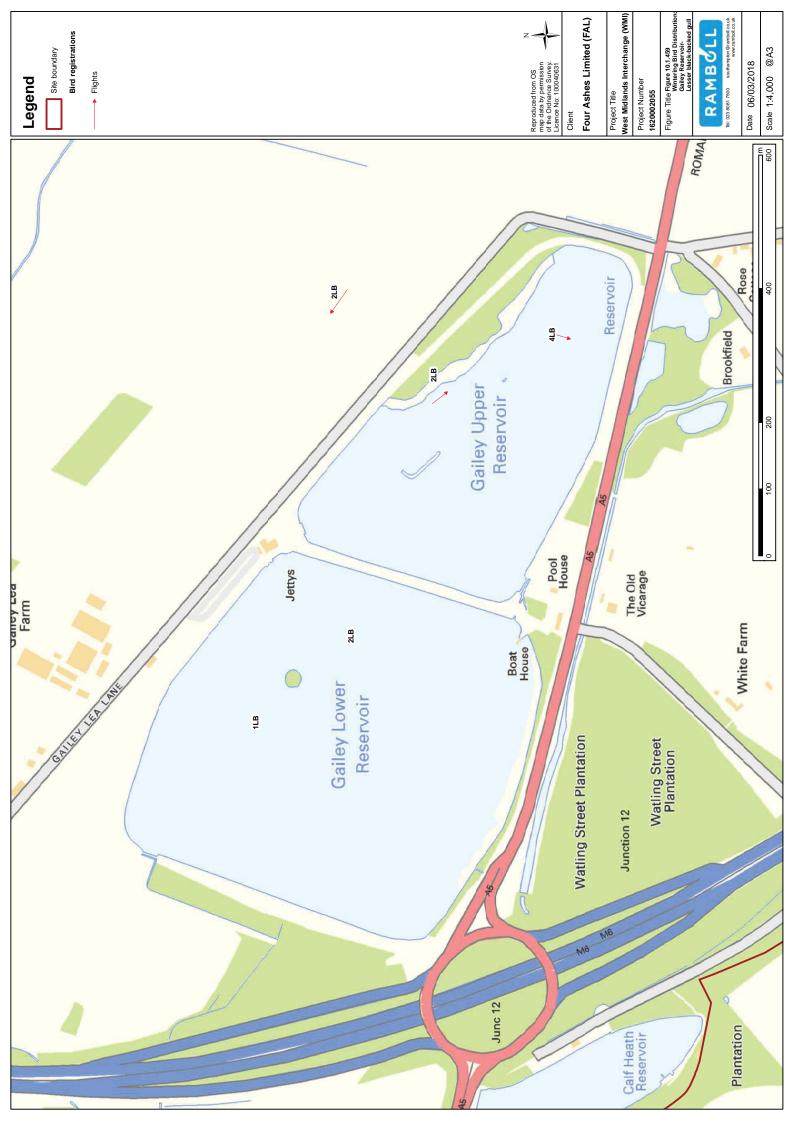


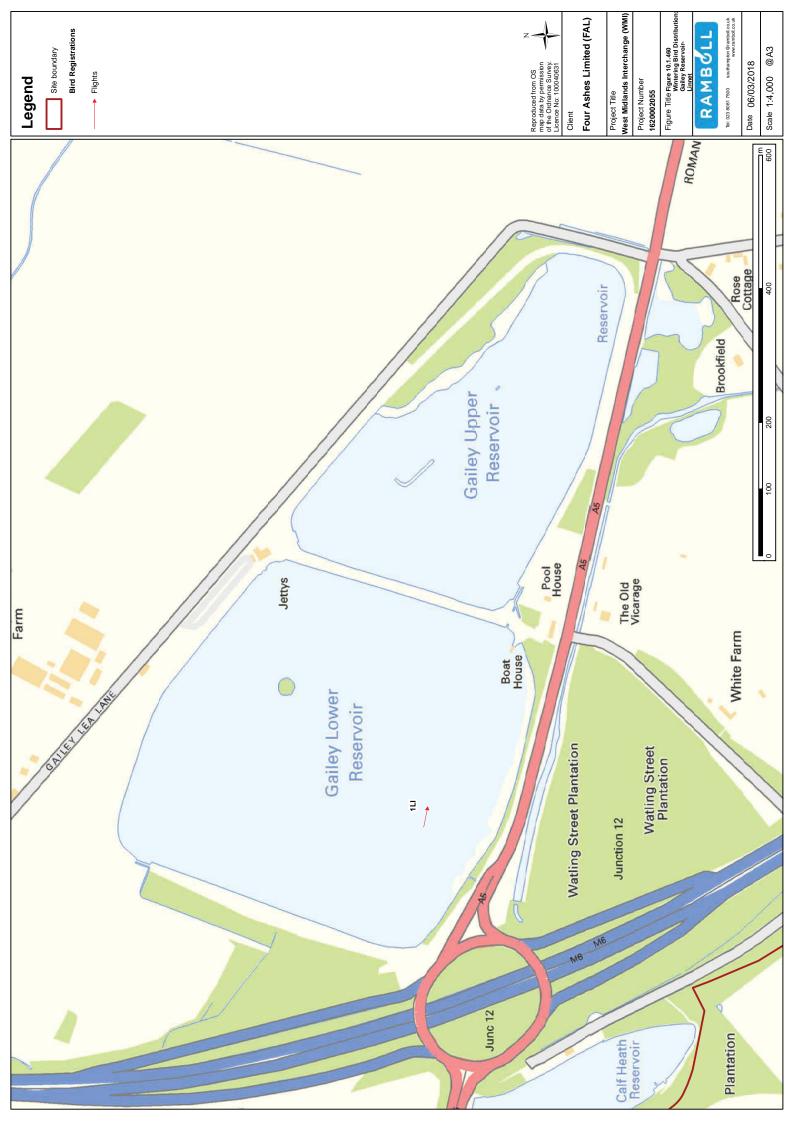


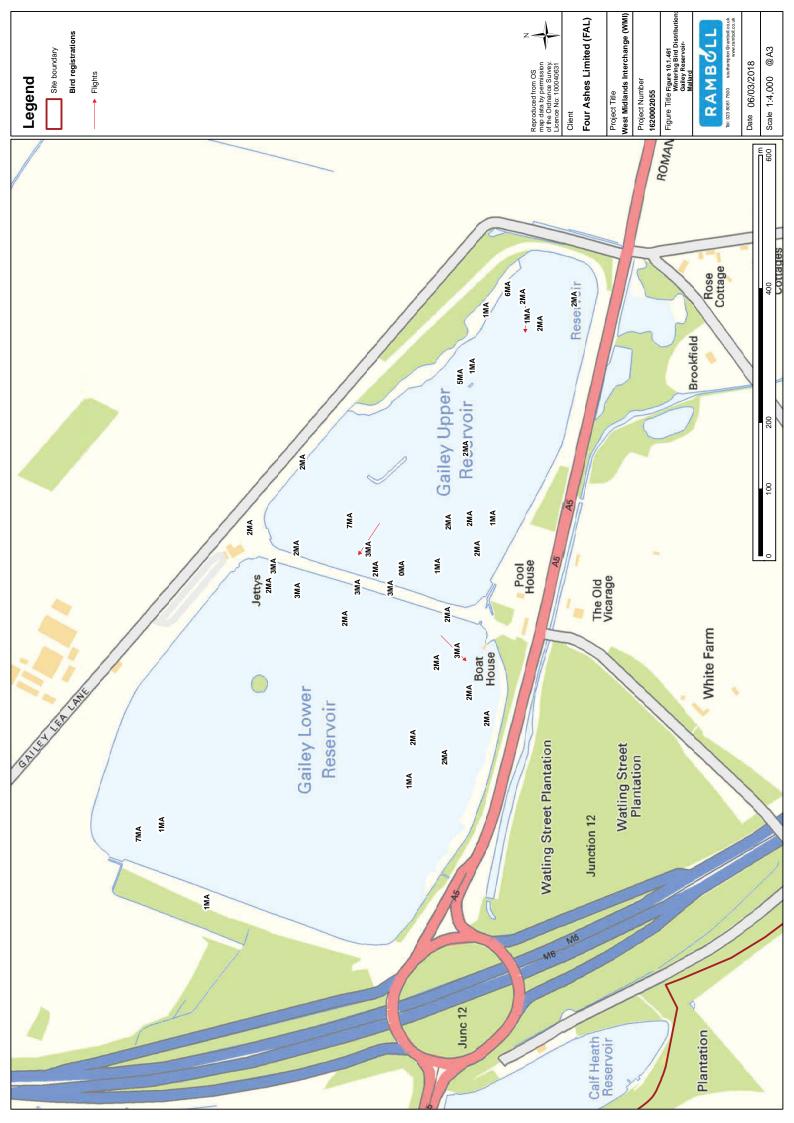


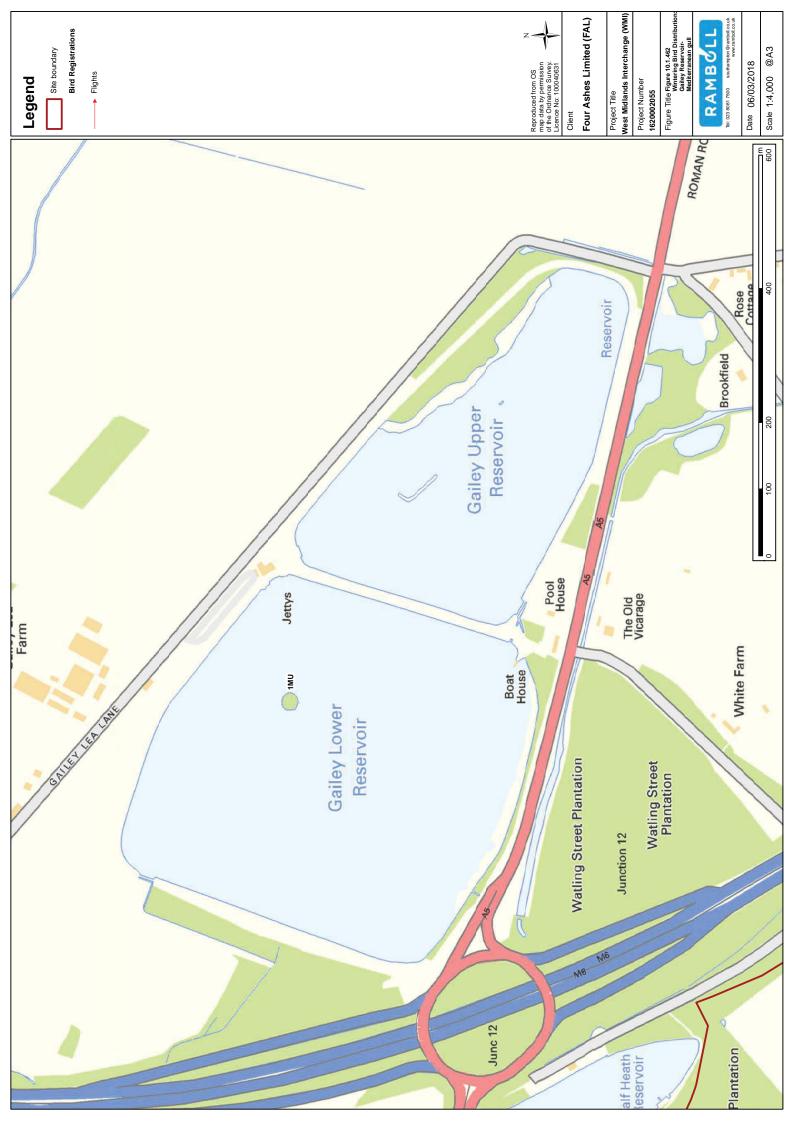


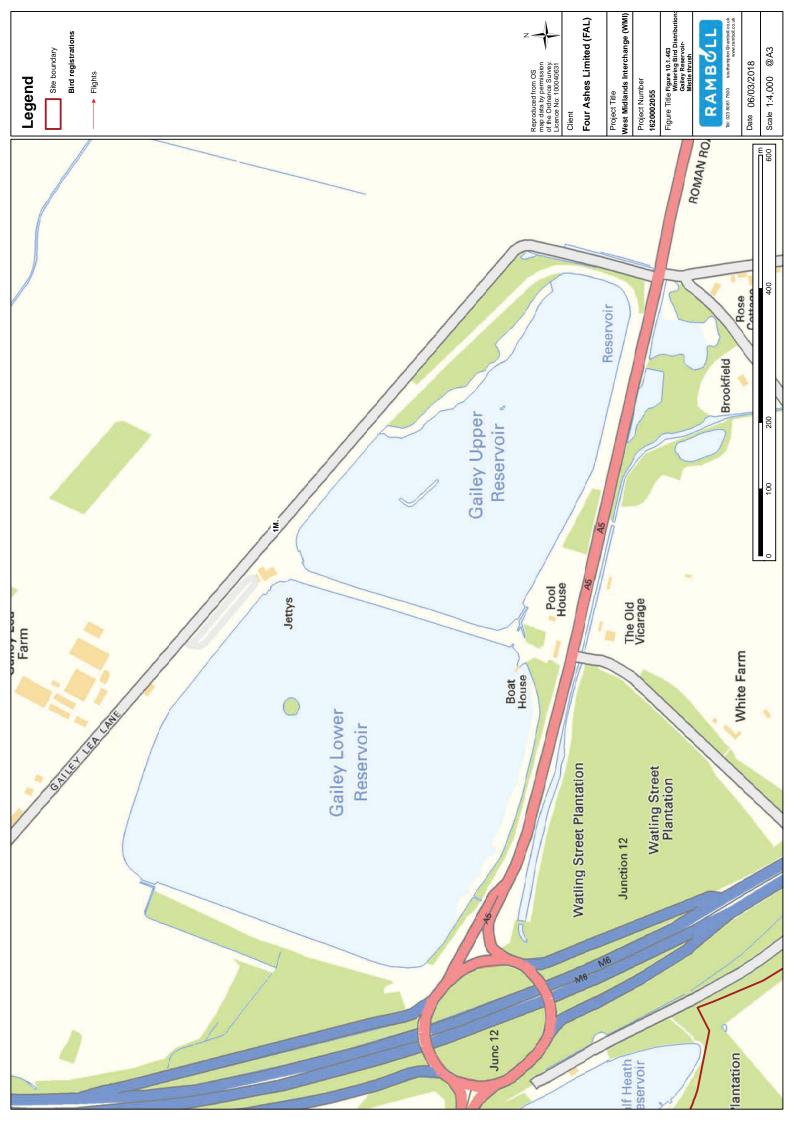


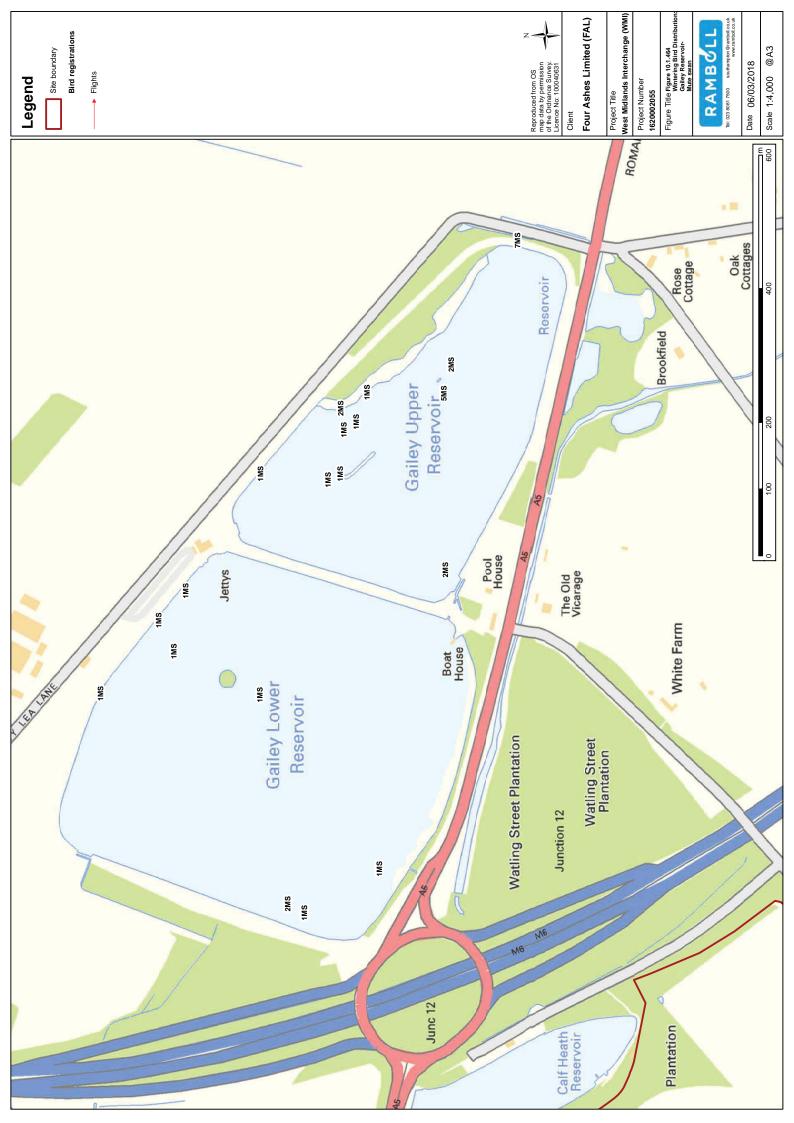


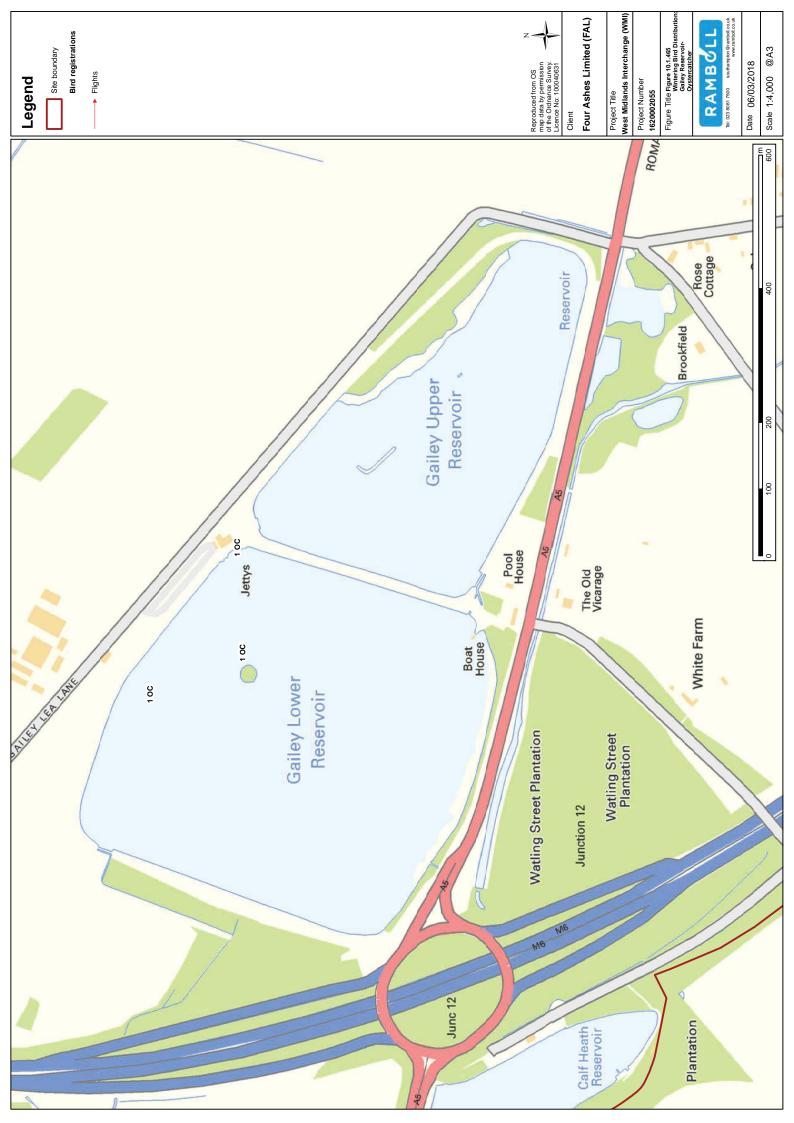


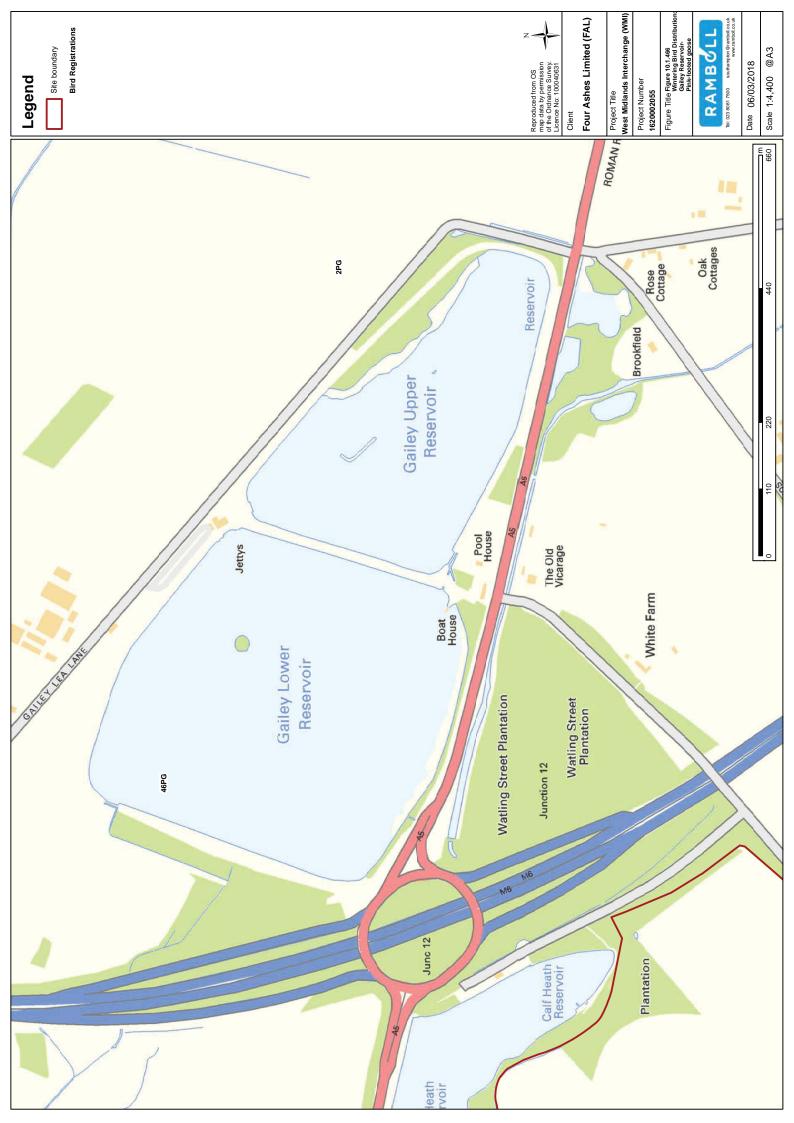


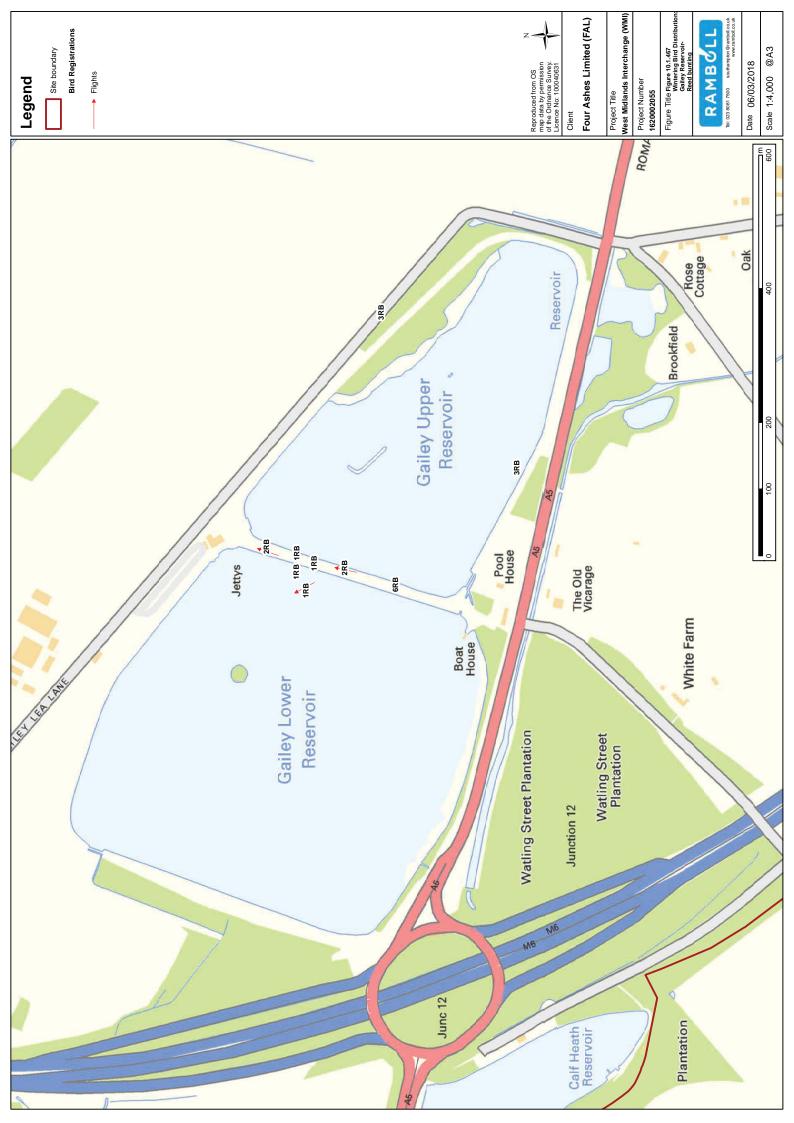


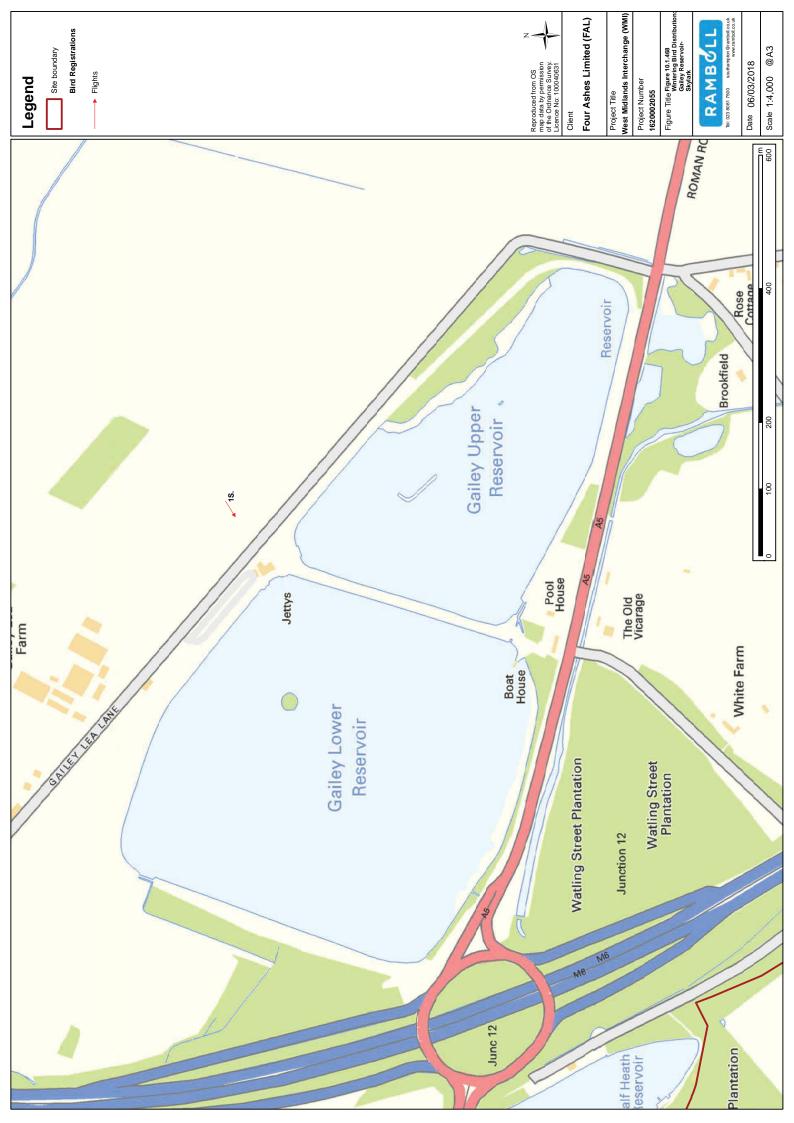


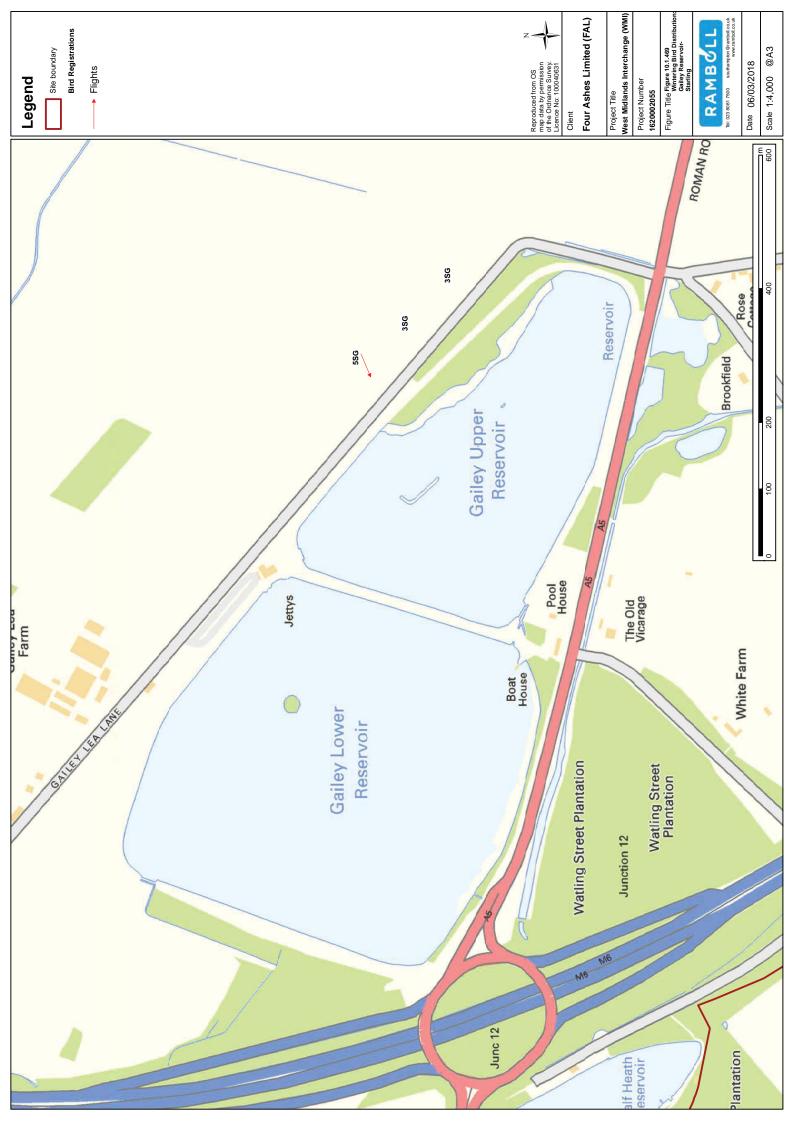












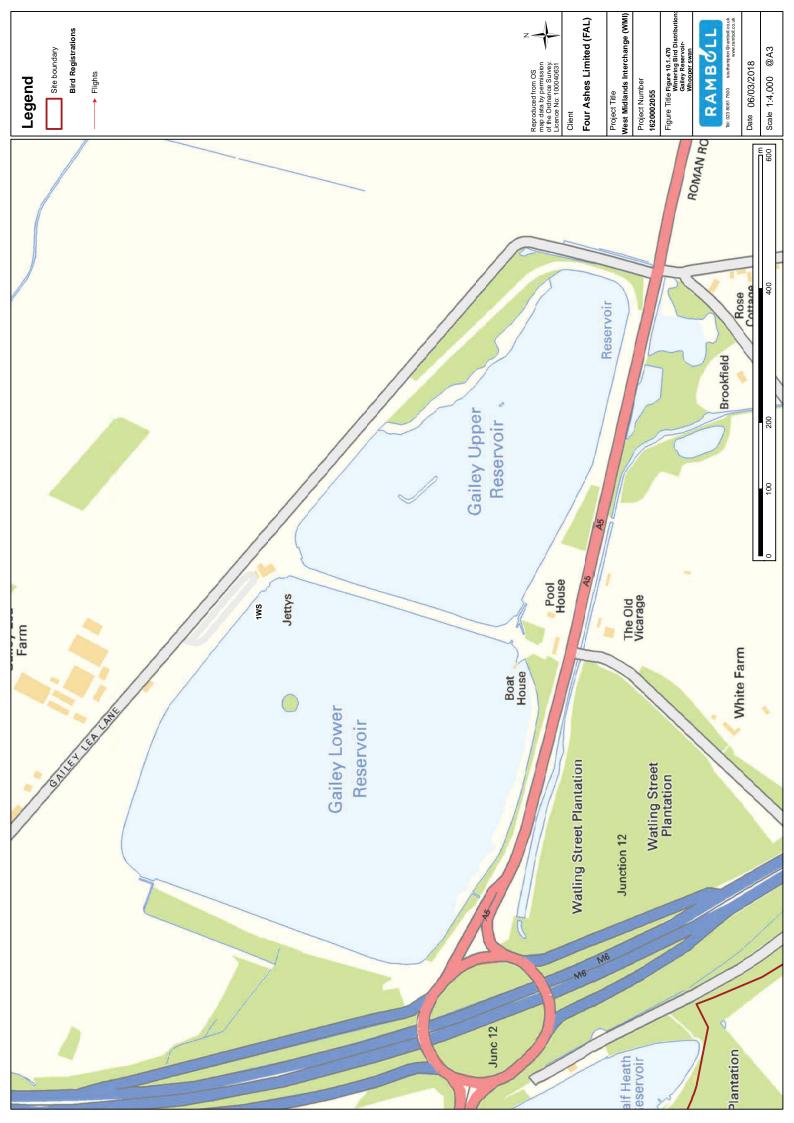
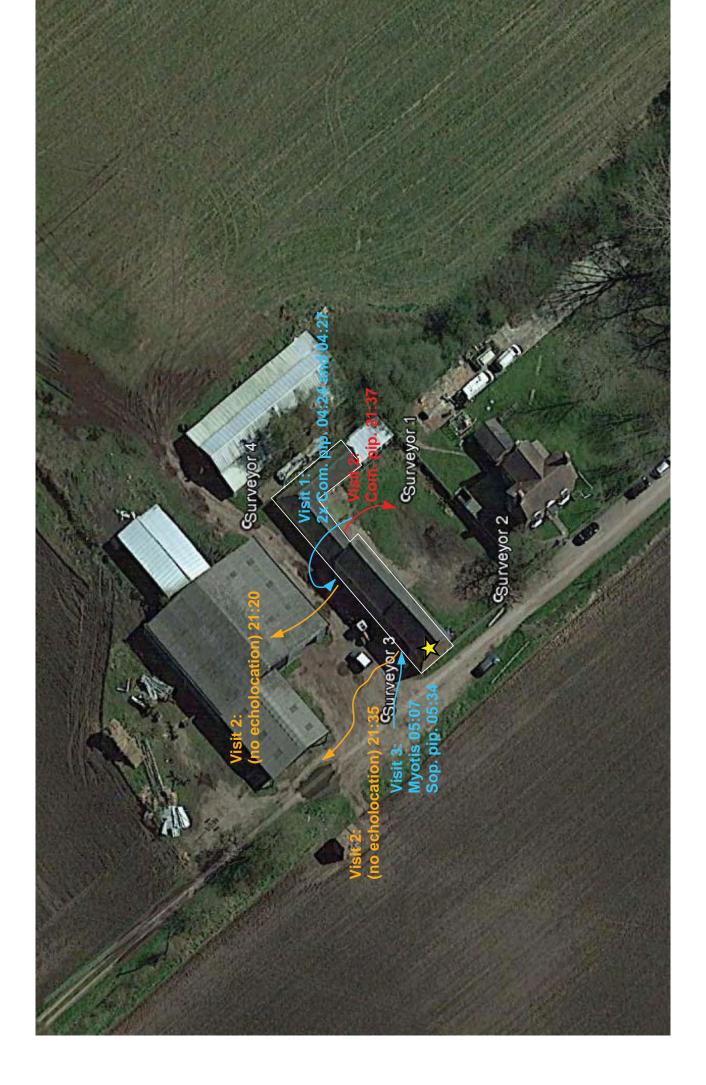
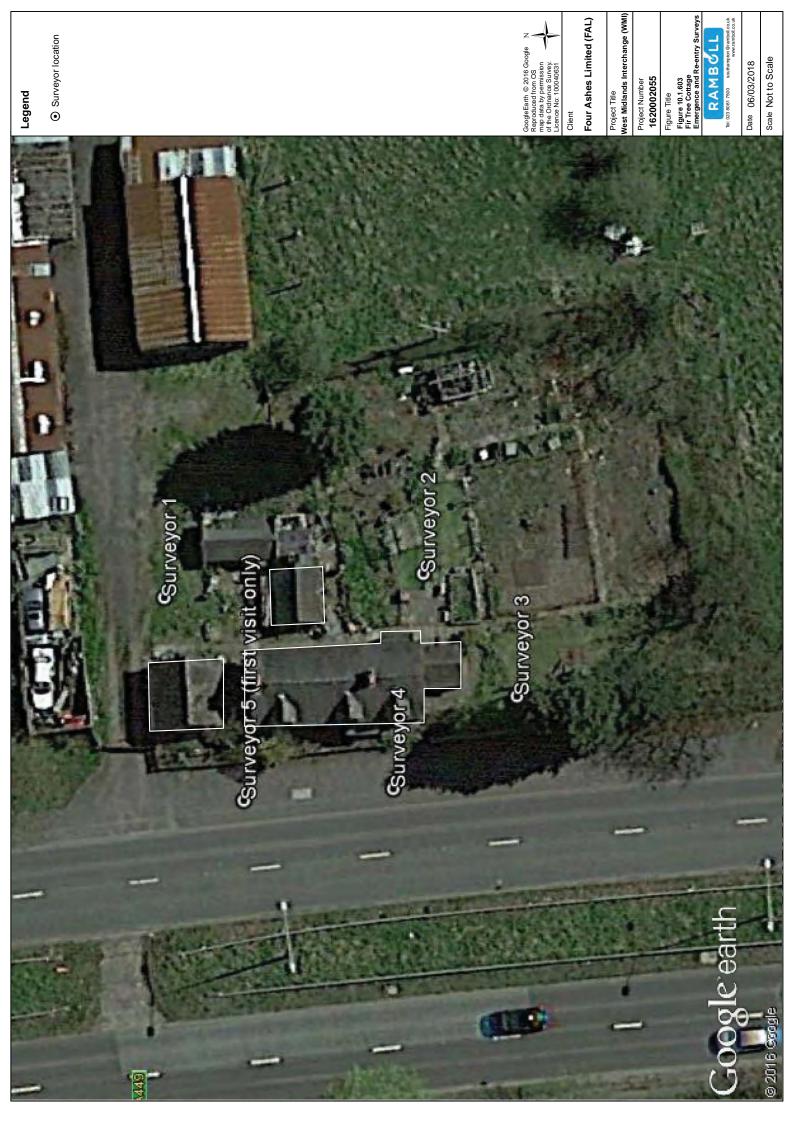


FIGURE SERIES 600: BATS

10.1.601	Woodside Farmhouse
10.1.602	Woodside Barn
10.1.603	Fir Tree Cottage
10.1.604	Gailey Magazine
10.1.605	Gravelly Way - The Barn
10.1.606	Gravelly Way – The Farmhouse
10.1.607	Gravelly Way - The Stables
10.1.608	Croft House Emergence
10.1.609	Heath Farm Main Farmhouse Emergence
10.1.610	Heath Farm Outbuildings Emergence
10.1.611	Mile End Cottage Emergence
10.1.612	Ash House Emergence
10.1.613	Clovelly Emergence
10.1.614	Stoney Brook Cottage Emergence
10.1.615	Stoney Brook Cottage - Annexe Emergence
10.1.616	Bat Activity Survey Transect
10.1.617	Distribution of Static Bat Detectors
10.1.618	May Static Detector Locations and Species
10.1.619	June Static Detector Locations and Species
10.1.620	July Static Detector Locations and Species
10.1.621	August Static Detector Locations and Species
10.1.622	September Static Detector Locations and Species
10.1.623	October Static Detector Locations and Species
10.1.624	Bat Trapping Locations June 2016
10.1.625	Bat Trapping Locations August 2016
10.1.626	Bat Trapping Locations 2017
10.1.627	Bat Roost Potential of Trees to be Lost
10.1.628	May Bat Activity Survey
10.1.629	June Bat Activity Survey
10.1.630	July Bat Activity Survey
10.1.631	August Bat Activity Survey
10.1.632	September Bat Activity Survey
10.1.633	October Bat Activity Survey
10.1.634	Important Bat Commuting and Foraging Areas
10.1.635	Daubenton's Roosts June 2016
10.1.636	All Bat Roosts June 2016
10.1.637	All Bat Roosts August 2016
10.1.638	All Bat Roosts June 2017
10.1.639	All Bat Roosts August 2017
10.1.640	All on-site bat roosts in buildings
10.1.641	Off-Site Bat Roosts Close to the Red Line Boundary (2016 and 2017)

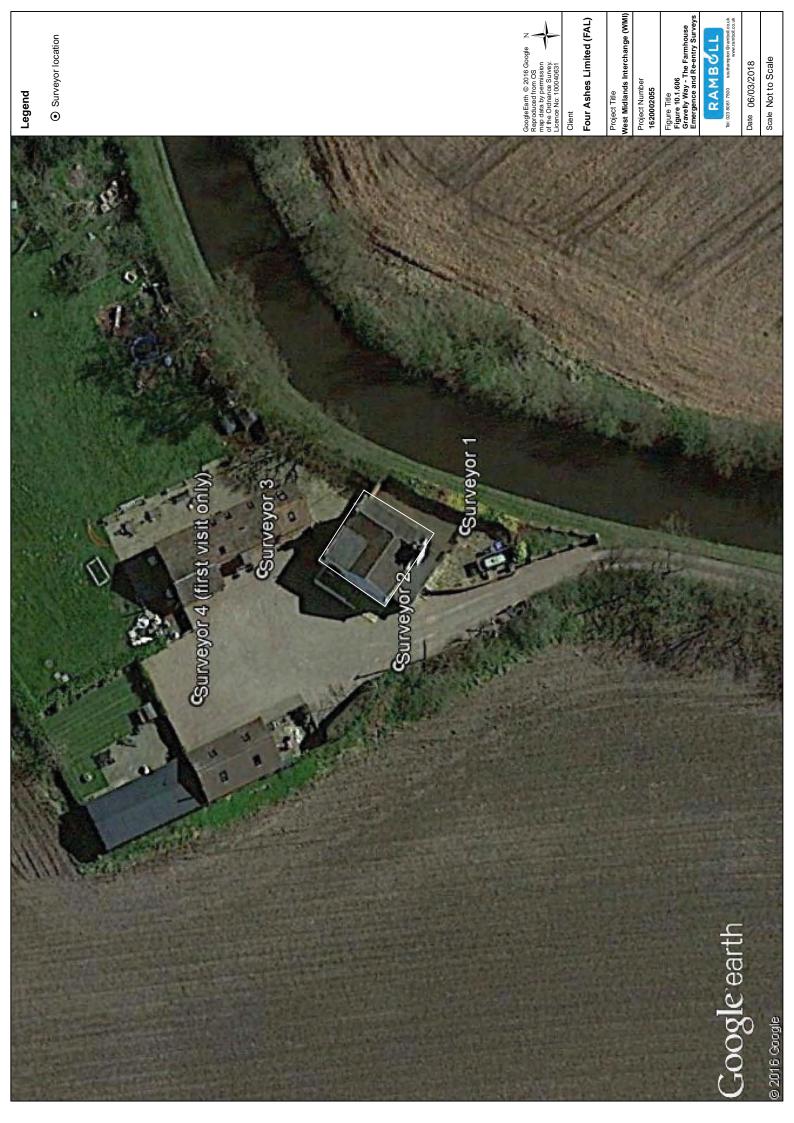


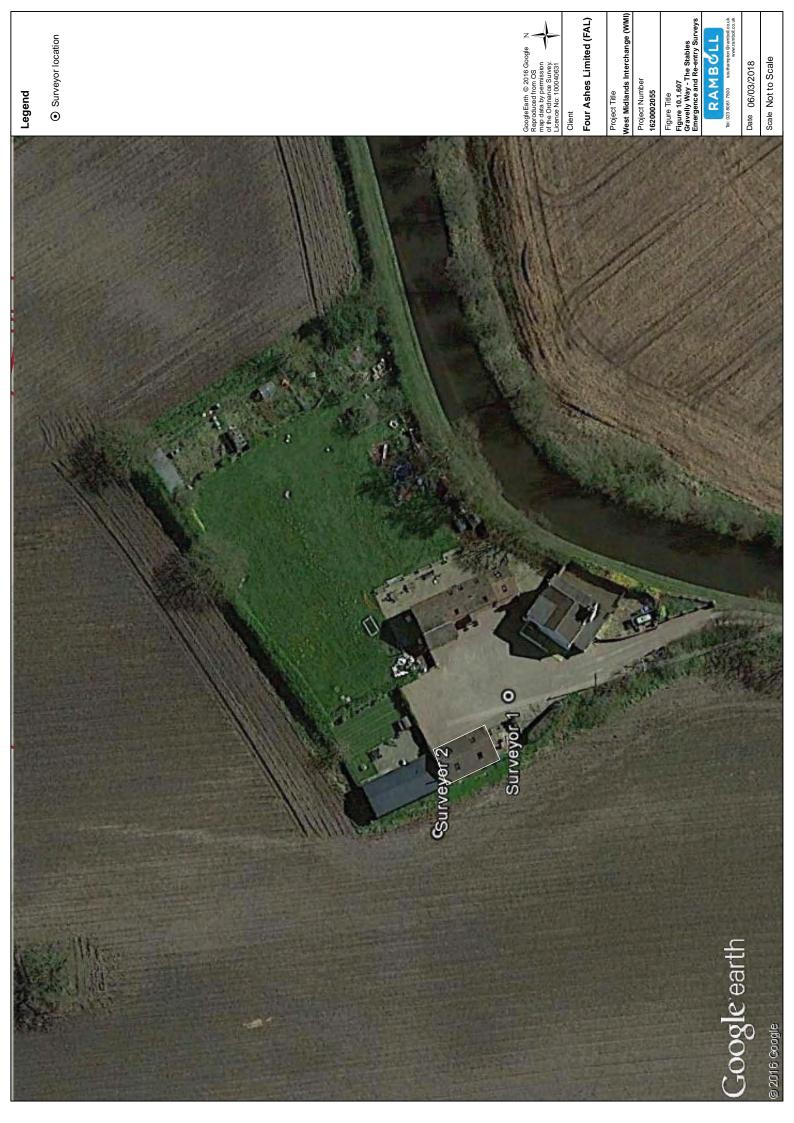










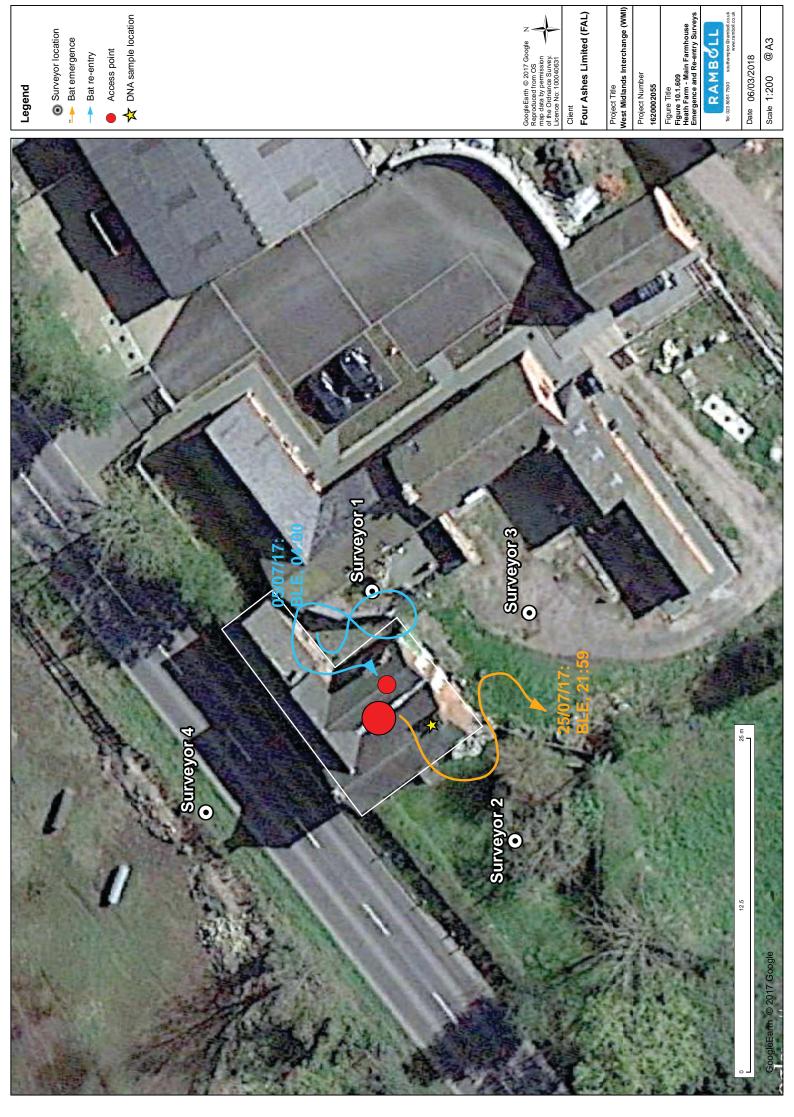


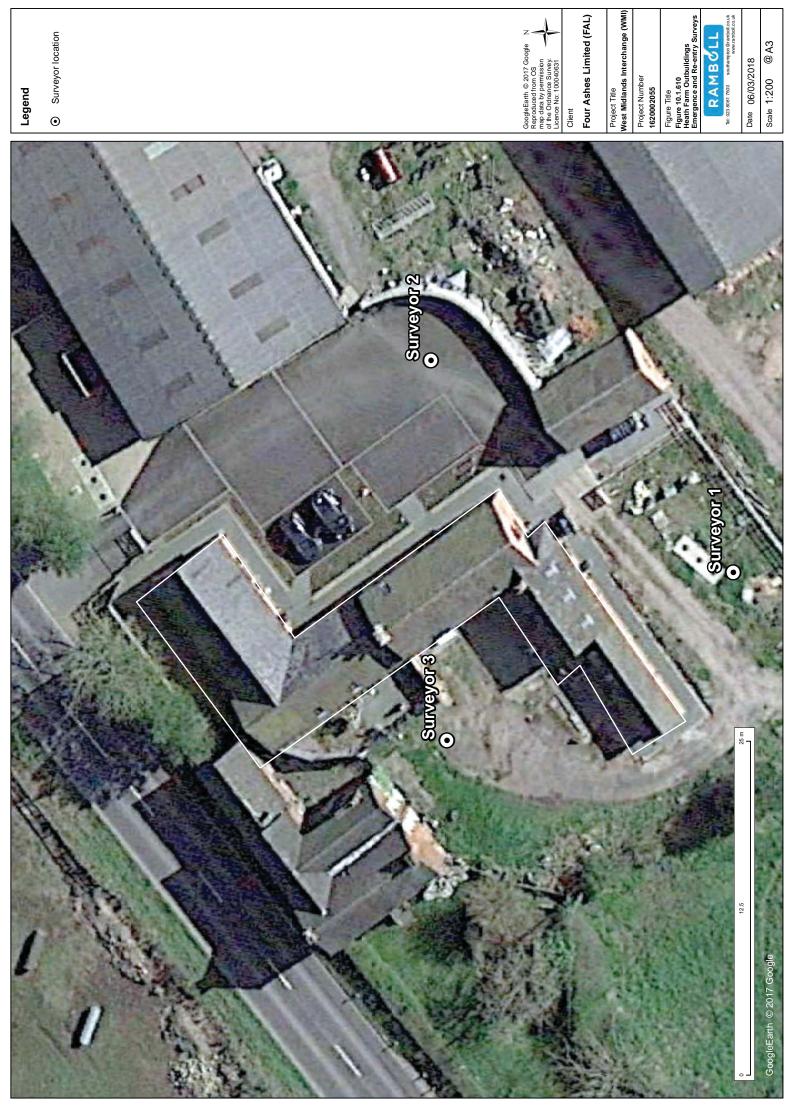


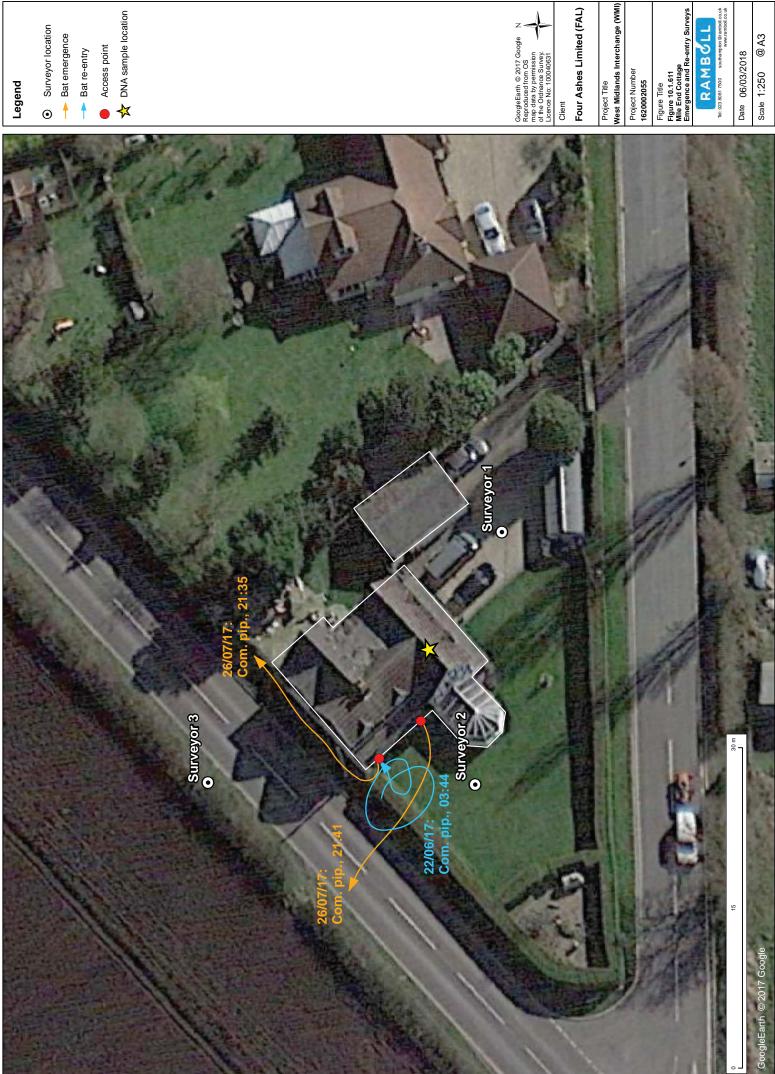
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Project Title West Midlands Interchange (WMI)

RAMBGLL
Tel: 023 8081 7500 southampton @remboli.





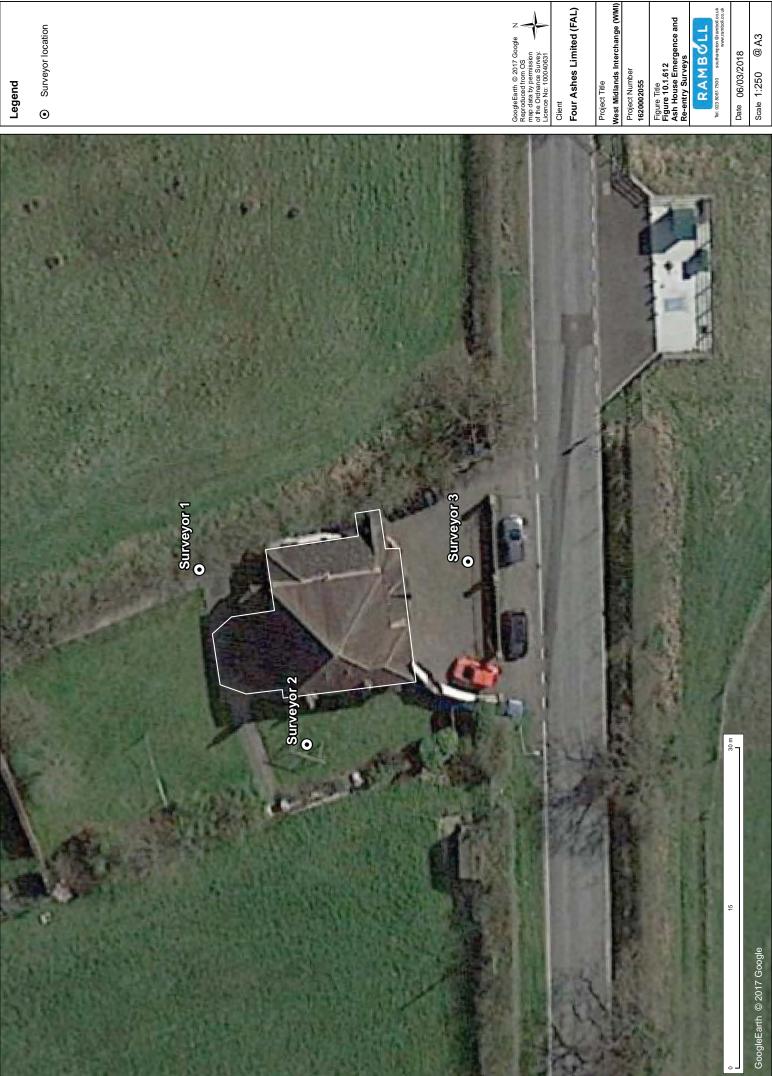




A DNA sample location

Four Ashes Limited (FAL)

RAMBGLL
Tel: 023 8081 7500 southampton @remboli.



Four Ashes Limited (FAL)



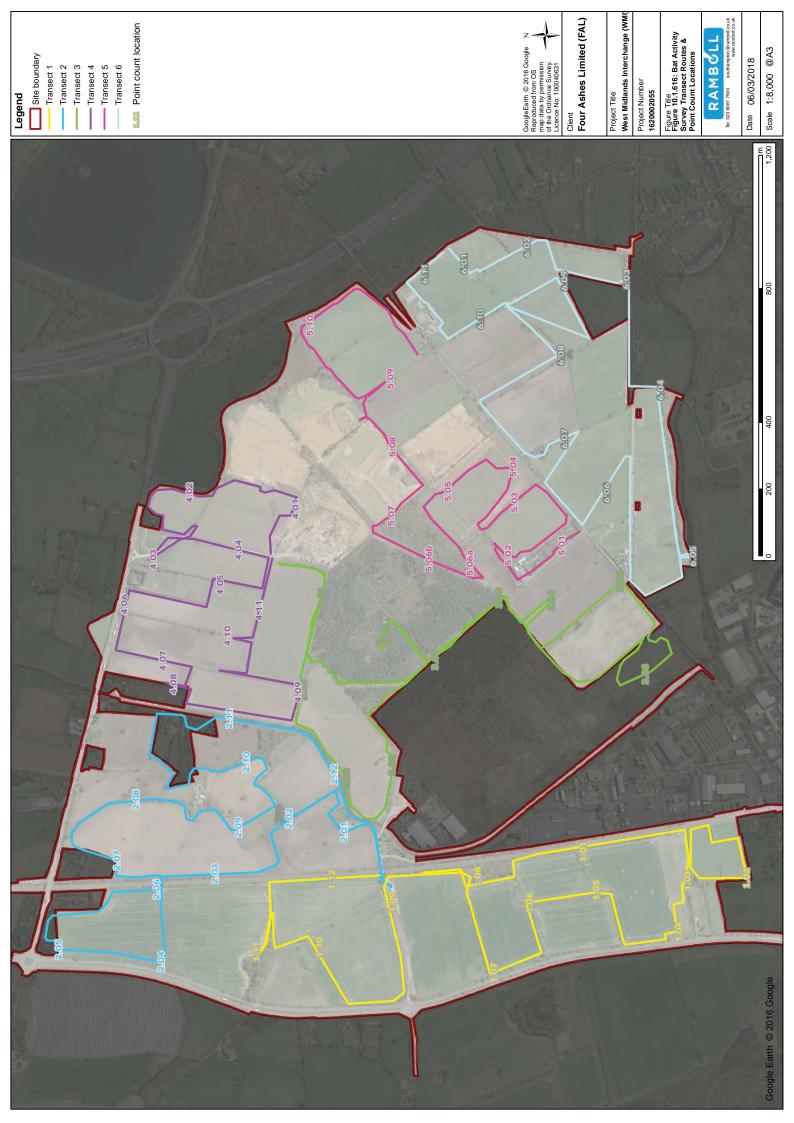
Four Ashes Limited (FAL)

RAMBÓLL



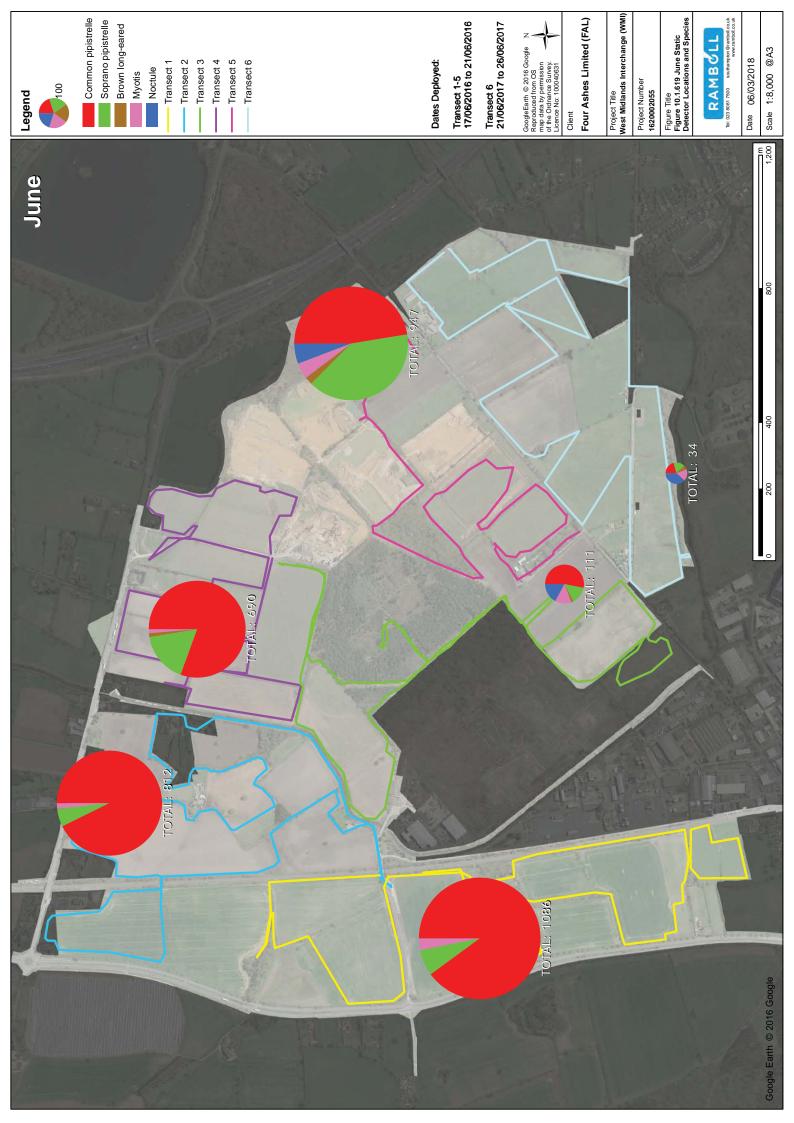
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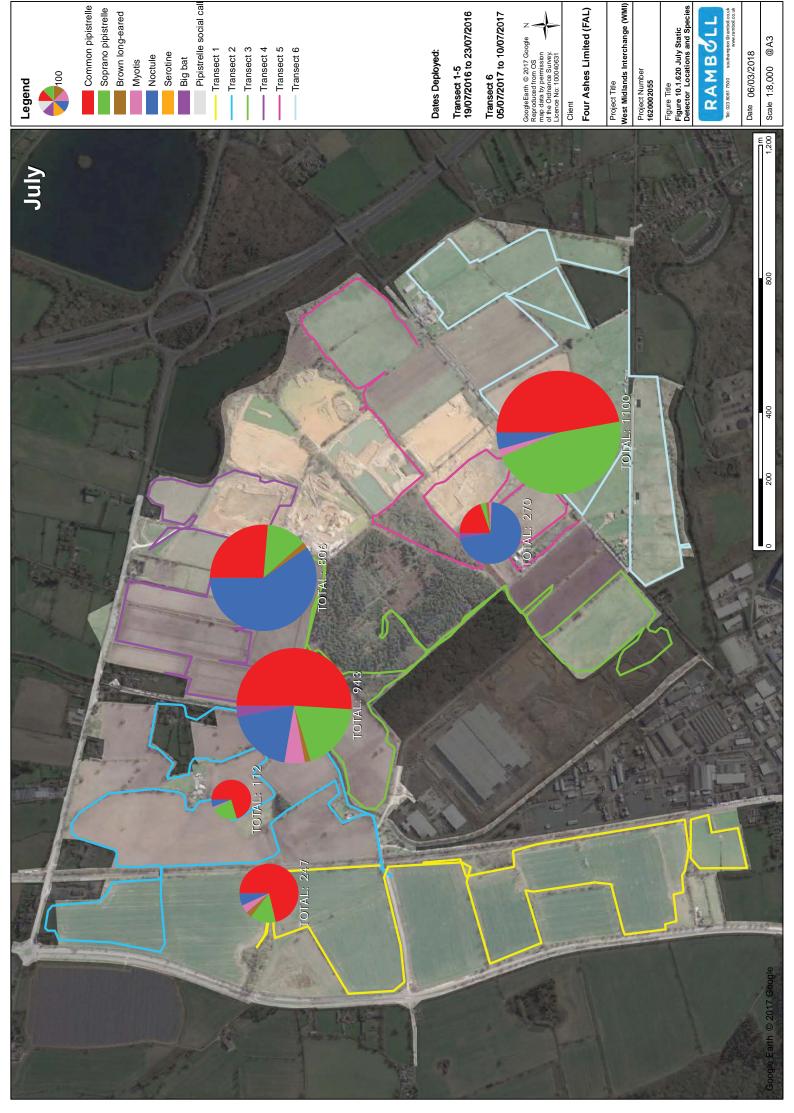








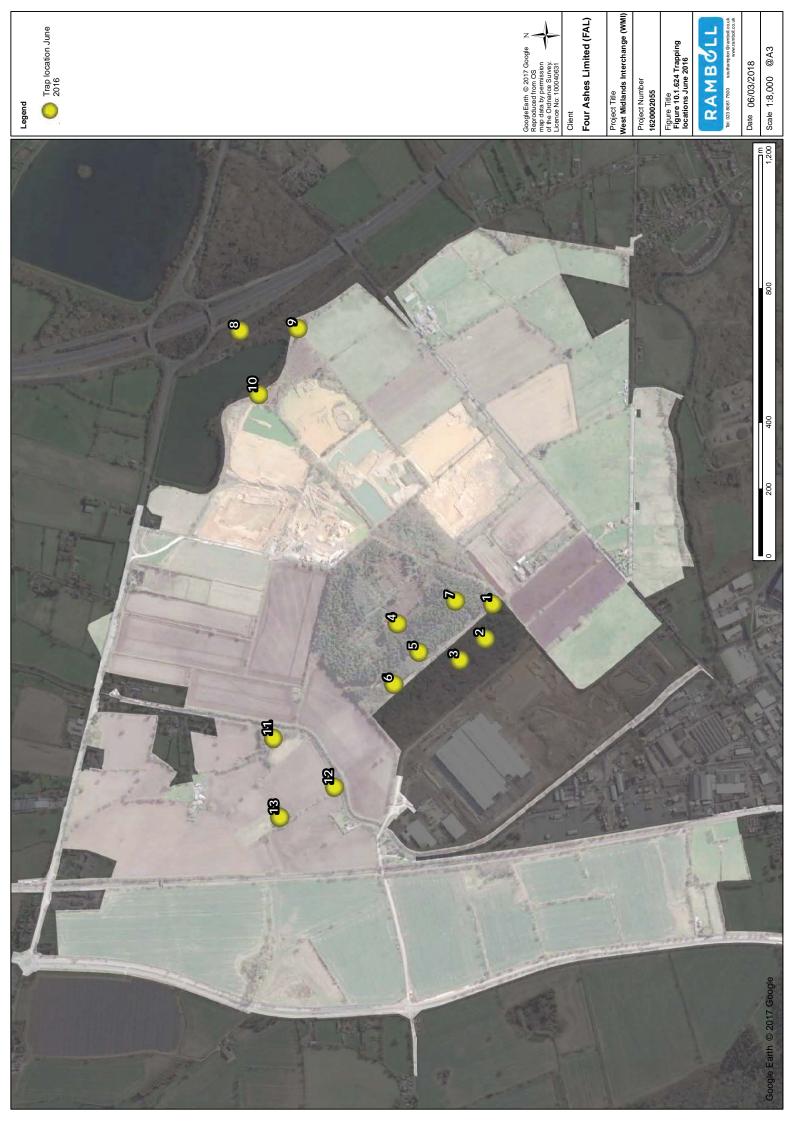






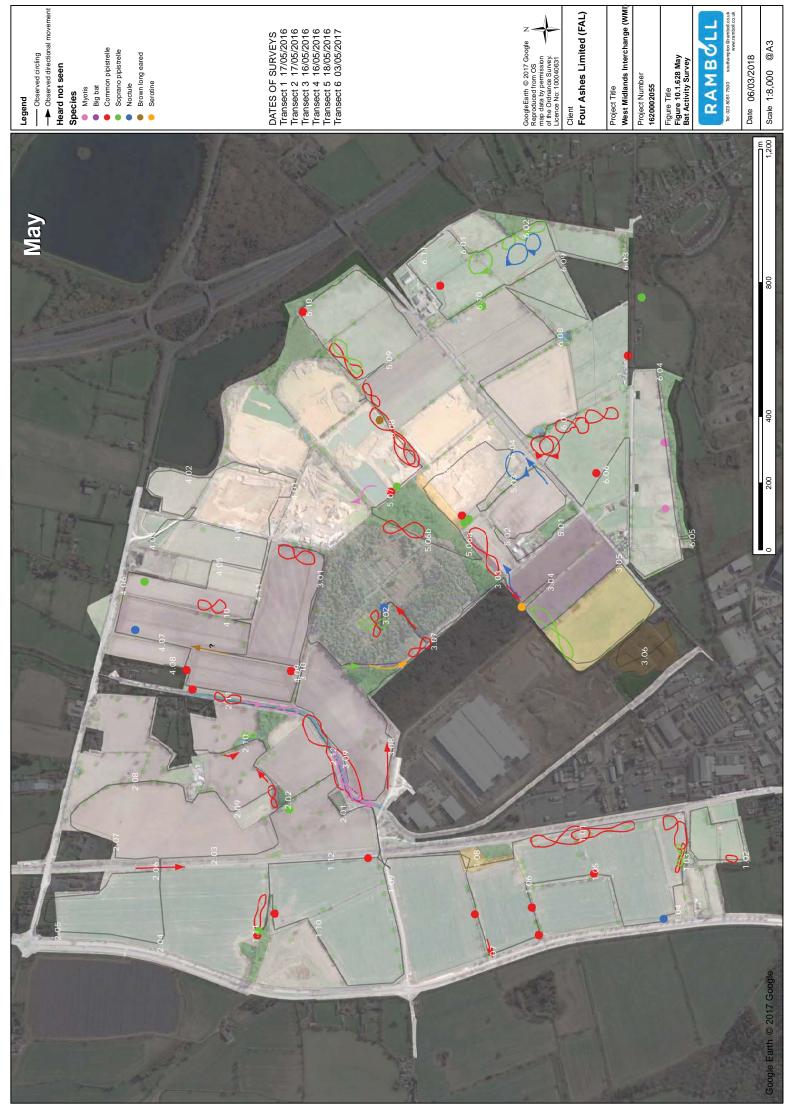


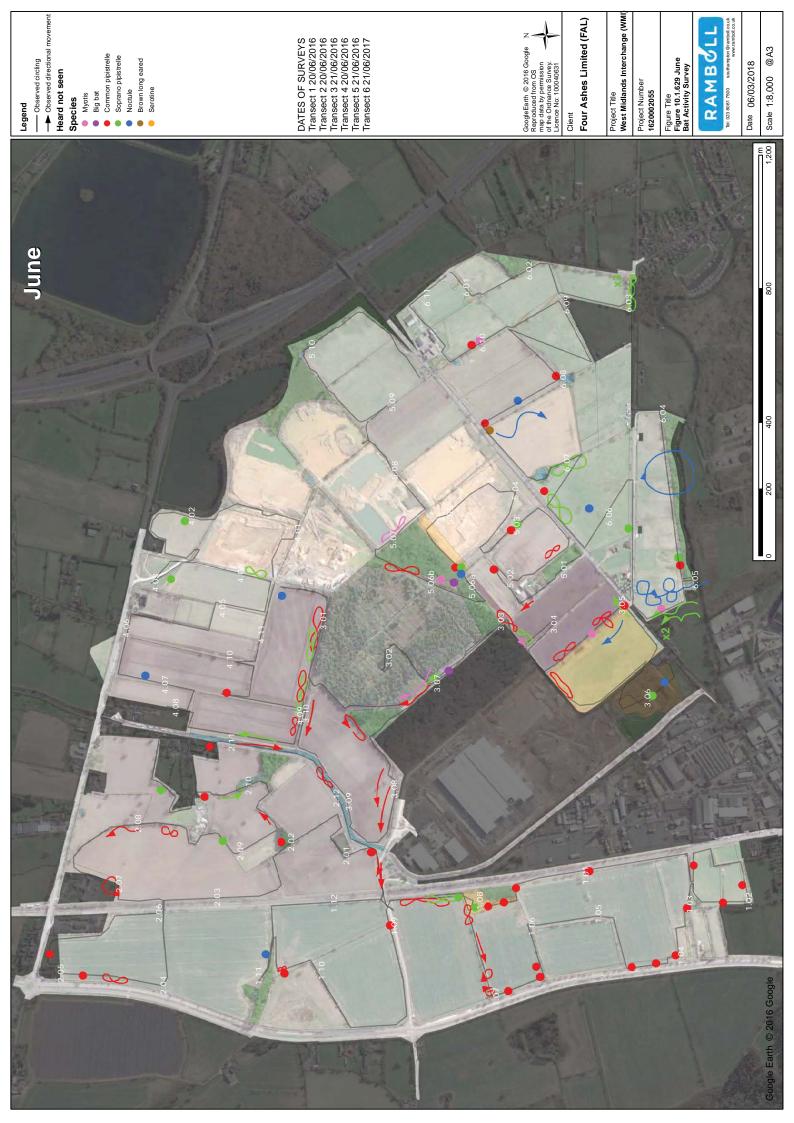


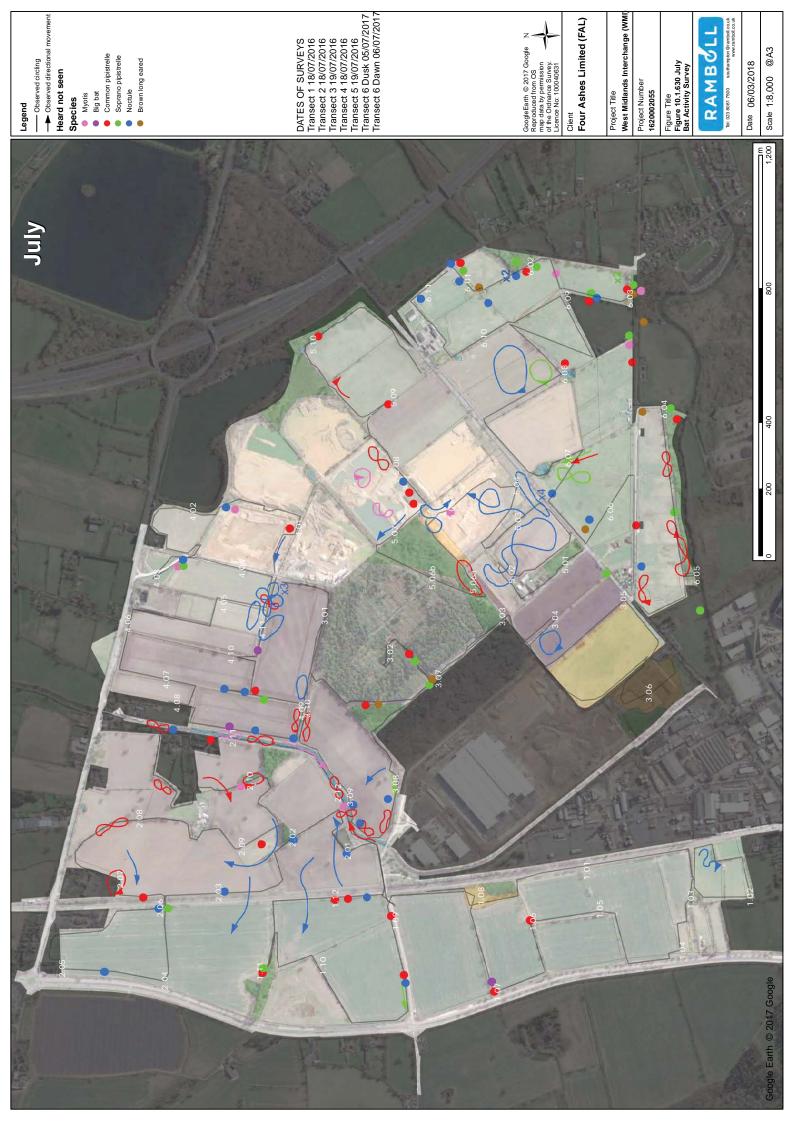


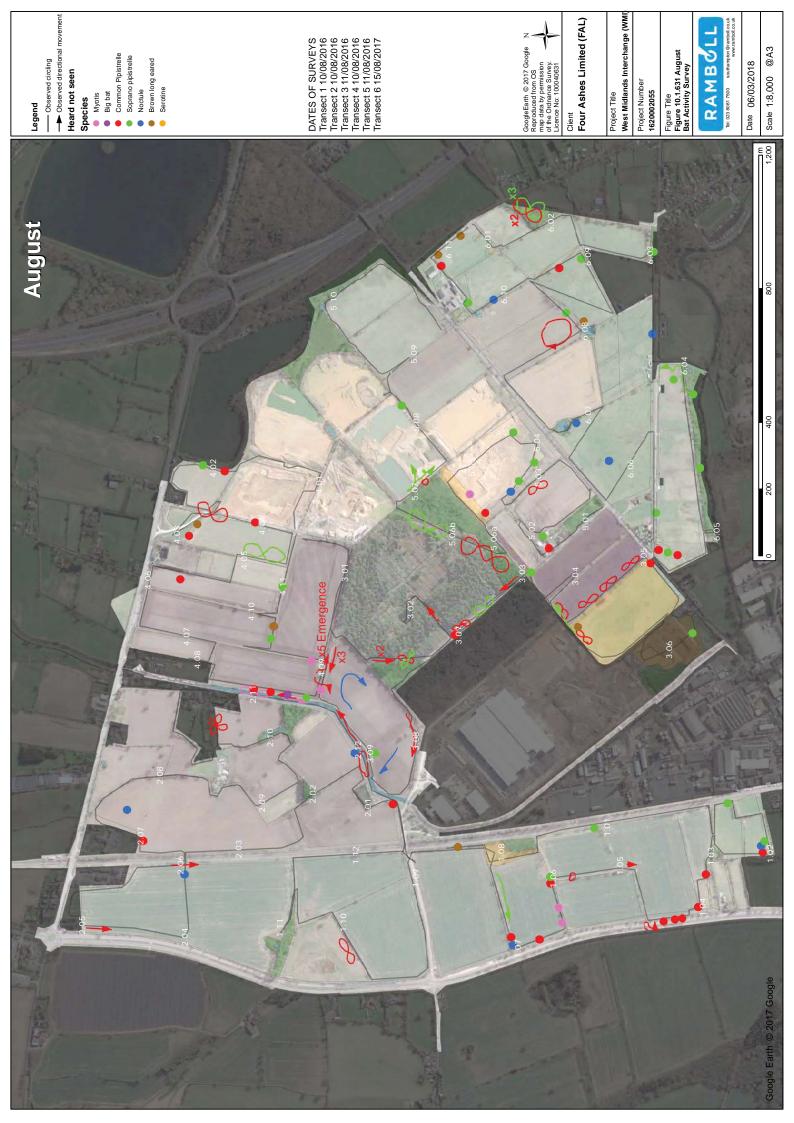


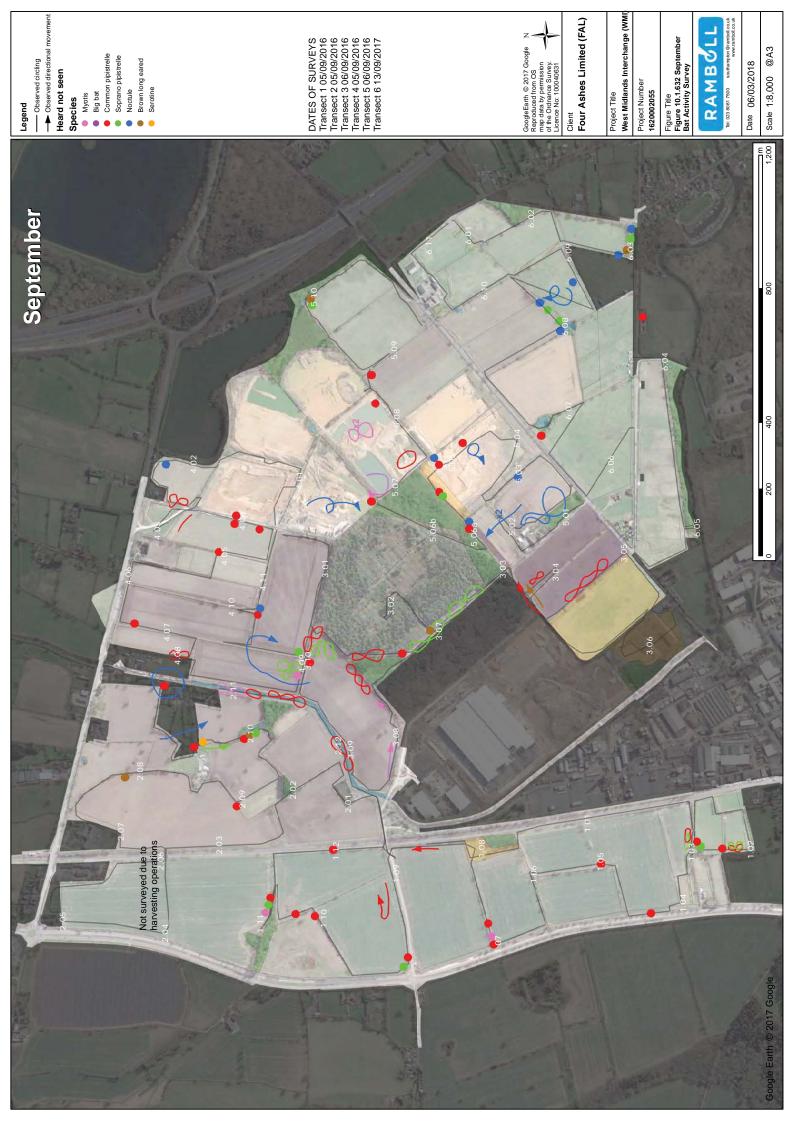


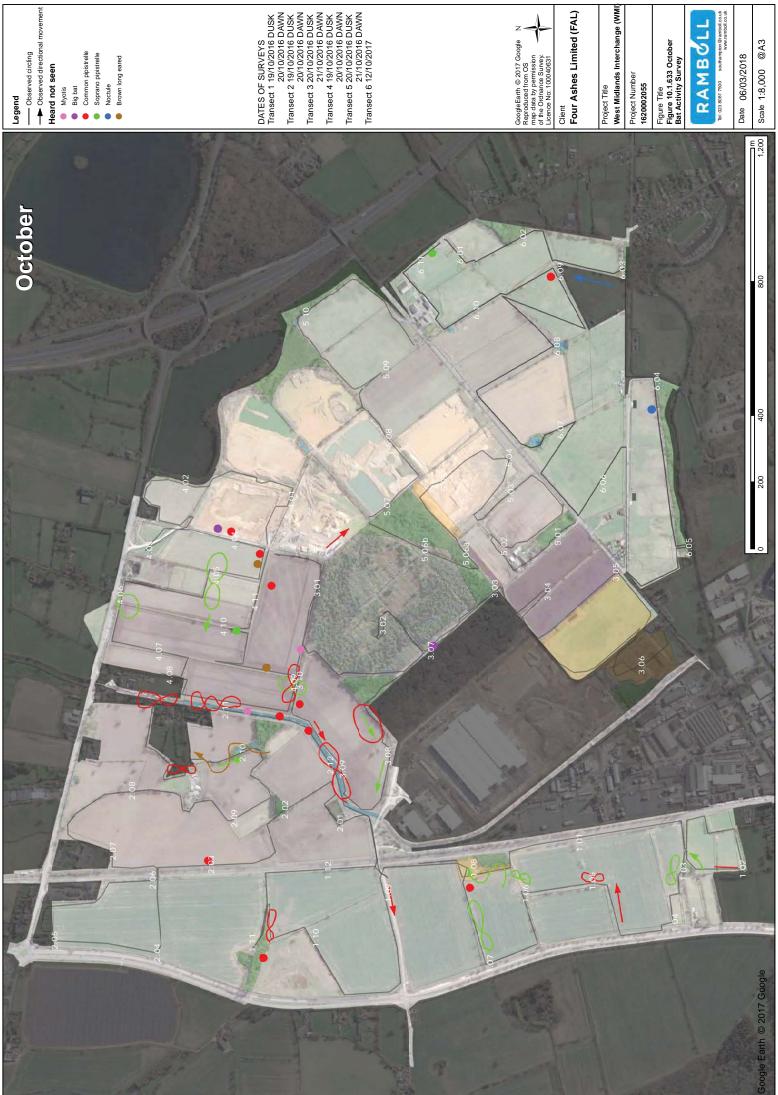












Brown long eared

Four Ashes Limited (FAL)

West Midlands Interchange (WMI)

Tel: 023 8081 7500 southampton @ramboll.co. RAMBGLL

Date 06/03/2018

Scale 1:8,000 @A3

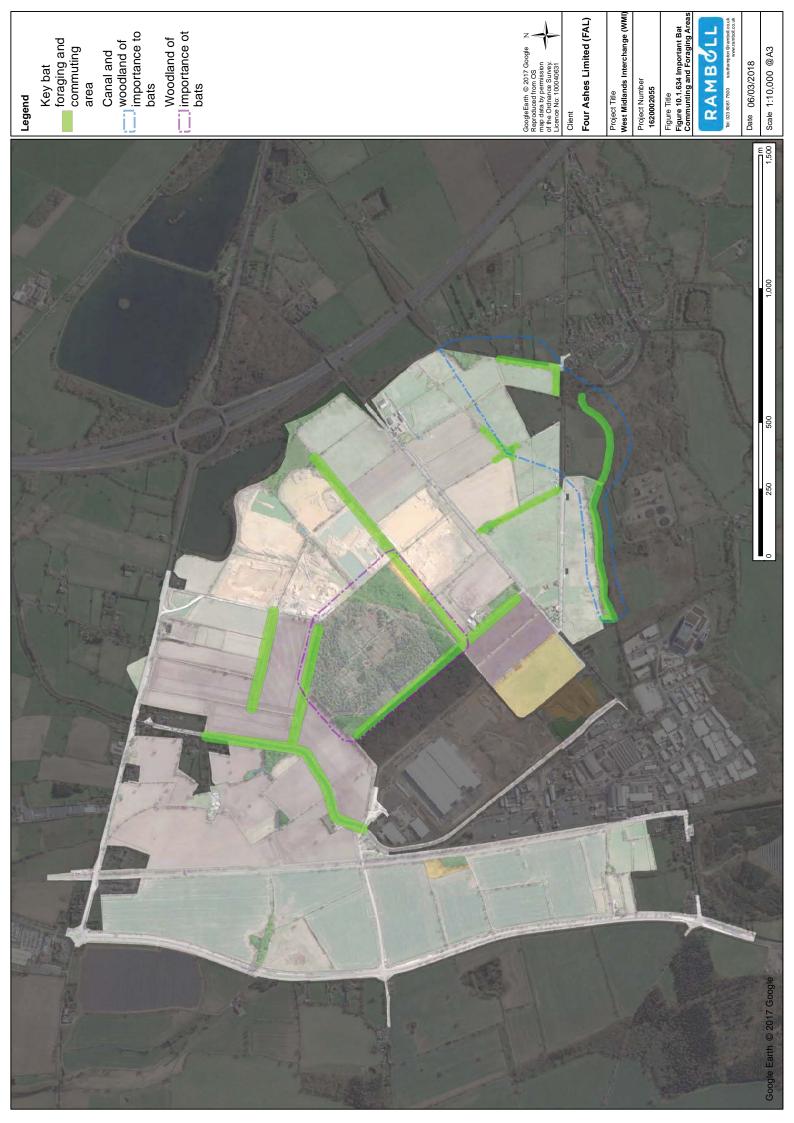
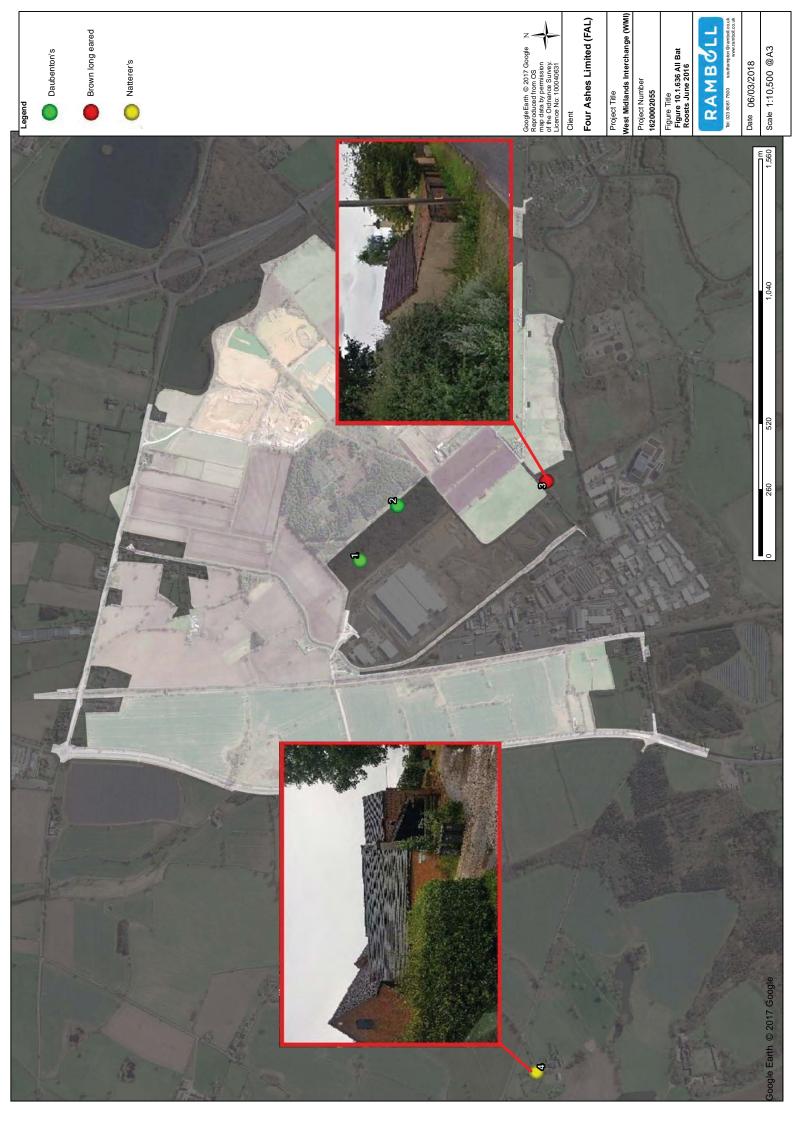




Figure Title Figure 10.1.635 Daubenton's Roosts June 2016

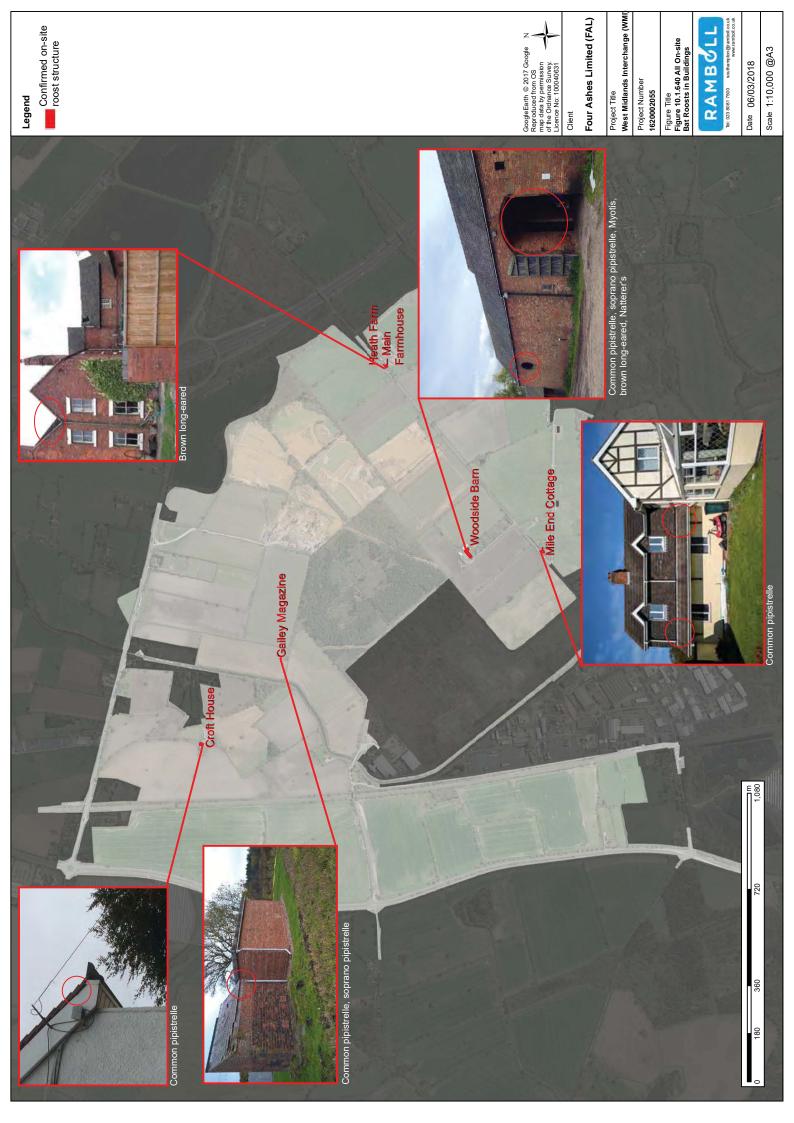
Tel: 023 8081 7500 southampton @ramboll.co.uⁱ www.ramboll.co.c RAMBÓLL









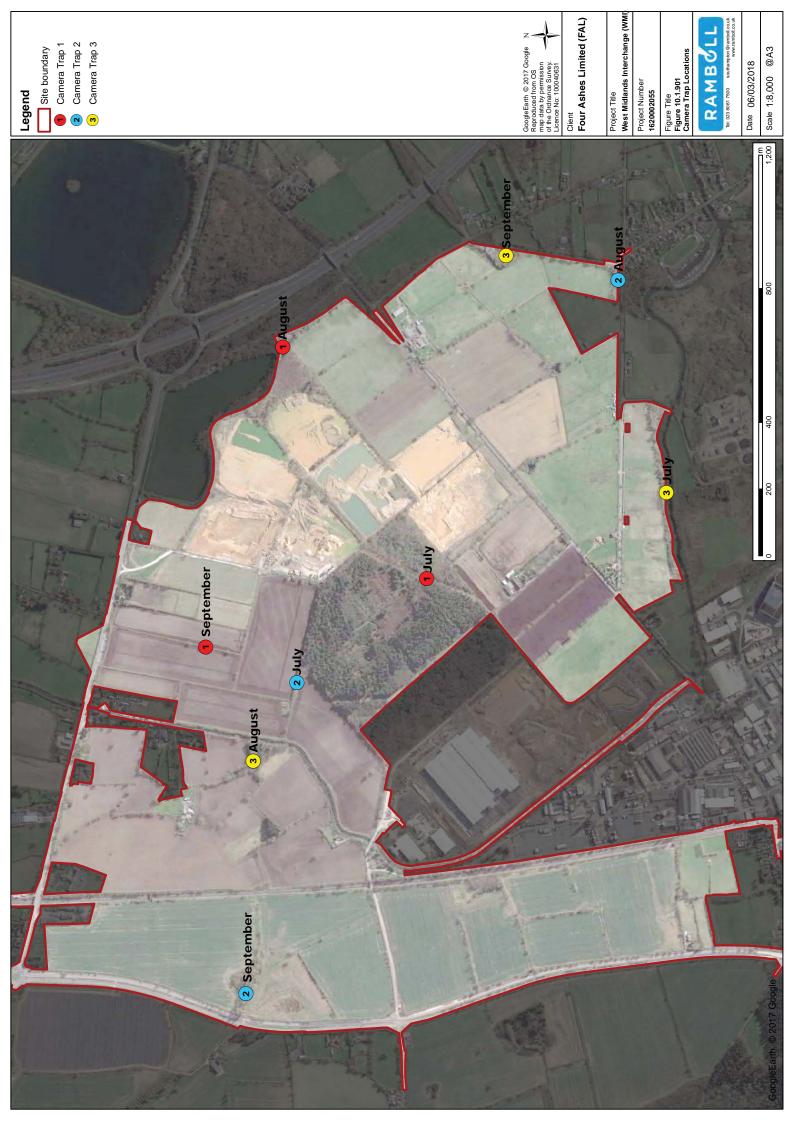




RAMBGLL
Tel: 023 8081 7500 soutemptor@transpoll.couk

FIGURE SERIES 900: TERRESTRIAL MAMMALS (EXCLUDING BADGER)

10.1.901 Camera Trap Locations



ANNEXES

Annex 10.1.1

SERC Records

Annex 10.1.2

Target Notes

Annex 10.1.3 (A-I)

Biocensus Hedgerow Survey Reports (2016 & 2017)

Annex 10.1.4

SERC Bird Records and Breeding Assessment

Annex 10.1.5

Biocensus Invertebrate Survey Report

Annex 10.1.6 (A-O)

Bat Roost Assessments for Structures

Annex 10.1.7

Bat Roost Assessment for Treess

Annex 10.1.8

Bat Trapping Details

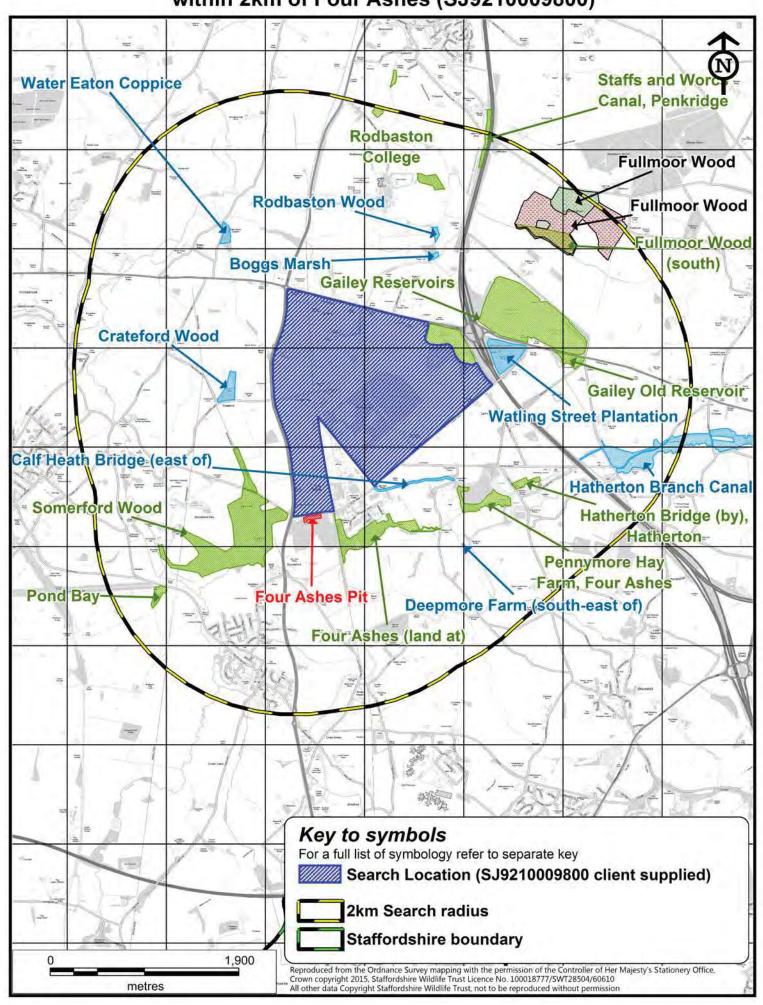
Annex 10.1.9

Bat Dropping DNA Analysis Results

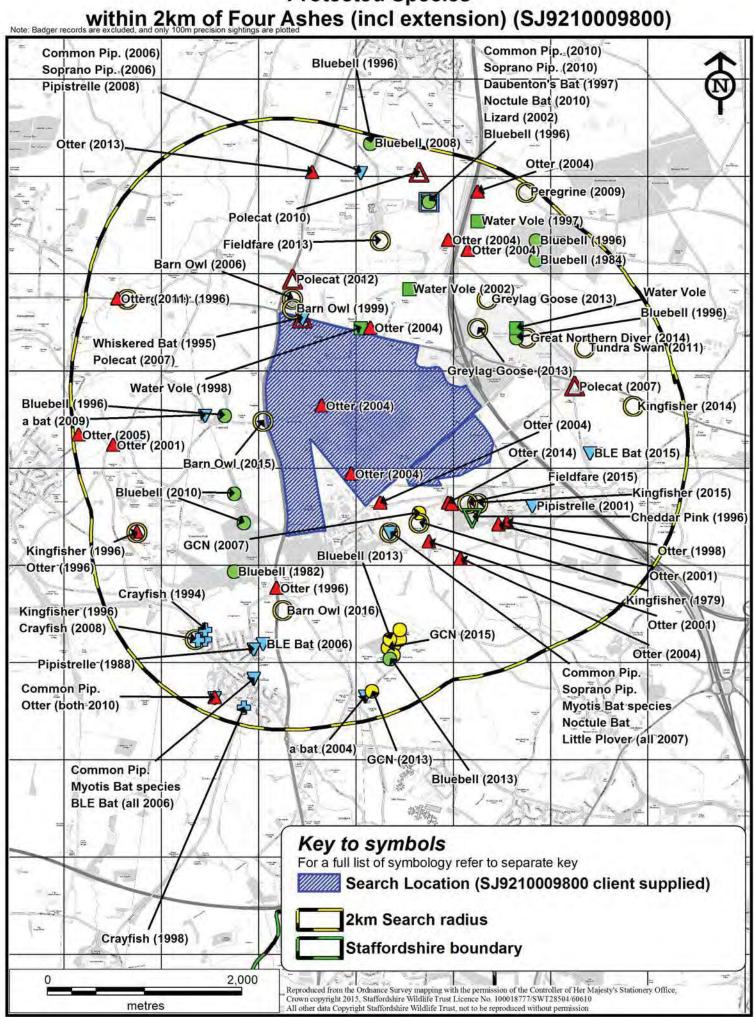
Annex 10.1.1

SERC Records

Nature Conservation Sites within 2km of Four Ashes (SJ9210009800)



Protected Species



Staffordshire Ecological Record

Enquiry Reference:	SER/16/392
Site Details:	Four Ashes (with extension)
Grid Reference:	392100 309800
Search Radius:	2km
Client Name:	Ramboll
Creation Date:	10/08/2016
Created by:	Craig Slawson
NOTES:	1) The 'Composite Species List' is created from 1km sq information, so may include records outside the search area and not included on the individual lists of records - this may result in a s 2) The enclosed data are copyright © Staffordshire Ecological Record, whilst the individual records are the intellectual property of the original recorder(s) 3) ** at the end of the Location Detail indicates SER holds more detailed location information, but this will not be released under normal circumstances

slight over-count for some species

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A Composite Species List: 2km of Four Ashes (with extension) (392100 309800) produced 10/8/201f

This list is created from 1km sq information, so may include records oulside the search area and not induded on the previous sheets - this may result in a slight over-count for some species

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difficult.
Reals and manage suitable habitats, replacing and mitgating.
Reals and en manage suitable habitats, replacing and mitgating.
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Retainspense Recommendation and a substance and subble surrounding babiliar. Onese additions Retain and manage wetland habtat. Provide compensatory habitat if wetland is lost. This needs to be in large blocks without tree planting and without disturbance from dog walkers. No action required. Provide suitable nesting sites, and retain open habitats and water Protect breeding sites, otherwise no specific recommendations. Where possible retain hedges and woodlands No specific action.

And adding required and adding and militaring when these are lost or damaged.

Where these are lost or damaged. Retain mature trees suitable for nestin;
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Retain and manage suitable habitals, replacing and miligating
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Red treeding species, Marklew woodland, generally sorfier staff but will use overgate voodlar Uncommon breeding species. Marklew in woodland general preferring storyiganes protein. Whence packed my these degrees described with the severance area operations are severance and the severance area operations and the severance area operations are severance area of the se schedule 1 species. Uncommon. Found in wetland, canals, rivers etc, always near open water. Eats fish, The entire of maintains usually nesting in voordand, voordand edges, scrub and verlands. Declaring. Reve white migrant entering the extension of the extension Wyklader and critical habitation habita. Revenue habita sheriya geoles bulled see bed in moviend habita. Schedule 1 spokes, Neste on criffs and tall building.
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Withoutpust breefing species. Notes in tree cavilier.
Withoutpust breefing species. Farmland bird in arable land and other habitats. Declining and now rare in Staffordshire Requires ponds for breeding and suitable nearby habitat such as rough a many years. Mainly coastal species although will occur inland on passag Widespread wintering species. Does brees:
Widespread wintering species. Does brees:
Widespread wintering species. Does brees
Widespread wintering species. Does brees
Uncommon wintering ant, tsusally roosting on large res dreeds in scrub, marshes and dense vegetation Heathland, grassland and scrub habitats Uncommon passage and winter migrant Uncommon winter migrant Open habitats, hedges and scrub Grassland in large open blocks hvaske Staffs INNS Confidentia No. Of Recs. Most Recent RF inst Known R Habitat Preferences 1988 1979 22011 1979 22001 22005 22001 22014 22 2009 1966 1966 1948 1992 2002 1966 2005 2006 2008 2004 2007 2007 2007 2007 2007 2007 1966 2015 2013 2016 2015 2015 2015 2009 False | Table | Tabl False
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A Composite Species List: 2km of Four Ashes (with extension) (392100 309800) produced 10/8/2016

No agredic recommendate for missing and the properties of the prop No action required Provide affication required Provide affications can be provided. Retain and manage welland habitat. Provide compensatory maintain if welland is lost. This meets to be in anger brokes without tee planting and without disturbance from day walkers Keetain habitage and wondbanks, or provide miligatory habita Wide amage of habitatis – no specific recommendation. No action required Retain scrub, particularly willow scrub, near wetands and oper water. Do not remove specimens of this species. If planting trees near water, consider planting a few specimens of native black poplar. No specific action. Retain woodland and scrub habitats. Where planting include be bearing yeades.

No specific recommendators due to range of habitat predictions between the superior recommendators due to trange of habitat. Retain or regions habitat. Retain hedges and woodlands, especially berry-bearing specie Retain shaded habitats. Do not allow planting of other bluebel species, which should be removed from the vicinity of naturally occurring bluebell Retain and manage wetland and moorland habitat. Provide compensatory habitat if lost. This needs to be in large blocks without tee planting and without disturbance from dog walkers High risk species for wind turbines No specific recommendations No specific recommendation Avoid loss of suitable habitat. Provide compensatiory habitat i woodland is damaged / loss. I Any development should include suitable miligatior Redain and transign woodcan.
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autable habitel.
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Retain scrub and woodland habita
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No specific recommendators: Protect watercourses, install SUDS to flooding Retain or replace habitat Retain or replace habitat Retain or replace habitat No specific recommendations No action required No specific action. Uncommon passage migram: "The property of the passage migram is a second to the passage migram. Patential to breed in Steffordshire but not yet confirme throughout passage migram! Patential to breed in Steffordshire but not yet confirme throughout passage migram! Patential to breed in Steffordshire but not yet confirme throughout passage migram! Patential to breed in Steffordshire but not yet confirme through the passage migram! Patential to breed in Steffordshire but not yet through the passage migram! Patential to breed in Steffordshire but not yet through the passage migram thro Debands in white sorth in damp places, around gravel pits and marshes. Feed on linects, seeds and berries. Seriou Pankand type habital, with grassland and trees / woodland edge. Feed on insects in grassland, nest in dead wood. We me grant are breeding spoése is enterent Englan. With respects to Bratic Windra spoése is freeding modified in modified in the spoese special permand, saling seeds. Breeds on modified in 10 was to be the control of the special section. Open water spories, treads on gravel pits the content of the cont to cooked, who greated without greated and moories checklass Coound nesting so vulnerable to disturbance cooked. So so word nesting near trees and other prescribes pools.

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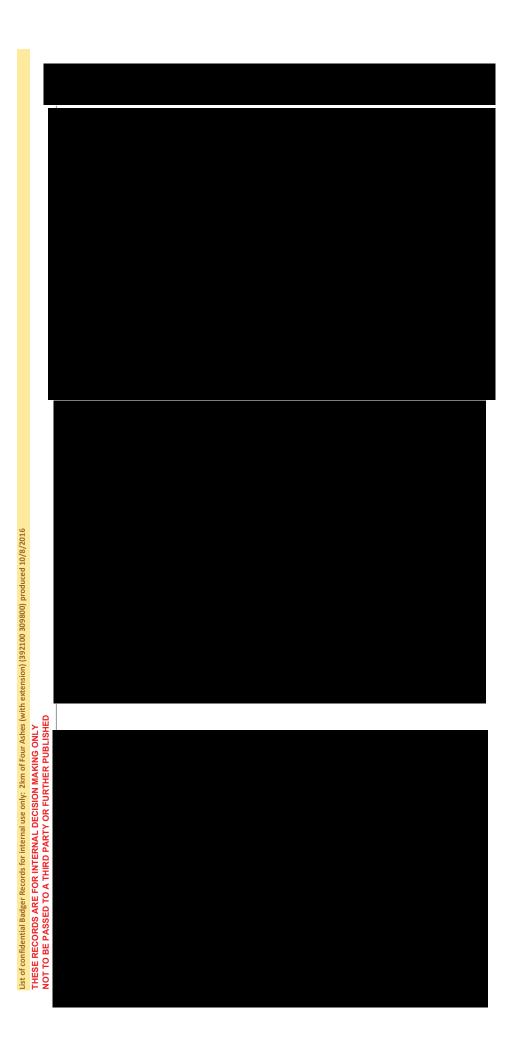
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Range of malatists, including gardens, grass and and scuto, usually year human habitatic. Found in woodland, needbads and gar dens throughout the county, less frequent in montaind areas. Wildespread brinding species in surface grades in Wildespread brinding species in Wildespread brinding species of the water with well vegatated mergin Fressby genuing and Vall registers but most records believed to be fortal brind for Fressby genuing but but most records believed to be fortal brind for Fressby genuing the species of the production of the species of the Very localised. Weltand habitats. Ground nesting so vulnerable to disturbance and to predation by or Will apply rest trees and other perchinghes. When the second so the second so that the western feeding in felds, the o Rare, mainly near kwiland rivers, particularly the R. Penk and Smestow Brook and their tributaries Of Zadens and distulbed land, not found as arable weed in Count Absent Uncommon passage migran
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Many woodland and scrib spocies
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Range of habitals, noulding grassland and scrub
Range of habitals, noulding grassland and scrub
Range wither granger, causily sear in confer plantations. Possibly breech in Staffordshi
Ness in niver branks but also artificials sites growide. Widespread breeding species. Breeds on fast flowing rocky shallow watercourses Grassland and wetland habitat.

Grassland and wetland habitat.

Mature trees, especielly in open areas. Woodland edges, parks and garden habitat Accidental occurence
Uncommon passage migrant, any breeding restricted to Staffordshire moroland. Widespread withering species, breeds in woodland, scrub, confer plantatio Accidental occurence Very local, especially outside Staffs Moorlands. Feeds over rough grassland, ledges in buildings. Accidental occurence Of Fairly widespread but uncommon. Open woodland and gardens. On the court respecting in analysis and other habitats, including rushy passiture. Re-pression may me. The pression may me. The court of t Winter visitor, feeding in a range of habitats. Rare passage migrant, any breeding restricted to Staffordshire moonland. Widespread breeding and wintering specie: Fairly widespread. Wetland and farmland habitats, usually near water. Grapedation by crows etc., so avoid nesting near trees and perching posts. Main threat is from crayfish plague. Populations in headwater streams Widespread in deciduous woodland and other shaded habitats garden escape; not occurring naturall; | Filest Known 2012 1086 2006 2007 2007 2007 1995 2006 2006 1966 1982 2001 2006 2006 2002 2002 2011 2008 2016 1966 1966 2002 2002 2002 2005 2005 2005 2013 2006 2012 2005 2005 2004 2010 2006 2008 2004 2004 2004 1966 1981 2005 1966 2005 2005 1982 1998 1991 2006 1999 2008 1993 2015 2015 2015 2015 2015 2015 1901 2016 2008 1996 2006 2006 1999 2008 1993 False False False -alse False alse alse alse False This list is created from 1km sq information, so may include records outside the search area and not induded on the previous sheets -(es es es ૭ flowering plant
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Scientific Name	Common Name	Informal Gross	Furonean Prof.	Furonean Prof LIK Protection Principle Cons Rare	-inciple Conc Rac	o hyasaha	Staffs INNS	NNS Confidentia	tia No. Of Recs.		int Known R H	More Recent RF list Krown R Makin at Defences	Management Recommendation
Scaphidema metallicum	insect - beetle	insect - beetle (Coleoptera)	1	No	N Ye						1983		
Coenonympha pamphilus	Small Heath	insect - butterfly	e S	No ON	Yes Ye	es No	8 N	False	e	2009			Retain and manage grassland
Lasiommata megera	Wall	insect - butterfly			_	es No	S N	False	2		1979 S	Species of woodland and shaded habitats, feeding on grasse:	Retain woodland with grassy, open clearings and rides
							1	i	,			uman habitation, feeds on a wide range of tree and other species. Often nests in bird boxes with a larg	No specific recommendations due to range of habita
Bombus nypnorum	Iree bumple bee	Insect - nymenopieran					0 2	False	-				requirements
Mniotype adusta	Dark Brocade	insect - moth					8 :	False	- (No specific recommendations
Tyria jacobaeae	Cinnabar	insect - moth					S S	False	2		1983 F	Research only	No specific recommendations
Cheilosia barbata	a true fly	insect - true fly (Diptera)	2	2 :	No Yes	S No	2 :	False		1984	1984		
Ciadonia chiorophaea	lichen	lignen			vo yes		NO	raise	-		8881		
Arvicola amphibi us	European Water Vole	mammal	2	Yes	Yes	8	2	False	۲	2012		Require well-vegetated water edge habitat, where not occupied by their main predator, mink.	Any development likely to affect watercourses in area shouk protect the watercourse and and provide a wide buffer strip of vegetation along the banks
													Design is important so that hedgehogs are enabled to move around; e.g. from garden to garden by allowing small gaps in runs
Erinaceus europaeus	West European Hedgehog	mammal	e N	No V	Yes No	No 0	S _o	False	34	2015	1999 V	Widespread in a range of habitats including gardens, feding mainly on insects, slugs and snails.	of fencing. If eutrable habitatie likely to be lost mitinatory habitat should be
Lepus europaeus	Brown Hare	mammal	No	No on	Yes No	No.	8	False	15	2010 2	2000 V	Widely distributed in Staffs, usually on arable or grassland	provided.
											0)	Any development likely to affect watercourses in Staffs. Requires substantial cover near water, often in the crook, trees or provide cover for otters, possibly in the form of artificial otter holts.	Any development likely to affect watercourses in area shouk provide cover for otters, possibly in the form of artificial otter
Lutra lutra	European Otter	mammal	Yes	Yes	Yes No	No	N	False	8	2014 1	1996 s		or waterside shrub planting
Meles meles	Eurasian Badger	mammal	No	Yes	No No	8	Š	True	29	2015	V 1964 ir	Widespread species in Staffordshire. Creates burrows (setts) in dry, usually sandy areas. Feeds on a wide range insects, fruit etc.	Protect where possible; mitgation will depend on size and location of badger groups affected on any given site.
Micromys minutus	Harvest Mouse	mammal			Yes No		N _o	False		2010 2	Z004 T	Tall vegetation usually near water.	Retain and buffer suitable habitat, especially marshy grassland
Mustela putorius	Polecat	mammal	No.				2	False			_	Usually found in farmland and near habitation. Feed on rabbits and rat:	No specific recommendations
Chiroptera	abat	mammal - bat			_		₽:	False					
Myotis darbertonii	Niyotis Bat species	mammal - Dat	× × ×	Yes	o No	2 2	2 2	False	₅ ∈	1998		Exact species not determined Roosts in trinnals hithres are sometimes in hillikling. Faads over water	No specific recommendations
Myotis mystacinus	Whiskered Bat	mammal - bat			_		2 2	True			1995		
								i					Retain hedges and trees, including dead trees. Install bat boxes
Nyctalus noctula Pipistrellus	Noctule Bat Pipistrelle Bat species	mammal - bat mammal - bat	Yes	Yes Y	Yes No No No	2 2	2 2	False	. g	2010	2007 N 2000	Mamy associated with trees, particularly old trees with holes for roosting.	in young woodlands.
													New housing should ideally have a range of bat-friendly roof tile
													and / or pricks. Natural habitat teatures for foraging should also be provided each as beckness these would pormally be provided.
Pipistrellus pipistrellus sensu lato	Pipistrelle	mammal - bat	Yes	Yes	Yes No	No.	8	True	8	2008	1986 C	Often associated with housing and roosting in some houses; widespread in Staffs. May also roost in trees.	within Green Infrastructure
													New housing should ideally have a range of bat-friendly roof tile and for bricks. Natural habitat features for foresting should also
													be provided such as hedges; these would normally be provided
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	mammal - bat	Yes	Yes	Yes No	No O	8	False	15	2010 2	2003 C	Often associated with housing and roosting in some houses; widespread in Staffs. May also roost in trees.	within Green Infrastructure
													New housing should ideally have a range of bat-friendly roof tile and / or bricks. Natural habitat features for foraging should also he provided each as backness these would normally be provided.
Pipistrellus pygmaeus	Soprano Pipistrelle	mammal - bat	Yes	Yes	Yes No	No O	No	False	10	2010 2	2006 C	Often associated with housing and roosting in some houses; widespread in Staffs. May also roost in trees.	within Green Infrastructure
Plecotus auritus	Brown Long-eared Bat	mammal - bat	Kes	Yes	Yes	No.	N	False	e	2015	2006	Usually roosting in loft spaces, offen in older buildings. Feed in open woodland and parkland.	Of particular concern where building alterations, including barr conversions are proposed.
	9						!						Retain suitable open habitat preferably with south-facing aspects



Annex 10.1.2

Target Notes

ANNEX 10.1.2 TARGET NOTES

Target Note	Description	Photograph
TN1	Confidential	Confidential
TN2	Confidential	Confidential
TN 3	Group of three derelict building located in the centre of the Site. Two buildings have loose tiles allowing access into structure. Buildings assessed during habitat survey to be of Moderate Bat Roost Suitability.	
TN 4	Confidential	Confidential

Target Note	Description	Photograph
TN 5	Gravelly Way Farm buildings beside the canal. Contains three buildings, two with low and one with moderate bat roost suitability.	LQC S ARI
TN 6	Shallow ditch that extends from the centre of the Site to the north of the Site.	
TN 7	Drainage ditch along the Sites northern boundary with potential for water vole.	

Target Note	Description	Photograph
TN 8	Shallow and isolated drainage ditch towards the west of the Site with limited potential for water vole.	
TN9	Barn and house at Woodside Farm. The barn and the farmhouse were assessed during the habitat survey to be of moderate bat roost Suitability.	
TN10	Confidential	Confidential
TN11	Confidential	Confidential

Target Note	Description	Photograph
TN12	Firtree Cottage and barn in the south-west of the Site. The barn is of negligible bat roost Suitability and the cottage is of moderate bat roost Suitability.	
TN 13	Two storey Farm House, brick built with clay tiles, gaps in deteriorating mortar. No facia or soffits. Few gaps under tiles. 3/4 height wing/block adjacent to driveway – hole in roof, house sparrow nesting – roof here has gaps to ridge tiles and lifted tiles. HIGH BAT POTENTIAL Garden to farmhouse; amenity grassland, hedge to road dominated by privet, dogwood, hazel. Trees include; cherry (<i>Prunus avium</i>), tree of heaven (<i>Ailanthus altissima</i>), willow (Salix), horse chestnut (<i>Aesculus hippocastanum</i>) and ornamental planting.	

Target Note	Description	Photograph
TN 14	Brick building, partly 1 storey, partly 2 storey, tile roof, timber facia to single storey, mesh under, limited access under felt. Bird box terrace. Two storey area has converted attic space, some gaps under ridge tiles, bat box on north west and south east elevation. Bat access tile to roof. Swallow nest box under porch. Both parts have attic space conversion.	
TN 15	Garage- brick, pitched clay tile roof. Generally in good condition, one lifted ridge tile, lighting on exterior. NEGLIGIBLE BAT POTENTIAL	
TN 16	Large barn, block base, corrugated asbestos walls and ceiling, timber cladding to gable end, sparrow terrace, steel framed. Timber cross beam, lighting on gable end. NEGLIGIBLE BAT POTENTIAL	

Target Note	Description	Photograph
TN 17	Open Barn, steel framed, clad with metal to sides, asbestos cement roof, open to rear. NEGLIGIBLE BAT POTENTIAL	
TN18	End section, barn supported with old telegraph poles, timber cross beams, metal clad, unsuitable for day roost. NEGLIGIBLE BAT POTENTIAL	
TN 19	Steel framed barn, concrete base, timber clad, corrugated concrete, modern timber cross beams. NEGLIGIBLE BAT POTENTIAL	

Target Note	Description	Photograph
TN 20	Intact hedge, species poor, dominated by hawthorn with trees including Oak (<i>Quercus robur</i>), field maple (<i>Acer campestre</i>), common nettle (<i>Urtica dioica</i>), and bramble (<i>Rubus fruticosus agg.</i>) cleavers (<i>Galium</i> sp.). Dry ditch beyond western side (Stable Lane), appears engineered with concrete.	
TN 21	Woodland dominated by field maple and oak, semi mature, tall ruderal and scrub under, dominated by bramble, nettles. Some open areas dominated by tall ruderal rosebay willowherb (<i>Chamerion angustifolium</i>).	No photograph
TN 22	Intact, species poor hedge, hawthorn, field maple (semi mature) nettle understorey.	
TN 23	Semi-improved grassland. Yorkshire fog (Holcus lanatus) dominant, annual Meadow grass (Poa annua), red and white clover (Trifolium pratense/repens), yarrow (Achillea millefolium), ribwort plantain (Plantago lanceolata), willow herb (Epilobium), cocksfoot (Dactylis), common nettle, creeping buttercup	No photograph

Target Note	Description	Photograph
	(Ranunculus repens).	
TN 24	Species poor hawthorn (<i>Crataegus</i>) hedge with nettle under. Some gaps. Dog rose (<i>Rosa canina</i>). Occasional elder (<i>Sambucus nigra</i>).	
TN 25	Improved grassland, perennial rye-grass (Lolium perenne) dominant, Yorkshire fog, common bent (Agrostis capillaris) abundant, cocksfoot, annual meadow grass -margins, scentless mayweed (Tripleurospermum inodorum), common thistle (Cirsium vulgare), nettle, dock (Rumex obtusifolius), ragwort (Jacobaea vulgaris), red clover and rosebay willowherb (Chamerion angustifolium).	
TN 26	Oak tree, several dead limbs, one fractured with multiple splits, voids and cavities. MODERATE BAT POTENTIAL	

Target Note	Description	Photograph
TN 27	Turkey Oak and English oak tree line, false oat grass understorey, cherry occasional.	
TN 28	 Oak midway along boundary, from track old damage to lower trunk, hole at top of damage MODERATE BAT POTENTIAL Adjacent tree similar but LOW BAT POTENTIAL Tree with cracked limbs and damage MODERATE BAT POTENTIAL Tree with cavity (has spider webs) MODERATE BAT POTENTIAL Large oak with large cavity and bird droppings LOW-MODERATE BAT POTENTIAL Dead cherry tree with woodpecker hole in decline under two oaks, likely to fall LOW-MODERATE BAT POTENTIAL 	No photographs
TN 29	Common toad in tall ruderal margin adjacent pond.	No Photograph

Target Note	Description	Photograph
TN30	Schwegler nest boxes. 1 sparrow terrace, 1 starling box, 1 kestrel box.	
TN31	Intact hedge hawthorn dominant, oak, honeysuckle (Lonicera periclymenum), oak sp., bittersweet nightshade (Solanum dulcamara), elder occasional.	
TN 32	Dry ditch man-made, surrounded by tall ruderal, willowherbs, fox glove (<i>Digitalis</i> sp.), thistle, wet to southern end	No Photograph
TN 33	Improved grassland, tall perennial rye-grass dominant. Creeping buttercup, broadleaf plantain (<i>Plantago major</i>), red clover, bird foot trefoil (<i>Lotus corniculatus</i>), occasional. Margins include Yorkshire fog, thistle (<i>Cirsium</i> sp.), pineapple mayweed (<i>Matricaria discoidea</i>), common nettle, broadleaf dock, annual meadow grass, spear thistle (<i>Cirsium vulgare</i>), redshank (<i>Persicaria maculosa</i>),	No Photograph

Target Note	Description	Photograph
	chickweed (Stellaria media), self heal (Prunella vulgaris), wood rush (Luzula campestris), meadow foxtail (Alopecurus pratensis), forget-me-not (Myosotis sp.)	
TN 34	Field margin to arable land: wild oat (Avena sp.) and barley (Hordeum vulgare), willow herb, scentless mayweed, scarlet pimpernel (Anagallis arvensis), dock, nettle, common vetch (Vicia sativa), fumitory (Fumaria officinalis), timothy (Phleum pratense), redshank, dock.	
TN 35	Confidential	Confidential
TN36	Line of trees: oak, bramble, elder under. Oak nearest pond LOW BAT POTENTIAL	

Target Note	Description	Photograph
TN37	Mature oak, limited inspection possible due to extensive vegetation. LOW/MODERATE BAT POTENTIAL	
TN38	Intact hedgerow, hawthorn, oak, dog rose, hedge bindweed (<i>Calystegia sepium</i>)	No Photograph
TN39	Abundant species; sweet vernal grass (Anthoxanthum odoratum), creeping bent (Agrostis stolonifera). Frequent species included; creeping buttercup, meadow foxtail, Yorkshire fog, common sorrel (Rumex acetosa), white clover and meadow buttercup (Ranunculus acris) (locally abundant). Occasional species included; mouse-ear chickweed (Cerastium fontanum), broad-leaved dock, perennial ryegrass, red fescue (locally abundant) (Festuca rubra), soft rush (Juncus effusus) and marsh foxtail (Alopecurus geniculatus). Rare species recorded included; cow parsley (Anthriscus sylvestris), soft brome (Bromus hordeaceus), ragwort, common nettle, creeping thistle, hairy tare (Vicia hirsuta), flax (Linum sp.), thyme leaved speedwell	No Photograph

Target Note	Description	Photograph
	(<i>Veronica serpyllifolia</i>) southern marsh orchid and common spotted orchid.	
	The species composition of the southern margin varied and was less diverse. Frequently recorded species included; dandelion, cow parsley and soft brome. Occasional species recorded included; mouse-ear chickweed, creeping buttercup, meadow foxtail (locally frequent), sweet vernal grass and perennial ryegrass. Rare species recorded included broad leaved dock, ragwort, common nettle, common sorrel, cock's-foot, creeping bent and spear thistle.	
TN 40	Outgrown hedge/trees. Oak, field maple, broom (Cytisus sp.), hawthorn, sycamore (Acer pseudoplatanus), hawthorn, Swedish whitebeam, crack willow, rowan, Corsican pine, hedge bindweed, honey suckle.	
	Moderately high to high value using HEGS.	
TN 41	Mature oak, damaged and with void at approx. 2 metres high. MODERATE BAT POTENTIAL	No Photograph

Target Note	Description	Photograph
TN 42	Defunct hawthorn dominant hedge.	
TN 43	Oak, 2 holes approx. 2-3m height. No cobwebs. MODERATE BAT POTENTIAL	
TN 44	Confidential	Confidential
TN 45	Intact hedge alder dominant hedge, hawthorn, willow	No Photograph
TN 46	Confidential	Confidential

Target Note	Description	Photograph
TN 47	Woodland: sessile oak, hawthorn, sycamore, holly, grey poplar (Populus × canescens), yew (Taxus baccata), rowan, silver birch (Betula pendula), false acacia (Robinia pseudoacacia). Several trees ivy clad limiting inspection, knot hole in poplar 10m high, understorey: bramble, nettle, creeping bent, cocksfoot, ivy (Hedera helix). Pond dry	
TN 48	Oak tree wood pecker holes at approx. 5m height, some dead limbs not really suitable for bat roosting. LOW BAT POTENTIAL	

Target Note	Description	Photograph
TN 49	Broadleaved woodland: silver birch, Salix sp., holly, alder, ash, oak, rowan, ivy, hawthorn, elder. Understory of: bramble, soft rush, Carex sp, creeping buttercup, common nettle and floating sweet-grass.Dry during survey in July 2016 but turned into extensive wet woodland over winter and early part of 2017. Smell of fox and rabbit sighted. Three trees with LOW BAT POTENTIAL – ivy restricting view on some.	
TN 50	Pond holding water, 3x1m, 5cm deep. Signs that it may extend to 10x10m during winter. No wildfowl, fish, vegetation.	
TN 51	Defunct species poor hedge, hawthorn dominant. Rabbit digging	

Target Note	Description	Photograph
TN 52	Perennial rye-grass dominant in grassland field, clover and nettle. The southern extent of this field adjacent the woodland was noted to offer a greater diversity and be subject to less grazing pressure. Additional species recorded in this location included hedge bedstraw (Galium mollugo), bird's-foot-trefoil and four marsh orchids (Dactylorhiza praetermissa).	
TN 53	Hedge with trees. Six notable trees and dry ditch behind. One of the trees with moderate bat roosting potential and one with low bat roost potential (rest negligible). Non-native oak (Possibly Turkey oak) present.	

Target Note	Description	Photograph
TN 54	Broadleaved woodland: oak, silver birch, elder, beech, hawthorn, horse chestnut, holly, rowan. Understorey of bramble, soft rush, common nettle, <i>Epilobium</i> sp., <i>Pteridium</i> sp., wood avens. Dense scrub in central understorey caused limited access.	
TN 55	Pond holding water, approximately 5x10, no fish, wildfowl, or emergent vegetation, 100% shaded.	
TN 56	Small circular pond basin within woodland adjacent the canal. The pond was heavily shaded and had significant amounts of leaf litter and woody debris within the basin. Pond was noted to dry annually.	

Target Note	Description	Photograph
TN 57	Large field with temporary fences in place for grazing horses. The main field within the fenced areas was heavily grazed. Species recorded included perennial rye-grass, broadleaf dock, creeping buttercup, Epilobium sp., soft rush, common nettle, spear thistle and cocksfoot. Some orchid rosettes were noted to the southern extent within the fence line. Semi-improved grassland (not grazed recently) around the margins included the species above and also included southern marsh orchid (Dactylorhiza praetermissa), common spotted orchid (Dactylorhiza fuchsii), red clover, hogweed, ribwort plantain, false-oat grass, Geranium sp., common vetch, bird's-foot-trefoil, hedge bedstraw, ladies smock,ragged robin and yarrow.	
TN 58	Veteran tree Intact hedge (species poor): hawthorn dominant, New tree planting along Straight Mile.	No photograph.
TN 60	Area of arable set aside	No Photograph

Target Note	Description	Photograph
	species present included poppy (<i>Papaver rhoeas</i>), violet (<i>Viola</i> sp.), groundsel (<i>Senecio vulgaris</i>), common nettle and rosebay willowherb.	
TN 61	Marsh orchids (<i>Dactylorhiza</i> praetermissa) were identified	No Photograph
TN 62	An area of arable set aside including a shallow ditch and bank. This area is seasonally wet, with a high proportion of <i>Juncus</i> noted.	No Photograph
TN 63	Typical arable field and area of broad-leaved woodland in the west of the Site.	
TN 64	Typical arable field in the centre of the Site.	

Target Note	Description	Photograph
TN 65	The woodland comprises semi-mature silver birch interspersed by blocks of early mature Austrian pine (Pinus nigra ssp. Nigra) and Scots pine (Pinus sylvestris). The shrub layer in much of the woodland is formed by dense rhododendron, bramble, bracken or laural (Prunus Laurocerasus). Occasional mature English oak, Turkey oak (Quercus cerris), elder, holly (Ilex aquifolium) and mountain ash (Sorbus aucuparia) are located within the woodland. Several more open areas are situated in the centre of the plantation woodland. The ground flora is poor.	
TN 66	Glade in the centre of the mixed plantation woodland vegetation with bracken.	
TN 67	Track through the mixed plantation woodland in the centre of the Site.	

Target Note	Description	Photograph
TN 68	Quarry and standing water in the north-east of the Site.	
TN 69	Broad-leaved woodland in the far east of the Site. The woodland predominantly comprises a dense stand of early mature silver birch of uniform size and age and occasional semi-mature alder. Marginal areas of the woodland are occupied by scattered mature pedunculate oak and scots pine (<i>Pinus sylvestris</i>). The field layer is predominantly bracken with locally dominant bramble and the occasional hard rush and broad buckler fern (<i>Dryopteris dilatata</i>).	
TN 70	Mature broadleaved woodland dominated by silver birch and pedunculate oak, ranging from small saplings to large late mature specimens. Occasional mature alder and horse chestnut (Aesculus hippocastanum) are also present. The understorey comprises locally dominant stands of bramble or rhododendron, which largely obscure the sparse field layer.	

Target Note	Description	Photograph
TN 71	Arable field in the centre of the Site with mature trees in the middle of the field.	
TN 72	Semi-improved grassland field and hedgerow with mature poplar trees in the south of the Site.	
TN 73	Typical hedgerow and mature trees in the west of the Site.	
TN 74	Dual carriageway and roundabout to the west of the Site.	

Target Note	Description	Photograph
TN 75	Stand of Japanese knotweed on railway embankment, approximately 20m by 5- 8m	
TN 76	Stand of Japanese knotweed (limited access) on railway embankment.	
TN 77	Himalayan balsam by the ditch adjacent to the Straight Mile	

Target Note	Description	Photograph
TN78	Improved grassland with generally low species diversity dominated by perennial ryegrass.	
TN79	Poor semi-improved	No photograph
	grassland dominated by false-oat grass, cocksfoot and Yorkshire fog. Also frequently present perennial ryegrass. Sparse herbaceous component including creeping thistle, broad leaved dock and common nettle.	
		No photograph
TN80	Semi-improved grassland, species present include cocksfoot, false oat grass, smooth meadow grass, creeping buttercup, cleavers, dandelion, yarrow and ribwort plantain. Pignut frequently observed suggesting long history without being ploughed or improved significantly – No other notable species observed.	No photograph
TN81	Hedgerow assessed as	
	being of moderately high to high value using HEGS.	No photograph
		11- 1-1-1-3, Sele

Target Note	Description	Photograph
TN82	Broadly triangular shaped mixed woodland dominated by pine including Austrian pine (<i>Pinus nigra</i> ssp. <i>Nigra</i>) and Scots pine (<i>Pinus sylvestris</i>). Other species present include elder (<i>Sambucus nigra</i>), hawthorn and alder (<i>Alnus glutinosa</i>). The understory is predominantly bare with pine needles with areas of dense bramble scrub.	No photograph.
TN83	Small mixed woodland block comprising elder (Sambucus nigra), English Oak (Quercus robur), Sycamore (Acer pseudoplatanus), Sweet Chestnut (Castanea sativa), Austrian Pine (Pinus nigra ssp. Nigra) and Scots Pine (Pinus sylvestris).	No photograph.
TN84	Mature woodland predominantly occupied by oak and alder with abundant silver birch and the occasional horse chestnut. The shrub layer predominantly comprises holly. Parts of the woodland appear to be quite wet and three seasonally connected small shallow ponds are located in low lying depressions.	No photograph

Target Note	Description	Photograph
TN85	Woodland containing several large mature English oak and Lombardy poplar, occasional ash, Norway maple and hornbeam. The shrub layer consists of elder, hawthorn and goat willow, with the occasional bramble. The field layer contains lesser celandine, lords and ladies and common ivy. Parts of the woodland are quite damp and a pond is located in this woodland.	No photograph.
TN86	Woodland containing semi- mature and early mature silver birch, alder, oak, beech, sweet chestnut and holly. The shrub layer contains scattered bramble, gorse and elder amongst a field layer of hard rush and grasses, which extend into the woodland from the adjoining semi-improved grassland habitat.	
TN87	Small area of broad-leaved plantation woodland containing a mix of early mature pedunculate oak, silver birch, elder, sycamore, aspen (<i>Populus tremula</i>) and hornbeam (<i>Carpinus betulus</i>).	No photograph. No photograph.
TN88	Native black poplar – confirmed via DNA.	No photograph.

Target Note	Description	Photograph
TN89	Large bungalow constructed largely of rendered brick. Concrete roofing tiles on several roof elevations and with modern PVC soffits and fascias. Separate garage building to the west of the main property was present, constructed in largely the same way as the main property. A large outbuilding was also present further west and was of the same construction materials as the garage. A row of horse stables were present to the south west of the main property. They were constructed of brick and render walls with flat bitumen roofing and relatively new PVC soffits and fascias.	
TN90	False acacia (<i>Robinia</i> pseudoacacia) was identified in hedgerow 75 located south of Calf Heath Wood	No photograph.

Annex 10.1.3

Biocensus Hedgerow Survey Report



Four Ashes Hedgerow Survey 2016



Presented to Ramboll Environ

August 2016



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Executive summary

Biocensus were commissioned by Ramboll Environ to undertake a survey of hedgerows within land at Four Ashes, Staffordshire. The study area surrounds an aggregate quarry located to the west of Cannock near Junction 12 of the M6 at National Grid Reference SJ925096.

Of the 97 hedgerows recorded only 11 were considered 'important' under the Hedgerow Regulations 1997. A further 6 were considered borderline, as a result of failing to reach the requisite number of associated features for consideration as 'important' by one. The majority of hedgerows did not meet the criteria.

Many hedgerows with mature trees did not meet the criteria for 'important' under the regulations although presence of trees is considered to increase the likelihood of protected species such as bats which would change the assessment. To date, bat roosts have been identified at two locations, both within Calf Heath Wood.



1. Introduction

Biocensus were commissioned by Ramboll Environ to undertake a survey of hedgerows within land at Four Ashes, Staffordshire. The study area surrounds an aggregate quarry located to the west of Cannock near Junction 12 of the M6 at National Grid Reference SJ925096.

2. Legislation and Planning Context

The Hedgerow Regulations 1997 set out the properties that make a hedgerow 'important' and therefore afforded protection under the legislation. In summary, a hedgerow is considered important if it is more than 30 years old and meets one or more of the following criteria:

Archaeology and history

- Marks part or all of the boundary of a historic parish or township that existed before 1850;
- Incorporates an archaeological feature (or is associated with one) included in the schedule
 of monuments compiled by the Secretary of State under section 1 (schedule of monuments)
 of the Ancient Monuments and Archaeological Areas Act 1979(7) or recorded in a Sites and
 Monuments Record (dating from 27 March 1997);
- Marks the boundary of a pre-1600 AD estate or manor (or visibly associated with one) and is listed in a Sites and Monuments Record or other such document held at a Records Office since 27 March 1997;
- Forms an integral part of a field system predating the Inclosure Acts;

Wildlife and landscape

- Contains species listed in part I of Schedule 1 (birds), 5 (animals) or 8 (plants) of the Wildlife and Countryside Act 1981 (as amended), or species considered to be "declining breeders, endangered, extinct, rare or vulnerable" in UK Red Data Books;
- Includes at least a) 7 woody species, b) 6 woody species plus 3 associated features, c) 6 woody species including a black poplar; large-leaved lime, small-leaved lime or wild service tree, d) 5 woody species and 4 associated features or e) is adjacent to a public right of way (byway open to all traffic) and supports at least 4 woody species in addition to 2 associated features.

Associated features include:

- (a) a bank or wall which supports the hedgerow along at least one half of its length;
- (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- (c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree;
- (d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;



- (e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
- (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
- (g) a ditch along at least one half of the length of the hedgerow;
- (h) connections scoring 4 points or more in accordance with sub-paragraph (5);
- (i) a parallel hedge within 15 metres of the hedgerow.

3. Methodology

3.1. Site Survey

A walkover of the site was undertaken between the 21st and 22nd June 2016 and hedgerows assessed using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997. Survey protocol was adapted from guidance of the Hedgerow Survey Handbook¹. However, given the emphasis on the number of woody species, the following criteria were used:

- (a) where hedgerow length did not exceed 30 metres, all woody species present in the hedgerow were counted;
- (b) where hedgerow length did not exceed 100 metres, woody species in the central 30 metres were counted;
- (c) where hedgerow length fell between 100-200 metres, the hedgerow was divided in half and woody species counted in each central 30 metre section with the aggregate divided by two;
- (d) where the hedgerow length exceeded 200 metres, the hedgerow was divided into three, woody species counted in each central 30 metre section and the aggregate divided by three.

3.2. Surveyor

The surveyor and author of this report was Matthew Pickard (BSc (Hons), MSc.), an ecologist with over 15 years environmental consultancy experience, a Chartered Environmentalist (CEnv) and full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

3.3. Survey Limitations

Seasonal timing posed a constraint to identification of some plants and in particular was considered late to survey for woodland indicator species. Additional surveys are proposed for 2017 to cover land south of Vicarage Way. This report should be read in conjunction with separate archaeological

¹ Defra (2007) Hedgerow Survey Handbook. A standard procedure for local surveys in the UK. Defra, London.



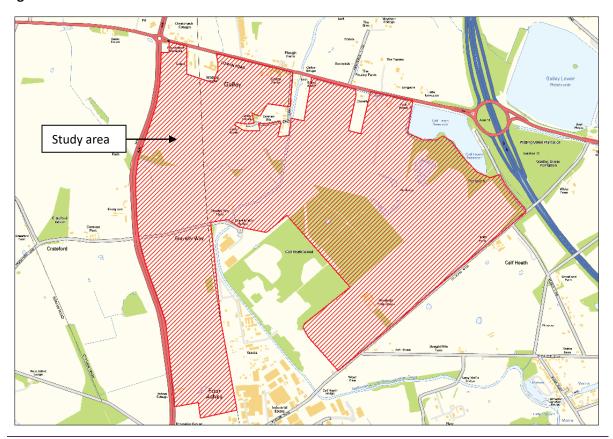
and cultural heritage assessments where reference is made to the archaeology and historical value of hedgerows on-site.

4. Existing Conditions

4.1. Overview

The study area (see Figure 1 below) is centred on agricultural land in the vicinity of an existing active aggregate quarry to the north of Four Ashes and west of Junction 12 of the M6.

Figure 1: Location Plan.



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4.2. Hedgerows

The site visit between the 21st and 22nd June 2016 recorded 97 hedgerow sections of which only 11 were considered 'important' under the Hedgerow Regulations 1997.

Appendix 1 provides an account of each hedgerow sampled. Figure 2 presents the location of each hedgerow and likely status under the Wildlife and landscape criteria of the Hedgerow Regulation. However, as a note of caution, the presence of protected or RDB species in any of the hedgerows provisionally assessed as 'not considered important' could change their status.

Four Ashes – Hedgerow Survey

- August 2016, Version 1.0

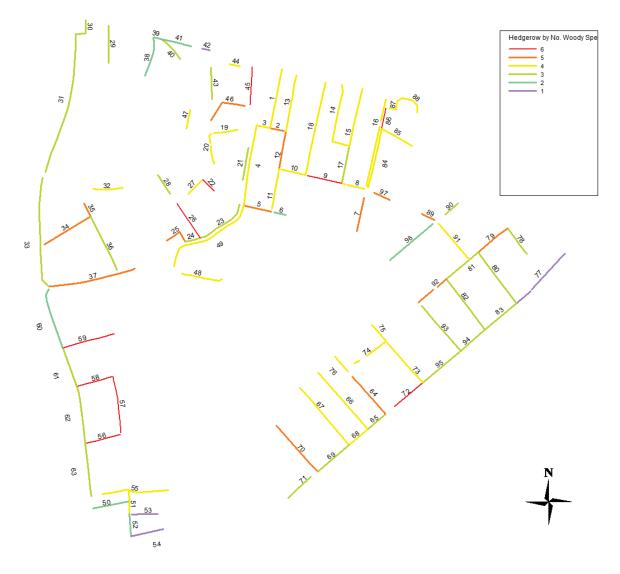
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The vast majority of hedgerows assessed during the site visit were relatively species-poor in terms of woody species, none reaching 7 species in any given 30m sample section.

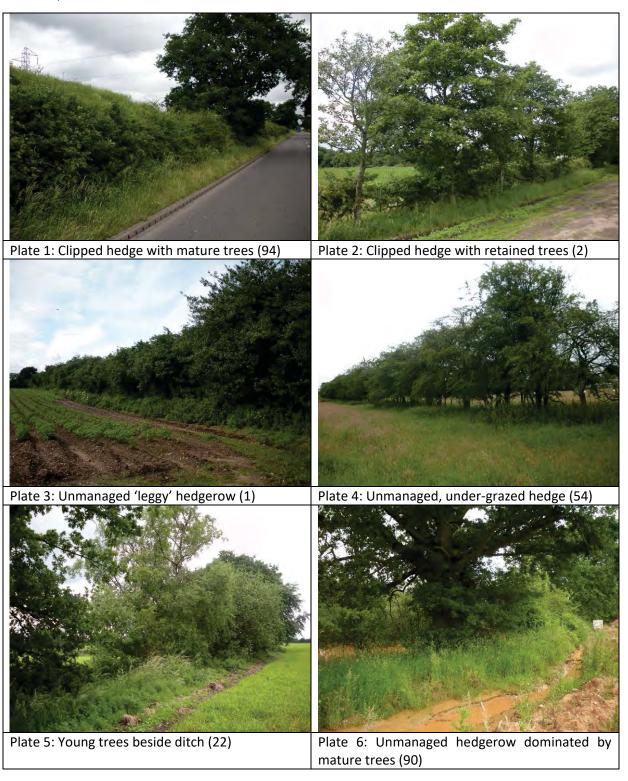
No. of woody sp	Hedgerow references
1	42, 53, 54 & 77
2	6, 38, 39, 41, 50, 52, 60 & 96
3	17, 21, 23, 24, 28, 29-31, 33, 36, 40, 43, 61-63, 65, 69, 71, 78, 80-83, 90 & 93-95
4	1, 3, 4, 8, 10, 11, 13-16, 18-20,27, 32, 44, 47-49, 51, 55, 66-68, 73-76, 84, 85, 87, 88 & 91
5	2, 5, 7, 12, 25, 34, 35, 37, 46, 64, 70, 79, 83, 89, 92 & 97
6	9, 22, 26, 45, 56-59, 72 & 86

Figure 3: Thematic map indicating number of woody species in 30m hedgerow sections





The character of hedgerows varied throughout the study area from intensively managed roadside hedgerows to unmanaged leggy field boundaries and mature trees. The following photographs illustrate examples of hedgerows found within the study area (the number in brackets is the hedge number):





5. Assessment

Of the 97 hedgerows recorded only 11 were considered 'important' under the Hedgerow Regulations 1997. A further 6 were considered borderline, as a result of failing to reach the requisite number of associated features for consideration as 'important' by one. The majority of hedgerows did not meet the criteria.

Hedgerows within a central area of the site were dominated by mature trees of Oak some of which were identified as veterans. Hedgerows with such trees included: 81 (T168 & T169), 84 (T153), 86 (T159), 90 (T178) and 91 (T175). An Alder within hedgerow 66 with a DBH of approximately 70cm may also qualify as a veteran tree. Many hedgerows with mature trees did not meet the criteria for 'important' under the regulations although presence of trees is considered to increase the likelihood of protected species such as bats which could change the assessment. To date, bat roosts have been identified at two locations, both within Calf Heath Wood, neither in a hedgerow.



Appendix 1 – Hedgerow data sheets



biocensus

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Website: www.biocensus.co.uk

Ref: 1	Date	21/06/2016	Surveyors	MP	
	ons 1997, is th	Landscape criteria of the Hedone hedgerow considered to be	gerow O Y	es O Likely	● No
ledgerow category		Note:			
O 1 - Intact managed hedgerow		Tall outgrown hedgerow the southern end.	with two mature	Oak (Quercus ro	bur) at
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge width	Hedge le	ength (m):
3 - Unmanaged 'leggy' hedgero	w	0.0.4	0.04		246
O 4 - Hedgebank with occasional		O 0-1m	O 0-1m	ĺ	
O 5 - Managed hedgerow with ma	ture trees	O 2-4m	O 2-4m		
O 6 - Treeline		● >4m	● >4m		
7 - New / reinstated hedgerow			74111		
O 8 - Fenceline					
Voody species					
Oak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel B	Blackthorn Elde	er Willow Ros	se Holly
			\checkmark		
ther: Elm	Cor	mposition: High proportion of	Elm		
umber of woody species per 30m sa	amnle length	Į.			
diffice of woody species per solli se	ampic ichgui				
	● 4	ess than 4			
O 7 or more O 6 O 5 (Are 3 notable features present? Are 4 notable features present?	Not 1 2 3 4 5	table features Bank or Wall fo		the hedgerows	_
Are 3 notable features present? Are 4 notable features present? Is the hedge adja to a bridalway footpath or bywa	Not 1 2 3 4 5 accent y, 6 ay to	table features Bank or Wall for form of the features Ditch form form form form form form form form	or at least half of	the hedgerows	lengt O >30
7 or more 6 5 Are 3 notable features present? Are 4 notable features present? Is the hedge adja to a bridalway	Not 1 2 3 4 5 acent 4, 6 ay to tains	table features Bank	or at least half of	the hedgerows	lengt O >30 voodland (2 poin
7 or more 6 5 6 Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con	Not 1 2 3 4 5 acent 4, 6 ay to tains	table features Bank or Wall for for the features Ditch for the features Less than 10% gaps Nor the feature / 50m At least 3 Woodland Species Connections with another head scoring 4 points or more Hedgerow connections	one 1-10%	the hedgerows 10-30% 10-30%	lengt O >30 voodland (2 poin
Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con	Not 1 2 3 4 5 acent y, 6 ay to tains res?	table features Bank or Wall for for the features Ditch for the features Less than 10% gaps North North Note: Bank or Wall for for the feature for th	or at least half of one 1-10% dge (1 point), por	the hedgerows 10-30% 10 (2 points) or v Less tha	lengt O >30 voodland (2 poin
Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con 2 notable feature	Not 1 2 3 4 5 acent y, 6 ay to tains res?	table features Bank or Wall for for the features Ditch for the features Less than 10% gaps North North Note: Bank or Wall for for the feature for th	one 1-10%	the hedgerows 10-30% 10-30%	lengt O >30 voodland (2 poin
7 or more 6 5 6 Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con	Not 1 2 3 4 5 acent y, 6 ay to tains res?	table features Bank or Wall for for the features Ditch for the features Less than 10% gaps North North Note: Bank or Wall for for the feature for th	or at least half of one O 1-10% dge (1 point), por O 4 or more	the hedgerows 10-30% 10 (2 points) or v Less tha	lengt O >30 voodland (2 poin
Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con 2 notable feature	Not 1 2 3 4 5 cent y, 6 ay to tains es?	table features Bank or Wall for for the features Ditch for the features Less than 10% gaps North North North North North North Feature	or at least half of one O 1-10% dge (1 point), por O 4 or more	the hedgerows 10-30% 10 (2 points) or v Less tha	lengt O >30 voodland (2 poin

Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Composition:	Note: Clipped hedge and ditch with standard Oak and young trees Hedge height Hedge width Hedge length (m): 0 0-1m 1-2m 2-4m > >4m > >4m	Regulations 1997, is
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 2-4m O 3- Unmanaged 'gappy' hedgerow O 6 - Treeline O 2-4m O 2-4m O 2-4m O 2-4m O 3- Unmanaged 'gappy' hedgerow O 6 - Treeline O 1-2m O 2-4m O 2-4m O 2-4m O 3- Unmanaged 'gappy' hedgerow O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 7 or more O 6	Clipped hedge and ditch with standard Oak and young trees Hedge height Hedge width Hedge length (m): O 0-1m O 1-2m O 2-4m O 2-4m O >4m O >4m	
O 1- Intact managed hedgerow O 2- Managed 'gappy' hedgerow O 3- Unmanaged 'teggy' hedgerow O 4- Hedgebank with occasional shrubs O 5- Managed hedgerow with mature trees O 6- Treeline O 7- New / reinstated hedgerow O 8- Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Field maple, Whitebeam	Hedge height	gerow category
2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Field maple, Whitebeam Composition: Number of woody species per 30m sample length 7 or more 6 6 5 4 Less than 4 Notable features present? Are 4 notable features present? Are 4 notable features present? As Less than 10% gaps None 1-10% 10-30% >30 Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge width 0 0-1m © 1-2m 0 2-4m 0 2	○ 0-1m ○ 0-1m ● 1-2m ○ 1-2m ○ 2-4m ○ 2-4m ○ >4m ○ >4m	1 - Intact managed hedgerow
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs ● 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Fleld maple, Whitebeam Composition: Notable features 1 Bank or Wall for at least half of the hedgerows length	○ 0-1m ○ 0-1m ● 1-2m ○ 1-2m ○ 2-4m ○ 2-4m ○ >4m ○ >4m	
● 5 - Managed hedgerow with mature trees	 ● 1-2m ○ 2-4m ○ >4m ○ >4m 	3 - Unmanaged 'leggy' hedgerow
O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species O 8 - Fenceline Woody species O 8 - Fenceline O 8 - Fenceline O 8 - Fenceline Woody species O 8 - Fenceline O 8 - Fenceline O 8 - Fenceline O 8 - Fenceline O 9 - 4m O > 4	○ 2-4m ○ >4m ○ >4m	4 - Hedgebank with occasional shrubs
7 - New / reinstated hedgerow 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Field maple, Whitebeam Composition: Jumber of woody species per 30m sample length Notable features present? Are 3 notable features present? Are 4 notable features Are 5 None ① 1-10% ① 10-30% ② >30 Connections with another hedge (1 point), pond (2 points) or woodland (3 cooring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m ② Yes ② No	O >4m	5 - Managed hedgerow with mature trees
Noody species		
Woody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Dither: Field maple, Whitebeam Composition:	Rooch Hauthorn Hazal Plackthorn Elder Willey Page 11-11:	•
Composition: Composition	Rooch Hauthorn Hazal Plackthorn Elder Willey Bass Hally	8 - Fenceline
Composition: Composition	Rooch Hauthorn Hazal Plackthorn Elder Willow Boss Haller	dy species
Other: Field maple, Whitebeam Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features		
Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length features present? Are 4 notable features present? Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m Yes No		
O 7 or more ○ 6 ● 5 ○ 4 ○ Less than 4 Are 3	position:	r: Field maple, Whitebeam C
Notable features notable features present? Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m Notable features Are 4 notable features Standard tree / 50m At least 3 Notable features Are 4 notable features Are 4 notable features Standard tree / 50m At least 3 Notable features Are 4 notable features Are 4 notable features Standard tree / 50m Are 4 notable features Are 4 notable features Are 4 notable features Standard tree / 50m Are 4 notable features Are 4		ber of woody species per 30m sample length
Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Are 4 notable features 1 Bank	s than 4	7 or more
Is the hedge adjacent to a bridalway, footpath or byway to —all traffic and contains 2 notable features? 4 Standard tree / 50m Oak 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections 4 or more Less than 4 Note:	ank or Wall for at least half of the hedgerows length	Are 3 notable 1 features
Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features? At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections Note:	ess than 10% gaps	3
Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features? The hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features? The hedge adjacent of the hedge (1 point), pond (2 points) or woodland (2 points) or woodland (3 points) or woodland (4 points) or woodland (5 points) or woodland (6 points) or woodland (7 points) or woodland (8 points) or woodland (9 points) or wo	5 10 10 10 000 10 00 10 00 10 00 10 00 10 00 10 00 10 00 10 00 10 00 10 00 10	Are 4 notable features
Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features? The hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features? Hedgerow connections The hedge adjacent of the hedge (1 point), pond (2 points) or woodland (2 points) or woodland (3 points) or woodland (4 points) or woodland (5 points) or woodland (6 points) or woodland (7 points) or woodland (8 points) or woodland (9 points) or woo	t least 2	present?
to a bridalway, footpath or byway to —all traffic and contains 2 notable features? The degree within 15m Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m Yes No	Woodland Species	
2 notable features? Hedgerow connections	connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more	to a bridalway, 6 footpath or byway to
7 Parallel hedge within 15m Yes No	edgerow connections	
	Note:	
	arallel hedge within 15m Yes No	
O Yes No No Have protected species been recorded?		O Vas
Not known		
nportantedgerow		

Ref: 3	Date	21/06/2016	Survey	ors MP	
		nd Landscape criteria of the Hees s the hedgerow considered to be		Yes O Likely	No
Hedgerow category		Note:			
O 1 - Intact managed	d hedgerow	Unmanaged Hawthorn o	dominated hedg	gerow	
O 2 - Managed 'gapp	y' hedgerow	Hedge height	Hedge width	Hedge lengt	h (m):
3 - Unmanaged 'le	ggy' hedgerow				60
O 4 - Hedgebank with	n occasional shrubs	O 0-1m	O 0-1m	'	
O 5 - Managed hedge	erow with mature trees	O 1-2m	● 1-2m		
O 6 - Treeline		⊚ 2-4m	O 2-4m		
7 - New / reinstated	d hedgerow	O >4m	O >4m		
O 8 - Fenceline					
Woody species					
Oak Birch Rowan Other:	Sycamore Alder As	sh Beech Hawthorn Hazel		Ider Willow Rose	Holly
,		·]			
Number of woody specie	es per 30m sample lengt	h 			
O 7 or more O 6	O 5	Less than 4			
ls the footy—all tra	I notable atures esent?	2 Ditch 🗹	for at least half None) >30
 nportant <u> </u>		Not known			
edgerow		7			
Dock, Rou	gh Meadow-grass and o				padleaved
Photo1 DS	SCN8750 Photo2	Photo3	Pho	to4	

Ref: 4	Date	21/06/2016	Surveyors	MP	
		d Landscape criteria of the Hedge the hedgerow considered to be	O Yes	Likely No	
Hedgerow category		Note:			
O 1 - Intact managed he	dgerow	Treeline with scrubby outgr	owth bordering o	anal	
O 2 - Managed 'gappy' he		Hedge height He	edge width	Hedge length (m	ı)·
O 3 - Unmanaged 'leggy'	hedgerow	Troage noight	ago widii	Tiedge length (ii	334
O 4 - Hedgebank with oc	casional shrubs		O 0-1m	'	
O 5 - Managed hedgerow	with mature trees		○ 1-2m ○ 2-4m		
6 - Treeline			● >4m		
7 - New / reinstated he	dgerow				
O 8 - Fenceline					
Voody species					
•	amore Alder Ash	n Beech Hawthorn Hazel Bla	ackthorn Elder	Willow Rose Holl	у
		Och Alder and Silver	Director de maior est		_
other: Gorse, Honeysuckle	C	omposition: Oak, Alder and Silve	er Birch dominate	ea	
umber of woody species pe	er 30m sample length	,			
○ 7 or more ○ 6	5 • 4 • 0	Less than 4			
to a b footpath — all traffic	1 2 3 table es 4	Ditch for Less than 10% gaps Non Standard tree / 50m At least 3 Woodland Species Connections with another hedgescoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	at least half of the 1-10% 1-	e hedgerows length ne hedgerows lengt 10-30% >30 (2 points) or woodland Less than 4	
		lave protected species been	recorded?		
portantdgerow		Not known			
arget notes Scrubby treelin	ne bordering canal.	Photo3	Photo4		

Regulations 19	life and Landscape criteria of the Hedgerow 97, is the hedgerow considered to be
'important'?	,
ledgerow category	Note:
O 1 - Intact managed hedgerow	Clipped hedgerow with standard Oak
2 - Managed 'gappy' hedgerow	Hodge height Hodge width Hodge length (m):
3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
O 4 - Hedgebank with occasional shrubs	0 0 1m
● 5 - Managed hedgerow with mature tree	ees
O 6 - Treeline	O 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
ak Birch Rowan Sycamore Alder	· Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther: Honeysuckle	Composition: Hawthorn dominated
umber of woody species per 30m sample l	length
7 or more	O Less than 4
	Notable features
Are 3 notable	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
features present?	2 Ditch ✓ for at least half of the hedgerows lengt
	3 Less than 10% gaps
Are 4 notable features	G 11010 G 10 00 0 7 00
present?	
	5 At least 3 Woodland Species
Is the hedge adjacent	
Is the hedge adjacent to a bridalway, footpath or byway to	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
to a bridalway,	
to a bridalway, footpath or byway to — all traffic and contains	scoring 4 points or more Hedgerow connections
to a bridalway, footpath or byway to — all traffic and contains	scoring 4 points or more Hedgerow connections Note: Canal and woodland
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	scoring 4 points or more Hedgerow connections Note: Canal and woodland Parallel hedge within 15m Yes No
to a bridalway, footpath or byway to — all traffic and contains	Scoring 4 points or more Hedgerow connections Note: Canal and woodland Parallel hedge within 15m Yes No No No No No No No No No N
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	scoring 4 points or more Hedgerow connections Note: Canal and woodland Parallel hedge within 15m Yes No

O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline ✓ Oody species ak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly ✓ □ □ □ □ □ □ □ ther: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Leggy treeline with low bank and ditch Hedge height Hedge width Hedge length (m): O 0-1m O 1-2m O 2-4m O 2-4m O >4m	Regulations 1997, is the hedgerow considered to be	Ref: 6		Date	21/06/2016	Su	irveyors	MP		
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedge height O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O - 1	O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggry hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Noody species O 1 -		Regulati	ons 1997, is			O Yes	O Likely	● No	
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 0-1m O 1-2m O 2-4m O 2-4m O > 4m O	O 1- Intact managed hedgerow O 2- Managed 'gappy' hedgerow O 3- Unmanaged 'leggy' hedgerow O 4- Hedgebank with occasional shrubs O 5- Managed hedgerow with mature trees O 6- Treeline O 7- New / reinstated hedgerow O 8- Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Sumber of woody species per 30m sample length O 7 or more O 6 O 5 O 4 ● Less than 4 Notable features present? Are 3 Are 3 Are 3 Are 3 Are 3 Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Present? O 2-4m O 3-4m O 1-2m O 2-4m O 2-4m O 2-4m O 2-4m O 2-4m O 2-4m O 3-4m O 4-4m O 3-4m O	Hedgerow ca	ategory		Note:					
O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 2 - 4m O 3 - 4m O 4 - Hedge length (m): O 0 - 1m O 1 - 2m O 2 - 4m O 3 - 4m O 4 - Hotable features present? O 7 or more O 8 - Fenceline O 8 - Fenceline O 8 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 3 - 4m O 4 - Hotable features O 0 - 1m O 1 - 2m O 2 - 4m O 3 - 4m O 4 - Hotable features O 5 Managed hedgerow with mature trees O 6 Fenceline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - 4m O 9 - 4m O 9 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 3 - 4m O 4 - Hotable features O 6 Fenceline with occasional corse. O 6 Fenceline with occasional corse. O 7 or more O 8 - 4 O 8 O 9 - 4m O 9 - 4m O 9 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 4 - 4m O 1 - 2m O 4 - 4m O 6 - 4m O 7 - 4m	O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O - 1 m	○ 1 - Inta	act managed hedgerow		Leggy treeline with	low bank and c	litch			r
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 9 - 4m O 2 - 4m O 2 - 4m O 2 - 4m O 2 - 4m O 3 - 4m O 4 - Hazel Blackthorn Elder Willow Rose Holly Ther: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. O 7 or more O 6 O 5 O 4 O Less than 4 Notable features Present? Are 4 notable features Present? Are 4 notable features Present? Are 4 notable features 1 Bank ✓ or Wall Or at least half of the hedgerows length 5 At least 3 Whondland Species Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? O 1 - 1 - 2m O 2 - 4m O 2 - 4m O 2 - 4m O 3 - 4m O 4 - 4m O 5 - 4m O 7 - New / reinstated hedgerow O 8 - Fenceline O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 9 - 4m O 1 - 2m O 4 - 4m O 1 - 2m O 2 - 4m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 9 - 4m O 1 - 2m O 2 - 4m O 3 - 4m O 3 - 4m O 6 or treeline with occasional gorse. I Bank ✓ or Wall or at least half of the hedgerows length for at least half of the hedgerow length for at least half of the hedgerow length for at least half of the hedgerow length for at least half of the	O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. O 7 or more O 6 O 5 O 4 ● Less than 4 Notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Are 5 None O 1-10% O 10-30% O >30 Standard tree / 50m Standard tree / 50m Standard Species At least 3 Woodland Species Note: Canal and woodland 7 Parallel hedge within 15m O Yes ● No	_			Hedge height	Hedge win	dth	Hedge l	anath (m):	
O 4 - Hedgebank with occasional shrubs ○ 5 - Managed hedgerow with mature trees ② 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 8 - Fenceline ○ 9 - 4m ○ 2-4m ○ 1-2m ○ 2-4m ○ 2-4m ○ 2-4m ○ 2-4m ○ 2-4m ○ 3-4m ○ 1-2m ○ 2-4m ○ 2-4m ○ 2-4m ○ 3-4m ○ 1-2m ○ 2-4m ○ 2-4m ○ 3-4m ○ 1-2m ○ 2-4m ○ 2-4m ○ 3-4m ○ 3-4m ○ 1-2m ○ 2-4m ○ 2-4m ○ 3-4m	O 4 - Hedgebank with occasional shrubs ○ 5 - Managed hedgerow with mature trees ○ 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 8 - Fenceline ○ 8 - Fenceline ○ 9 - 4m ○ 2 - 4m ○ 2 - 4m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 2 - 4m ○ > 2 - 4m ○ > 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 2 - 4m ○ > 4m ○ > 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ > 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ > 4m ○ 1-2m ○ 2 - 4m ○ 3 - 4m ○ 1 - 2m ○ 4 - 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 1 - 2m ○ 4 - 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4 - 4m ○ 4 - 4m ○ 1 - 2m ○ 2 - 4m ○ 3 - 4m ○ 4 - 4			W	rieuge rieigni	Tiedge wit		Tiedge it	engui (iii).	50
© 6 - Treeline O 7 - New / reinstated hedgerow 8 - Fenceline O 2-4m ○ >4m	© 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Other: Gorse Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Other: Gorse Other: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Other: Gorse Other:	O 4 - Hed	dgebank with occasional	shrubs	O 0-1m	O 0-1r	m	-		00
7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 8 - Fenceline 9 - 4m	Oracle O	O 5 - Mar	naged hedgerow with ma	ture trees						
Notable features present? Are 4 notable features present? Standard tree / 50m	Notable features Are 4 notable features Present? Standard tree / 50m Standard	6 - Tre	eline							
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Are 3 Notable features Are 4 notable features Are 4 notable features Are 5 Notable features Are 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections Are 4 notable features Are 5 None O 1-10% O 10-30% O >30 Are 4 notable features Are 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections Are 4 notable features Are 3 Notable features Are 4 notable features Are 4 notable features Are 3 Notable features Are 3 Notable features Are 4 notable	Are 4 notable features present? Standard tree / 50m Standard	O 7 - Nev	w / reinstated hedgerow		(•) >4m	O >4m	1			
As Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Silver Birch and Oak dominated treeline with occasional Gorse.	O 8 - Fer	nceline							
ther: Gorse Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Uniform of woody species per 30m sample length Notable features 1 Bank or Wall for at least half of the hedgerows length features 1 Bank for at least half of the hedgerows length for at least half of the hedgerows length for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies 1 Standard tree / 50m 5 At least 3 Noordland Snecies	Composition: Silver Birch and Oak dominated treeline with occasional Gorse. Sumber of woody species per 30m sample length O 7 or more	Voody spec	ies							
Notable features Are 3 notable features present? Are 4 notable features Are 3 notable features Are 4 notable features Are	Notable features Are 3 notable features present? Are 4 notable features Are 3 None Ditch Standard tree / 50m Standard tree / 50m Standard tree / 50m Standard tree / 50m The standard tree / 50m Standard tree / 50m The standard tree / 50m Standard tree / 50m The standard tre	V			omposition: Silver Birch]	-
Notable features Are 3	Are 3 notable features present? Are 4 notable features Are 4 notable foatures Are 4 notab	lumber of w	oody species per 30m sa	ample length	,					
Notable features Are 3	Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Parallel hedge within 15m Notable features 1 Bank or Wall for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) scoring 4 points or more Hedgerow connections Note: Canal and woodland 7 Parallel hedge within 15m Yes No	7 or mo	re) 4	Less than 4					
portant	Not known		notable features present? Are 4 notable features present? Is the hedge adja to a bridalway footpath or bywa all traffic and con 2 notable feature	2 3 4 5 accent y, 6 ay to tains res?	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Connections with anotts scoring 4 points or model to the second	for at leas None Snecies her hedge (1 points (a) 4 or m Canal and Market Canal and The Canal and	t half of the	2 points) or v	lengt O >30 voodland (2	? points

ng the Wildlife and gulations 1997, is to cortant'? row erow dgerow onal shrubs h mature trees	Note: Unmanaged outgrown hedgerow bordering quarry. Hedge height Hedge width Hedge length (m):
erow Igerow onal shrubs	Unmanaged outgrown hedgerow bordering quarry. Hedge height Hedge width Hedge length (m):
erow Igerow onal shrubs	Hedge height Hedge width Hedge length (m):
erow Igerow onal shrubs	142
onal shrubs	142
	0-1m 0-1m
h mature trees	
	○ 1-2m ○ 1-2m ○ 2-4m ○ 2-4m
	○ >4m
row	
	Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
	omposition: Hawthorn dominated
	I lawtion dominated
)m sample length	
O 4 O L	Less than 4
No	otable features
1	Bank ☑ or Wall ☐ for at least half of the hedgerows length
2	Ditch for at least half of the hedgerows lengt
3	Less than 10% gaps
e 4	Standard tree / 50m
5	At least 2
Ŭ	Woodland Species Geum urbanum
alway, 6	Connections with another hedge (1 point), pond (2 points) or woodland (2 poscoring 4 points or more
contains	Hedgerow connections
	Note: Woodland
7	Parallel hedge within 15m
	Have protected species been recorded? Not known
	Com sample length O 4 O 1 No 1 2 1 2 3 4 5 adjacent alway, byway to d contains eatures?

Ref: 8	Dat	e 📗	21/06/2016		Surveyors	MP		
			Landscape criteria of the hedgerow considered		O Yes	O Likely	● No	
Hedgerow category			Note:					
1 - Intact manage	ed hedgerow		Dense Hawthorn o	lominated n	nanaged hedge	erow		
O 2 - Managed 'gapp	_		Hedge height	Heda	je width	Hedge l	ength (m):	
O 3 - Unmanaged 'le	eggy' hedgerow		rieuge rieignt	riedg		Tiedge it	engur (m).	90
O 4 - Hedgebank wit	h occasional shrubs		O 0-1m	0	0-1m	1		
O 5 - Managed hedg	erow with mature tre	es	O 1-2m		1-2m			
O 6 - Treeline			● 2-4m		2-4m			
7 - New / reinstate	ed hedgerow		O >4m		>4m			
O 8 - Fenceline								
Voody species								
Dak Birch Rowan	Sycamore Alder	Ash	Beech Hawthorn H	łazel Black	thorn Elder	Willow Ros	se Holly	
							1 🗆	
ther: Lime		Con	mposition: Hawthorn o	lominated				
umber of woody specie	es per 30m sample l	ength	,					
7 or more	O 5	∩ Le	ess than 4					
ls the foot	4 notable atures resent? e hedge adjacent of a bridalway, path or byway to affic and contains otable features?	1 2 3 4 5	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Connections with anoth scoring 4 points or more Hedgerow connections	for at None Snecies ner hedge (re	1 point), pond (or more	e hedgerows 10-30% 2 points) or v Less that	lengt O >30 voodland (2	points
Over		7	Parallel hedge within 1	5m O Ye	es	● No		
O Yes	● No	8	Have protected spec	ies been re	corded?			
portant			Not known					
dgerow			IF.					
			species-poor ground fl (Q.robur) are present.	ora domina	ted by Nettle a	nd False Oat	-grass. A Lir	me

Llaina the Wildli	fo and Landacana criteria of the Hadgerow
	fe and Landscape criteria of the Hedgerow 97, is the hedgerow considered to be Yes O Likely O No
ledgerow category	Note:
1 - Intact managed hedgerow	Clipped hedgerow and ditch with small trees
2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
O 4 - Hedgebank with occasional shrubs	0.0 1m
O 5 - Managed hedgerow with mature tre	
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
loody species	
ak Birch Rowan Sycamore Alder	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther: Cherry, Field Maple, Lime, Honeys	Composition: Hawthorn and Blackthorn dominated with Dogrose, Goat Willow, Q.robur, Prunus avium and Tilia x europaea
umber of woody species per 30m sample le	
	-
7 or more	O Less than 4
Are 3	Notable features
notable features	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
present?	2 Ditch ✓ for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
features — present?	4 Standard tree / 50m
	5 At least 3 Woodland Species
le the hades adjacent	
Is the hedge adjacent to a bridalway,	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
footpath or byway to — all traffic and contains	
2 notable features?	
	Note:
	7 Parallel hedge within 15m Yes No
	8 Have protected species been recorded?
● Yes O No	have protected species been recorded:
Yes No	Not known

Ref: 10	Date	21/06/2016 Surveyors MP
		and Landscape criteria of the Hedgerow is the hedgerow considered to be
Hedgerow category		Note:
1 - Intact managed	d hedgerow	Clipped hedgerow and ditch
O 2 - Managed 'gapp'	_	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leg	ggy' hedgerow	105
O 4 - Hedgebank with	n occasional shrubs	O 0-1m
	erow with mature trees	● 1-2m● 1-2m
O 6 - Treeline		O 2-4m
7 - New / reinstated	d hedgerow	O >4m
0 8 - Fenceline		
Woody species		
	Sycamore Alder As	sh Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Prunus avium	(Composition: Hawthorn and Oak dominated
lumber of woody specie	es per 30m sample lengt	ıth
O 7 or more O 6	O 5) Less than 4
Is the to footp— all tra 2 no	e hedge adjacent of a bridalway, path or byway to ffic and contains otable features?	Notable features 1 Bank ✓ or Wall ☐ for at least half of the hedgerows length 2 Ditch ✓ for at least half of the hedgerows lengt 3 Less than 10% gaps
nportant edgerow		
	ra generally improverish	iks. Species indicative of acidic conditions including Sheep's Sorrel present. ned. Photo3 Photo4

Ref: 11	Date	2	1/06/2016	Su	irveyors	MP		
	Using the Wildlife Regulations 1997 'important'?				O Yes	O Likely	● No	
Hedgerow category		Note	:					
1 - Intact managed	hedgerow	Clipp	oed hedgerow an	d ditch				
2 - Managed 'gappy'	_	Hode	ro hoight	Hodgo wie	dth	Hodgo I	onath (m):	
3 - Unmanaged 'legg	•	Пеа	ge height	Hedge wid	uin	neage i	ength (m):	170
O 4 - Hedgebank with	occasional shrubs		0-1m	O 0-1r	m	-		170
O 5 - Managed hedger	ow with mature tree	s	1-2m	● 1-2r	m			
O 6 - Treeline			2-4m	O 2-4r	m			
O 7 - New / reinstated	hedgerow		>4m	O >4m	1			
O 8 - Fenceline								
Woody species								
Dak Birch Rowan S	Sycamore Alder	Ash Beech	Hawthorn Haz	el Blackthor	n Elder	Willow Ros	se Holly	
					\checkmark			
Other: Honeysuckle,		Composition	: Hedgerow dor	minated by Ha	awthorn, Q	robur and B	.pendula	
umber of woody species	nor 30m sample lor	agth	1					
			_					
7 or more 6	5 • 4	C Less than 4	<u>'</u>					
Are 3 notable		Notable feat	_	for at least	half of the	hedgerows	length	
features present?		2 Ditch	2	for at leas	t half of the	e hedgerows	lengt	
Aro 4	notable	3 Less tha	n 10% gaps) None	1-10% (1 0-30%	O >30	
feat	ures	4 Standard	I tree / 50m					
— pres	sent?	5 At least 3	,					
		O Alleast	Woodland Sn	ecies				
to a	hedge adjacent a bridalway, ath or byway to		ons with another points or more	hedge (1 poi	int), pond (2 points) or v	woodland (2	point
	ic and contains able features?	Hedgero	w connections	O 4 or m	ore	Less that	an 4	
			Note:					
	-	7 Decelled	and an existing 4.5			(A) Nie		
O Yes	● No	0	nedge within 15m			● No		
	<u> </u>	8 Have p	rotected species	been recorde	ed?			
portant dgerow		INOT KNO	JVVII					
49010W		i*						
Ground flora	gerow and ditch sup a largely rank and su Foxglove and Wavy I	pporting Nettle	, Rosebay Willov					
Photo1 DSC	CN8758 Photo2	2	Photo3		Photo4			
Photo1 DSC	CN8758 Photo2	2	Photo3		Photo4			

		21/06/2016	31	urveyors	MP	
	s 1997, is th	Landscape criteria of the e hedgerow considered		O Yes	O Likely	● No
Hedgerow category		Note:				
1 - Intact managed hedgerow		Clipped hedgerow a	nd ditch			
O 2 - Managed 'gappy' hedgerow		Lladge beight	Hedge w	idth	l lodge le	anath (m)
O 3 - Unmanaged 'leggy' hedgerow		Hedge height	neage w		neuge ie	ength (m):
O 4 - Hedgebank with occasional shr	rubs	O 0-1m	O 0-1	m	1	107
O 5 - Managed hedgerow with matur	re trees	● 1-2m	1 -2			
O 6 - Treeline		O 2-4m	O 2-4			
O 7 - New / reinstated hedgerow		O >4m	O >4r	m		
O 8 - Fenceline						
Voody species						
Dak Birch Rowan Sycamore Al	lder Ash	Beech Hawthorn Ha	zel Blacktho	rn Elder	Willow Ros	se Holly
				\checkmark		
Other: Honeysuckle	Con	nposition: Hawthorn, O	ak and Honey	suckle cons	stant	
lumber of woody species per 30m sam	ple length	J.				
		45 4				
○ 7 or more ○ 6 ● 5 ○ 6	4 0 16	ess than 4				
Are 3		able features	-			
notable	1	Bank 🗹 or Wall 🛭	for at leas	t half of the	hedgerows le	enath
features		_				_
present?	2	Ditch 🔽	for at leas	st half of the	e hedgerows	_
					hedgerows	_
present?	3				hedgerows	lengt
present? Are 4 notable features	3	Less than 10% gaps	None C		hedgerows	lengt
Are 4 notable features present?	3 4 5	Less than 10% gaps Standard tree / 50m	None C		hedgerows	lengt
Are 4 notable features present? Is the hedge adjace to a bridalway,	3 4 5 nt 6	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another	None C) 1-10% (e hedgerows	lengt >30
present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai	3 4 5 nt 6 to ns	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more	None C) 1-10% (hedgerows 10-30% 2 points) or w	lengt O >30 /oodland (2 poin
Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway t	3 4 5 nt 6 to ns	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more Hedgerow connections	None C) 1-10% (e hedgerows	lengt O >30 /oodland (2 poin
Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway t all traffic and contai	3 4 5 nt 6 to ns	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more	None C) 1-10% (hedgerows 10-30% 2 points) or w	lengt O >30 /oodland (2 poin
present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai 2 notable features:	3 4 5 nt 6 to	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more Hedgerow connections	None Connecies or hedge (1 po) 1-10% (hedgerows 10-30% 2 points) or w	lengt O >30 /oodland (2 poin
Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway t all traffic and contai	3 4 5 nt 6 to	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more Hedgerow connections Note:	Prince (1 po) 1-10% (2 points) or w	lengt O >30 /oodland (2 poin
Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai 2 notable features:	3 4 5 nt 6 to ns ?	Less than 10% gaps Standard tree / 50m At least 3 Woodland S Connections with another scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15	Prince (1 po) 1-10% (2 points) or w	lengt O >30 /oodland (2 poin

	Date	21/06/2016	Surveyors	MP	
		e and Landscape criteria of the Hed 7, is the hedgerow considered to be	gerow O Ye	s O Likely (No	
Hedgerow category		Note:			
1 - Intact managed	hedgerow	Clipped hedgerow and di	tch dominated by	Hawthorn	
O 2 - Managed 'gappy'	_	Hedge height	Hedge width	Hedge length (m)	
O 3 - Unmanaged 'legg	gy' hedgerow		loage width	riouge length (iii)	235
O 4 - Hedgebank with	occasional shrubs	O 0-1m	O 0-1m	,	
O 5 - Managed hedger	ow with mature trees	os	● 1-2m○ 2-4m		
6 - Treeline	h - d	O >4m	O >4m		
7 - New / reinstated 8 - Fenceline	neagerow				
Voody species					
Dak Birch Rowan S ☑ □ □	ycamore Alder	Ash Beech Hawthorn Hazel E	Blackthorn Elder ☐ ✓	Willow Rose Holly	
Other:		Composition:			_
lumber of woody species	per 30m sample ler	ngth			
7 or more 6	O 5 • 4	O Less than 4			
Are 3 notable features present?		2 Ditch 🗹 f	or at least half of	he hedgerows length	ī
	notable ures	9 11.	one 0 1-10%	O 10-30% O >30	
— pres	sent?	4 Standard tree / 50m			
		5 At least 3 Woodland Specie	2		
to a footpa	nedge adjacent a bridalway, ath or byway to ic and contains	6 Connections with another hed scoring 4 points or more	 ge (1 point), pond	d (2 points) or woodland	(2 poin
	able features?	Hedgerow connections	4 or more	Less than 4	
		Note:			
2 not		') Yes	● No	
	No No	'		⊚ No	

Ref: 14	Date	21/06/2016	Surveyors MP
		and Landscape criteria of the Hedgero is the hedgerow considered to be	O Yes O Likely No
Hedgerow category	,	Note:	
O 1 - Intact ma	naged hedgerow	Outgrown to north but clippe	d to the south.
O 2 - Managed	'gappy' hedgerow	Hedge height Hed	lge width Hedge length (m):
O 3 - Unmanage	ed 'leggy' hedgerow		313
O 4 - Hedgeban	k with occasional shrubs		0-1m
	hedgerow with mature trees) 1-2m
O 6 - Treeline			2-4m) >4m
7 - New / rein	stated hedgerow) 24111
O 8 - Fenceline			
Woody species			
Oak Birch Row		sh Beech Hawthorn Hazel Blac	
Other:		Z	
Juner.		Composition:	
Number of woody s	pecies per 30m sample leng	th	
O 7 or more	6 05 • 4	Less than 4	
_	3 ble res nt? Are 4 notable features present? Is the hedge adjacent	2 Ditch for a 3 Less than 10% gaps None 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge scoring 4 points or more Hedgerow connections Note:	(1 point), pond (2 points) or woodland (2 points) or more Less than 4 Yes No
Tes Tes	• NO	8 Have protected species been re	ecorded?
 nportant edgerow		Not known	
_	rde porth the hadrers were	porte un to civ woody anasiaa nor 20:-	a but becomes creaics near to south
Grour	nd flora is species-poor and l	argely dominated by False Oat-grass	
Photo	DSCN8762 Photo2	Photo3	Photo4

Ref: 15	Date	21/06/2016	Surveyo	rs MP	
		Landscape criteria of the Hec ne hedgerow considered to be		Yes O Likely (No No
Hedgerow category		Note:			
O 1 - Intact managed he	dgerow	Clipped Hawthorn domir the north	nated hedgerow	with semi-mature C	aks to
O 2 - Managed 'gappy' he		Hedge height	Hedge width	Hedge ler	igth (m):
O 3 - Unmanaged 'leggy'		O 0.1m	O 0-1m		242
4 - Hedgebank with oc		O 0-1m	① 1-2m		
5 - Managed hedgerow	w with mature trees	● 2-4m	O 2-4m		
6 - Treeline		O >4m	O >4m		
7 - New / reinstated he	edgerow				
0 8 - Fenceline					
Voody species					
	amore Alder Ash		Blackthorn Ele		Holly
					☑
Other:	Col	mposition:			
umber of woody species pe	er 30m sample length	1			
		ess than 4			
to a b footpath — all traffic 2 notab	table es 4 dge adjacent oridalway, 6 or byway to and contains ole features?	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another he scoring 4 points or more Hedgerow connections Note:	for at least half) >30 odland (2 point
O Yes	No 8	Have protected species be	en recorded?		
portantdgerow		Not known	on 10001d0d.		
Hawthorn dom Photo1 DSCN		mpoverished ground cover su	pporting rank g		

	Date	21/06/2016	Surv	eyors	MP	
Re		d Landscape criteria of the H the hedgerow considered to		O Yes	O Likely	⊚ No
Hedgerow category		Note:				
O 1 - Intact managed hedg	ierow	Clipped roadside (qua	arry) hedgerow			
② 2 - Managed 'gappy' hed		Hodgo hoight	Hedge widtl	h	Hodgo I	anath (m):
3 - Unmanaged 'leggy' he		Hedge height	neage width	'' <u> </u>	neuge i	ength (m):
O 4 - Hedgebank with occa	sional shrubs	O 0-1m	O 0-1m		1	040
O 5 - Managed hedgerow w	vith mature trees	● 1-2m	● 1-2m			
O 6 - Treeline		O 2-4m	O 2-4m			
7 - New / reinstated hedg	gerow	O >4m	O >4m			
O 8 - Fenceline						
Voody species						
ak Birch Rowan Sycan	nore Alder Ash	Beech Hawthorn Haz	el Blackthorn	Elder	Willow Ro	se Holly
ther:	Co	omposition: Hawthorn and	Dogrose domi	nated		
umber of woody species per	30m sample length	1				
7 or more		and then 4				
	1	Less than 4				
Are 3		otable features	1			
notable features	1	_	for at least h		-	
present?	2	Ditch L	for at least h	nalf of the	e hedgerows	lengt
Are 4 notal		Less than 10% gaps	None 0 1	-10% (10-30%	O >30
features — present	4	Standard tree / 50m				
	5	At least 3 Woodland Sne	ecies			
Is the hedg	e adiacent					
to a brid	dalway, 6	Connections with another scoring 4 points or more	hedge (1 point	t), pond (2 points) or v	woodland (2 po
— all traffic ar		Hedgerow connections	O 4 or mor	·	Less that	an 4
2 Hotable	reatures :	-	<u> </u>		<u> </u>	
		Note:				
	7	Parallel hedge within 15m	Yes		O No	
O Yes (7 No 8	_		?	O No	
O Yes (a No	-		?	O No	

Ref: 17	Date	21/06/2016	Surveyors	MP	
		Landscape criteria of the Hedg he hedgerow considered to be	erow O Yes	Likely No	
Hedgerow category		Note:			
1 - Intact managed he	edgerow	Hawthorn and locally, Elm	dominated clippe	ed hedgerow	
O 2 - Managed 'gappy' h	-	l Hedge height H	edge width	Hedge length (m):	
O 3 - Unmanaged 'leggy	' hedgerow	Treage neight	- Lage width	riedge length (m).	153
O 4 - Hedgebank with o	ccasional shrubs	O 0-1m	O 0-1m	1	100
O 5 - Managed hedgero	w with mature trees	● 1-2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
7 - New / reinstated he	edgerow	O >4m	O >4m		
8 - Fenceline					
Voody species					
Dak Birch Rowan Sy	camore Alder Ash	Beech Hawthorn Hazel B	lackthorn Elder	Willow Rose Holly	
Other: Elm	Co	mposition:			
Number of woody species p	per 30m sample length	-			
		ess than 4			
to a footpati — all traffic	otable res 4	Ditch	nr at least half of the	e hedgerows lengt 10-30% >30 10-30% >30 (2 points) or woodland (Less than 4	2 point
O Yes	No 8	Have protected species beer			
'		Not known	r recorded?		
portant dgerow		┦			
Photo1 DSCN	Elm dominated hedge	row with rank ground cover of Fa	alse Oat-grass, N	ettle and Cleavers.	

Ref: 18	Date	21/06/20	16	Surveyors	MP	
		e and Landscape criter 7, is the hedgerow con		O Yes	O Likely	No No
Hedgerow category		Note:				
O 1 - Intact manage	ed hedgerow	Clipped hed	gerow with standa	rd Oaks		
O 2 - Managed 'gapı	_	Lladge beigh	st Hodas	a width	Hodgolo	n ath (m)
3 - Unmanaged 'le		Hedge heigh	neage	e width	Heage le	ngth (m):
O 4 - Hedgebank wit	th occasional shrubs	O 0-1m	0	0-1m		390
● 5 - Managed hedg	gerow with mature tree	●s 1-2m	•	1-2m		
O 6 - Treeline		O 2-4m		2-4m		
7 - New / reinstate	ed hedgerow	O >4m		>4m		
O 8 - Fenceline						
Voody species						
Dak Birch Rowan	Sycamore Alder	Ash Beech Hawth	orn Hazel Blackt	thorn Elder	Willow Ros	e Holly
Other: Honeysuckle		Composition: Haw	thorn, Oak, Dogros	se and Elder al	most constan	t
umber of woody speci	es per 30m sample lei	ngtn				
7 or more 0 6	O 5	O Less than 4				
Is th	4 notable eatures resent? e hedge adjacent of a bridalway, epath or byway to affic and contains otable features?	2 Ditch 3 Less than 10% g 4 Standard tree / 9 5 At least 3 Word 6 Connections wit scoring 4 points Hedgerow connections 7 Parallel hedge w	n another hedge (1 or more ections	or more	e hedgerows l	engt >30 oodland (2 poin
nportant edgerow		THE KIOWII				
arget notes Clipped he grass, Cle	edgerow with mature 0 eavers, Nettle and Ros		Ground cover larg	ely rank and d	lominated by l	False Oat-

Using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997, is the hedgerow considered to be Yes Likely No Note: Note: Roadside hedgerow dominated by Hawthorn, Oak and Alder Hedge height Hedge width Hedge length (m): 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Are 4 notable features present? Are 4 notable features 1 - Bank or Wall for at least half of the hedgerows length features present? Are 4 notable features 1 - Bank or Wall for at least half of the hedgerows length for at least half of the hedgerows length for at least half of the hedgerows length scoring 4 points or more 1 - Bank or Wall for at least half of the hedgerows length for at least half of the hedgerow connections. Are 4 notable features Are 5 At least 3 Wwortland Renarias Are 5 At least 3 Wortland Renarias Are 6 None 1-10% 10-30% 3-30 At least 3 Wortland Renarias Are 7 Parallel hedge within 15m 9 Yes No No 8 Have protected species been recorded? Not known Note:	Regu 'impo	ulations 1997, is t		erow O Yes	s () Likely () No	ī
Roadside hedgerow dominated by Hawthorn, Oak and Alder 1	edgerow category					
① 1- Intact managed hedgerow ○ 2 - Managed 'gappy' hedgerow ○ 3 - Unmanaged 'leggy' hedgerow ○ 4 - Hedgebank with occasional shrubs ○ 5 - Managed hedgerow with mature trees ○ 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline ○ 8 - Fenceline ○ 9 - 1-2m ○ 2-4m ○ > 2-4m ○			Note:			
O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - Managed hedgerow with mature trees O 1 - Zedm O 2 - Managed hedgerow with mature trees O 2 - Managed hedgerow with mature trees O 2 - Managed hedgerow with mature trees O 3 - Unmanaged 'leggy' hedgerow O 1 - Im O 1 - Im O 1 - Im O 2 - Managed hedgerow with mature trees O 2 - Managed hedgerow with mature trees O 3 - Ved / In		ow	Roadside hedgerow domir	nated by Hawthor	rn, Oak and Alder	
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - 4m O 2 - 4m O 2 - 4m O 3 - 4m O 2 - 4m O 3 - 4m O 3 - 4m O 4 - Hedgebank with occasional shrubs O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - 4m O 2 - 4m O 2 - 4m O 3 - 4m O 3 - 4m O 4 - Hawthorn Hazel Blackthorn Elder Willow Rose Holly O 1 - 1m O 1 - 1m O 1 - 2m O 2 - 4m O 3 - 4m O 4 - Hawthorn Hazel Blackthorn Elder Willow Rose Holly O 7 or more O 6 O 5 ● 4 O Less than 4 Notable features I Bank O or Wall O or at least half of the hedgerows length for at least half of the hedgerows length I Standard tree / 50m I Standard Snecies Is the hedge adjacent to a bridalway, footpath or byway to a bridalway, footpath or bridalway, footpath or bridalway, footpath or byway to a bridalway, footpath or bridalway, footpath			Hodge beight	adaa width	Hadga langth (m)	۸-
O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Coody species ak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly ther: Honeysuckle Composition: Roadside hedgerow dominated by Hawthorn, Oak and Alder umber of woody species per 30m sample length O 7 or more O 6 O 5 ● 4 O Less than 4 Notable features present? Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features prosont? Are 6 notable features prosont? Are 7 Parallel hedge within 15m ● Yes			Heage neight H	eage wiath	Heage length (m)	
Consecution			O 0-1m	O-1m	L	101
7 - New / reinstated hedgerow 8 - Fenceline Oody species ak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	5 - Managed hedgerow with	mature trees	● 1-2m	○ 1-2m		
Restance Recycles	O 6 - Treeline		O 2-4m	O 2-4m		
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? O Yes Not known	7 - New / reinstated hedger	ow	O >4m	O >4m		
Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	8 - Fenceline					
Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	oody species					
umber of woody species per 30m sample length 7 or more 6 5 • 4						
Notable features Are 3	her: Honeysuckle	Co	omposition: Roadside hedgerov	v dominated by F	Hawthorn, Oak and Alde	r
Notable features Are 3	,					
Notable features Are 3	umber of woody species per 30	m sample length				
Are 3 notable features present? Are 4 notable features present? 1 Bank or Wall for at least half of the hedgerows length for at least half of the hedgerow le	7 or more	● 4 O L	Less than 4			
Standard tree / 50m	notable features present? Are 4 notable	1 2 3	Bank or Wall for Ditch fo	r at least half of t	he hedgerows lengt	
Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Steel hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections A or more Less than 4		4	Standard tree / 50m			
to a bridalway, footpath or byway to all traffic and contains 2 notable features? The parallel hedge within 15m Order		5	At least 3 Woodland Species			
2 notable features? Hedgerow connections O 4 or more Less than 4 Note: 7 Parallel hedge within 15m O Yes No Note: ote: Note: Note: Note: Note: Note: Note: Note: Note: Note: Note: Note: Note	to a bridat footpath or b	lway, 6 yway to		e (1 point), pond	I (2 points) or woodland	(2 poin
7 Parallel hedge within 15m Yes No No No Not known Not known			Hedgerow connections	4 or more	Less than 4	
O Yes No 8 Have protected species been recorded? Not known			Note:			
O Yes No 8 Have protected species been recorded? Not known			Develled her developed to 15	. Vee	O No.	
Have protected species been recorded? Not known dgerow	O Yes	No	1		O No	
lgerow		8		recorded?		
			Not known			
			,			

Ref: 20	Date	21/06/2016	Surveyors	MP
	ns 1997, is	d Landscape criteria of the He the hedgerow considered to I		s O Likely (No
Hedgerow category		Note:		
O 1 - Intact managed hedgerow		Clipped to the north an trees)	d unmanaged to the	south (becoming line of
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge width	Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	1			1
O 4 - Hedgebank with occasional sl	hrubs	O 1.0	O 1.000	,
5 - Managed hedgerow with mature	ure trees	O 1-2m	O 1-2m	
O 6 - Treeline		② 2-4m	 	
7 - New / reinstated hedgerow		O >4m	O >4m	
O 8 - Fenceline				
Voody species				
Dak Birch Rowan Sycamore <i>i</i>	Alder Ash	n Beech Hawthorn Haze	l Blackthorn Elder	Willow Rose Holly
			\square	\square
Other: Honeysuckle	С	omposition: Blackthorn, Hav	vthorn, Alder, Goat \	Willow and
,			nedge turning into O	ak dominated treeline
lumber of woody species per 30m sar	mple length	 		
7 or more) 4	l 4h 4		
	, .	Less than 4		
		otable features		
Are 3	N	otable features	for at least half of t	ne hedgerows length
Are 3 notable features	N 1	otable features Bank ☑ or Wall □		ne hedgerows length
Are 3 notable	N	otable features Bank ☑ or Wall □		ne hedgerows length the hedgerows lengt
Are 3 notable features present? Are 4 notable	N 1	otable features Bank ☑ or Wall □ Ditch ☑		
Are 3 notable features present? Are 4 notable features	N 1 2	otable features Bank ☑ or Wall □ Ditch ☑	for at least half of	he hedgerows lengt
Are 3 notable features present? Are 4 notable	N 1 2 3	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m Attack 2	for at least half of None 1-10%	he hedgerows lengt
Are 3 notable features present? Are 4 notable features	N 1 2 3 4	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m	for at least half of None 1-10%	he hedgerows lengt
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac	N 1 2 3 4 5	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special	for at least half of None 1-10%	the hedgerows lengt
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway	N 1 2 3 4 5 eent 6	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m Attack 2	for at least half of None 1-10%	the hedgerows lengt
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway,	N 1 2 3 4 5 ent 6 to ains	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Specific Connections with another h	for at least half of None 1-10%	the hedgerows lengt
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta	N 1 2 3 4 5 ent 6 to ains	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special	for at least half of the None 1-10% None 1-10% Dies 1 Diedge (1 point), pond 4 or more	the hedgerows lengt O 10-30% O >30 I (2 points) or woodland (2
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta	N 1 2 3 4 5 ent 6 to ains	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another had scoring 4 points or more Hedgerow connections Note:	for at least half of None 1-10% None 1-10% Dies 1 Dedge (1 point), pond O 4 or more Woodland	the hedgerows lengt 10-30%
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta 2 notable feature	N 1 2 3 4 5 ent 6 to ains s?	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Snee Connections with another h scoring 4 points or more Hedgerow connections	for at least half of the None 1-10% None 1-10% Dies 1 Diedge (1 point), pond 4 or more	the hedgerows lengt O 10-30% O >30 I (2 points) or woodland (2
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta	N 1 2 3 4 5 ent 6 to ains s?	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Snee Connections with another h scoring 4 points or more Hedgerow connections Note:	for at least half of the None 1-10% None 1-10% Dies 1 Dies 1 Dies 1 Dies 1 Dies 2 Dies 2 Dies 3 Dies 3 Dies 3 Dies 4 or more 1 Woodland Dies 2 Ves	the hedgerows lengt 10-30%
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjac to a bridalway, footpath or byway — all traffic and conta 2 notable feature	N 1 2 3 4 5 ent 6 to ains s?	otable features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another had be seen or wore Hedgerow connections Note: Parallel hedge within 15m	for at least half of the None 1-10% None 1-10% Dies 1 Dies 1 Dies 1 Dies 1 Dies 2 Dies 2 Dies 3 Dies 3 Dies 3 Dies 4 or more 1 Woodland Dies 2 Ves	the hedgerows lengt 10-30%

Ref: 21	Date	21/06/2016	Surveyors	MP	
R		I Landscape criteria of the Hedg the hedgerow considered to be	O Yes	s O Likely O No	Ī
Hedgerow category		Note:			
O 1 - Intact managed hed	gerow	Clipped hedgerow with ma	ture trees beside	e tow-path of canal	
2 - Managed 'gappy' hed		Hedge height H	edge width	Hedge length (m):	
O 3 - Unmanaged 'leggy' h	edgerow	Tiedge Height Ti	eage width	riedge lengtir (m).	137
O 4 - Hedgebank with occa	asional shrubs	O 0-1m	O 0-1m	1	107
	with mature trees	● 1-2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
O 7 - New / reinstated hed	gerow	O >4m	O >4m		
O 8 - Fenceline					
Woody species					
Dak Birch Rowan Syca	more Alder Ash	Beech Hawthorn Hazel B	lackthorn Elder	Willow Rose Holly	
Other: Aspen, Honeysuckle	Co	omposition: Hawthorn dominate	ed hedgerow with	mature trees of Oak	
lumber of woody species per	30m sample length	1			
○ 7 or more ○ 6 ○	5 () 4 (ii) 1	ess than 4			
to a bri footpath o — all traffic a 2 notable	1 2 3 sble s 4	Ditch	r at least half of the 1-10% 1-10% ge (1 point), ponce 4 or more oodland and can Yes	O Less than 4	2 points
nportant edgerow					
arget notes Clipped hedgero	ludes Red Fescue, F sp per 30m.	wthorn and punctuated by matur False Oat-grass, Meadow Vetchl			dy

			Surveyors	MP	
		Landscape criteria of the Hedgero he hedgerow considered to be	O Yes	O Likely	Ī
Hedgerow category		Note:			
O 1 - Intact managed hedgerow		Ditch and bank with outgrown	shrubs and tre	es	
O 2 - Managed 'gappy' hedgerow		Hedge height Hedge	ge width	Hedge length (m)	
O 3 - Unmanaged 'leggy' hedgerow		Treage freight Frea	ge widtii	Treage rengin (iii)	70
O 4 - Hedgebank with occasional shru	ubs		0-1m	1	
O 5 - Managed hedgerow with mature	e trees) 1-2m		
6 - Treeline) 2-4m) >4m		
7 - New / reinstated hedgerow			7 74111		
O 8 - Fenceline					
oody species					
ak Birch Rowan Sycamore Ald ☑ ☑ ☐ [Willow Rose Holly	
		mposition: Mix of Oak, Hawthorn		irch Gorse and Goat	_
iei. Goise, Aspeil	Co	Willow	, Lidei, Silvei B	iicii, Goise and Goat	
mber of woody species per 30m samp	le length				
7 or more 6 6 5 4	- O L	ess than 4			
	No	table features			
Are 3 notable	No 1	_	least half of the	hedgerows length	
		Bank 🗹 or Wall 🗆 for at		hedgerows length	
notable features present?	1	Bank 🗹 or Wall 🗆 for at	t least half of the		7
notable features present? Are 4 notable features	1	Bank ✓ or Wall ☐ for at Ditch ✓ for a	t least half of the	e hedgerows lengt	
notable features present? Are 4 notable	1 2 3	Bank or Wall for at Ditch for a Less than 10% gaps Standard tree / 50m	t least half of the	e hedgerows lengt	
notable features present? Are 4 notable features present?	1 2 3 4 5	Bank or Wall for at Ditch for a Less than 10% gaps Standard tree / 50m	t least half of the	e hedgerows lengt	
notable features present? Are 4 notable features present? Is the hedge adjacen to a bridalway,	1 2 3 4 5 5 nt 6	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge	t least half of the	e hedgerows lengt 10-30% >30	(2 poin
notable features present? Are 4 notable features — present? Is the hedge adjacen to a bridalway, footpath or byway to — all traffic and contain	1 2 3 4 5 5 ont 6 ons	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more	t least half of the	e hedgerows lengt 10-30% >30 2 points) or woodland	(2 point
notable features present? Are 4 notable features present? Is the hedge adjacen to a bridalway, footpath or byway to	1 2 3 4 5 5 ont 6 ons	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections	t least half of the	e hedgerows lengt 10-30% >30	(2 point
notable features present? Are 4 notable features — present? Is the hedge adjacen to a bridalway, footpath or byway to — all traffic and contain	1 2 3 4 5 5 ont 6 ons	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections Note:	t least half of the	e hedgerows lengt 10-30% >30 2 points) or woodland Less than 4	(2 point
notable features present? Are 4 notable features present? Is the hedge adjacen to a bridalway, footpath or byway to all traffic and contain 2 notable features?	1 2 3 4 5 5 at 6 a s b 7	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections	(1 point), pond (or more	e hedgerows lengt 10-30% >30 2 points) or woodland	(2 point
notable features present? Are 4 notable features present? Is the hedge adjacen to a bridalway, footpath or byway to all traffic and contain	1 2 3 4 5 5 ont 6 ons	Bank or Wall for at Ditch for a Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections Note:	(1 point), pond (or more	e hedgerows lengt 10-30% >30 2 points) or woodland Less than 4	(2 point

Ref: 23	Date	21/06/2016	Su	urveyors	MP	
	s 1997, is the	andscape criteria of the He hedgerow considered to b		O Yes	O Likely	● No
Hedgerow category		Note:				
1 - Intact managed hedgerow		Clipped hedgerow besi	de towpath	of canal		
2 - Managed 'gappy' hedgerow		Lladge beight	Lladge wi	dth	Hadaal	anath (m)
3 - Unmanaged 'leggy' hedgerow		Hedge height	Hedge wi	atn 	Heage	ength (m):
O 4 - Hedgebank with occasional sh	rubs	O-1m	O 0-1	m	ļ	222
O 5 - Managed hedgerow with matur	e trees	● 1-2m	● 1-2i	m		
O 6 - Treeline		O 2-4m	O 2-41			
7 - New / reinstated hedgerow		O >4m	O >4n	n		
O 8 - Fenceline						
Woody species						
Dak Birch Rowan Sycamore A	lder Ash	Beech Hawthorn Haze	Blackthor	n Elder V	Villow Ro	se Holly
				\checkmark		Z 🗆
Other: Honeysuckle	Com	position: Hawthorn dominother woody spe		erow with a l	ow frequen	cy of
lumber of woody species per 30m sam	ple length	Journal Woody Sp.	50103			
7 or more	4 O Les	ss than 4				
Are 3		ble features				
notable features	1 E	Bank ☑ or Wall ☐		t half of the h	-	
present?	2 [Ditch 📙	for at leas	st half of the	hedgerows	lengt
Are 4 notable	3 L	ess than 10% gaps	None O	1-10%	10-30%	O >30
features present?	4 5	Standard tree / 50m				
	5 A	At least 3 Woodland Spec	ries			
In the hadron officer	4					
Is the hedge adjace to a bridalway,	6 (Connections with another h scoring 4 points or more	edge (1 po	int), pond (2	points) or	woodland (2 poi
footpath or byway i — all traffic and contai 2 notable features	ins	Hedgerow connections	● 4 or m	nore (Characteristics Less that	an 4
2 Hotasis isatures		Note:		l and canal	-	
	-, -		,		2 N	
O Yes No		Parallel hedge within 15m	Yes		○ No	
	8	Have protected species b	een recorde	ed?		
portantedgerow		- NOT KIIOWII				
arget notes Clipped Hawthorn domina mature trees are a feature						
				5 , -0.	,	- -
grass, Nettle, Cleavers, C		· ·				
grass, Nettle, Cleavers, C						

Ref: 24	Date	21/06/2016	Surveyors MP	
F		d Landscape criteria of the Hedgerow the hedgerow considered to be	O Yes O Likely No	
Hedgerow category		Note:		
1 - Intact managed hed	daerow	Clipped hedgerow beside tow-pa	ath of canal	
O 2 - Managed 'gappy' he	_	Hedge height Hedge v	width Hedge length (m):	
O 3 - Unmanaged 'leggy' I		Treage reight Treage v	width Theage length (III).	65
O 4 - Hedgebank with occ	asional shrubs	O 0-1m	-1m	00
O 5 - Managed hedgerow	with mature trees	O 1-2m		
O 6 - Treeline		② 2-4m		
7 - New / reinstated hed	dgerow	O >4m	4m	
O 8 - Fenceline				
Woody species				
`	amore Alder Ash			
Other:	С	omposition: Hawthorn dominated		
lumber of woody species pe	r 30m sample length	1		
O 7 or more O 6	5 04 💿	Less than 4		
to a bi footpath — all traffic a	able es 4	Ditch for at least Less than 10% gaps None Standard tree / 50m None At least 3 Woodland Species Scoring 4 points or more Hedgerow connections	O No	points
nnortant		Not known		
portant dgerow		7		
arget notes Hawthorn domin			Great Willowherb, Cleavers, Hogweed	J

Ref: 25	Date	21/06/2016	Surveyors	MP	
Re		Landscape criteria of the Hedgene hedgerow considered to be	O Yes	s O Likely (No	
Hedgerow category		Note:			
O 1 - Intact managed hedge	erow	Unmanaged shrubs and sr	mall trees		
O 2 - Managed 'gappy' hedg		Hodgo hoight H	adaa width	Hedge length (n	a):
3 - Unmanaged 'leggy' he		Hedge height He	edge width	Hedge length (n	110
O 4 - Hedgebank with occas	sional shrubs	O-1m	O 0-1m		110
O 5 - Managed hedgerow wi	ith mature trees	O 1-2m	O 1-2m		
O 6 - Treeline		● 2-4m	○ 2-4m		
O 7 - New / reinstated hedge	erow	O >4m	O >4m		
O 8 - Fenceline					
Woody species					
Dak Birch Rowan Sycam	nore Alder Ash	Beech Hawthorn Hazel Bl	ackthorn Elder	Willow Rose Holl	у
				\checkmark]
ther: Laurel	Cor	mposition:			
umber of woody species per 3	ROm sample length				
7 or more 6 6 5	5 O 4 O L	ess than 4			
	ole adjacent dalway, byway to d contains	Ditch	r at least half of the 1-10% 1-10%	ne hedgerows length the hedgerows lengt 10-30% 1(2 points) or woodlan Less than 4	
nportant edgerow					
arget notes Unmanaged outg		small trees surrounding a prope es Nettle, Cleavers, False Oat-ç			erasus)

	Date	21/06/2016	Su	irveyors	MP	
		andscape criteria of the hedgerow considered		Yes	O Likely	O No
Hedgerow category		Note:				
O 1 - Intact managed hedgerow		Clipped hedgerow v	rith standard O	ak trees		
O 2 - Managed 'gappy' hedgerow		Hodgo boight	Hedge wid	dth	Hodgo I	onath (m):
O 3 - Unmanaged 'leggy' hedgerow		Hedge height	Hedge wit		neuge i	ength (m): 173
O 4 - Hedgebank with occasional shru	ubs	O 0-1m	O 0-1r	n	-	173
● 5 - Managed hedgerow with mature	e trees	O 1-2m	● 1-2r			
O 6 - Treeline		⊚ 2-4m	O 2-4r			
7 - New / reinstated hedgerow		O >4m	O >4m	1		
O 8 - Fenceline						
Voody species						
oak Birch Rowan Sycamore Ald	der Ash	Beech Hawthorn Ha	zel Blackthori	n Elder	Willow Ros	se Holly
				\checkmark		
ther:	Com	position: Hawthorn, B	ackthorn, Alde	er and Oak	constant	
umber of woody species per 30m samp	ole length	,				
7 or more 6 6 5 0 4	l Oles	ss than 4				
Are 3		ble features Bank ☑ or Wall │	T for at least	half of the	hadaarawa	longth
notable features		<u></u>	for at least		_	-
present?		Ditch 🗹	for at leas	t half of the	hedgerows	lengt
Are 4 notable	3 L	ess than 10% gaps	O None	1-10% (10-30%	O >30
features — present?	4 5	Standard tree / 50m	⊘ Oak			
	5 /	At least 3 Woodland S	necies			
Is the hedge adjacer	nt					
	6 (Connections with anothe scoring 4 points or more		int), pond (2 points) or v	voodland (2 poi
to a bridalway,						
to a bridalway, footpath or byway to — all traffic and contain	18	- '		ore	O Less tha	an 4
to a bridalway, footpath or byway to	18	Hedgerow connections	● 4 or m		O Less tha	an 4
to a bridalway, footpath or byway to — all traffic and contain	18	- '	● 4 or m	ore and canal	O Less tha	an 4
to a bridalway, footpath or byway to all traffic and contain 2 notable features?	ns P	Hedgerow connections	● 4 or m		Less thatNo	an 4
to a bridalway, footpath or byway to — all traffic and contain	ns P	Hedgerow connections Note: Parallel hedge within 15 Have protected specie	Woodland The Yes	and canal		an 4
to a bridalway, footpath or byway to all traffic and contain 2 notable features?	7 F	Hedgerow connections Note: Parallel hedge within 15	Woodland The Yes	and canal		an 4

Ref: 27	D	ate	21/06/2016	Su	rveyors)	
			d Landscape criteria of the l the hedgerow considered to		O Yes) Likely No	
Hedgerow cate	gory		Note:				
	managed hedgerow		Clipped hedgerow an	d ditch			
O 2 - Manag	ged 'gappy' hedgerow		Hedge height	Hedge wid	dth	Hedge length (m	1):
O 3 - Unmar	naged 'leggy' hedgerow					3 3 (75
O 4 - Hedge	bank with occasional shrul	os	O 0-1m	O 0-1r	n		
O 5 - Manag	ged hedgerow with mature	trees	● 1-2m	● 1-2r	n		
O 6 - Treelin	ne		O 2-4m	O 2-4r	n		
O 7 - New /	reinstated hedgerow		O >4m	O >4m	1		
O 8 - Fence	line						
Noody species							
	Rowan Sycamore Alde	er Asl		el Blackthori	n Elder Wil	low Rose Holly	/
Other: Honeys	suckle	С	omposition:				
lumber of woo	dy species per 30m sample	e length	J				
O 7 or more			Less than 4				
T of filore	6 05 • 4		Less than 4				
	Are 3	N	otable features	-			
	otable atures	1	Bank or Wall	for at least	half of the he	dgerows length	
	resent?	2	Ditch 🗹	for at leas	t half of the he	dgerows lengt	
	Are 4 notable	3	Less than 10% gaps	None O	1-10% ()	0-30% () >30	
	features	4					
	present?	5	At locat 2				
		3	Woodland Sn	ecies			
	Is the hedge adjacent	6	Connections with another	hedge (1 poi	nt) nond (2 na	oints) or woodland	1 (2 noint
	to a bridalway, footpath or byway to		scoring 4 points or more	cago (1 poi	, ροπα (2 μι		, (2 poii10
	— all traffic and contains 2 notable features?	3	Hedgerow connections	O 4 or m	ore	Less than 4	
			Note:	Woodland			
			7. Dorollol bodge within 45.	. O Yee		No	
O Yes	● No		7 Parallel hedge within 15m	-		No	
	9 1.0	3	lave protected species	been recorde	ed?		
nportant			Not known				
edgerow			,				
		with gr	ound cover of Ivy, Bramble,	False Oat-gra	ass, Cleavers,	Great Willowherb	and
Fo	oxglove.						
Pł	hoto1 Ph	oto2	Photo3		Photo4		
					1		

Ref: 28	Date	21/06/2016	Surveyors	MP	
	ons 1997, is	d Landscape criteria of the Hedgerd the hedgerow considered to be	O Yes	O Likely No	
ledgerow category		Note:			
1 - Intact_managed hedgerow		Streamside trees grading into	o a clipped hed	gerow to the north	
O 2 - Managed 'gappy' hedgerow		Hedge height Hed	ge width	Hedge length (m	١٠.
O 3 - Unmanaged 'leggy' hedgero	w	Treage neight Treag	ge widin	r leage length (iii	94
O 4 - Hedgebank with occasional	shrubs	O 0-1m) 0-1m	1	04
O 5 - Managed hedgerow with ma	ture trees) 1-2m		
● 6 - Treeline			2-4m		
O 7 - New / reinstated hedgerow		● >4m) >4m		
8 - Fenceline					
Voody species					
Dak Birch Rowan Sycamore The Difference of the Company of the Com	Alder Ash	Beech Hawthorn Hazel Blace	ekthorn Elder	Willow Rose Holly	
lumber of woody species per 30m sa	ample length	1			
○ 7 or more ○ 6 ○ 5 () 4 (a)	Less than 4			
Are 3 notable features present? Are 4 notable features — present? Is the hedge adja to a bridalway footpath or bywa — all traffic and con 2 notable feature	y, 6 ay to stains res?	Ditch for a Less than 10% gaps None Standard tree / 50m None At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections Note: Woodland Species	ot least half of the O 1-10% (1 point), pond or more dland	e hedgerows length ne hedgerows lengt 10-30%	I (2 points
	8	Flave protected species been re	ecorded?		
1		Not known			
portant dgerow					

Ref: 29	Date	21/06/2016	Surveyors
Re		d Landscape criteria of the Hedgero the hedgerow considered to be	W Yes O Likely No
Hedgerow category		Note:	
O 1 - Intact managed hedge	erow	Gappy Hawthorn dominated s	shrub cover beside a palisade fence
O 2 - Managed 'gappy' hedg	gerow	Hedge height Hedg	ge width Hedge length (m):
	edgerow		15
O 4 - Hedgebank with occas	sional shrubs		0 0-1m
O 5 - Managed hedgerow w	rith mature trees		1-2m
O 6 - Treeline			2-4m
7 - New / reinstated hedge	erow	O >4m) >4m
8 - Fenceline			
Woody species			
Dak Birch Rowan Sycam Dther: Norway Maple, Prunus		Beech Hawthorn Hazel Black	kthorn Elder Willow Rose Holly
Stron Interway Maple, France	aviani	omposition: Trawtrom dominated	
Number of woody species per 3	30m sample length		
○ 7 or more ○ 6 ○ 5	5 O 4 •	Less than 4	
Are 3 notable features present? Are 4 notab features present? Is the hedge to a brid footpath or all traffic an	ole 3 se adjacent dalway, 6 r byway to	Ditch for at Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species	least half of the hedgerows lengt it least half of the hedgerows lengt 1-10% 10-30% >30 1 point), pond (2 points) or woodland (2 points)
2 notable		Hedgerow connections O 4	or more O Less than 4
		Note:	
	7	Parallel hedge within 15m Y	es
O Yes	No 8	· -	
		Not known	33.234
nportant		_	
edgerow			

O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Number of woody species per 30m sample length O 7 or more O 5 O 4 Less than 4 Notable features Present? Are 3 notable features Present? Are 4 notable features Present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Notable features Present? At least 3 Woodland Species Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Present Prese	Regulations 1997, is the hedgerow considered to be	Ref: 30	Da	ite	21/06/2016	Su	rveyors	MP		
Unmanaged hedgerow with young ash trees O 1 - Intact managed hedgerow	Unmanaged hedgerow Unmanaged hedgerow Unmanaged hedgerow with young ash trees		Regulations 19				O Yes	O Likely	● No	
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Number of woody species per 30m sample length O 7 or more O 6 5 0 4	1 - Intact managed hedgerow 2 - Managed 'sappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedge height Hedge width Hedge length (m): 94 5 - Managed hedgerow with mature trees 6 - Treeline 0 - 1 m 0 - 1 m 0 - 1 m 0 - 1 m 0 - 2 d m 0 - 2	Hedgerow categ	ory		Note:					
O 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features 2 Ditch for at least half of the hedgerows length for at least half of the hedgerows length 6 Connections with another hedge (1 point), pond (2 points) or woodland (3 points) or woodland (4 points) or woodland (5 points) or w	2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedge height	1 - Intact r	managed hedgerow		Unmanaged hedge	erow with young	ash trees			
③ 3 - Unmanaged 'leggy' hedgerow ④ 4 - Hedgebank with occasional shrubs ⑤ 5 - Managed hedgerow with mature trees ⑥ 6 - Treeline ⑦ 7 - New / reinstated hedgerow ⑧ 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	③ 3 - Unmanaged 'leggry' hedgerow ④ 4 - Hedgebank with occasional shrubs ⑤ 5 - Managed hedgerow with mature trees ⑥ 6 - Treeline ⑦ 7 - New / reinstated hedgerow ⑧ 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	_			Hedge height	Hedge wid	łth	Hedge l	enath (m):	
O 4 - Hedgebank with occasional shrubs ○ 5 - Managed hedgerow with mature trees ○ 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly ○ 1 - 2m ○ 2 - 4m ○ > 4m ○ 1 - 2m ○ 2 - 4m ○ > 4m ○ 1 - 2m ○ 2 - 4m ○ > 4m ○ 1 - 2m ○ 2 - 4m ○ > 4m ○ > 4m ○ 1 - 2m ○ 2 - 4m ○ > 4m ○ 2 - 4m ○ > 4m ○ 4m ○ 1 - 2m ○ 4 - 4m ○	O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Composition: Notable features present? Are 3 Are 3 Are 4 notable features present? Are 4 notable features 1 Bank ☑ or Wall ☐ for at least half of the hedgerows length Connections with another hedge (1 point), pond (2 points) or woodland (2 point society and present in the present	3 - Unman	aged 'leggy' hedgerow		Treage rieight	ricage with		Tiedge is	engui (iii).	94
O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 2-4m	6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Dither: Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Are 3	O 4 - Hedgel	oank with occasional shrub	S	O 0-1m	O 0-1n	n	1		0.1
7 - New / reinstated hedgerow 8 - Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: ther least half of the hedgerows length for at least half of the hed	7 - New / reinstated hedgerow 8 - Fenceline O > 4m	O 5 - Manage	ed hedgerow with mature to	ees		-				
Noody species Noody specie	Notable features Present? Standard tree / 50m Standard tre	O 6 - Treeline	е			-				
Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Other: Composition: Other: Or more 6 5 4	Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Number of woody species per 30m sample length Are 3	_	_		O >4m	O >4m				
Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Cher: Composition: Composition	Dake Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition:	O 8 - Fenceli	ne							
Composition: Composition: Compo	Other: Composition:	Voody species								
Other: Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length features present? 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Moodland Species 1 Standard tree / 50m 5 At least 3 Moodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more Hedgerow connections 4 or more Less than 4 Note: 7 Parallel hedge within 15m 7 es No 8 Have protected species been recorded?	Other: Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or wall or at least half of the hedgerows length features present? Are 4 notable features Are 4 notable foatures Are 4 notable foatu	Dak Birch R	Rowan Sycamore Alde	r Ash	n Beech Hawthorn H	azel Blackthorr	Elder	Willow Ros	se Holly	
Are 3 notable features present? Are 4 notable features Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable features Are 4 notable feat	Notable features 1 Bank			✓						
Notable features Are 3 notable features present? Are 4 notable features Are 3 None Ditch Standard tree / 50m Standard tree / 5	Notable features Are 3	ther:		С	omposition:					
Notable features Are 3 notable features present? Are 4 notable features 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 5 At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more Hedgerow connections 4 or more Less than 4 Note: 7 Parallel hedge within 15m Yes No 8 Have protected species been recorded?	Notable features Are 3 notable features present? Are 4 notable features Are 3 None or at least half of the hedgerows lengt 3 Less than 10% gaps None or 1-10% or 10-30% or >30 4 Standard tree / 50m or 1-10% or 10-30% or >30 5 At least 3 None or 1-10% or 10-30% or >30 4 Standard tree / 50m or 1-10% or 10-30% or >30 5 At least 3 None or 1-10% or 10-30% or >30 6 Connections with another hedge (1 point), pond (2 points) or woodland (3 points) or woodland (4 points) or woodland (5 points) or woodland (6 points) or woodland (7 points) or woodland (8 points) or woodland (9 poin	umber of wood	y species per 30m sample	length	<u> </u>					
Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features 2 Ditch for at least half of the hedgerows length for at least half of the	Notable features Are 3	O 7 or more	06 05 04	•	Loss than 4					
Are 3 notable features present? Are 4 notable features present? At least 3 Woodland Species Standard tree / 50m	Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Portant dgerow Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Parallel hedge within 15m Yes No Note: O Yes No	I								
features present? 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 None 1-10% 10-30% >30 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 possion of the hedgerow connections 1-10% 10-30% >30 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 possion of the hedgerow connections 1-10% 10-30% >30 7 Parallel hedge within 15m 1-10% 10-30% >30 8 None 1-10% 10-30% >30 9 None 1-10%	features present? Are 4 notable features present? Are 4 notable features present? At least 3 Less than 10% gaps Standard tree / 50m Standard tree / 50m Standard tree / 50m The standard tree / 50m Standard tree / 50m Standard tree / 50m The standard tree / 50m Standard tree / 50m Standard tree / 50m The standard tree / 50m Standard tree / 50m Standard tree / 50m Standard tree / 50m The standard tree / 50m St				_					
Are 4 notable features present? Standard tree / 50m	Are 4 notable features present? Standard tree 50m				_				-	
Are 4 hotable features present? 4 Standard tree / 50m	Are 4 notable features present? Standard tree / 50m	pre	esent?	2	Ditch L	for at leas	t half of the	e hedgerows	lengt	7
Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Hedgerow connections O Yes Note: 7 Parallel hedge within 15m O Yes No No Have protected species been recorded?	Is the hedge adjacent to a bridalway, footpath or byway to —all traffic and contains 2 notable features? At least 3		Are 4 notable	3	Less than 10% gaps	None	1-10% (10-30%	O >30	
Is the hedge adjacent to a bridalway, footpath or byway to —all traffic and contains 2 notable features? A connections with another hedge (1 point), pond (2 points) or woodland (2	Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? A connections with another hedge (1 point), pond (2 points) or woodland (2 points) or woodland (2 points) or more Hedgerow connections			4	Standard tree / 50m					
to a bridalway, footpath or byway to all traffic and contains 2 notable features? The project of the project o	to a bridalway, footpath or byway to all traffic and contains 2 notable features? The properties of Ash surrounding a property. A rank ground flora is			5	At least 3 Woodland 9	Species				
to a bridalway, footpath or byway to all traffic and contains 2 notable features? The parallel hedge within 15m Of Yes Of Yes Note: Connections with another hedge (1 point), pond (2 points) or woodland (2 possible for more) Hedgerow connections Of Yes Note: The parallel hedge within 15m Of Yes Note: Have protected species been recorded?	to a bridalway, footpath or byway to all traffic and contains 2 notable features? The portant dgerow Connections with another hedge (1 point), pond (2 points) or woodland (3 points) or woodland (2 points) or woodland (3 points) or woodland (3 points) or woodland (4 points) or woodland (4 points) or woodland (5 points) or woodland (5 points) or woodland (6 points) or woodland (7 points) or woodland (8 points) or woodland (8 points) or woodland (8 points) or woodland (9 points)									
all traffic and contains 2 notable features? Hedgerow connections O 4 or more Less than 4 Note: 7 Parallel hedge within 15m O Yes No No Have protected species been recorded?	all traffic and contains 2 notable features? Hedgerow connections Note: 7 Parallel hedge within 15m Yes No Not knowm Not knowm Not knowm Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is		to a bridalway,	6			nt), pond (2 points) or v	voodland (2	point
Note: 7 Parallel hedge within 15m Yes No No 8 Have protected species been recorded?	Note: 7 Parallel hedge within 15m Yes No 8 Have protected species been recorded? Not knowm Arget notes Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is		- all traffic and contains		- '	_	2.50	O Loop the	n 4	
7 Parallel hedge within 15m Yes No No No Have protected species been recorded?	7 Parallel hedge within 15m Yes No No No Not knowm Arget notes Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is		2 notable features?		-		JI E	Less tha	111 4	-
O Yes No No No No No No No No No N	Not knowm Arget notes Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is				Note					
Have protected species been recorded?	Not knowm Arget notes Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is			7	7 Parallel hedge within 1	5m O Yes		● No		
Not knowm	dgerow arget notes Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is	O Yes	No	8	Have protected speci	es been recorde	d?			
portant	dgerow Unmanaged Hawthorn dominated hedgerow with young trees of Ash surrounding a property. A rank ground flora is	portant			Not knowm					
		•								
Photo1 DSCN8778 Photo2 Photo3 Photo4	FIIOLO FI	r II	DOONOTTO PIO	.02	FIIOLOS		110104			

	Note:
1 - Intact_managed hedgerow	Clima ad use advide head are source under surjustive de unit advertigate de la Literathe com
9	Clipped roadside hedgerow overwhemingly dominated by Hawthorn
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	587
O 4 - Hedgebank with occasional shrubs	O 0-1m
O 5 - Managed hedgerow with mature trees	● 1-2m
O 6 - Treeline	O 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
Dak Birch Rowan Sycamore Alder As	sh Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other:	Composition: Hawthorn dominated with occasional Elder, Ash and Dogrose
umber of woody species per 30m sample lengtl	
○ 7 or more ○ 6 ○ 5 ○ 4 ●	Less than 4
Are 3	Notable features
notable 1 features	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
	2 Ditch for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps
features	4 Standard tree / 50m
	5 At least 3 Woodland Species
	woodand species
Is the hedge adjacent to a bridalway, footpath or byway to	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
all traffic and contains 2 notable features?	Hedgerow connections
2 Hotable leatures:	Note:
	7 Parallel hedge within 15m
O Yes No	8 Have protected species been recorded?
 portant	Not known
dgerow	
arget notes Clipped Hawthorn dominated hedge	gerow with rank ground cover of False Oat-grass, Cleavers, Nettle, Hogweed and ve been planted in a roadside verge to the west.

Ref: 32	Date	21/06/2016	Sur	veyors	MP		
	ons 1997, is tl	Landscape criteria of the Hec he hedgerow considered to be		O Yes	O Likely	● No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerow		Outgrown hedgerow adj	oining smal	copse			
O 2 - Managed 'gappy' hedgerow		" Hedge height	Hedge widt	:h	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgero	N						123
O 4 - Hedgebank with occasional	shrubs	O 0-1m	O 0-1m		'		
O 5 - Managed hedgerow with ma	ture trees	O 1-2m	O 1-2m				
⑥ 6 - Treeline		O 2-4m	O 2-4m				
O 7 - New / reinstated hedgerow		● >4m	● >4m				
O 8 - Fenceline		'					
Voody species							
ak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder	Willow Ro	se Holly	
				\checkmark			
her: Norway Maple, Hornbeam	Co	mposition: Hawthorn domina	ated				
ımber of woody species per 30m sa	imple length						
7 or more	9 4 O L	ess than 4					
Are 3 notable features present?	No 1 2	table features Bank ☑ or Wall ☐ f			hedgerows	-	7
Are 4 notable	3	Less than 10% gaps O N	lone 🌀 ´	1-10%	10-30%	O >30	
features — present?	4	Standard tree / 50m					
, , , , , , , , , , , , , , , , , , ,	5	At least 3 Woodland Speci	aa l				
		weemand adeci					
Is the hedge adja to a bridalway footpath or bywa	, 6 y to	Connections with another he scoring 4 points or more	edge (1 poin	t), pond (2	2 points) or v	woodland (2	poin
all traffic and con 2 notable feature		Hedgerow connections	O 4 or mo	re	Less that	an 4	
		_	Woodland				
	7	Parallel hodgo within 15m	O Yes		(a) No		
O Yes No	7				No No		
	8	Have protected species be	en recorded	1?			
ortant		Not known					
gerow		,					
arget notes Outgrown hedgerow adj	oining small v	woodland. Nettle forms much	of the grour	nd cover.			
Photo1 DSCN8780	Photo2	Photo3	F	Photo4			

Ref: 33	Date	21/06/2016	Surveyors
F		I Landscape criteria of the Hedger the hedgerow considered to be	Yes O Likely No
Hedgerow category		Note:	
1 - Intact managed hec	dgerow	Clipped roadside hedgerow	dominated by Hawthorn
O 2 - Managed 'gappy' he		Hedge height Hedge	dge width Hedge length (m):
O 3 - Unmanaged 'leggy' I	hedgerow	Though Holgin	_ 459
O 4 - Hedgebank with occ	casional shrubs		O 0-1m
O 5 - Managed hedgerow	with mature trees		1-2m
O 6 - Treeline) 2-4m
7 - New / reinstated hed	dgerow	O >4m) >4m
O 8 - Fenceline			
Woody species			
	amore Alder Ash		ckthorn Elder Willow Rose Holly
Other:	Co	omposition: Hawthorn and Oak co	onstant
Number of woody species pe	r 30m sample length	1	
○ 7 or more ○ 6 ○) 5 O 4 📵 L	Less than 4	
to a bi footpath — all traffic a	1 2 3 able es 4	Ditch	at least half of the hedgerows lengt begin at least half of the hedgerows lengt at least half of the hedgerows lengt at least half of the hedgerows lengt begin at least half of the hedgerows lengt at least half of the hedgerows lengt begin at least half of the hedgerows lengt at least half of the hedgerows lengt begin at least half of the hedgerows lengt begin at least half of the hedgerows lengt begin at least half of the hedgerows lengt consideration of the hedgerows lengt begin at least half of the hedgerows lengt consideration of the hedgerows lengt begin at least half of the hedgerows lengt consideration of the hedgerows length consideration
O Yes	7	ů	Yes No
1 0 163	8 NO	Trave protected species been to	recorded?
portant		Not known	
edgerow		P	
		e hedgerow with frequent Oak and Cleavers and Hogweed.	d occasional Ash. Bramble and Nettle form

	ife and Landscape criteria of the Hedgerow 97, is the hedgerow considered to be
edgerow category	Note:
O 1 - Intact managed hedgerow	Partially managed hedgerow with trees
2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	riedge width riedge length (iii).
O 4 - Hedgebank with occasional shrubs	0.0 1m
● 5 - Managed hedgerow with mature tree	
O 6 - Treeline	○ 2-4m ○ 2-4m
7 - New / reinstated hedgerow	● >4m
8 - Fenceline	
loody species	
ak Birch Rowan Sycamore Alder	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther: Lime, Sweet Chestnut	Composition: Hawthorn dominated with occasional Tilia x europaea, Quercus robur, Goat Willow, Alder, Elder and Sweet
umber of woody species per 30m sample le	
7 or more 6 6 5 4	O Less than 4
	O Less titali 4
Are 3	Notable features
notable features	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
present?	2 Ditch for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps O None O 1-10% O 10-30% O >30
features — present?	4 Standard tree / 50m 🗸
	5 At least 3 Woodland Species
Is the hedge adjacent	
to a bridalway,	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
- all traffic and contains	Hedgerow connections
2 notable features?	
	Note:
	7 Parallel hedge within 15m Yes No
O Yes No	8 Have protected species been recorded?
portant	Not known

Ref: 35	ate 21/06/2016 Surveyors MP
	dlife and Landscape criteria of the Hedgerow 997, is the hedgerow considered to be
ledgerow category	Note:
O 1 - Intact managed hedgerow	Outgrown hedgerow (largely a treeline)
2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
3 - Unmanaged 'leggy' hedgerow	riedge riefgitt riedge width riedge leftgitt (iii).
O 4 - Hedgebank with occasional shrubs	0 0 1m
O 5 - Managed hedgerow with mature tr	
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	⊚ >4m ⊚ >4m
8 - Fenceline	
Voody species	
oak Birch Rowan Sycamore Alder	r Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Sweet Chestnut, Lime, Norway Ma	
umber of woody species per 30m sample	Oak (Quercus robur) with Blackthorn
7 or more 6 6 5 4	O Less than 4
Are 3	Notable features
notable	1 Bank or Wall for at least half of the hedgerows length
features present?	2 Ditch 🗹 for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps
features	4 Standard tree / 50m 🔽
present?	E Atlant 2
	5 At least 5 Woodland Species
Is the hedge adjacent to a bridalway,	Connections with another hedge (1 point), pond (2 points) or woodland (2 points) [
footpath or byway to —all traffic and contains	scoring 4 points or more
2 notable features?	Hedgerow connections
	Note:
	7 Parallel hedge within 15m Yes No
O Yes No	
O Yes	Trave protected species been recorded:
portant	Not known
portantdgerow	Not known
portantdgerow	Trave protected species been recorded:
portantdgerow	Not known

ledgerow category	Note:
1 - Intact managed hedgerow	Partially managed hedgerow with a mature Oak
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	246
O 4 - Hedgebank with occasional shrubs	
O 5 - Managed hedgerow with mature tree	
O 6 - Treeline	⊚ 2-4m ⊚ 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
/oody species	
ak Birch Rowan Sycamore Alder	r Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
	•
Other:	Composition: Hawthorn, Hazel and Blackthorn dominated
,	
umber of woody species per 30m sample l	length
7 or more	Less than 4
	Notable features
Are 3	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
notable features	_
present?	2 Ditch 🗹 for at least half of the hedgerows lengt
	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
Are 4 notable	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
Are 4 notable features present?	4 Standard tree / 50m
features	4 Standard tree / 50m
features — present?	4 Standard tree / 50m
features present? Is the hedge adjacent to a bridalway,	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
features — present? Is the hedge adjacent	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more
features present? Is the hedge adjacent to a bridalway, footpath or byway to	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections O 4 or more Note:
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections O 4 or more Note: 7 Parallel hedge within 15m O Yes No
ls the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features?	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections O 4 or more D Less than 4 Note: 7 Parallel hedge within 15m O Yes No No Have protected species been recorded?
ls the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features?	4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections O 4 or more Note: 7 Parallel hedge within 15m O Yes No

	21/06/2016	Surveyors
Using the Wild Regulations 1 'important'?	and Landscape criteria of the Hedgero is the hedgerow considered to be	Yes O Likely No
ledgerow category	Note:	
1 - Intact managed hedgerow	Clipped roadside hedgerow w	rith occasional young trees of Birch
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge	ge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow		362
O 4 - Hedgebank with occasional shrub		0-1m
O 5 - Managed hedgerow with mature t	, 0	1-2m
O 6 - Treeline		2-4m
O 7 - New / reinstated hedgerow	O >4m	>4m
O 8 - Fenceline		
Voody species		
ak Birch Rowan Sycamore Alde	Ash Beech Hawthorn Hazel Black	kthorn Elder Willow Rose Holly
Other: Honeysuckle, Privet	Composition: Hawthorn dominated vand Honeysuckle	vith frequent Silver Birch, Oak, Rowan
umber of woody species per 30m sample		
7 or more 0 6 6 5 0 4	Characteristics (1997) Less than 4	
	<u> </u>	
Are 3	Notable features	
notable features	1 Bank ☑ or Wall ☐ for at	least half of the hedgerows length
present?	2 Ditch for at	least half of the hedgerows lengt
	2 1 and then 100/ game	
Are 4 notable	3 Less than 10% gaps O None	○ 1-10%
features	4 Standard tree / 50m	O 1-10%
	4 Standard tree / 50m	O 1-10%
features	4 Standard tree / 50m	<u>0</u> 1-10% <u>●</u> 10-30% <u>0</u> >30
features —— present? Is the hedge adjacent to a bridalway,	4 Standard tree / 50m 5 At least 3 Woodland Species	1 point), pond (2 points) or woodland (2 points)
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	4 Standard tree / 50m	1 point), pond (2 points) or woodland (2 poin
features present? Is the hedge adjacent to a bridalway, footpath or byway to	4 Standard tree / 50m	
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	4 Standard tree / 50m	1 point), pond (2 points) or woodland (2 poin
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	4 Standard tree / 50m	1 point), pond (2 points) or woodland (2 point or more • Less than 4
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	4 Standard tree / 50m	1 point), pond (2 points) or woodland (2 point or more • Less than 4 es • No
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	4 Standard tree / 50m	1 point), pond (2 points) or woodland (2 point or more • Less than 4 es • No

Ref: 38	Date	21/06/2016	Surveyors
		d Landscape criteria of the Hedgero the hedgerow considered to be	Yes O Likely No
Hedgerow category		Note:	
O 1 - Intact managed h	nedgerow	Treeline plus unmanaged Ha	wthorn dominated hedgerow
O 2 - Managed 'gappy'		Hedge height Hedge	ge width Hedge length (m):
	y' hedgerow		165
O 4 - Hedgebank with o	occasional shrubs) 0-1m
O 5 - Managed hedgero	ow with mature trees) 1-2m
O 6 - Treeline) 2-4m
7 - New / reinstated h	nedgerow	● >4m) >4m
8 - Fenceline			
Woody species			
Dak Birch Rowan Sy Dther: Prunus avium, Lim	ycamore Alder Asl		kthorn Elder Willow Rose Holly
Number of woody species	per 30m sample length	1	
7 or more 6	O 5 O 4 •	Less than 4	
to a footpat — all traffi	otable ures 4	Ditch	least half of the hedgerows lengt t least half of the hedgerows lengt 1-10% 10-30% >30 (1 point), pond (2 points) or woodland (2 points) or more Less than 4
	_ - -	7. Donalla la administra 45	(a) (A)
O Yes	O No	7 Parallel hedge within 15m	
		Have protected species been re Not known	ecorded?
nportant edgerow		- INOURING WIT	
arget notes Post and rail		roung) trees of Oak, Lime, Ash to the cover comprises False Oat-grass an	e south which develops into a Hawthorn nd Nettle.

				urveyors	MP		
	s 1997, is the	andscape criteria of the He e hedgerow considered to b		O Yes	O Likely	No No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Hawthorn dominated ro	adside hed	dgerow.			
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wi	idth	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerow		Treage Height	Treage wi		Tiedge	engur (m).	40
O 4 - Hedgebank with occasional shr	rubs	O 0-1m	0-1	m	,		40
O 5 - Managed hedgerow with matur	e trees	O 1-2m	● 1-2i				
O 6 - Treeline		● 2-4m	O 2-4i				
O 7 - New / reinstated hedgerow		O >4m	O >4n	n			
O 8 - Fenceline							
/oody species							
ak Birch Rowan Sycamore Al	lder Ash	Beech Hawthorn Hazel	Blackthor	n Elder	Willow Ro	se Holly	
Prunus avium	Com	position:					
umber of woody species per 30m sam	ple length	,					
		ss than 4					
	4 (a) Les	able features					
7 or more 6 5 6	4		for at leas	t half of the	e hedgerows	length	
7 or more	4	able features			e hedgerows e hedgerows	_	
7 or more 6 5 6	4	able features Bank or Wall Ditch	for at leas	st half of the	_	_	<u> </u>
7 or more 6 5 6 Are 3 notable features present? Are 4 notable features	4	able features Bank or Wall Ditch	for at leas	st half of the	e hedgerows	lengt	
7 or more 6 5 0 Are 3 notable features present? Are 4 notable	4	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 2	for at leas	st half of the	e hedgerows	lengt	
7 or more 6 5 6 Are 3 notable features present? Are 4 notable features	4	able features Bank or Wall Ditch Less than 10% gaps	for at leas	st half of the	e hedgerows	lengt	
Are 3 notable features present? Are 4 notable features present? Is the hedge adjace	Nota 1 E 2 E 3 L 4 S 5 A	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3	for at leas	1-10% (e hedgerows	>30	2 point:
7 or more 6 5 6 Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway te	Nota 1 E 2 E 3 L 4 S 5 A nt 6 G	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 2	for at leas	1-10% (e hedgerows	>30	2 points
Are 3 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway,	Nota 1 E 2 E 3 L 4 S 5 //	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Spec	for at leas	ot half of the	e hedgerows	>30 >30 woodland (2	2 points
Are 3 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway t all traffic and contai	Nota 1 E 2 E 3 L 4 S 5 //	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Snec Connections with another he scoring 4 points or more	for at leas	ot half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (2	2 points
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai	Nota 1 E 2 [3 L 4 S 5 / nt 6 (S) ns ?	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another he scoring 4 points or more Hedgerow connections Note:	for at lease	ot half of the	e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (2	2 points
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai	Nota 1 E 2 [3 4 \$ 5 / nnt 6 (5 s) 7 7 7 7 7 7 7 7 7 7	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Spec Connections with another he scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	for at leas None O edge (1 po 4 or m	st half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (2	2 points
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway t — all traffic and contai 2 notable features	Nota 1 E 2 [3 L 4 S 5 / nt 6 (S) ns ?	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another he scoring 4 points or more Hedgerow connections Note:	for at leas None O edge (1 po 4 or m	st half of the	e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (2	2 points

Ref: 40	Da	te 21/06/2016 Surveyors MP
		life and Landscape criteria of the Hedgerow 097, is the hedgerow considered to be
Hedgerow cat	tegory	Note:
O 1 - Intac	ct managed hedgerow	Defunct hedgerow / treeline
O 2 - Mana	aged 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unm	anaged 'leggy' hedgerow	114
O 4 - Hedg	gebank with occasional shrubs	
O 5 - Mana	aged hedgerow with mature tr	
● 6 - Treel	line	○ 2-4m ○ 2-4m
O 7 - New	/ reinstated hedgerow	● >4m
O 8 - Fenc	celine	
Woody specie	es	
Oak Birch	Rowan Sycamore Alder	
Other: Lime		Composition:
Number of wo	pody species per 30m sample	length
7 or more	e O 6 O 5 O 4	Less than 4
f	Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 2 notable features?	Notable features 1 Bank ☐ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☑ for at least half of the hedgerows lengt 3 Less than 10% gaps ☐ None ☐ 1-10% ☐ 10-30% ⑥ >30 4 Standard tree / 50m ☑ 5 At least 3 ☑ Woodland Species ☐ 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections ☐ 4 or more ⑥ Less than 4 Note: 7 Parallel hedge within 15m ☐ Yes ⑥ No 8 Have protected species been recorded?
		Not known
		INOU KIIOWII
Important hedgerow		

Regulations 19 'important'?	dlife and Landscape criteria of the Hedgerow 997, is the hedgerow considered to be
edgerow category	Note:
A 1 Intest managed hadgerous	
1 - Intact managed hedgerow2 - Managed 'gappy' hedgerow	
3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
4 - Hedgebank with occasional shrubs	s 0-1m 128
5 - Managed hedgerow with mature tr	Q 1 2m
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
√oody species	
	r Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
lak Birch Rowan Sycamore Alder ☑	
Other: Gorse	Composition:
1-	
umber of woody species per 30m sample	length
7 or more	● Less than 4
	Notable features
Are 3 notable	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
features	
nresent?	2 Ditch I I for at least half of the hedgerows lengt
present?	2 Ditch for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
Are 4 notable features	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
Are 4 notable features present?	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30 4 Standard tree / 50m
Are 4 notable features present? Is the hedge adjacent to a bridalway,	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m Mondland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m Mondland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more Hedgerow connections 4 or more Less than 4
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections Note: Pond
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or more Hedgerow connections 4 or more Less than 4
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections Note: Pond
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections 4 or more Less than 4 Note: Pond 7 Parallel hedge within 15m Yes No

Regulati		21/06/2016	Surv	reyors MP		
'importa	ions 1997, is the h	dscape criteria of the Hee edgerow considered to be		O Yes ○ Lik	cely No	
Hedgerow category		Note:				
1 - Intact managed hedgerow		Clipped roadside hedge	row			
O 2 - Managed 'gappy' hedgerow	,	Hedge height	Hedge widt	h He	dge length (m):	
O 3 - Unmanaged 'leggy' hedgero	ow					31
O 4 - Hedgebank with occasional	shrubs	O 0-1m	O 0-1m	'		
O 5 - Managed hedgerow with ma	ature trees	● 1-2m	● 1-2m			
O 6 - Treeline		O 2-4m	O 2-4m			
O 7 - New / reinstated hedgerow		O >4m	O >4m			
O 8 - Fenceline						
Voody species						
Dak Birch Rowan Sycamore Dther:			Blackthorn Bilver Birch in		Rose Holly	
,	·				,	
Number of woody species per 30m s	ample length					
Are 3 notable		e features	for at least h	alf of the hedger	ows length	
features present? Are 4 notable features present? Is the hedge adjato a bridalway footpath or bywa all traffic and con 2 notable feature	4 Sta 5 At l acent y, 6 Co ay to sco ntains	ss than 10% gaps andard tree / 50m least 3 Woodland Sneck nnections with another hearing 4 points or more dgerow connections	None () 1	:), pond (2 points	0% () >30	? point
Are 4 notable features present? Is the hedge adjato a bridalway footpath or bywa all traffic and con	3 Les 4 Sta 5 At l acent y, 6 Co ay to sco ntains res? He	ss than 10% gaps andard tree / 50m least 3 Woodland Snecion mnections with another hearing 4 points or more dgerow connections Note:	None O 1	-10% () 10-30 c), pond (2 points e () Les) or woodland (2	? point
Are 4 notable features present? Is the hedge adjato a bridalway footpath or bywa all traffic and con	3 Les 4 Sta 5 At 5 At y, 6 Co ay to sco stains res? He	ss than 10% gaps andard tree / 50m least 3 Woodland Snecion mnections with another hearing 4 points or more dgerow connections Note: rallel hedge within 15m	None O 1 ies edge (1 point O 4 or mor	-10%) or woodland (2	? point
Are 4 notable features — present? Is the hedge adjato a bridalway footpath or bywa — all traffic and con 2 notable feature	3 Les 4 Sta 5 At 5 At 7 Par 8 H	ss than 10% gaps andard tree / 50m least 3 Woodland Snecion mnections with another hearing 4 points or more dgerow connections Note:	None O 1 ies edge (1 point O 4 or mor	-10%) or woodland (2	2 point

Ref: 43	Date 21/06/2016 Surveyors MP
	Idlife and Landscape criteria of the Hedgerow 1997, is the hedgerow considered to be
ledgerow category	Note:
1 - Intact managed hedgerow	Clipped hedgerow with mature Oaks
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	132
O 4 - Hedgebank with occasional shruk	bs O 0-1m
● 5 - Managed hedgerow with mature to	
O 6 - Treeline	O 2-4m O >4m O >4m
7 - New / reinstated hedgerow	0 24111
O 8 - Fenceline	
Voody species	
Oak Birch Rowan Sycamore Alde	
ther: Apple	Composition: Hawthorn dominated
umber of woody species per 30m sample	e length
O 7 or more O 6 O 5 O 4	Less than 4
	Notable features
Are 3	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
features	2 Ditch ✓ for at least half of the hedgerows lengt
present?	
Are 4 notable features	3 Less than 10% gaps None 0 1-10% 0 10-30% 0 >30
— present?	4 Standard tree / 50m 🔽
	5 At least 3 Woodland Species
Is the hedge adjacent	
to a bridalway, footpath or byway to	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
all traffic and contains 2 notable features?	Hedgerow connections
	Note:
	7 7 10 11 15 15 15 10 10 11 11 11 11 11 11 11 11 11 11 11
O Yes No	7 Parallel hedge within 15m Yes No
	Have protected species been recorded? Not known
portant dgerow	INCL KIOWII
	row with ditch and mature trees of Oak. Other woody species include Blackthorn,
	and cover is rank and supports False Oat-grass, Nettle, Bramble, Cleavers and Red
Campion.	

Ref: 44	Date	21/06/2016	Sur	rveyors		
	1997, is th	Landscape criteria of the H ne hedgerow considered to		O Yes O Like	ely No	
Hedgerow category		Note:				
O 1 - Intact managed hedgerow		Outgrown hedgerow /	treeline			
O 2 - Managed 'gappy' hedgerow		⊩ Hedge height	Hedge wid	th Hed	ge length (m):	
O 3 - Unmanaged 'leggy' hedgerow					99 (/-	44
O 4 - Hedgebank with occasional shi	ubs	O 0-1m	O 0-1m	1		•••
O 5 - Managed hedgerow with matur	e trees	O 1-2m	O 1-2m	1		
⑥ 6 - Treeline		O 2-4m	● 2-4m	1		
7 - New / reinstated hedgerow		○ >4m	O >4m			
O 8 - Fenceline						
√oody species						
	der Ash	Beech Hawthorn Haze	l Blackthorn	ı Elder Willow	Rose Holly	
D D D D	del Asii		I BIACKITOTT			
ther:	_	mposition:				
1101.	001	iipositioii.				
umber of woody species per 30m sam	ole length	r				
7 or more 6 5 Are 3 notable features	Not			half of the hedgero	-	
present?	2	Ditch L	for at least	half of the hedger	ows lengt	7
Are 4 notable	3	Less than 10% gaps	None	1-10% () 10-30	% 🔘 >30	
features —— present?	4	Standard tree / 50m				
i i	5	At least 3 Woodland Spe	cies			
Is the hedge adjace to a bridalway,	nt 6	Connections with another		nt) pond (2 points)	or woodland (2	point
footpath or byway t		scoring 4 points or more				
all traffic and contai 2 notable features		Hedgerow connections	O 4 or mo	ore	s than 4	
		Note:				
	7	Parallel hedge within 15m	O Yes	No		
O Yes	8	Have protected species I				
		Not known	Cen recorde	u:		
ortant lgerow		1				
arget notes Outgrown hedgerow and to	ee cover.					
Photo1 DSCN8793 F	hoto2	Photo3		Photo4		

	Date	21/06/2016	Surveyo	rs MP	
	ions 1997, is tl	Landscape criteria of the He he hedgerow considered to b		Yes O Likely O No	Ī
dgerow category		Note:			
1 - Intact managed hedgerow		Roadside hedge and tr	ees with thick ou	tgrowth of Bracken	
2 - Managed 'gappy' hedgerow		l Hedge height	Hedge width	Hedge length (m)	
3 - Unmanaged 'leggy' hedgerd	ow W	Troage rieight	Tioago widin	Treage length (m)	156
4 - Hedgebank with occasional	shrubs	O 0-1m	O 0-1m	'	
5 - Managed hedgerow with ma	ature trees	○ 1-2m	O 1-2m		
6 - Treeline		O 2-4m	② 2-4m		
7 - New / reinstated hedgerow		O >4m	O >4m		
8 - Fenceline					
pody species					
k Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthorn Ele	der Willow Rose Holly	
ner: Honeysuckle,	Co	mposition:			
mber of woody species per 30m s	eamnle length	J			
7 or more 6 6 5 (O 4 O L	ess than 4			
	<u> </u>				
Are 3		table features			
notable features	1	_		of the hedgerows length	
present?	2	Ditch L	for at least half	of the hedgerows lengt	
Are 4 notable	3	Less than 10% gaps	None	% (a) 10-30% (b) >30	
features present?	4	Standard tree / 50m			
	5	At least 3 Woodland Spec	eies		
la tha haday adi					
Is the hedge adjate to a bridalwa	y, 6	Connections with another h	edge (1 point), p	ond (2 points) or woodland	(2 poin
footpath or bywa		scoring 4 points or more	0.		
— all traffic and cor		Hedgerow connections	O 4 or more	Less than 4	
	res?				
— all traffic and cor	res?	Note:			
— all traffic and cor	res?	Note:	Yes	O No	
— all traffic and cor	7	Parallel hedge within 15m	Yes		
all traffic and cor 2 notable feature	7		Yes		
— all traffic and cor 2 notable featur	7	Parallel hedge within 15m	Yes		
all traffic and cor 2 notable feature Yes No Portant gerow	7 8	Parallel hedge within 15m Have protected species b	Yes een recorded?		
all traffic and cor 2 notable feature Yes No Portant gerow	7 8	Parallel hedge within 15m Have protected species b Not known	Yes een recorded?		
all traffic and cor 2 notable feature Yes No Portant gerow	7 8	Parallel hedge within 15m Have protected species b Not known	Yes een recorded?		

	Date	21/06/2016	Surveyors
		e and Landscape criteria of the Hedger 7, is the hedgerow considered to be	Yes O Likely No
edgerow category		Note:	
1 - Intact manage	d hedgerow	Unmanaged outgrown hedg	erow with trees
2 - Managed 'gapp	_	Lladge beight Lla	dae width Hedge length (m)
3 - Unmanaged 'le		Hedge height Hed	dge width Hedge length (m):
O 4 - Hedgebank wit	h occasional shrubs	O 0-1m) 0-1m
O 5 - Managed hedg	erow with mature tree	55 -) 1-2m
O 6 - Treeline			2-4m) >4m
7 - New / reinstate	d hedgerow	24111) 24III
O 8 - Fenceline			
loody species			
	Sycamore Alder	Ash Beech Hawthorn Hazel Bla	
ther:		Composition:	
umber of woody specie	es per 30m sample le	ength	
7 or more	● 5	O Less than 4	
fe pr	4 notable atures resent? e hedge adjacent or a bridalway, path or byway to affic and contains otable features?	2 Ditch ☐ for a 3 Less than 10% gaps ☐ None 4 Standard tree / 50m ☑ 5 At least 3 Woodland Species 6 Connections with another hedge scoring 4 points or more	at least half of the hedgerows lengt by 1-10%
	otable features?		Less than 4
2 n			
2 n		Note:	
		_	Yes No
O Yes	● No	_	

Ref: 47	Date	21/06/2016	Su	irveyors	MP		
	s 1997, is	d Landscape criteria of the He the hedgerow considered to b		O Yes	O Likely	No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerow		Stream with defunct he	dgerow / tre	eeline			
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wid	dth	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerow		Trouge Hoight	Tiougo Wi		l louge !	ongar (m).	80
O 4 - Hedgebank with occasional sh	ırubs	O 0-1m	O 0-1r		,		
O 5 - Managed hedgerow with matu	re trees	O 1-2m	O 1-2r				
● 6 - Treeline		O 2-4m	② 2-4r				
7 - New / reinstated hedgerow		● >4m	O >4m	1			
O 8 - Fenceline							
Woody species							
•	Alder Ash		Blackthor			se Holly	
			$\overline{\mathbf{V}}$]	_
Other:	C	omposition:					
lumber of woody species per 30m sam	nple length	1					
○ 7 or more ○ 6 ○ 5 ⑥	4 01	and then 4					
7 or more 6 5 6		Less than 4					
Are 3	N	otable features					
notable features	1	Bank or Wall	for at least	half of the	hedgerows	length	
present?	2	Ditch 🔽	for at leas	t half of the	hedgerows	lengt	_
Are 4 notable	3	Less than 10% gaps	None O	1-10% (10-30%	O >30	
features —— present?	4	Standard tree / 50m					
prosent.	5	At least 3 Woodland Spec					
		vvoodiand Spec	ies				
Is the hedge adjace to a bridalway,	ent 6	Connections with another he	edge (1 poi	int), pond (2 points) or v	woodland (2	2 points)
footpath or byway — all traffic and conta		scoring 4 points or more		`			,
2 notable features		Hedgerow connections	O 4 or m	ore	Less that	an 4	
		Note:					
	7	Parallel hedge within 15m	O Yes		No		
O Yes No	8			ad2	<u> </u>		
		Not known	en recorde	5u !			
portant edgerow							
arget notes Stream with defunct hedg	erow / tree	line.					
Photo1 DSCN8796	Photo2	Photo3		Photo4			

Ref: 48	Date	21/06/2016	Surveyors	
		and Landscape criteria of the Hedgis the hedgerow considered to be	gerow Yes O Likely N	No
Hedgerow category		Note:		
O 1 - Intact manage	d hedgerow	Treeline with some infilling	g of shrubs	
O 2 - Managed 'gapp	oy' hedgerow	Hedge height	Hedge width Hedge length	(m):
O 3 - Unmanaged 'le	ggy' hedgerow			170
O 4 - Hedgebank wit	h occasional shrubs	O 0-1m	O 0-1m	
O 5 - Managed hedg	erow with mature trees	O 1-2m	O 1-2m	
6 - Treeline		② 2-4m ③ >4m	② 2-4m○ >4m	
7 - New / reinstate	d hedgerow	24111	O >4111	
O 8 - Fenceline				
Woody species				
Oak Birch Rowan Other:		sh Beech Hawthorn Hazel E Composition: Oak and Hawthorn		olly 🔽
Number of woody specie	es per 30m sample leng	∥ th		
O 7 or more O 6	O 5) Less than 4		
ls the foot	4 notable atures resent? e hedge adjacent	2 Ditch f 3 Less than 10% gaps No 4 Standard tree / 50m M 5 At least 3 Moodland Specie 6 Connections with another headscring 4 points or more Hedgerow connections Note: V		30
O Yes	No No			
		Not known	n recorded?	
nportant edgerow		Not Known		
	as well as some Bracker		ded False Oat-grass, Yorkshire-fog an	d

Ref: 49	Date	21/06/2016	00	urveyors	MP		
	s 1997, is the	andscape criteria of the He hedgerow considered to b		O Yes	O Likely	No No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerow		Trees and scrub beside	e eastern b	anks of car	nal		
O 2 - Managed 'gappy' hedgerow		 Hedge height	Hedge wi	dth	Hedge I	length (m):	
O 3 - Unmanaged 'leggy' hedgerow		Treage freight	rieuge wi		Tiedge i	lengui (iii).	412
O 4 - Hedgebank with occasional sh	rubs	O 0-1m	O 0-1	m	-		412
O 5 - Managed hedgerow with matur	re trees	O 1-2m	O 1-2i	m			
● 6 - Treeline		O 2-4m	O 2-4	m			
O 7 - New / reinstated hedgerow		⊚ >4m	● >4n	n			
O 8 - Fenceline							
Voody species							
oak Birch Rowan Sycamore A	lder Ash	Beech Hawthorn Hazel	Blackthor	n Elder	Willow Ro	se Holly	
ther: Honeysuckle	Com	position: Oak (Q.robur), /	Alder, Crac	k Willow ar	nd Silver Bird	ch	
r							
		,					
lumber of woody species per 30m sam	ple length						
Number of woody species per 30m sam	4 O Les	ss than 4					
Are 3 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway,	4 O Les Notal 1 E 2 E 3 L 4 S 5 A	ble features Bank or Wall or	None O	ot half of the	e hedgerows	>30 >30	2 point
7 or more 6 5 • Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and contains	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent to ins	ble features Bank or Wall or	None O	st half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (2	2 point
7 or more 6 5 • Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent to ins	ble features Bank or Wall or	None O	st half of the	e hedgerows	>30 >30 woodland (2	2 point
7 or more 6 5 • Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and contains	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent to ins	ble features Bank or Wall or	None O	st half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (2	2 point
7 or more 6 5 • Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and contains	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent to ins in:	ble features Bank or Wall or	None O	st half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (2	2 point
7 or more 6 5 • Are 3 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and contains	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent to ins in:	ble features Bank or Wall or W	for at leas None O edge (1 po 4 or m	int), pond (e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway—all traffic and contal 2 notable features	4 O Les Notal 1 E 2 E 3 L 4 S 5 A ent 6 C sins ;? H	ble features Bank or Wall or	for at leas None O edge (1 po 4 or m	int), pond (e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (2	2 point

Ref: 50	Date	22/06/2016	Sur	veyors	MP		
	s 1997, is t	Landscape criteria of the Hed he hedgerow considered to be		O Yes	O Likely	⊚ No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerow		Hawthorn dominated unn	managed h	edgerow			
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wid	th	Hodgo	length (m):	
3 - Unmanaged 'leggy' hedgerow		Tleage fleight	rieuge wiu		rieuge	iengui (iii).	152
O 4 - Hedgebank with occasional sh	rubs	O 0-1m	O 0-1m	1	-		102
O 5 - Managed hedgerow with matur	re trees	O 1-2m	O 1-2m				
O 6 - Treeline		O 2-4m	② 2-4m	1			
O 7 - New / reinstated hedgerow		● >4m	O >4m				
O 8 - Fenceline							
Voody species							
Dak Birch Rowan Sycamore A	lder Ash	Beech Hawthorn Hazel I	Blackthorn	Elder	Willow Ro	se Holly	
			\checkmark			Z 🗆	
ther: Crataegus persimilis	Co	emposition:					
umber of woody species per 30m sam	nnle lenath						
7 or more 6 5 0	4 () L	ess than 4					
Are 3	No	table features					
notable features	1	Bank or Wall fo	or at least	half of the	hedgerows	length	
present?	2	Ditch 🗹 f	for at least	half of the	e hedgerows	lengt	_
Are 4 notable	3	Less than 10% gaps No	one O	1-10% (10-30%	O >30	
features —— present?	4	Standard tree / 50m					_
,	5	At least 3 Woodland Specie	Pignut	in grassl	and		
Is the hedge adjace to a bridalway, footpath or byway	6	Connections with another hed scoring 4 points or more	dge (1 poir	nt), pond (2 points) or	woodland (2	2 point
all traffic and contains 2 notable features		Hedgerow connections (O 4 or mo	ore	Less th	an 4	
		Note:					
	-		O Vez		O N		
O Yes No	_ 7	1-	O Yes		● No		
	8	Have protected species bee	en recorde	d?			
		Not known					
dgerow		,					
leaved Cockspurthorn (No	orth Americ	hedgerow supporting infreque an species). Ground flora grass creeping Bent as well as Nettle	sy in chara	acter and			ass,
arget notes A species-poor Hawthorn leaved Cockspurthorn (No	orth Americ	an species). Ground flora gras	sy in chara	acter and			ass,

	Date	22/06/2016	Sı	ırveyors	MP		
	s 1997, is	d Landscape criteria of the He the hedgerow considered to b		O Yes	O Likely	⊚ No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Unmanaged hedgerow	with trees				
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wi	dth	Hedge	length (m):	
O 3 - Unmanaged 'leggy' hedgerow		Treage rieight	Trouge W		riougo	iongai (iii).	94
O 4 - Hedgebank with occasional sh	rubs	O 0-1m	0 0-1	m	'		
O 5 - Managed hedgerow with matur	re trees	O 1-2m	0 1-2				
⑥ 6 - Treeline		O 2-4m	⊚ 2-4ı				
O 7 - New / reinstated hedgerow		● >4m	O >4n	n			
O 8 - Fenceline							
Voody species							
	Alder Ash		Blackthor	n Elder	Willow Ro	ose Holly	_
Other:	Co	omposition:					
lumber of woody species per 30m sam	ple length	1					
○ 7 or more ○ 6 ○ 5	4 01	_ess than 4					
Are 3 notable features present? Are 4 notable features present? Is the hedge adjace to a bridalway, footpath or byway all traffic and contai 2 notable features	1 2 3 4 5 ent 6 to ins 5?	Standard tree / 50m At least 3 Woodland Snee Connections with another he scoring 4 points or more Hedgerow connections Note:	for at leas None edge (1 po 4 or m	int), pond	e hedgerows 10-30% (2 points) or Less th	o >30 woodland (2	2 point
	7	Parallel hedge within 15m	O Yes		● No		
O Yes No	8	Have protected species be	en recorde	ed?			
portant		Not known					

	Date	22/06/2016	Su	rveyors	MP		
	ons 1997, is the	andscape criteria of the Hec hedgerow considered to be		O Yes	O Likely	● No	
dgerow category		Note:					
1 - Intact managed hedgerow		Unmanaged and outgrov	wn hedger	ow borderi	ng tree plant	ing	
2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wid	dth	Hedge I	ength (m):	
∃ - Unmanaged 'leggy' hedgerov	N				The state of the s		96
4 - Hedgebank with occasional s	shrubs	O 1-1m	O 0-1r		'		
5 - Managed hedgerow with mat	ture trees	O 1-2m	① 1-2r ② 2-4r				
6 - Treeline		● >4m	O >4m				
7 - New / reinstated hedgerow		9 7 4.111					
8 - Fenceline							
pody species							
k Birch Rowan Sycamore			Blackthor	_		se Holly	
							,
her:	Com	position: Hawthorn domina	ated with L	ogrose			
mber of woody species per 30m sa	mple length	r					
7 or more 6 5 C		ble features					
notable features	1 E	Bank 🗹 or Wall 🗌 f	for at least	half of the	hedgerows	length	
present?	2 [Ditch	for at leas	t half of the	e hedgerows	lengt	
Are 4 notable	3 L	ess than 10% gaps O N	lone 🔘	1-10% () 10-30%	O >30	
	4 8	Standard tree / 50m					
features	4 0	Standard tree / 50m					
— present?		ut locat 2					
— present?	5 A		es				
present? Is the hedge adjactor a bridalway	5 A	At least 3 Woodland Special Sp		nt), pond (2 points) or v	woodland (2	point
present? Is the hedge adjace	cent c, 6 C y to stains	Mondland Special Woodland Woo			2 points) or v		point
Is the hedge adjactor a bridalway footpath or bywa	cent c, 6 C y to stains	Connections with another he coring 4 points or more	edge (1 poi				point
Is the hedge adjactor a bridalway footpath or bywa	cent c, 6 C y to stains es? H	Connections with another he acoring 4 points or more Hedgerow connections Note:	edge (1 poi		• Less tha		point
Is the hedge adjact to a bridalway footpath or bywar all traffic and cont 2 notable feature	cent y to stains es? 7 F	Connections with another he acoring 4 points or more Hedgerow connections Note:	edge (1 poi				point
Is the hedge adjactor a bridalway footpath or bywa	cent c, 6 C y to stains es? H	Connections with another he coring 4 points or more Hedgerow connections Note: Parallel hedge within 15m Have protected species be	O Yes	pre	• Less tha		point
Is the hedge adjact to a bridalway footpath or bywar all traffic and cont 2 notable feature	cent y to stains es? 7 F	Connections with another he coring 4 points or more Hedgerow connections Note:	O Yes	pre	• Less tha		poin

Ref: 53	Date	22/06/2016	Surveyors MP
	Using the Wildlife ar Regulations 1997, is 'important'?	nd Landscape criteria of the Hedgerov the hedgerow considered to be	Yes O Likely No
Hedgerow category		Note:	
1 - Intact managed h 2 - Managed 'gappy' 3 - Unmanaged 'legg	hedgerow	Unmanaged and undergrazed Hedge height Hedge	ge width Hedge length (m):
O 4 - Hedgebank with o 5 - Managed hedgero 6 - Treeline 7 - New / reinstated h 8 - Fenceline	ow with mature trees	○ 1-2m ○ 2-4m	0-1m 1-2m 2-4m >4m
Woody species			
Other: Sumber of woody species	per 30m sample lengtl	Less than 4	least half of the hedgerows length
features present?	2	P. Ditch ☐ for at	least half of the hedgerows lengt
Are 4 n featu — pres	ures	Standard tree / 50m	O 1-10% O 10-30% O >30
to a footpat — all traffi	nedge adjacent bridalway, 6 th or byway to c and contains able features?	scoring 4 points or more	1 point), pond (2 points) or woodland (2 poor more Less than 4
O Yes	€ No	7 Parallel hedge within 15m O Yo 8 Have protected species been rec	
portant	No No	0	corded?

	Date	e 22/06/2016 Surveyors MP
		fe and Landscape criteria of the Hedgerow 07, is the hedgerow considered to be Yes O Likely No
ledgerow category		Note:
● 1 - Intact manage	d hedgerow	Unmanaged Hawthorn
O 2 - Managed 'gapp	_	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'le	eggy' hedgerow	137
O 4 - Hedgebank wit	h occasional shrubs	O 0-1m
5 - Managed hedg	erow with mature tre	es
6 - Treeline	d b - d =	● >4m
7 - New / reinstate 8 - Fenceline	a neagerow	
Voody species		
Dak Birch Rowan	Sycamore Alder	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other:		Composition: Hawthorn only
Aller.		Composition: I lawriom only
lumber of woody speci-	es per 30m sample le	ength
7 or more 6	O 5 O 4	Less than 4
fe	4 notable atures resent?	Notable features 1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m
to foot	l e hedge adjacent o a bridalway, path or byway to affic and contains	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more
2 n	otable features?	Hedgerow connections
		Note:
		7 Parallel hedge within 15m O Yes No
O Yes	● No	7 Parallel hedge within 15m Yes No No No

Ref: 55	Dat	е	22/06/2016		Surveyors	MP		
			ndscape criteria of nedgerow consider		O Yes	O Likely	● No	
edgerow category			Note:					
O 1 - Intact manag	ned hedgerow		Unmanaged hed	gerow / treelin	e centred on o	litch		
O 2 - Managed 'gap	-		Hedge height	Hedge	width	Hedge I	ength (m):	
3 - Unmanaged '			Tleage fleight	Tiedge	width	riedge i	engui (iii).	276
O 4 - Hedgebank w	vith occasional shrubs		O 0-1m	0	0-1m	1		210
O 5 - Managed hed	dgerow with mature tre	es	O 1-2m		1-2m			
O 6 - Treeline			○ 2-4m ○ >4m		2-4m			
7 - New / reinsta	ted hedgerow		74111		>4m			
8 - Fenceline								
loody species								
ak Birch Rowan	Sycamore Alder	_		Hazel Blackt			se Holly	
		Ш						_
ther: Lime, Field Ma	aple, White Willow	Compo	osition: Blackthor	n and Tilia x e	uropaea domi	nated		
umber of woody spec	cies per 30m sample l	ength	,					
7 or more 0 6	O 5	O Less	than 4					
Is t		2 Dit 3 Les 4 Sta 5 At 6 Co	ss than 10% gaps andard tree / 50m least 3 Woodland more tions with ancoring 4 points or more degrow connections.	for at I None None I Species other hedge (1 ore os te: Ponds	point), pond (r more	2 points) or v	>30 >30 woodland (2	2 point
0		7 Pa	rallel hedge within	15m O Ye	S	● No		
Yes	(No	_	lave protected spe	cies been rec	orded?			
		N	Not known					
	ged hedgerow / treeling present.	8 	lave protected spe	cies been rec	orded?		of Nettle and	d

ledgerow category		d Landscape criteria of the Hedgerow the hedgerow considered to be Yes O Likely O No	
37		Note:	
1 - Intact managed hedgerow		Clipped hedgerow with small trees of Cherry	
O 2 - Managed 'gappy' hedgerow		Hodgo hoight Hodgo width Hodgo longth (m):	
O 3 - Unmanaged 'leggy' hedgerow		Hedge height Hedge width Hedge length (m):	150
O 4 - Hedgebank with occasional sh	rubs	O 0-1m	150
O 5 - Managed hedgerow with matur	re trees	● 1-2m	
O 6 - Treeline		O 2-4m	
O 7 - New / reinstated hedgerow		O >4m	
O 8 - Fenceline			
Voody species			
Dak Birch Rowan Sycamore A	lder Ash	n Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	
Other: Prunus avium	C	omposition:	
umber of woody species per 30m sam	ınle lenath		
7 or more 6 5 0	4 01	Less than 4	
Are 3	N:	otable features Bank or Wall for at least half of the hedgerows length	
notable features		_	
present?	2	Ditch for at least half of the hedgerows lengt	7
Are 4 notable	3	Less than 10% gaps	
features — present?	4	Standard tree / 50m	
	5	At least 3 Woodland Species	
Is the hedge adjace	ınt		
to a bridalway,	6	Connections with another hedge (1 point), pond (2 points) or woodland (2 scoring 4 points or more	point
all traffic and contains 2 notable features	ins	Hedgerow connections	
2 Hotable leatures		Note:	
		,	
(a) You	7	Parallel hedge within 15m Yes No	
● Yes O No	8	Have protected species been recorded?	
		Not known	
 portantdgerow			

Ref: 57	Date	22/06/2016	Surveyors	MP	
	ns 1997, is t	Landscape criteria of the he hedgerow considered to		s O Likely O No	
ledgerow category		Note:			
O 1 - Intact managed hedgerow		Partially reinstated he	dgerow with small tre	ees	
O 2 - Managed 'gappy' hedgerow		ll Hedge height	Hedge width	Hedge length (m):	
	v			gg ()	234
O 4 - Hedgebank with occasional s	hrubs	O 0-1m	O 0-1m	1	
O 5 - Managed hedgerow with mat	ure trees	O 1-2m	O 1-2m		
O 6 - Treeline		O 2-4m	② 2-4m		
7 - New / reinstated hedgerow		○ >4m	O >4m		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Haze	el Blackthorn Elder	Willow Rose Holly	
Other: Field Maple, Sorbus aria, Elm	Co	omposition: Shrubs plus yo	oung trees of Ash, Oa	ık and Field Maple	
lumber of woody species per 30m sa	mple length	J			
7 or more 6 6 5) 4 O L	ess than 4			
Are 3	No	table features			
notable features	1	Bank 🗹 or Wall 🗆	for at least half of t	he hedgerows length	
present?	2	Ditch 🗹	for at least half of	the hedgerows lengt	
Are 4 notable	3	Less than 10% gaps	None (a) 1-10%	O 10-30% O >30	Ī
features	4	Standard tree / 50m			_
present?	5	At least 3 Woodland Spe	. 1		
	· ·	Woodland Sne	ecies		
Is the hedge adjact to a bridalway.		Connections with another	hedge (1 point), pond	d (2 points) or woodland (2	2 points
footpath or byway — all traffic and cont	y to	scoring 4 points or more			·
2 notable feature		Hedgerow connections	4 or more	O Less than 4	
		Note:	Pond		
	7	Parallel hedge within 15m	O Yes	● No	
	8	-		© 110	
		Have protected species Not known	peen recorded'?		
portant dgerow		- Not Kilowii			
		laple form the bulk of the he planted) creating an underst			
and Elli (Some of which	· · P		,	,,	
Oat-grass, Hogweed, Cl	eavers and F	Red Campion.			
	eavers and F	Red Campion.			

'important'?	997, is the hedgerow considered to be Yes O Likely O No
Hedgerow category	Note:
O 1 - Intact managed hedgerow	Clipped hedgerow with small trees
2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	154
O 4 - Hedgebank with occasional shrubs	0 0 1m
● 5 - Managed hedgerow with mature tre	ees 0 1-2m 0 1-2m
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	● >4m ○ >4m
O 8 - Fenceline	
Voody species	
	Ash Beech Houthern Herel Blockthorn Elder Willow Beec Helly
oak Birch Rowan Sycamore Alder ☑ □ □ □	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Lime, Cherry, Poplar	Composition: Hawthorn, Hazel, Elder as well as Oak (Quercus robur),
anor.	Lime (Tilia x europaea), Cherry (Prunus avium) and Ash.
umber of woody species per 30m sample	length
○ 7 or more	O Less than 4
	Notable features
Are 3	Notable features
notable features	1 Bank or Wall for at least half of the hedgerows length
notable	
notable features	1 Bank or Wall for at least half of the hedgerows length
notable features present? Are 4 notable features	1 Bank ✓ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☐ for at least half of the hedgerows lengt
notable features present? Are 4 notable	1 Bank ✓ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☐ for at least half of the hedgerows lengt 3 Less than 10% gaps ☐ None ⑥ 1-10% ☐ 10-30% ☐ >30 4 Standard tree / 50m ✓
notable features present? Are 4 notable features present?	1 Bank ✓ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☐ for at least half of the hedgerows lengt 3 Less than 10% gaps ☐ None ⑥ 1-10% ☐ 10-30% ☐ >30 4 Standard tree / 50m ✓
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to	1 Bank ✓ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☐ for at least half of the hedgerows lengt 3 Less than 10% gaps ☐ None ⑥ 1-10% ☐ 10-30% ☐ >30 4 Standard tree / 50m ✓
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway,	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections 4 or more Less than 4
notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections 4 or more Less than 4 Note:
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections 4 or more Less than 4
notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections 4 or more Less than 4 Note:
notable features present? Are 4 notable features features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections 4 or more Less than 4 Note: 7 Parallel hedge within 15m Yes No

Using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997, is the hedgerow considered to be "yes \ Likely \ \ \ \ No \ \ Note: Note:	Ref: 59	Date	22/06/2016	Surveyors
Unmanaged outgrown hedge with trees Unmanaged 'gappy' hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'gappy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline		Regulations 1997, is		Yes O Likely No
O 1- Infact managed hedgerow O 2- Managed 'gappy' hedgerow O 3- Unmanaged 'leggy' hedgerow O 4- Hedgebank with occasional shrubs O 5- Managed hedgerow with mature trees O 6- Treeline O 7- New / reinstated hedgerow O 8- Fenceline Woody species Cak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Poplar Composition: Number of woody species per 30m sample length O 7 or more O 6 5 0 4	Hedgerow category		Note:	
O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Poplar Composition: Number of woody species per 30m sample length O 7 or more ● 6 ○ 5 ○ 4 ○ Less than 4 Notable features present? Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 5 notable features present? Are 6 notable features present? Are 7 notable features present? Are 8 notable features present? Are 9 notable features present? Are 1 notable features present? Are 3 notable features present? Are 4 notable features present? Are 5 notable features present? Are 6 notable features present? Are 7 notable features present? Are 8 notable features present? Are 9 notable features present? Are 9 notable features present? Are 1 notable features present? Are 3 notable features present? Are 4 notable features present? Are 5 notable features present? Are 6 notable features present? Are 7 notable features present? Are 8 notable features present? Are 9 notable features present? Are 9 notable features present? Are 9 notable features Are 9 notable features Notable features Are 9 notable feat	○ 1 - Intact managed	hedaerow	Unmanaged outgrown hedge v	with trees
O 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □		_	Hedge height Hedge	e width Hedge length (m):
O 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ Other: Poplar Composition: Jumber of woody species per 30m sample length O 7 or more	_		Treage freight Treage	
© 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	O 4 - Hedgebank with	occasional shrubs	O 0-1m	0-1m
7 - New / reinstated hedgerow 8 - Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Poplar Composition: Sumber of woody species per 30m sample length 7 or more 6 6 5 4 Less than 4 Notable features present? Are 3 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? O Yes No No Note: 7 Parallel hedge within 15m O Yes No Not known Note: Not known Note: Not known	O 5 - Managed hedger	ow with mature trees		
Noody species	⑥ 6 - Treeline			
Woody species Cak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Cher: Poplar Composition: Composition: Composition: Number of woody species per 30m sample length O 7 or more 6 0 5 0 4		hedgerow		>4m
Cak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Cher: Poplar	O 8 - Fenceline			
Composition: Other: Poplar Composition: Co	Voody species			
Number of woody species per 30m sample length 7 or more 6 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length features present? Are 4 notable features 2 Ditch for at least half of the hedgerows length features present? Are 4 notable features 1 Bank or Wall for at least half of the hedgerows length for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m or 1-10% 10-30% >30 5 At least 3 Woodland Species Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections A or Wall for at least half of the hedgerows length for at least half of the hedgerow length for at least half of the hedgerow lengt		·		·
Notable features notable features present? Are 4 notable features Are 4 no				
Notable features Are 3 notable features present? Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 3 None Ditch For at least half of the hedgerows lengt Are 4 notable features Are 4 notable for at least half of the hedgerows lengt Are 4 notable features Are 4 n	ther: Poplar	C	Composition:	
Are 4 notable features present? Are 4 notable features Are 4 notable f	lumber of woody species	per 30m sample lengtl	h	
Are 3 notable features present? Are 4 notable features present? 1 Bank	7 or more 6 6	O 5 O 4 O	Less than 4	
	notable features present? Are 4 r feat pres Is the l to a footpa all traff 2 nota	notable ures sent? nedge adjacent a bridalway, th or byway to ic and contains able features?	Bank or Wall for at leteration for at leterati	least half of the hedgerows lengt 1-10% 10-30% >30 1 point), pond (2 points) or woodland (2 point) or more Less than 4 S No
		ers, Hogweed and Cov		assy rank ground cover supports False Oat-

Ref: 60	Date	22/06/2016	Sur	veyors	ИP		
		nd Landscape criteria of the He s the hedgerow considered to b		O Yes	O Likely	● No	
Hedgerow category		Note:					
	d hedgerow	Clipped roadside hedge	erow				
O 2 - Managed 'gapp	y' hedgerow	Hedge height	Hedge wid	th	Hedge I	ength (m):	
O 3 - Unmanaged 'leg	ggy' hedgerow	Trouge risigni	Tiedge wid	<u> </u>	riouger	erigur (iii).	258
O 4 - Hedgebank with	n occasional shrubs	O 0-1m	O 0-1m	1			200
O 5 - Managed hedge	erow with mature trees	● 1-2m	● 1-2m				
O 6 - Treeline		O 2-4m	O 2-4m	1			
7 - New / reinstated	d hedgerow	O >4m	O >4m				
O 8 - Fenceline							
Woody species							
Oak Birch Rowan	Sycamore Alder As	sh Beech Hawthorn Hazel	Blackthorn	Elder V	Villow Ros	se Holly	
Other:	(Composition:					
lumber of woody specie	es per 30m sample lengt	<u> </u>					
7 or more 6	05 04 0	Less than 4					
ls the to foots — all tra	e hedge adjacent of a bridalway, path or byway to ffic and contains otable features?	Notable features 1 Bank or Wall or Wa	for at least None O cies edge (1 point O 4 or mo	half of the 1-10% C nt), pond (2	hedgerows	lengt O >30 woodland (:	2 points
'		Not known	een recorde	u ?			
portant dgerow		INOU KIIOWII					
		ated by Hawthorn. Semi-mature and supports Cleavers, Roseba					ent
Photo1 DS	CN8831 Photo2	Photo3	-	Photo4			

	dlife and Landscape criteria of the Hedgerow 997, is the hedgerow considered to be O Yes O Likely No
'important'?	
edgerow category	Note:
1 - Intact managed hedgerow	Clipped roadside hedgerow
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	
O 4 - Hedgebank with occasional shrub	0.1m
O 5 - Managed hedgerow with mature tr	rees 1-2m 0 1-2m
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	<u> </u>
/oody species	
ak Birch Rowan Sycamore Alde	er Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther: Broadleaved Cockspurthorn	Composition: Hawthorn dominated
tumber of weedy appeign per 20m cample	Nongth
umber of woody species per 30m sample	riengui
7 or more 6 6 5 4	Less than 4
Ara 2	Notable features
Are 3 notable	1 Bank or Wall for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
	3 Less than 10% gaps
Are 4 notable features	4 Standard tree / 50m
present?	
	5 At least 3 Woodland Species
Is the hedge adjacent	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points
to a bridalway, footpath or byway to	scoring 4 points or more
— all traffic and contains 2 notable features?	Hedgerow connections O 4 or more
	Note:
<u> </u>	7 Parallel hedge within 15m Yes No
O Yes No	
	Have protected species been recorded? Not known
portantdgerow	Not Kilowii

Ref: 62	Date	22/06/2016	Sur	veyors	MP		
		d Landscape criteria of the Hec the hedgerow considered to be		O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed	hedgerow	Clipped roadside hedge	row				
O 2 - Managed 'gappy	_	Hodgo hoight	Hedge widt	th	Hodgo I	ength (m):	
3 - Unmanaged 'lege		Hedge height	Heage wiai	ın 	Heage I	engin (m):	238
O 4 - Hedgebank with	occasional shrubs	O 0-1m	O 0-1m	ı	-		230
O 5 - Managed hedger	ow with mature trees	● 1-2m	● 1-2m				
O 6 - Treeline		O 2-4m	O 2-4m	1			
O 7 - New / reinstated	hedgerow	O >4m	O >4m				
O 8 - Fenceline							
Woody species							
Dak Birch Rowan S	Sycamore Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder \	Willow Ro	se Holly	-
Julei.		omposition.	ateu				
Number of woody species	per 30m sample length						
7 or more 6	O 5 O 4 O I	Less than 4					
ls the to footpa	notable cures 4 hedge adjacent a bridalway, ath or byway to fic and contains able features?	Less than 10% gaps Standard tree / 50m At least 3 Woodland Speci Connections with another he scoring 4 points or more	for at least	half of the	hedgerows	lengt O >30 woodland (:	2 points
		Note:					-
	_	Porellol hodge within 15	O Yes		⊘ No		
O Yes	7	,			No ■		
	8	Have protected species be Not known	en recorded	d?			
portant		INOL KIIOWII					
		ed by Hawthorn. Semi-mature d supports Cleavers, Rosebay					cent
Photo1 DS0	CN8833 Photo2	Photo3	F	Photo4			

Ref: 63	Date	22/06/2016	Surveyors MP
		and Landscape criteria of the Hedgerd is the hedgerow considered to be	Yes O Likely No
Hedgerow category		Note:	
	ued hedgerow	Clipped roadside hedgerow	
O 2 - Managed 'gap	_	Hadge height Had	go width Hadga langth (m)
3 - Unmanaged '		Hedge height Hed	ge width Hedge length (m):
O 4 - Hedgebank w	vith occasional shrubs	O 0-1m) 0-1m
O 5 - Managed hed	Igerow with mature trees	● 1-2m) 1-2m
O 6 - Treeline		O 2-4m) 2-4m
7 - New / reinsta	ted hedgerow	O >4m) >4m
O 8 - Fenceline			
Voody species			
Dak Birch Rowan	Sycamore Alder A	ash Beech Hawthorn Hazel Blac	kthorn Elder Willow Rose Holly
Other:		Composition: Hawthorn dominated	
lumber of woody spec	cies per 30m sample leng	 ith	
○ 7 or more ○ 6		Less than 4	
Is t	to a 4 notable features present? the hedge adjacent to a bridalway, otpath or byway to raffic and contains notable features?	2 Ditch for a 3 Less than 10% gaps None 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge scoring 4 points or more	
rget notes Clipped		nated by Hawthorn. Semi-mature trees and supports Cleavers, Rosebay Willo	s of Maple are associated with the adjacent owherb, Nettle and False Oat-grass.

					Surveyors	MP	
			andscape criteria of th hedgerow considered		O Yes	O Likely	● No
ledgerow category			Note:				
1 - Intact manage	ed hedgerow		Clipped hedgerow	beside ditc	h and access t	rack	
2 - Managed 'gap	_		Hedge height	Hada	e width	Hedge l	ength (m):
3 - Unmanaged 'le	eggy' hedgerow		Treage freight	Tiedg	Width	Tiedge it	20
O 4 - Hedgebank wi	th occasional shrubs		O 0-1m		0-1m	-	_
5 - Managed hedg	gerow with mature tree	es	O 1-2m		1-2m		
6 - Treeline			 ○ 2-4m ○ >4m		2-4m >4m		
7 - New / reinstate	ed hedgerow		<u> </u>		74111		
O 8 - Fenceline							
loody species							
Dak Birch Rowan	Sycamore Alder	Ash I		lazel Black	thorn Elder	Willow Ros	se Holly
Other: Honeysuckle		_	position:				
Tioneysuckie		Oom	position.				
umber of woody speci	ies per 30m sample le	ength					
7 or more 6	⊙ 5	O Les	s than 4				
		Notal	ole features				
fe	4 notable eatures resent?	2 D	ank ☑ or Wall		least half of the	e hedgerows	
notable features present? Are	eatures	2 D 3 L 4 S	ess than 10% gaps	for at	least half of the	e hedgerows	lengt
notable features present? Are fe p Is th t foot — all tr	eatures	2 C 3 L 4 S 5 A	ess than 10% gaps ess than 10% gaps etandard tree / 50m at least 3 Woodland 5 Connections with another coring 4 points or more dedgerow connections	for at None Snecies ner hedge (least half of th	e hedgerows	lengt O >30 voodland (2 p
notable features present? Are fe p Is th t foot — all tr	eatures resent? ne hedge adjacent to a bridalway, tpath or byway to affic and contains	2 C 3 L 4 S 5 A	ess than 10% gaps Standard tree / 50m At least 3 Woodland 9 Connections with another coring 4 points or more	for at None Snecies ner hedge (least half of th	e hedgerows 10-30% 2 points) or v	lengt O >30 voodland (2 p
notable features present? Are fe p Is th t foot all tr 2 n	eatures resent? ne hedge adjacent to a bridalway, tpath or byway to affic and contains notable features?	2 C 3 L 4 S 5 A 6 C s	ess than 10% gaps ess than 10% gaps etandard tree / 50m at least 3 Woodland 5 Connections with another coring 4 points or more dedgerow connections	for at None Snecies ner hedge (least half of the	e hedgerows 10-30% 2 points) or v	lengt O >30 voodland (2 p
notable features present? Are fe p Is th t foot — all tr	eatures resent? ne hedge adjacent to a bridalway, tpath or byway to affic and contains	2 C 3 L 4 S 5 A 6 C S H	ess than 10% gaps ess than 10% gaps standard tree / 50m at least 3 Connections with anoth coring 4 points or more dedgerow connections Note	for at None None Snecies ner hedge (least half of the	e hedgerows 10-30% 2 points) or v Less tha	lengt O >30 voodland (2 p

Ref: 65	Date	22/06/2016	Sur	veyors MP	
		and Landscape criteria of the is the hedgerow considered to		O Yes O Likely	No No
Hedgerow category		Note:			
● 1 - Intact manage	ed hedgerow	Clipped roadside hed	dgerow		
O 2 - Managed 'gap	py' hedgerow	Hedge height	Hedge widt	h Hedge	length (m):
O 3 - Unmanaged 'le	eggy' hedgerow				95
O 4 - Hedgebank wit	th occasional shrubs	O 0-1m	O 0-1m	' '	
O 5 - Managed hedg	gerow with mature trees	● 1-2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
7 - New / reinstate	ed hedgerow	O >4m	O >4m		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan	·		zel Blackthorn		se Holly
ther:		Composition: Hawthorn dor	ninated		
lumber of woody speci	es per 30m sample leng	th			
7 or more 6	O 5 O 4 @	Less than 4			
fe	4 notable eatures	2 Ditch	for at least	half of the hedgerows	
p	resent?	E Atlant 2			
		5 At least 3 Woodland Sr	necies		
t foot	path or byway to	6 Connections with another scoring 4 points or more	r hedge (1 poin	t), pond (2 points) or	woodland (2 point
	affic and contains otable features?	Hedgerow connections	O 4 or mo	re	an 4
		Note:			
	— <u>,</u>		0.11		
O Yes	● No	7 Parallel hedge within 15n	n Yes	O No	
1 0 163	● NO	8 Have protected species	been recorded	1?	
portant		Not known			
dgerow					
	hedgerow dominated by Willowherb.	Hawthorn with rank ground o	cover of False (Dat-grass, Cleavers, l	Nettle and
_					_
Photo1 D	SCN8836 Photo2	Photo3	F	Photo4	

	ate 22/06/2016 Surveyors MP
	dlife and Landscape criteria of the Hedgerow 997, is the hedgerow considered to be
Hedgerow category	Note:
1 - Intact managed hedgerow	Clipped hedgerow with three trees (Oak and Alder)
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	309
O 4 - Hedgebank with occasional shrubs	os O-1m O 0-1m
● 5 - Managed hedgerow with mature tr	
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
Dak Birch Rowan Sycamore Alder	er Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Honeysuckle, Elm	Composition:
lumber of woody species per 30m sample	e length
○ 7 or more ○ 6 ○ 5 ● 4	O Less than 4
Are 3	Notable features
notable features	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
present?	2 Ditch ✓ for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps
features — present?	4 Standard tree / 50m
— present:	5 At least 3 Woodland Species
	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 point
Is the hedge adjacent to a bridalway, footpath or byway to	scoring 4 points or more
to a bridalway, footpath or byway to — all traffic and contains	
to a bridalway, footpath or byway to	Hedgerow connections 4 or more Less than 4
to a bridalway, footpath or byway to — all traffic and contains	Hedgerow connections O 4 or more Less than 4 Note:
to a bridalway, footpath or byway to — all traffic and contains 2 notable features?	Hedgerow connections 4 or more Less than 4
to a bridalway, footpath or byway to — all traffic and contains	Hedgerow connections Note: Less than 4
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	Hedgerow connections Note: 7 Parallel hedge within 15m Yes No

features 4 Observations (50m)	Hedge length (m): 31 Willow Rose Holly
Partially managed hedgerow with planted Po 1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Composition: Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features 1 Ditch or at least half of the features	Hedge length (m): 31 Willow Rose Holly
1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Oah	Hedge length (m): 31 Willow Rose Holly
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs ● 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Other: Poplar, Honeysuckle Other: Poplar, Honeysuck	Willow Rose Holly □ ☑ □
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs ● 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Other: Poplar, Honeysuckle Other: Poplar, Honeysuckle O 0-1m O 1-2m O 2-4m O >4m O >4m O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4 O To more O 6 O 5 ● 4 O Less than 4	Willow Rose Holly □ ☑ □
	Willow Rose Holly
O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 2-4m	
O	
Other: Poplar, Honeysuckle O	
Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Dither: Poplar, Honeysuckle Composition:	
Other: Poplar, Honeysuckle Composition: Sumber of woody species per 30m sample length O 7 or more	
Other: Poplar, Honeysuckle Composition: Sumber of woody species per 30m sample length 7 or more 6 5 • 4 Less than 4 Notable features 1 Bank or Wall for at least half of the features 2 Ditch for at least half of the features 3 Less than 10% gaps None 1-10% (1-10%)	
Illumber of woody species per 30m sample length O 7 or more O 6 O 5	hedgerows length
O 7 or more ○ 6 ○ 5 ● 4 ○ Less than 4 Notable features 1 Bank □ or Wall □ for at least half of the features 2 Ditch ☑ for at least half of the features 3 Less than 10% gaps ● None ○ 1-10% (1)	hedgerows length
O 7 or more ○ 6 ○ 5 ● 4 ○ Less than 4 Notable features 1 Bank □ or Wall □ for at least half of the features 2 Ditch ☑ for at least half of the features 3 Less than 10% gaps ○ None ○ 1-10% (1)	hedgerows length
Notable features Are 3 notable features present? Notable features 1 Bank □ or Wall □ for at least half of the 2 Ditch ☑ for at least half of the 3 Less than 10% gaps None ○ 1-10% (hedgerows length
Are 3 notable features present? 1 Bank or Wall for at least half of the form to the form to the form to the features form to the for	hedgerows length
notable features present? 1 Bank □ or Wall □ for at least half of the formation in th	hedgerows length
present? 2 Ditch ✓ for at least half of the 3 Less than 10% gaps None ○ 1-10% (
features 4. Observations (50m)	hedgerows lengt
features 4 Observed to 150m -) 10-30% () >30
1 4 Standard tree / 50m 1 1	
present?	
Woodland Species	
Is the hedge adjacent to a bridalway, 6 Connections with another hedge (1 point), pond (2 noints) or woodland (2 no
footpath or byway to scoring 4 points or more	_ points; or woodiand (2 β
— all traffic and contains 2 notable features? Hedgerow connections • 4 or more	O Less than 4
Note: Pond	
	O. II.
7 Parallel hedge within 15m Yes	● No
Have protected species been recorded?	
portantNot known	
dgerow	

 1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 	adside hedgerow The state of t
 ☐ 1 - Intact managed hedgerow ☐ 2 - Managed 'gappy' hedgerow ☐ 3 - Unmanaged 'leggy' hedgerow ☐ 4 - Hedgebank with occasional shrubs ☐ 5 - Managed hedgerow with mature trees ☐ 6 - Treeline Clipped roa Hedge heig ☐ 0-1m ☐ 1-2m ☐ 2-4m ○ 2-4m ☐ 2-4m 	ght Hedge width Hedge length (m):
 1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 	ght Hedge width Hedge length (m):
O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline Hedge heig	O 0-1m
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 2-4m	O 0-1m
O 5 - Managed hedgerow with mature trees O 6 - Treeline O 2-4m	O 0-1m
O 6 - Treeline	
O - Heeline	
O 7 Now / reinstated hadgerow O >4m	
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Woody species	
Dak Birch Rowan Sycamore Alder Ash Beech Hawtl	horn Hazel Blackthorn Elder Willow Rose Holly
Other: Honeysuckle Composition: Hav	wthorn dominated
umber of woody species per 30m sample length	
○ 7 or more ○ 6 ○ 5 ③ 4 ○ Less than 4	
features present? Are 4 notable features present? At least 3 Wo Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? 2 Ditch 3 Less than 10% 5 At least 3 Wo 6 Connections wis scoring 4 points Scoring 4 points Hedgerow conf	nondland Species with another hedge (1 point), pond (2 points) or woodland (2 points) or more nections A or more Note:
O Yes No	ad anagica been records 10
O Yes No No Have protected	ed species been recorded?
O Yes No 8 Have protected Not known	ed species been recorded?
No No No No No No No No Not known	
Yes No 8 Have protected Not known	

Regulations 19	life and Landscape criteria of the Hedgerow 97, is the hedgerow considered to be
'important'?	,
edgerow category	Note:
1 - Intact managed hedgerow	Clipped roadside hedgerow
2 - Managed 'gappy' hedgerow	
3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
O 4 - Hedgebank with occasional shrubs	0.0.1m
O 5 - Managed hedgerow with mature tre	ees 1-2m 1-2m
O 6 - Treeline	O 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
oody species	
ak Birch Rowan Sycamore Alder	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther:	Composition: Hawthorn with Oak and Dogrose
umber of woody species per 30m sample l	length
7 or more	Less than 4
	Notable features
Are 3 notable	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
	3 Less than 10% gaps
Are 4 notable features	4. Observational Access (500)
present?	
	5 At least 3 Woodland Species
Is the hedge adjacent	
to a bridalway, footpath or byway to	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
all traffic and contains 2 notable features?	Hedgerow connections
	Note:
O Yes No	7 Parallel hedge within 15m Yes No
Tes Wild	Have protected species been recorded?
portant	Not known
Igerow	
dgerow	Not known Apporting Hawthorn with Oak and Dogrose. The hedgerow adjoins a semi-improved

Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features features present? 1 Bank or Wall for at le	-1m 25 -2m -4m
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blacktr Other: Elm, Honeysuckle Composition: Mixed woody cover with Hawthorn and Elder consumption of woody species per 30m sample length O 7 or more ○ 6 ● 5 ○ 4 ○ Less than 4 Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	-1m 25 -2m -4m
1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blacktt Dither: Elm, Honeysuckle Composition: Mixed woody cover with Hawthorn and Elder con Number of woody species per 30m sample length Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains Is the hedge adjacent to a large of the society of	-1m 25 -2m -4m
2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blacktt Dither: Elm, Honeysuckle Composition: Mixed woody cover with Hawthorn and Elder consumber of woody species per 30m sample length Are 3 notable features present? Are 4 notable features present? Are 5 At least 3 Woodland Species Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains Connections with another hedge (1 scoring 4 points or more all traffic and contains	-1m 25 -2m -4m
③ 3 - Unmanaged 'leggy' hedgerow ○ 4 - Hedgebank with occasional shrubs ○ 5 - Managed hedgerow with mature trees ○ 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackti □ □ □ □ □ □ □ □ □ □ □ □ Other: Elm, Honeysuckle Composition: Mixed woody cover with Hawthorn and Elder consumber of woody species per 30m sample length O 7 or more ○ 6 ⑥ 5 ○ 4 ○ Less than 4 Notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features Are 3 1 Bank ☑ or Wall ☐ for at legatures Are 3 2 Ditch ☑ for at legatures Are 4 notable features Are 4 notable features Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 4 notable features Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 4 notable features Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 5 1 Bank ☑ or Wall ☐ for at legatures Are 6 Connections with another hedge (1 scoring 4 points or more	-1m 25 -2m -4m
3 - Nanaged hedgerow with mature trees	-1m -2m -4m
O 3 - Maladget hedgerow O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species O 8 - Fenceline Woody species O 8 - Fenceline O 2 - 4m O 2 O > 4m O 3 O > 4m O 2 O > 4m O 2 O > 4m O 3 O > 4m O 2 O > 4m O 3 O > 4m O 2 O > 4m O 3 O > 4m O 3 O > 4m O 4	-4m
7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 8 - Fenceline 7 - New / reinstated hedgerow 9 > 4m 0 > 4m 1	
S - Fenceline	4m
Are 3 notable features present? Are 4 notable features present? Are 5 At least 3 Woodland Species Woodland Species with another hedge (1 scoring 4 points or more woodlands) Are 4 notable features for at least 3 Woodland Species with another hedge (1 scoring 4 points or more woodlands) Are 4 notable features for at least 3 Woodland Species woodland Species with another hedge (1 scoring 4 points or more woodlands)	
Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackth	
Composition: Mixed woody cover with Hawthorn and Elder consumber of woody species per 30m sample length O 7 or more O 6	
Composition: Mixed woody cover with Hawthorn and Elder consumber of woody species per 30m sample length O 7 or more O 6 5 4 Less than 4 Notable features Are 3 notable features present? Are 4 notable features present? Are 4 notable features Are 5 None 4 Standard tree / 50m None Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	orn Elder Willow Rose Holly
Hawthorn and Elder construction Hawt	
Are 3 notable features present? Are 4 notable features present? Are 4 notable features present? Are 4 notable features Are 5 Ditch	Elm dominant to the south.
7 or more ○ 6 ● 5 ○ 4 ○ Less than 4 Notable features	stants.
Are 3 notable features present? Are 4 notable features 5 At least 3 Woodland Species Connections with another hedge (1 scoring 4 points or more	
Are 3 notable features present? Are 4 notable features present? 5 At least 3 Woodland Species Connections with another hedge (1 scoring 4 points or more	
notable features present? Are 4 notable features at least 3 Less than 10% gaps O None features at least 3 Woodland Species for at least 3 Woodland Species	
Are 4 notable features present? 2 Ditch for at legacy	ast half of the hedgerows length
Standard tree / 50m	ast half of the hedgerows lengt
features present? 4 Standard tree / 50m 5 At least 3 Woodland Species Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	1 -10%
Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	3 1 3 11 3 1
Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	
to a bridalway, footpath or byway to — all traffic and contains 6 Connections with another hedge (1 scoring 4 points or more	
footpath or byway to scoring 4 points or more — all traffic and contains	point), pond (2 points) or woodland (2 n
	,,, (
	more
Note:	
7 Parallel hedge within 15m O Yes	
O Yes	⊘ No
8 Have protected species been reco	
portant	
arget notes An unmanaged hedgerow supporting a mix of woody species including Eli	

Note: Unmanaged roadside hedgerow O Yes O Likely No
Hedge height Hedge width Hedge length (m): O 0-1m O 1-2m O 2-4m O 2-4m Unmanaged roadside hedgerow Hedge width Hedge length (m):
Hedge height Hedge width Hedge length (m): O 0-1m O 1-2m O 2-4m O 2-4m Hedge width Hedge length (m): 126
O 0-1m O 1-2m O 2-4m O 2-4m
O 0-1m O 1-2m O 2-4m O 2-4m
O 0-1m O 1-2m O 2-4m O 2-4m O 2-4m
ees
● >4m ○ >4m
r Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Composition: Hawthorn dominated
La contraction of the Contractio
length
Less than 4
1 Bank or Wall for at least half of the hedgerows length 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections 4 or more Less than 4 Note: 7 Parallel hedge within 15m Yes No
8 Have protected species been recorded?
Not known

ef: 72	Date	22/06/2016	Sur	veyors	MP		
Regul		Landscape criteria of the He he hedgerow considered to b		Yes	O Likely	O No	
dgerow category		Note:					
1 - Intact managed hedgero	w	Clipped roadside hedge	erow				
2 - Managed 'gappy' hedgerd	ow	l Hedge height	Hedge wid	th	Hedae I	ength (m):	
◯ 3 - Unmanaged 'leggy' hedge	erow		g				153
A - Hedgebank with occasion	nal shrubs	O 0-1m	O 0-1m	1	1		
5 - Managed hedgerow with	mature trees	● 1-2m	● 1-2m				
6 - Treeline		O 2-4m	O 2-4m				
7 - New / reinstated hedgero	w	O >4m	O >4m				
8 - Fenceline		'					
oody species							
k Birch Rowan Sycamore			Blackthorn	V			-
ner: Honeysuckle	Co	mposition: Hawthorn with H	Holly, Dogros	se, Elder, C	ak and Ho	neysuckie	
mber of woody species per 30m	n sample length	,					
) 7 or more	O4 OL	ess than 4					
Are 3 notable features present? Are 4 notable features present?	No 1 2 3 4	Ditch	for at least I	half of the		lengt]
	5	At least 3 Woodland Spec	ries				
Is the hedge a to a bridaly footpath or by — all traffic and c	vay, 6 way to	Connections with another h scoring 4 points or more	edge (1 poin	nt), pond (2	points) or v	woodland (2	2 point
2 notable fea		Hedgerow connections	● 4 or mo	ore (C Less that	an 4	
		Note:	Woodland 8	& pond			
	7	Parallel hedge within 15m	Yes		O No		
● Yes O N		Have protected species b					
		Not known	een recorded	u ? ———			_
ortant							
ortant gerow		1					

Regulations 1997, is 'important'?	the hedgerow considered to be Yes O Likely No
edgerow category	
agoron catogory	Note:
◯ 1 - Intact_managed hedgerow	Clipped hedgerow with mature trees to the north
2 - Managed 'gappy' hedgerow	Hadra hainta Hadra width Hadra lareth (m)
3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
4 - Hedgebank with occasional shrubs	O 0-1m
5 - Managed hedgerow with mature trees	● 1-2m
◯ 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
8 - Fenceline	
oody species	
	h Basah Hautharn Hazal Blacktharn Eldar William Basa Hally
ak Birch Rowan Sycamore Alder Asi	
	Composition:
ımber of woody species per 30m sample length	
7 or more	Less than 4
	lotable features
Are 3	
features	_
present? 2	
Are 4 notable	Less than 10% gaps
features 4 present?	Standard tree / 50m
5	At least 3 Woodland Species
le the hedge ediceent	
Is the hedge adjacent to a bridalway, 6 footpath or byway to	Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
— all traffic and contains 2 notable features?	Hedgerow connections
	Note: Pond
	7. D. H.H. J. W. 45. O.Y.
O Ves O No	7 Parallel hedge within 15m Yes No
Tes Williams	Have protected species been recorded:
ortant	Not known
gerow	,

Ref: 74	Da	ate	22/06/2016	Su	rveyors	MP		
			andscape criteria of the Hedg e hedgerow considered to be	erow	O Yes	O Likely	No No	Ī
Hedgerow cat	egory		Note:					
1 - Intac	t managed hedgerow		Clipped hedgerow with a p	atch of	young unc	ut Oaks to th	he west	
O 2 - Mana	aged 'gappy' hedgerow		Hedge height H	edge wid	dth	Hedge I	ength (m):	
O 3 - Unma	anaged 'leggy' hedgerow			<u> </u>				124
O 4 - Hedg	gebank with occasional shrub	s	O 0-1m	O 0-1n		'		
_	aged hedgerow with mature to	rees	● 1-2m	1-2n2-4n				
O 6 - Treel			O 2-4m	O >4m				
	/ reinstated hedgerow		O 24111	O >411				
O 8 - Fenc	eline							
Woody specie	es							
Dak Birch Dither:	Rowan Sycamore Alde		Beech Hawthorn Hazel B	lackthorr	n Elder	Willow Ro	se Holly	_
Number of wo	ody species per 30m sample	length	1					
7 or more	e O 6 O 5 © 4	O 1 a	ss than 4					
f	Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	1 E 2 E 3 E 5 7	Ditch	r at leas	t half of the	hedgerows hedgerows 10-30% points) or v Less tha	>30 >30 woodland (2 points
			_			0		
O Yes	s • No		1) Yes		● No		
	W NO	8	Have protected species beer	recorde	ed?			
			Not known					
	Clipped hedgerow and ditch v		Not known ng sections towards west (farrcter.	n). A pat	ch of uncu	t young Oak	s have bee	en

	ate	22/06/2016		Surveyors	MP		
Using the Wil Regulations 1 'important'?	dlife and 1997, is th	Landscape criteria of the Ho ne hedgerow considered to l	edgerow be	O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Clipped hedgerow with	small tree	es of False A	cacia as we	ll as Oak.	
2 - Managed 'gappy' hedgerow		l Hedge height	Hedge v	vidth	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerow							89
O 4 - Hedgebank with occasional shrub	bs	O 0-1m	0 0-		'		
O 5 - Managed hedgerow with mature	trees	● 1-2m	(a) 1-				
O 6 - Treeline		O 2-4m	O 2-				
7 - New / reinstated hedgerow		O >4m		·111			
O 8 - Fenceline							
Voody species							
Dak Birch Rowan Sycamore Alde	er Ash	Beech Hawthorn Haze	l Blacktho	orn Elder	Willow Ros	se Holly	
				\checkmark			
Other: False Acacia	Cor	mposition: Hawthorn domi	nated				
lumber of woody species per 30m sample	e lenath	J					
\bigcirc 7 or more \bigcirc 6 \bigcirc 5 \bigcirc 4	() Le	ess than 4					
		535 triair 4					
		able features					
Are 3 notable		able features	for at lea	st half of the	hedgerows	length	
Are 3	Not	able features			hedgerows e hedgerows		
Are 3 notable features present?	Not	able features Bank ☑ or Wall □ Ditch ☑	for at lea	ast half of the	e hedgerows	lengt	Ī
Are 3 notable features present? Are 4 notable features	Not 1 2	able features Bank or Wall Ditch but	for at lea	ast half of the	e hedgerows		
Are 3 notable features present? Are 4 notable	Not 1 2 3 4	able features Bank or Wall Ditch but Less than 10% gaps Standard tree / 50m At least 2	for at lea	ast half of the	e hedgerows	lengt	
Are 3 notable features present? Are 4 notable features	Not 1 2 3 4	able features Bank or Wall Ditch but	for at lea	ast half of the	e hedgerows	lengt	
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway,	Not 1 2 3 4 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Specific Connections with another h	None (ast half of the	e hedgerows	lengt O >30	2 point
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	Not 1 2 3 4 5 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Specific Connections with another his scoring 4 points or more	for at lease. None (ast half of the	e hedgerows 10-30% 2 points) or v	lengt >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to	Not 1 2 3 4 5 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another has been dependent or more has been dependent or more with a special connection or more has been dependent or work another has been dependent or more has been dependent or work another has been dependent or more has been dependent or work another has been dependent or work and the special connections with another has been dependent or work and the special connections with another has been dependent or work and the special connection or work and the special connecti	None (ast half of the	e hedgerows	lengt >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	Not 1 2 3 4 5 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Specific Connections with another his scoring 4 points or more	for at lease. None (ast half of the	e hedgerows 10-30% 2 points) or v	lengt >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	Not 1 2 3 4 5 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another has been dependent or more has been dependent or more with a second or more has been dependent or more with another has been dependent or more has be	for at lease. None (ast half of the	e hedgerows 10-30% 2 points) or v	lengt >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	Not 1 2 3 4 5 5 6	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another rescoring 4 points or more Hedgerow connections Note:	None (None (Cies (1 p	oint), pond (e hedgerows 10-30% 2 points) or v Less that	lengt >30 woodland (2	2 point
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	Not 1 2 3 4 5 6 6 5	able features Bank or Wall Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another had be sooned a points or more Hedgerow connections Note: Parallel hedge within 15m	None (None (Cies (1 p	oint), pond (e hedgerows 10-30% 2 points) or v Less that	lengt >30 woodland (2	2 point

Ref: 76	Date	22/06/2016	Surveyors MP
		and Landscape criteria of the Hedgerow , is the hedgerow considered to be	O Yes O Likely No
Hedgerow category		Note:	
O 1 - Intact manag	ed hedgerow	Clipped hedgerow with trees	
O 2 - Managed 'gap	_	Hedge height Hedge	width Hedge length (m):
O 3 - Unmanaged '	leggy' hedgerow	Trouge rioignt Trouge	Width Friedge length (m).
O 4 - Hedgebank w	rith occasional shrubs	O 0-1m)-1m
● 5 - Managed hed	gerow with mature tree		
O 6 - Treeline		O 2-4m	
7 - New / reinstat	ed hedgerow	O >4m	-4m
8 - Fenceline			
Voody species			
Dak Birch Rowan	Sycamore Alder	Ash Beech Hawthorn Hazel Blackth	norn Elder Willow Rose Holly
Other: Sorbus aria		Composition: Hawthorn dominated with	h Oak trees
lumber of woody spec	cies per 30m sample lei	ngth	
7 or more	O 5	O Less than 4	
Is the state of th	the hedge adjacent to a bridalway, stpath or byway to raffic and contains notable features?	2 Ditch ☑ for at le 3 Less than 10% gaps ○ None 0 4 Standard tree / 50m ☑ 5 At least 3 Woodland Species 6 Connections with another hedge (1) scoring 4 points or more Hedgerow connections	and & pond No
	oped hedgerow with tre Willowherb, Bramble a	es of Oak and occasional Elder and Dogro nd False Oat-grass.	ose. Ground cover included Couch,

Ref: 77	Date	22/06/2016	Surveyors	MP
		d Landscape criteria of the Hed the hedgerow considered to be		C Likely No
ledgerow category		Note:		
1 - Intact managed he	edgerow	Unmanaged roadside he beside scrub and young		
O 2 - Managed 'gappy' h	edgerow	Hedge height	Hedge width	Hedge length (m):
O 3 - Unmanaged 'leggy'	hedgerow			280
O 4 - Hedgebank with oc	casional shrubs	O 0-1m	O 0-1m	,
O 5 - Managed hedgerov	v with mature trees	O 1-2m	① 1-2m	
O 6 - Treeline		⊚ 2-4m	O 2-4m	
7 - New / reinstated he	edgerow	O >4m	O >4m	
O 8 - Fenceline		,		
oody species				
ak Birch Rowan Syc	camore Alder Ash	Beech Hawthorn Hazel I	Blackthorn Elder	Willow Rose Holly
ther:	Co	omposition: Hawthorn domina	ted	
umber of woody species p				
Are 3 notable features present? Are 4 no featur prese	table res 4		for at least half of thone 1-10%	e hedgerows length ne hedgerows lengt 10-30%
to a k footpath — all traffic	dge adjacent oridalway, 6 or byway to and contains	scoring 4 points or more	dge (1 point), pond	(2 points) or woodland (2 points)
2 notab	ole features?	Hedgerow connections Note:	2 4 of filore	Less than 4
	7	Parallel hedge within 15m	Yes	O No
O Yes	No 8	1-		_
ortant		Not known	en recorded ?	
lgerow		1		
		crub covered embankment to the ws are almost entirely dominate		

	Vildlife and Landscape criteria of the Hedgerow s 1997, is the hedgerow considered to be
ledgerow category	Note:
O 1 - Intact managed hedgerow	Clipped hedgerow with ditch
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	132
O 4 - Hedgebank with occasional shru	ubs O 0-1m
● 5 - Managed hedgerow with mature	
O 6 - Treeline	O 2-4m
7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
•	der Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other:	Composition: Hawthorn dominated
lumber of woody species per 30m samp	ple length
O 7 or more	4
	Notable features
Are 3 notable	1 Bank ☑ or Wall ☐ for at least half of the hedgerows length
features	<u> </u>
present?	
Are 4 notable	3 Less than 10% gaps
features —— present?	4 Standard tree / 50m
	5 At least 3 Woodland Species
Is the hedge adjacen	n t
to a bridalway, footpath or byway to	 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) scoring 4 points or more
all traffic and contain notable features?	
	Note:
	7 Parallel hedge within 15m O Yes No
() Yes	8 Have protected species been recorded?
O Yes	
O Yes No Portant dgerow	Not known

	Date	22/06/2016	Surveyors	MP
	ations 1997, is	d Landscape criteria of the Hedg the hedgerow considered to be	erow O Yes	s O Likely No
Hedgerow category		Note:		
O 1 - Intact managed hedgerov	W	Ditch and scrub cover whi outgrown hedgerow	ch may have orig	inated from a defunct
O 2 - Managed 'gappy' hedgero)W	Hedge height H	edge width	Hedge length (m):
O 3 - Unmanaged 'leggy' hedge	erow	O 0.1m	O 0-1m	
O 4 - Hedgebank with occasion	al shrubs	○ 0-1m ○ 1-2m	O 1-2m	·
O 5 - Managed hedgerow with r	mature trees	O 2-4m	O 2-4m	
⑥ 6 - Treeline		● >4m	_	
7 - New / reinstated hedgerov	N	2411	● >4m	
O 8 - Fenceline				
Woody species				
Oak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel B	lackthorn Elder	Willow Rose Holly
Other: Whitebeam	Co	omposition:		
		<u> </u>		
lumber of woody species per 30m	sample length			
○ 7 or more ○ 6 ○ 5	O 4 O I	_ess than 4		
Are 3 notable features present?	1 2	_		ne hedgerows length
Are 4 notable features present?	3 4 5	Less than 10% gaps O No Standard tree / 50m At least 3 Woodland Species		(a) 10-30% (b) >30
features — present? Is the hedge action a bridalwice footpath or by	djacent vay, 6 way to	Standard tree / 50m		
features — present? Is the hedge action a bridalw	djacent vay, 6 way to ontains	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more		
features — present? Is the hedge actor a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more	ge (1 point), pond	l (2 points) or woodland (2
features — present? Is the hedge actor a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more Hedgerow connections Note:	ge (1 point), pond	(2 points) or woodland (2
features — present? Is the hedge actor a bridalw footpath or by — all traffic and contable feat	djacent vay, 6 way to ontains tures?	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	ge (1 point), pond	l (2 points) or woodland (2
features — present? Is the hedge actor a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains tures?	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	ge (1 point), pond) 4 or more	(2 points) or woodland (2
features — present? Is the hedge actor a bridalw footpath or by — all traffic and core 2 notable feat	djacent vay, 6 way to ontains tures?	Standard tree / 50m At least 3 Woodland Species Connections with another hed scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	ge (1 point), pond) 4 or more	(2 points) or woodland (2

					Surveyors	MP		
			andscape criteria of the hedgerow considered to		O Yes	O Likely	● No	
Hedgerow category			Note:					
O 1 - Intact managed	d hedgerow		Clipped hedgerow wi	th occasi	ional standard	Oak trees		
O 2 - Managed 'gappy	-		Hedge height	Heda	e width	Hedge I	length (m):	
O 3 - Unmanaged 'leg	ggy' hedgerow			rioug		rieage		262
O 4 - Hedgebank with	occasional shrubs		O 0-1m		0-1m	-		
	erow with mature tre	es	● 1-2m ○ 2-4m		1-2m 2-4m			
O 6 - Treeline			O >4m		>4m			
7 - New / reinstated	d hedgerow		<u> </u>					
O 0 - 1 elicellile								
Voody species								
Dak Birch Rowan →	Sycamore Alder	Ash	Beech Hawthorn Haz	zel Black 1 r	thorn Elder		se Holly	
Other:		_	position: Hawthorn dor					
outer.		Com	position. Trawthorn doi	illialeu				
lumber of woody specie	s per 30m sample le	ength						
7 or more 6	O 5 O 4	Les	ss than 4					
fea	notable atures esent?	1 E 2 C 3 L 4 S	Ditch 🔲	for at	least half of th	ne hedgerows	lengt]
notable features present? Are 4 features Is the to footp	atures	1 E 2 C 3 L 4 S 5 A 6 C	or Wall ☐ Ditch ☐ Less than 10% gaps ☐ Standard tree / 50m ☐	for at None	least half of th	ne hedgerows	s lengt	poin
notable features present? Are 4 fea pre ls the to footp — all trai	atures esent? hedge adjacent a bridalway, path or byway to	1 E 2 C 3 L 4 S 5 A 6 C S	or Wall Ditch Ditch Dess than 10% gaps Grandard tree / 50m Date least 3 Woodland Science Connections with another	None None hecies	least half of th	ne hedgerows	s lengt >30 woodland (2	poin
notable features present? Are 4 fea present Is the to footp all train	atures esent? hedge adjacent a bridalway, bath or byway to ffic and contains	1 E 2 C 3 L 4 S 5 A 6 C S	or Wall Ditch Description and the coring 4 points or Wall Description or Wall Ditch	None None hecies	least half of th	10-30%	s lengt >30 woodland (2	poin
notable features present? Are 4 fea pres Is the to footp all train 2 no	e hedge adjacent a bridalway, bath or byway to ffic and contains otable features?	1 E 2 C 3 L 4 S 5 A 6 C 8	Ditch Duess than 10% gaps Candard tree / 50m Duest 3 Woodland Screening 4 points or more dedgerow connections	None None hecies A 4	least half of the order of the order of the order of the order ord	10-30%	s lengt >30 woodland (2	poin
notable features present? Are 4 fea present Is the to footp all train	atures esent? hedge adjacent a bridalway, bath or byway to ffic and contains	1 E 2 C 3 L 4 S 5 A 6 C 8	Bank or Wall Ditch Ditch Dess than 10% gaps Grandard tree / 50m Description of the second of the sec	None None hedge (least half of the O 1-10% 1 point), pond or more	10-30% (2 points) or v	s lengt >30 woodland (2	poin

	, i	22/06/2016 Surveyors MP
		and Landscape criteria of the Hedgerow s the hedgerow considered to be
edgerow category		Note:
O 1 - Intact managed he	edgerow	Ditch and scrub cover which may have originated from a defunct outgrown hedgerow
O 2 - Managed 'gappy' h	nedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy	y' hedgerow	171
O 4 - Hedgebank with oc	ccasional shrubs	O 0-1m O 1-2m
5 - Managed hedgerov	w with mature trees	O 1-2111 O 2-4m
6 - Treeline		● >4m
7 - New / reinstated he	edgerow	24111
8 - Fenceline		
Voody species		
Dak Birch Rowan Syd The Day of the Company of the	camore Alder As	sh Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Hawthorn, Oak and Goat Willow dominated
lumber of woody species p	per 30m sample lengt	th
7 or more 6 (O 5 O 4 •	Less than 4
Are 3 notable		1 Bank or Wall for at least half of the hedgerows length
features present? Are 4 no feature prese Is the he to a l footpate — all traffic	otable res ant?	for at least half of the hedgerows lengt Less than 10% gaps
features present? Are 4 no feature prese Is the he to a l footpate — all traffic 2 notal	edge adjacent bridalway, h or byway to c and contains ble features?	Standard tree / 50m At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections A to more O 4 or more Less than 4
features present? Are 4 no feature — prese Is the he to a l footpate — all traffic	edge adjacent bridalway, h or byway to c and contains ble features?	Standard tree / 50m At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more Hedgerow connections Note:

Ref: 82	Date	22/06/2016	Surveyors	MP	
		Landscape criteria of the Henne hedgerow considered to be		res O Likely	
Hedgerow category		Note:			
1 - Intact managed h	edgerow	Hawthorn dominated cli	pped hedgerow		
O 2 - Managed 'gappy' h	nedgerow	⊩ Hedge height	Hedge width	Hedge length (m	1):
O 3 - Unmanaged 'leggy	' hedgerow				261
O 4 - Hedgebank with o	ccasional shrubs	O 0-1m	O 0-1m	1	20.
O 5 - Managed hedgero	w with mature trees	● 1-2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
O 7 - New / reinstated h	edgerow	O >4m	O >4m		
O 8 - Fenceline		'			
Voody species					
Dak Birch Rowan Sy	camore Alder Ash	Beech Hawthorn Hazel	Blackthorn Elde	er Willow Rose Holly	/
Other: Honeysuckle	Со	mposition: Hawthorn domin	ated		
lumber of woody species p	ner 30m sample length	J			
7 or more 6 () 5	ess than 4			
Are 3	No	table features			
notable features	1	Bank or Wall	for at least half of	the hedgerows length	
present?	2	Ditch	for at least half o	f the hedgerows lengt	
Are 4 no	otable 3	Less than 10% gaps	None () 1-10%	5 0 10-30% 0 >30	
featu	res 4	Standard tree / 50m			
— prese	5	At least 3 Woodland Speci	1		
		Woodland Speci	AS		
	edge adjacent bridalway, 6	Connections with another he	edae (1 point), po	nd (2 points) or woodland	d (2 poin
footpat	h or byway to	scoring 4 points or more	3 (· F =,, po		(-
	c and contains ble features?	Hedgerow connections	O 4 or more	Less than 4	
		Note:			
	I -	Parallal hadge within 15m	O Yes	(a) No	
O Yes	7	Parallel hedge within 15m		● No	
	8	Have protected species be	en recorded?		
portantdgerow		INOU KHOWII			
29010W					
arget notes Clipped hedge	erow dominated by Haw	rthorn.			
Photo1	Photo2	Photo3	Photo	4	
				r .	

Ref: 83	Date	22/06/2016	Survey	ors MP	
Regu		Landscape criteria of the He e hedgerow considered to b		Yes O Likely O No	
ledgerow category		Note:			
O 1 - Intact managed hedgero	ow	Clipped roadside hedge	e with Oak tree		_
O 2 - Managed 'gappy' hedger	row	l Hedge height	Hedge width	Hedge length (m)):
O 3 - Unmanaged 'leggy' hedg	erow	Trouge Holgh	Trougo Main		167
O 4 - Hedgebank with occasio	nal shrubs	O-1m	O 0-1m	1	101
	mature trees	1 -2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
7 - New / reinstated hedger	DW W	O >4m	O >4m		
O 8 - Fenceline					
Voody species					
oak Birch Rowan Sycamor	e Alder Ash	Beech Hawthorn Hazel	Blackthorn E	lder Willow Rose Holly	
ther: Cherry, Honeysuckle	Con	nposition:			_
lumber of woody species per 30r	n sample length				
7 or more 6 6 5	O 4 O Le	ess than 4			
	Not	able features			
Are 3 notable	1	Bank 🗹 or Wall 🗌	for at least half	of the hedgerows length	
features present?	2	Ditch	for at least half	f of the hedgerows lengt	
	3	Less than 10% gaps	None () 1-10		
Are 4 notable features			None O 1-10	7/0 0 10-30/0 0 230	
present?		· ·			
	5	At least 3 Woodland Spec	ries		
Is the hedge a	l adjacent				
to a bridal footpath or b	way, 6	Connections with another h scoring 4 points or more	edge (1 point), p	oond (2 points) or woodland	(2 point
— all traffic and	contains	Hedgerow connections	O 4 or more	Less than 4	
2 notable fea	atures ?	-	- or more	Cess tildii 4	
		Note:			
	7	Parallel hedge within 15m	Yes	O No	
● Yes O	No 8	Have protected species b	een recorded?		
ortant		Not known			
oortant dgerow		1			
rget notes Clipped roadside he	daerow with rank	ground cover			
angot notes Tompou roduside ne	-9010W WIGHT CHIR	g. 53114 55701.			
Photo1 DSCN8855	Photo2	Photo3	Pho	to4	

			Surveyors		
F		nd Landscape criteria of the Hedge the hedgerow considered to be	O Yes	C Likely No	Ī
edgerow category		Note:			
1 - Intact managed hed	dgerow	Clipped hedgerow beside q young trees and one mature		d with occasional	
O 2 - Managed 'gappy' hee	dgerow	Hedge height He	dge width	Hedge length (m):	
O 3 - Unmanaged 'leggy' h	hedgerow	Trougo noight		riougo iong.ii (iii).	250
O 4 - Hedgebank with occ	asional shrubs	O 0-1m	O-1m	1	200
O 5 - Managed hedgerow	with mature trees		● 1-2m		
O 6 - Treeline			2-4m		
O 7 - New / reinstated hed	dgerow	O >4m) >4m		
O 8 - Fenceline					
Voody species					
oak Birch Rowan Syca	amore Alder As	h Beech Hawthorn Hazel Bla	ackthorn Elder	Willow Rose Holly	
ther: Cherry, Norway Maple	e, Honeysuck	Composition:			_
umber of woody species per	r som sample lengu				
7 or more 6 0	5	Less than 4			
A landar and the same and the s					
Are 3 notable features present? Are 4 nota feature presen	able st? 4	Ditch	at least half of the	hedgerows length hedgerows lengt 10-30% >30	
notable features present? Are 4 nota feature	able as a	Bank or Wall for a for Standard tree / 50m	at least half of the	e hedgerows lengt	
notable features present? Are 4 nota feature present Is the hed to a br footpath o	able st? 4	Bank or Wall for a Ditch for Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more	at least half of the	e hedgerows lengt 10-30% >30	(2 poin
notable features present? Are 4 nota feature present Is the hed to a br footpath o	able ss 4 t? 5 dge adjacent ridalway, 6 or byway to and contains	Bank or Wall for a Ditch for Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more	at least half of the	e hedgerows lengt 10-30% >30 2 points) or woodland	(2 poin
notable features present? Are 4 nota feature present Is the hed to a br footpath o	able ss t? dge adjacent ridalway, or byway to and contains e features?	Bank or Wall for a Ditch for Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections Note:	at least half of the O 1-10% (a) the O 1-10% (b) the O 1-10% (c) the O 1-10% (e hedgerows lengt 10-30%	(2 poin
notable features present? Are 4 nota feature present Is the hed to a br footpath all traffic a 2 notable	able es 4 t? 5 dge adjacent ridalway, 6 or byway to and contains e features?	Bank or Wall for a for Bank or Wall for a for Bank or Wall for Bank or Wal	at least half of the e	e hedgerows lengt 10-30% >30 2 points) or woodland	(2 poin
notable features present? Are 4 nota feature present Is the hed to a br footpath all traffic a 2 notable	able es 4 t? 5 dge adjacent ridalway, 6 or byway to and contains e features?	Bank or Wall for a Ditch for Less than 10% gaps None Standard tree / 50m At least 3 Woodland Species Connections with another hedge scoring 4 points or more Hedgerow connections Note:	at least half of the e	e hedgerows lengt 10-30%	(2 poin

Ref: 85	Date	22/06/2016	Surveyors	MP	
	ns 1997, is	nd Landscape criteria of the Hedg the hedgerow considered to be	O Ye	s O Likely (No	Ī
Hedgerow category		Note:			
1 - Intact managed hedgerow		Partly clipped Hedge with	young trees and	ditch	
2 - Managed 'gappy' hedgerow		Hodge beight	ladga width	Hodgo longth (m)	
3 - Unmanaged 'leggy' hedgerow		Hedge height F	ledge width	Hedge length (m):	145
O 4 - Hedgebank with occasional sh	nrubs	O 0-1m	O 0-1m		145
O 5 - Managed hedgerow with matu	ire trees	● 1-2m	● 1-2m		
O 6 - Treeline		O 2-4m	O 2-4m		
7 - New / reinstated hedgerow		O >4m	O >4m		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan Sycamore <i>A</i>	Alder As	h Beech Hawthorn Hazel E	Blackthorn Elder	Willow Rose Holly	
Other:		Composition:			_
lumber of woody species per 30m san	nple lengt	1			
○ 7 or more ○ 6 ○ 5 ○	4 0	Less than 4			
	١	lotable features			
Are 3 notable	1	Bank 🗹 or Wall 🗌 fo	r at least half of t	he hedgerows length	
features present?	2	! Ditch ☑ fo	or at least half of	the hedgerows lengt	
	3	400/			7
Are 4 notable features		<u> </u>	one 0 1-10%	O 10-30% O >30	
present?	4	\L			
	5	Mondland Species			
Is the hedge adjace					
to a bridalway, footpath or byway	to 6	 Connections with another hed scoring 4 points or more 	ge (1 point), pond	d (2 points) or woodland ((2 point
all traffic and conta	ins	Hedgerow connections) 4 or more	Less than 4	
2 Hotable leature.		Note:			_
		Note.			
	_	7 Parallel hedge within 15m) Yes	No No	
O Yes O No		⁸ Have protected species bee	n recorded?		
portant		Not known			
dgerow		ļ			
arget notes Partly clipped hedgerow v	with young	trees and rank ground cover			
	,	· ·			
Photos	Dhati o F		Divis		
Photo1	Photo2	Photo3	Photo4		

Ref: 86	Dat	е	22/06/2016		Surveyors	MP		
	Using the Wildl Regulations 19 'important'?				W Yes	O Likely	O No	
ledgerow categor	ту	Not	e:					
(a) 1 - Intact ma	anaged hedgerow	Foi	mer trackside	hedgerow w	ith scrub infill b	etween para	illel hedges	
	l 'gappy' hedgerow	Hed	dge height	Hedo	ge width	Hedae	length (m):	
O 3 - Unmanaç	ged 'leggy' hedgerow			Ţ				86
O 4 - Hedgeba	nk with occasional shrubs		0-1m		0-1m	,		
O 5 - Managed	I hedgerow with mature tre	es) 1-2m		1-2m			
O 6 - Treeline			2-4m		2-4m			
7 - New / rei	nstated hedgerow) >4m		>4m			
8 - Fenceline	Э							
Voody species								
oak Birch Ro	wan Sycamore Alder	Ash Beech	Hawthorn	Hazel Black	kthorn Elder	Willow Ro	se Holly	
			$\overline{\mathbf{V}}$					
Other: Honeysuc	kle,	Compositio	n: Hawthorn	dominated				
umber of woody	species per 30m sample l	ength	,					
7 or more	6 0 5 0 4		4					
Are nota featu press	able ures	 3 Less th 4 Standa 5 At least 6 Connect scoring Hedger 7 Parallel 	or Wall an 10% gaps rd tree / 50m 3 Woodland ctions with ano 4 points or mo ow connection Not hedge within	for at None Snecies other hedge (ore as 4 15m Yell Y	1 point), pond (or more	e hedgerows	>30 >woodland (2	2 points
dgerow	ner trackside hedgerow wi	the court infill be						0.4

Ref: 87	Date	22/06/2016	Surveyo	ors MP	
	ns 1997, is t	Landscape criteria of the Hed he hedgerow considered to be	gerow	Yes O Likely (a) N	0
Hedgerow category		Note:			
O 1 - Intact managed hedgerow		Tall leggy hedgerow besi	de domestic pı	operty	
O 2 - Managed 'gappy' hedgerow		⊩ Hedge height I	Hedge width	Hedge length	(m):
	v				86
O 4 - Hedgebank with occasional s	hrubs	O 0-1m	O-1m	,	
O 5 - Managed hedgerow with mat	ure trees	O 1-2m	O 1-2m		
O 6 - Treeline		● 2-4m	② 2-4m		
O 7 - New / reinstated hedgerow		O >4m	O >4m		
O 8 - Fenceline		'			
Voody species					
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel I	Blackthorn El	der Willow Rose Ho	olly
Other: Apple, Damson	Co	mposition: Hawthorn domina	ted		
l h					
lumber of woody species per 30m sa	mpie iengin				
○ 7 or more ○ 6 ○ 5) 4 O L	ess than 4			
Are 3 notable features present? Are 4 notable features	No 1 2 3 4	_	or at least half	of the hedgerows length of the hedgerows lengt %	
present?			-		
	5	At least 3 Woodland Specie	2		
Is the hedge adjac to a bridalway footpath or byway	, 6 y to	Connections with another hed scoring 4 points or more	dge (1 point), p	ond (2 points) or woodla	and (2 points
all traffic and cont 2 notable feature		Hedgerow connections (A or more	Less than 4	
		Note:			
		Note.			
0.4	7	Parallel hedge within 15m) Yes	● No	
O Yes O No	8	Have protected species bee	en recorded?		
portantdgerow		Not known			
		•			
arget notes Hawthorn dominated her	dgerow with	a rank ground flora beside a do	mestic propert	у	
Photo1 DSCN8857	Photo2	Photo3	Phot	04	

Regulations 19 'important'?		22/06/2016	Surve	eyors	MP	
Hedgerow category		Landscape criteria of the Hed e hedgerow considered to be) Yes	O Likely	No No
Hedgerow category		Note:				
1 - Intact managed hedgerow		Hedgerow adjoing garder	n of domesti	ic proper	ty	
O 2 - Managed 'gappy' hedgerow		∥ Hedge height I	Hedge width	1	Hedae I	ength (m):
O 3 - Unmanaged 'leggy' hedgerow					T T T T T T T T T T T T T T T T T T T	10
O 4 - Hedgebank with occasional shrub	s	O 0-1m	O-1m		,	
O 5 - Managed hedgerow with mature to	rees	● 1-2m	① 1-2m			
O 6 - Treeline		O 2-4m	O 2-4m			
7 - New / reinstated hedgerow		O >4m	O >4m			
O 8 - Fenceline						
Woody species						
Oak Birch Rowan Sycamore Alde	r Ash	Beech Hawthorn Hazel E	Blackthorn	Elder	Willow Ro	se Holly
Other: Sycamore, Damson	Cor	mposition: Hawthorn domina	ted			
Number of woody species per 30m sample	length					
		1				
○ 7 or more ○ 6 ○ 5 ● 4	O Le	ess than 4				
Are 3	Not	able features				
notable features	1	Bank 🗹 or Wall 🗌 fo	or at least ha	alf of the	hedgerows	length
present?	2	Ditch ✓ f	for at least h	alf of the	hedgerows	lengt
Are 4 notable	3	Less than 10% gaps No	one O 1-	-10% () 10-30%	O >30
features — present?	4	Standard tree / 50m				
present:	5	At least 3 Woodland Specie	, ji			
		Woodland Specie	25			
Is the hedge adjacent to a bridalway,	6	Connections with another hed	u dge (1 point)), pond (2	2 points) or v	woodland (2 p
footpath or byway to all traffic and contains		scoring 4 points or more				
2 notable features?		Hedgerow connections	4 or more	е	Less that	an 4
		Note:				
	7	Parallel hedge within 15m) Yes		No	
	8				<u> </u>	
O Yes No	Ŭ	Have protected species bee	en recorded	?		
O Yes No						
nportant		+				
nportant		1				
mportantedgerow	mestic pr	1				
mportant	nestic pr	1				
mportant	mestic pr	1				

ef: 89	Date	22/06/2016	Su	ırveyors	MP		
	ns 1997, is t	Landscape criteria of the He he hedgerow considered to b		O Yes	O Likely	No No	
edgerow category		Note:					
1 - Intact managed hedgerow		Unmanaged and leggy	trackside h	edgerow			
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge wi	dth	Hedae I	length (m):	
3 - Unmanaged 'leggy' hedgerow	v						58
O 4 - Hedgebank with occasional s	shrubs	O 0-1m	0 0-1		,		
5 - Managed hedgerow with mat	ture trees	○ 1-2m ○ 2-4m	① 1-2t				
6 - Treeline		● >4m	O >4n				
7 - New / reinstated hedgerow		974111		<u> </u>			
8 - Fenceline							
oody species							
•	Alder Ash		Blackthor			se Holly	
				✓			_
her: Lime (T x europaeus)	Со	mposition:					
mber of woody species per 30m sa	mple length	,					
7 or more) 4 O L	ess than 4					
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacto a bridalway, footpath or byway all traffic and cont 2 notable features	1 2 3 4 5 cent 6 y to cains	Bank or Wall Ditch Ditch Standard tree / 50m At least 3 Woodland Special Connections with another hescoring 4 points or more	for at leas	t half of th	e hedgerows	>30 >30 woodland (2	2 point
		Note:					-
					0		
	7	Parallel hedge within 15m	O Yes		● No		
O Yes		Harris marke skeal ama strack.	en recorde	ed?			
O Yes No	8	Have protected species be					
ortant	8	Not known					
ortant							

footpath or byway to —all traffic and contains 2 notable features? Hedgerow connections Note: 7 Parallel hedge within 15m O Yes No No Note: N	Ref: 90	Date	22/06/2016	Surveyors MP
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'gappy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Number of woody species per 30m sample length O 7 or more O 6 ○ 5 ○ 4 ● Less than 4 Notable features present? Are 3 notable features present? Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or Are at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or Are at least half of the hedgerows length Composition: Are 3 notable features 1 Bank or Wall or Are at least half of the hedgerows length Composition: Are 3 notable features 1 Bank or Wall or Are at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or Are at least half of the hedgerows length Composition: Are 4 notable features 1 Bank or Wall or Are at least half of the hedgerows lengt		Regulations 1997, is		O Yes O Likely ● No
O 1- Intact managed hedgerow O 2- Managed 'gappy' hedgerow O 3- Unmanaged 'gappy' hedgerow O 4- Hedgebank with occasional shrubs O 5- Managed hedgerow with mature trees O 6- Treeline O 7- New / reinstated hedgerow O 8- Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Number of woody species per 30m sample length O 7 or more O 6 O 5 O 4	Hedgerow category		Note:	
O 3 - Unmanaged 'leggy' hedgerow 0 4 - Hedgebank with occasional shrubs 0 5 - Managed hedgerow with mature trees 0 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	O 1 - Intact managed	hedgerow	Unmanaged gappy hedgerow v	vith mature (veteran) Oaks
3 - Unmanaged Teggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	O 2 - Managed 'gappy	' hedgerow	Hedge height Hedge	width Hedge length (m):
3 - Hedgebark with accessional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species	O 3 - Unmanaged 'lege	gy' hedgerow		7
© 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Composition: Itumber of woody species per 30m sample length 7 or more ○ 6 ○ 5 ○ 4 ● Less than 4 Notable features notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? Notable features 7 Parallel hedge within 15m ○ Yes ● No 8 Have protected species been recorded? Not known	O 4 - Hedgebank with	occasional shrubs)-1m
7 - New / reinstated hedgerow 8 - Fenceline Noody species bak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	O 5 - Managed hedger	row with mature trees		
Notable features Present? Standard tree / 50m Standard tre				
Are 4 notable features present? Standard tree / 50m Standard Species	_	hedgerow		
Ask Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	υ δ - Fenceline			
Other: Composition: Composit	loody species			
Are 4 notable features present? Standard tree / 50m Standard		Sycamore Alder As		
umber of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall or at least half of the hedgerows length features present? Are 4 notable features 2 Ditch or at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10%				
Notable features Are 3 notable features present? Are 4 notable features A Standard tree / 50m A Unordland Species A t least 3 Woodland Species A t least 3 Woodland Species A or wall for at least half of the hedgerows lengt A t least 3 Woodland Species A t least 3 Woodland Species A t least 3 Woodland Species A or wall for at least half of the hedgerows lengt A t least 3 Woodland Species A or wore A or more	ther:	(Composition:	
Notable features 1 Bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 2 bitch or Wall for at least half of the hedgerows length 3 bank or Wall for at least half of the hedgerows length 4 bank or Wall for at least half of the hedgerows length 5 bank or Wall for at least half of the hedgerows length 6 bank or Wall for at least half of the hedgerows length 7 bank or Wall for at least half of the hedgerows length 8 bank or Wall for at least half of the hedgerows length 9 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 1 bank or Wall for at least half of the hedgerows length 2 bank or Wall for at least half of the hedgerows length 3 bank or Wall for at least half of the hedgerows length 3 bank or Wall for at least half of the hedgerows length 4 bank or Wall for at least half of the hedgerows length 4 bank or Wall for at least half of the hedgerow length 5 bank or Wall for at least half of the hedgerow length 6 connections or Wall or Wall for at least half of the hedgerow length	umber of woody species	per 30m sample lengtl	n	
Are 3 notable features present? Are 4 notable features present? At least 3 None 1-10% 10-30% >30 At least 3 None 1-10% 10-30% >30 Connections with another hedge (1 point), pond (2 points) or woodland (2 points or more hedge (1 point), pond (2 points) or woodland (2 points or more hedge (1 point), pond (2 points) or woodland (2 points) or woodland (3 points) or more hedge (1 point), pond (2 points) or woodland (3 points) or more hedge (1 point), pond (2 points) or woodland (3 points) or more hedgerow connections Note:	○ 7 or more ○ 6	O 5 O 4 O	Less than 4	
portant	notable features present? Are 4 feat present Is the to a footpa all traff 2 not	notable tures sent? hedge adjacent a bridalway, ath or byway to fic and contains table features?	Bank or Wall of or at leter for	east half of the hedgerows lengt 1-10% 10-30% >30 point), pond (2 points) or woodland (2 points) more Less than 4
edgerow			ng old Oaks on a grassy bank surround	ded by localised flooding caused by

Ref: 91	Date		22/06/2016			Surveyors	MP		
	Using the Wildlif Regulations 199 'important'?					O Yes	s O Likel	y () No	Ī
Hedgerow category		١	lote:						
O 1 - Intact managed	hedgerow	l	Jnmanaged hed	lge with	mature	e (veteran) C	aks		
O 2 - Managed 'gappy'	-		ledge height		Hedge	width	Hoda	o longth (m)	
3 - Unmanaged 'legg			neage neight	_ [пеаде	width	пеад	e length (m)	195
O 4 - Hedgebank with	occasional shrubs		O-1m		0)-1m			195
O 5 - Managed hedger	ow with mature tree	es	O 1-2m		01	I-2m			
● 6 - Treeline			O 2-4m		② 2	2-4m			
O 7 - New / reinstated	hedgerow		> 4m		0 >	>4m			
O 8 - Fenceline				_ '					
Voody species									
oak Birch Rowan S	Sycamore Alder	Ash Bee	ch Hawthorn	Hazel	Blackt	horn Elder	Willow F	Rose Holly	
								$ \mathbf{\nabla} \mathbf{\nabla} $	
Other: Honeysuckle		Composi	tion: Oak treel	ine with	unders	storey of unr	nanaged sh	ubs	_
Lumbar of woody aposica	nor 20m comple le	n ath							
lumber of woody species		ngui							
7 or more 6	O 5 • 4	O Less th	an 4						
feat — pres Is the to a footpa — all traff	notable tures sent? hedge adjacent a bridalway, ath or byway to fic and contains table features?	2 Ditch 3 Less 4 Stand 5 At les 6 Conr scori Hedg 7 Para 8 Han	than 10% gaps dard tree / 50m ast 3 Woodland dections with and ng 4 points or m derow connection No dilel hedge within we protected spe	O N Id Specie oother herore ns (a) 15m (b) 15m	one dge (1	point), ponc	he hedgerow he hedgerow 10-30% (2 points) c Less t	vs lengt >30 r woodland	(2 points)
l I nportant		No	t known						
dgerow		7							
	I hedge with mature tle and opportunisti) with un	dersto	rey of unma	naged shrub	s and grour	nd

		22/06/2016	Sur	veyors	MP		
	ns 1997, is th	Landscape criteria of the ne hedgerow considered t		Yes	O Likely	O No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerow		Partly managed hed	ge with mature	Oaks			
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge widt	·h	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerov	v	Tiedge Height	r leage wide		riedge i		130
O 4 - Hedgebank with occasional s	shrubs	O-1m	O 0-1m		-		100
O 5 - Managed hedgerow with mat	ure trees	O 1-2m	O 1-2m				
		O 2-4m	② 2-4m				
7 - New / reinstated hedgerow		● >4m	O >4m				
O 8 - Fenceline							
Voody species							
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Ha	zel Blackthorn	Elder	Willow Ro	se Holly	
				\checkmark			
Other: Honeysuckle	Со	mposition: Mature Oaks	with mixed und	lerstorey			
lumber of woody species per 30m sa	mple length						
		ess than 4					
Are 3		table features	7.				
notable features	1	_	for at least l		-	-	
present?	2	Ditch 🔽	for at least	half of the	hedgerows	lengt	-
Are 4 notable	3	Less than 10% gaps	None	1-10%	10-30%	O >30	
features — present?	4	Standard tree / 50m	Z 🗆				
	5	At least 3 Woodland St	1				
	ŭ	Woodland Sr	necies				
is the hedge adjace		Woodland St	necies				
Is the hedge adjactor a bridalway	cent , 6	Connections with anothe		t), pond (2	2 points) or v	woodland (2	2 points
to a bridalway footpath or bywa — all traffic and cont	cent , 6 y to ains	Connections with anothe scoring 4 points or more	r hedge (1 poin				2 points
to a bridalway footpath or bywa	cent , 6 y to ains	Connections with anothe scoring 4 points or more Hedgerow connections			2 points) or v		? points
to a bridalway footpath or bywa — all traffic and cont	cent , 6 y to ains	Connections with anothe scoring 4 points or more	r hedge (1 poin				? points
to a bridalway footpath or bywa — all traffic and cont 2 notable feature	cent , 6 y to ains	Connections with anothe scoring 4 points or more Hedgerow connections	r hedge (1 poin				2 points
to a bridalway footpath or bywa — all traffic and cont	cent , 6 y to ains es?	Connections with anothe scoring 4 points or more Hedgerow connections Note:	r hedge (1 point) O 4 or mo	re	• Less tha		? points
to a bridalway footpath or bywa — all traffic and cont 2 notable feature	cent , 6 y to ains es?	Connections with anothe scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15r	r hedge (1 point) O 4 or mo	re	• Less tha		2 points

		22/06/2016		Surveyors	MP	
		e and Landscape criteria of the hedgerow considers.		O Yes	O Likely	N o
Hedgerow category		Note:				
O 1 - Intact managed h	hedgerow	Managed hedg	erow with semi-	mature trees o	of Oak	
O 2 - Managed 'gappy'	-	l Hedge height	Hedge	width	Hedge leng	ath (m)·
O 3 - Unmanaged 'legg	y' hedgerow				Trouge long	244
O 4 - Hedgebank with o	occasional shrubs	O 0-1m)-1m	1	
5 - Managed hedgerd	ow with mature tree	O 1-2m		1-2m 2-4m		
6 - Treeline		O >4m				
7 - New / reinstated h 8 - Fenceline	hedgerow					
O 6 - Pericellile						
oody species						
ak Birch Rowan Sy ☑	ycamore Alder	Ash Beech Hawthorn	Hazel Blackt		Willow Rose	Holly
her:		Composition:				
101.		Composition				
umber of woody species	per 30m sample le	ngth				
7 or more 6	O 5 O 4	Less than 4				
l Are 3 notable		Notable features 1 Bank ☑ or V	Vall ☐ for at le	east half of the	hedgerows len	gth
			None None	O 1-10% (e hedgerows ler) >30
present? Are 4 n featu pres Is the h to a footpa	ures sent? nedge adjacent a bridalway, th or byway to	3 Less than 10% gap 4 Standard tree / 50n	None O 1-10% () 10-30%) >30	
present? Are 4 n featu — pres Is the h to a footpa — all traffi	ures sent? nedge adjacent a bridalway,	 3 Less than 10% gap 4 Standard tree / 50n 5 At least 3 Woodla 6 Connections with a 	None n	O 1-10% () 10-30%	odland (2 point
present? Are 4 n featu — pres Is the h to a footpa — all traffi	nedge adjacent a bridalway, th or byway to ic and contains	3 Less than 10% gap 4 Standard tree / 50n 5 At least 3 Woodla 6 Connections with a scoring 4 points or Hedgerow connect	None n	O 1-10% (2 points) or woo	odland (2 point
present? Are 4 n featu — pres Is the h to a footpa — all traffi	nedge adjacent a bridalway, th or byway to ic and contains	3 Less than 10% gap 4 Standard tree / 50n 5 At least 3 Woodla 6 Connections with a scoring 4 points or Hedgerow connect	nother hedge (1 more ons O 4 o	O 1-10% (point), pond (2 points) or woo	odland (2 point
present? Are 4 n featu — pres Is the h to a footpa — all traffi	nedge adjacent a bridalway, th or byway to ic and contains	3 Less than 10% gap 4 Standard tree / 50n 5 At least 3 Woodla 6 Connections with a scoring 4 points or Hedgerow connect	nother hedge (1 more lons	O 1-10% (point), pond (r more	2 points) or woo	odland (2 point

	Idlife and Landscape criteria of the Hedgerow 1997, is the hedgerow considered to be
edgerow category	Note:
O 1 - Intact managed hedgerow	Clipped roadside hedge
2 - Managed 'gappy' hedgerow	Hodge beight Hodge width Hodge length (m)
3 - Unmanaged 'leggy' hedgerow	Hedge height Hedge width Hedge length (m):
O 4 - Hedgebank with occasional shrub	0.1m
O 6 - Treeline	⊚ 2-4m ○ >4m ○ >4m
7 - New / reinstated hedgerow	O >4m
8 - Fenceline	
/oody species	
ak Birch Rowan Sycamore Alde	
ther:	Composition: Hawthorn dominated roadside hedgerow
umber of woody species per 30m sample	e length
7 or more	Less than 4
	Notable features
Are 3 notable	1 Bank ☐ or Wall ☐ for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
present:	
Are 4 notable features	4. Observational frame (50):
present?	4 Standard tree / 50m
	5 At least 3 Woodland Species
Is the hedge adjacent	t 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
to a bridalway, footpath or byway to	scoring 4 points or more
— all traffic and contains 2 notable features?	Hedgerow connections 4 or more Less than 4
	Note:
	7 Parallel hedge within 15m Yes No
	8 Have protected species been recorded?
O Yes No	riave protected openies been recorded:
O Yes No	Not known

Ref: 95	Date	22/06/2016	Sı	ırveyors	MP		
	ons 1997, is the	andscape criteria of the He e hedgerow considered to b		O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Clipped roadside hedge	erow				
O 2 - Managed 'gappy' hedgerow		⊩ Hedge height	Hedge wi	dth	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerov	W						205
O 4 - Hedgebank with occasional s	shrubs	O 0-1m	0 0-1		-		
O 5 - Managed hedgerow with mat	ture trees	● 1-2m	● 1-2i				
O 6 - Treeline		O 2-4m	O 2-4i				
O 7 - New / reinstated hedgerow		O >4m	O >4n	n			
O 8 - Fenceline							
Voody species							
Oak Birch Rowan Sycamore	Alder Ash		Blackthor			se Holly	
				\checkmark			
ther:	Com	nposition:					
umber of woody species per 30m sa	imple length						
7 or more 6 6 5) 4 () Les	ss than 4					
Are 3		able features					
notable features present? Are 4 notable features — present? Is the hedge adjacto a bridalway footpath or bywa — all traffic and conto	2 3 4 5 6 6 7 7 7 7 7 7 7 7	Ditch	for at leas	t half of th	hedgerows hedgerows 10-30% points) or v Less tha	lengt >30 woodland (2	2 poin
features present? Are 4 notable features present? Is the hedge adjat to a bridalway footpath or bywa all traffic and cont 2 notable feature	2 3 4 5 6 6 6 5 6 6 6 6 6	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Sneed Connections with another he scoring 4 points or more Hedgerow connections	for at leas	t half of the	2 points) or v	lengt >30 woodland (2	2 point
features present? Are 4 notable features present? Is the hedge adjacto a bridalway footpath or bywa all traffic and contents	2 3 4 5 6 6 6 5 6 6 6 6 6	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Sneed Connections with another he scoring 4 points or more Hedgerow connections Note:	for at lease None O edge (1 po 4 or m	int), pond (2 points) or v	lengt >30 woodland (2	2 point
features present? Are 4 notable features present? Is the hedge adjacto a bridalway footpath or bywa all traffic and conto	2 3 4 5 6 6 5 6 6 5 6 6 6	Ditch Less than 10% gaps Standard tree / 50m At least 3 Woodland Snee Connections with another hescoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	for at lease None O edge (1 po 4 or m	int), pond (2 points) or v	lengt >30 woodland (2	2 point

Ref: 96	Date	22/06/2016	Surveyors	MP	
		d Landscape criteria of the Hedge the hedgerow considered to be	o Yes	s O Likely (No	
Hedgerow category		Note:			
O 1 - Intact managed he	daerow	Unmanaged hedgerow loca	ited in hollow be	tween spoil mounds	
O 2 - Managed 'gappy' he	_	Hedge height He	dge width	Hedge length (m)-
3 - Unmanaged 'leggy'	hedgerow		ago widiii	riedge length (m	232
O 4 - Hedgebank with occ	casional shrubs		O-1m	1	
O 5 - Managed hedgerow	with mature trees) 1-2m		
O 6 - Treeline			② 2-4m		
O 7 - New / reinstated her	dgerow	O >4m) >4m		
0 8 - Fenceline					
Voody species					
Dak Birch Rowan Syca	amore Alder As	h Beech Hawthorn Hazel Bla	ackthorn Elder	Willow Rose Holly	
Other:	C	Composition: Haethorn dominated	I		
lumber of woody species pe	er 30m sample length) 1			
○ 7 or more ○ 6 ○) 5 () 4 ()	Less than 4			
to a b footpath — all traffic	dge adjacent ridalway, or byway to and contains le features?	Ditch	at least half of t e	ne hedgerows length he hedgerows lengt 10-30%	(2 point
		Trave protected species been	recorded?		
portantedgerow		Not known			
have widened t	the original feature and to the cover. Mature	nedgerow located between spoil ment of rank ground cover of False Oat e Oaks are present at either end o	-grass, Hogwee		ıble

Ref: 97	Date	22/06/2016	Surveyors	MP	
Using the Regulation	Wildlife and	Landscape criteria of the less that the hedgerow considered to	Hedgerow	,	
'important	'?	Ç	<u> </u>		
Hedgerow category		Note:			
		Defunct fragment of I	nedgerow		Ī
O 1 - Intact managed hedgerow					
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge width	Hedge length (m):	
3 - Unmanaged 'leggy' hedgerow	,	Trougo Trongrit	riougo muui	riougo iongar (iii).	70
O 4 - Hedgebank with occasional s		O-1m	O-1m		70
5 - Managed hedgerow with matu		O 1-2m	O 1-2m		
	ile liees	⊚ 2-4m	⊚ 2-4m		
6 - Treeline		O >4m	O >4m		
7 - New / reinstated hedgerow		0 /4111	0 /4111		
O 8 - Fenceline					
/oody species					
^ _	Alder Ash		tel Blackthorn Elder		
ther: Lime (T x europeaus), Honeys	uckl Co	mposition:			
lumber of woody species per 30m sar	nple length				
○ 7 or more ○ 6 ● 5 ○	4 O L	ess than 4			
Are 3	No	table features	_		
notable	1	Bank 🗹 or Wall	for at least half of t	he hedgerows length	
features present?	2	Ditch	for at least half of	the hedgerows lengt	
	2	Loss than 10% gaps			ī
Are 4 notable	3	Less than 10% gaps) None () 1-10%	○ 10-30% ○ >30	
features present?	4	Standard tree / 50m]		
	5	At least 3 Woodland Sp			
		vvnodiand Sh	eries		
Is the hedge adjac		Connections with a well	hadge (4 maint)	1 (0 nainta) == 1 (0) naint-
to a bridalway, footpath or byway	6 ' to	connections with another scoring 4 points or more	neage (1 point), pond	d (2 points) or woodland (2	points)
all traffic and conta	ains	- '	O 4 or more	Less than 4	
2 notable feature	s?	Hedgerow connections	O 4 or more	Less man 4	
		Note:			
	7	Parallal hadaa within 45~	O Yes	No No No	
O Yes No	_ 7	Parallel hedge within 15m	U les	UNU UNU	
1 103	8	Have protected species	been recorded?		
oortant		Not known			
dgerow		7			
Fragmented section of H Dogrose, Honeysuckle, A		ninated hedgerow fringed b	y Bracken. Other woo	ody species included Lime	,
Dogrose, Honeysuckie, F	non and FOP	iai.			
Photo1 DSCN8867	Photo2	Photo3	Photo4		



Four Ashes Hedgerow Survey 2017



Presented to Ramboll Environ

August 2017



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Executive summary

Biocensus were commissioned by Ramboll Environ to undertake a survey of hedgerows within land at Four Ashes, Staffordshire. The current study area forms an extension to land which was surveyed in 2016, surrounding an aggregate quarry near Junction 12 of the M6. The extended area is centred upon National Grid Reference SJ929091.

The vast majority of hedgerows within the study area were relatively species-poor, with hawthorn forming the dominant woody species.

Of the 31 hedgerows recorded none were considered 'important' under the Hedgerow Regulations 1997. Approximately half of the hedgerows within the study area (15 of 31) were evaluated as *Moderately high to High value* using HEGS. However, only two hedgerows, B26 and B27, were evaluated at the upper end of the scale (2+), all of the others fell at the bottom of the range (2-). Hedgerows B26 and B27 are located towards the south-west of the study area and comprise unmanaged hedgerows with frequent trees.



1. Introduction

Biocensus were commissioned by Ramboll Environ to undertake a survey of hedgerows within land at Four Ashes, Staffordshire. The current study area forms an extension to land which was surveyed in 2016, surrounding an aggregate quarry near Junction 12 of the M6. The extended area is centred upon National Grid Reference SJ929091.

2. Legislation and Planning Context

The Hedgerow Regulations 1997 set out the properties that make a hedgerow 'important' and therefore afforded protection under the legislation. In summary, a hedgerow is considered important if it is more than 30 years old and meets one or more of the following criteria:

Archaeology and history

- Marks part or all of the boundary of a historic parish or township that existed before 1850;
- Incorporates an archaeological feature (or is associated with one) included in the schedule
 of monuments compiled by the Secretary of State under section 1 (schedule of monuments)
 of the Ancient Monuments and Archaeological Areas Act 1979(7) or recorded in a Sites and
 Monuments Record (dating from 27 March 1997);
- Marks the boundary of a pre-1600 AD estate or manor (or visibly associated with one) and is listed in a Sites and Monuments Record or other such document held at a Records Office since 27 March 1997;
- Forms an integral part of a field system predating the Inclosure Acts;

Wildlife and landscape

- Contains species listed in part I of Schedule 1 (birds), 5 (animals) or 8 (plants) of the Wildlife and Countryside Act 1981 (as amended), or species considered to be "declining breeders, endangered, extinct, rare or vulnerable" in UK Red Data Books;
- Includes at least a) 7 woody species, b) 6 woody species plus 3 associated features, c) 6 woody species including a black poplar; large-leaved lime, small-leaved lime or wild service tree, d) 5 woody species and 4 associated features or e) is adjacent to a public right of way (byway open to all traffic) and supports at least 4 woody species in addition to 2 associated features.

Associated features include:

- (a) a bank or wall which supports the hedgerow along at least one half of its length;
- (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- (c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree;
- (d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;



- (e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
- (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
- (g) a ditch along at least one half of the length of the hedgerow;
- (h) connections scoring 4 points or more in accordance with sub-paragraph (5);
- (i) a parallel hedge within 15 metres of the hedgerow.

In addition to specific legislation relating to hedgerows, a number of more general evaluation methodologies have been described. For the purpose of this report, an assessment of the ecological value of each hedgerow was also undertaken using the Hedgerow Evaluation and Grading System (HEGS)¹.

3. Methodology

3.1. Site Survey

A walkover of the site was undertaken on the 12th July 2017 and hedgerows assessed using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997. Survey protocol was adapted from guidance of the Hedgerow Survey Handbook². However, given the emphasis on the number of woody species, the following criteria were used:

- (a) where hedgerow length did not exceed 30 metres, all woody species present in the hedgerow were counted;
- (b) where hedgerow length did not exceed 100 metres, woody species in the central 30 metres were counted;
- (c) where hedgerow length fell between 100-200 metres, the hedgerow was divided in half and woody species counted in each central 30 metre section with the aggregate divided by two;
- (d) where the hedgerow length exceeded 200 metres, the hedgerow was divided into three, woody species counted in each central 30 metre section and the aggregate divided by three;

¹ Clements, D.K. and Tofts, R.J. (1992). *Hedgerow Evaluation and Grading System (HEGS). A Methodology for the Ecological Survey, Evaluation and Grading of Hedgerows – September 1992*. Countryside Planning and Management.

² Defra (2007) Hedgerow Survey Handbook. A standard procedure for local surveys in the UK. Defra, London.



In addition, notes were taken describing attributes which are required to undertake the HEGS grading. The following hedgerow attributes were recorded:

- Structure including width, height and form;
- Connectivity presence of gaps and end connections;
- Diversity number of woody and dominance of canopy species; and
- Associated features presence of banks, ditches and grass verges.

3.2. Surveyor

The surveyor and author of this report was Matthew Pickard (BSc (Hons), MSc.), an ecologist with over 15 years environmental consultancy experience, a Chartered Environmentalist (CEnv) and full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

3.3. Survey Limitations

Seasonal timing of survey visits was not considered to pose a significant constraint to hedgerow assessment.

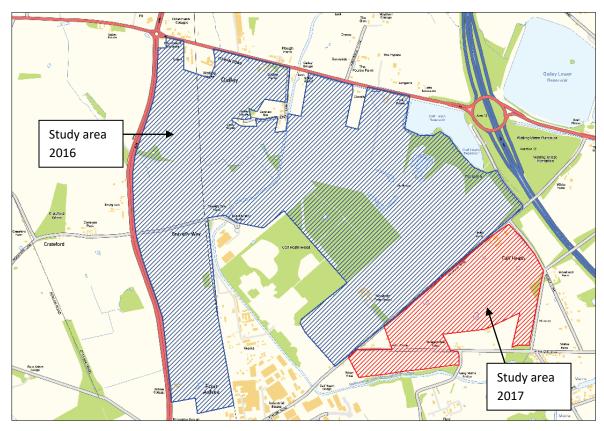


4. Existing Conditions

4.1. Overview

The study area (see Figure 1) is centred on agricultural land in the vicinity of an existing active aggregate quarry to the north of Four Ashes and west of Junction 12 of the M6.

Figure 1: Location Plan.



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4.2. Hedgerows

The site visit on the 12th July 2017 recorded 31 hedgerow sections, none of which were considered 'important' under the Hedgerow Regulations 1997.

Appendix 1 provides an account of each hedgerow sampled. Figure 2 presents the location of each hedgerow and provides a HEGS evaluation. None of the hedgerows were considered "important" under the Wildlife and landscape criteria of the Hedgerow Regulation. However, as a note of caution, the presence of protected or Red Data Book species in any of the hedgerows assessed could change their status.

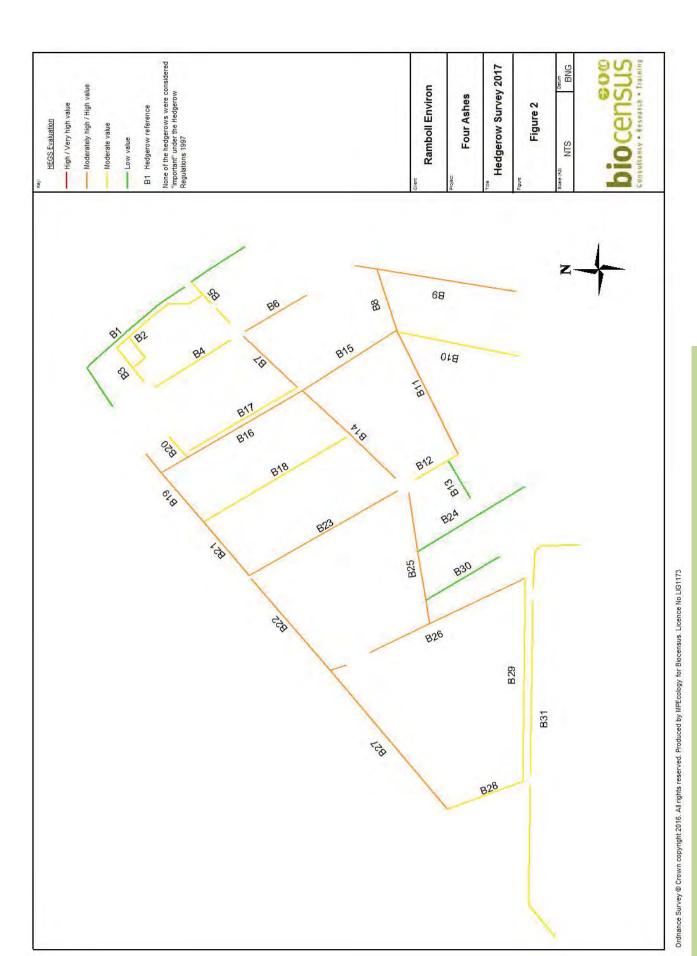




Table 1: HEGS Evaluation Scores

ID	Structural	Connectivity	Diversity	Features	HEGS	HEGS evaluation
					Grade	
B1	6	6	3	-	4-	Low value
B2	3	4	6	-	3-	Moderate value
В3	12	5	3	-	3	Moderate value
B4	7	6	3	-	3+	Moderate value
B5	8	6	3	-	3+	Moderate value
В6	9	7	3	-	2-	Mod high / High value
В7	10	7	3	2	2-	Mod high / High value
В8	9	8	3	4	2-	Mod high / High value
В9	13	4	4	4	2-	Mod high / High value
B10	10	3	4	2	3-	Moderate value
B11	7	8	4	4	2-	Mod high / High value
B12	8	5	3	-	3	Moderate value
B13	5	3	3	-	4-	Low value
B14	9	7	3	6	2-	Mod high / High value
B15	8	8	3	3	2-	Mod high / High value
B16	8	8	3	-	2-	Mod high / High value
B17	12	4	3	-	3	Moderate value
B18	6	8	3	-	3-	Moderate value
B19	9	7	3	-	2-	Mod high / High value
B20	8	6	3	-	3+	Moderate value
B21	9	7	3	-	2-	Mod high / High value
B22	8	8	3	-	2-	Mod high / High value
B23	11	7	3	4	2-	Mod high / High value
B24	6	6	3	-	4+	Low value
B25	8	8	3	-	2-	Mod high / High value
B26	15	7	3	4	2+	Mod high / High value
B27	13	7	4	2	2+	Mod high / High value
B28	12	6	3	-	3+	Moderate value
B29	9	6	3	-	3+	Moderate value
B30	6	6	3	-	4+	Low value
B31	8	6	3	-	3+	Moderate value

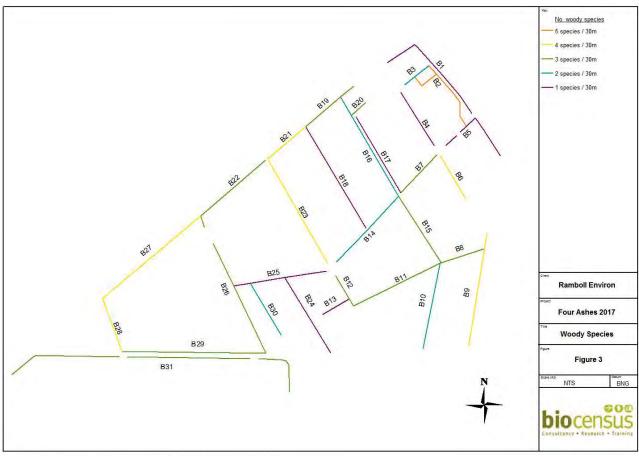


The vast majority of hedgerows assessed during the site visit were relatively species-poor in terms of woody species, none reaching 7 species in any given 30m sample section.

Table 2: Number of Woody Species / 30m Section of Hedgerow

No. of woody sp	Hedgerow references
1	B1, B4, B5, B13, B17, B18, B24 & B25
2	B3, B10, B14, B16 & B30
3	B7, B8, B11, B12, B15, B19, B20, B22, B26, B29 & B31
4	B6, B9, B21, B23, B27 & B28
5	B2

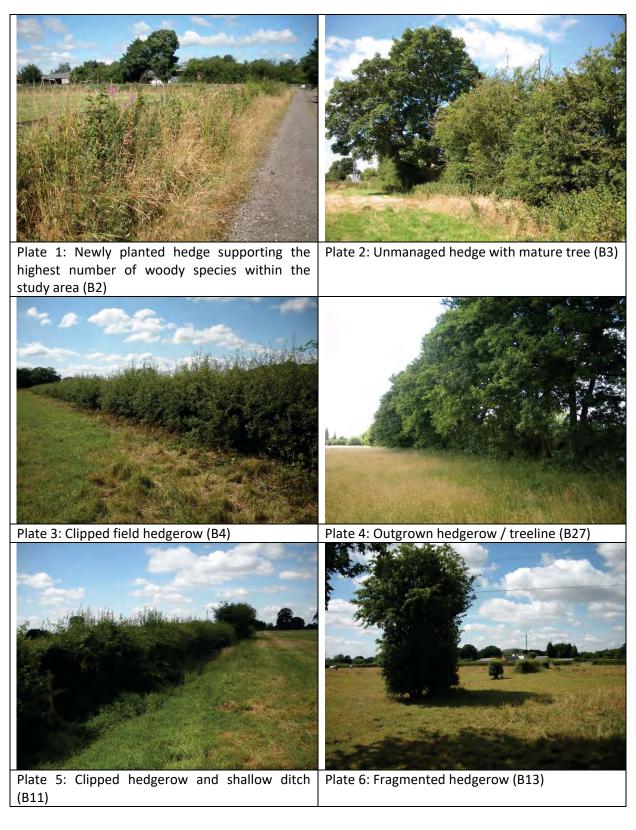
Figure 3: Thematic map indicating number of woody species in 30m hedgerow sections



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The character of hedgerows varied throughout the study area from intensively managed roadside hedgerows to unmanaged 'leggy' field boundaries and mature trees. The following photographs illustrate examples of hedgerows found within the study area:







5. Assessment

The vast majority of hedgerows within the study area were relatively species-poor, with hawthorn forming the dominant woody species. The hedgerow with the highest number of woody species per 30m section (5 species) was a newly planted hedgerow (B2) to the north of the site.

Of the 31 hedgerows recorded none were considered 'important' under the Hedgerow Regulations 1997.

Approximately half of the hedgerows within the study area (15 of 31) were evaluated as *Moderately high to High value* using HEGS. However, only two hedgerows, B26 and B27, were evaluated at the upper end of the scale (2+), all of the others fell at the bottom of the range (2-). Hedgerows B26 and B27 are located towards the south-west of the study area and comprise unmanaged hedgerows with frequent trees. All other hedgerows were evaluated as Low value (4 hedgerows) or Moderate value (12 hedgerows).

No rare or notable species were noted during the site visit. A few woody species not normally found in hedgerows included grey alder (*Alnus incana*) in hedgerow B8 and Swedish whitebeam (*Sorbus intermedia*) in B27. A lime (*Tilia europaea*) was also noted from the south-western end of B29.



Appendix 1 – Hedgerow data sheets



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Ref: B1	Date 12/07/2017	Surveyors MP
	Wildlife and Landscape criteria of the Hens 1997, is the hedgerow considered to be?	
Hedgerow category	Note:	
1 - Intact managed hedgerow	Clipped hedgerow near wooded roadside emba	farm buildings forming a boundary to a ankment.
O 2 - Managed 'gappy' hedgerow	Hedge height	Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	_	380
O 4 - Hedgebank with occasional sh	Q 1.2m	○ 0-1m ○ 1-2m
5 - Managed hedgerow with matur	re trees 2-4m	O 2-4m
O 6 - Treeline	O >4m	O >4m
7 - New / reinstated hedgerow	O 74111	0 24111
O 8 - Fenceline		
Voody species		
Oak Birch Rowan Sycamore A □ □ □ ☑ Other:	Alder Ash Beech Hawthorn Hazel Composition: Hawthorn domin	Blackthorn Elder Willow Rose Holly
Number of woody species per 30m sam	nple length	
O 7 or more O 6 O 5 O	4	
Are 3 notable features present? Are 4 notable features present?	2 Ditch	for at least half of the hedgerows length for at least half of the hedgerows lengt None
Is the hedge adjace to a bridalway, footpath or byway	6 Connections with another h scoring 4 points or more	edge (1 point), pond (2 points) or woodland (2 poin
all traffic and conta 2 notable features		O 4 or more
	Note:	
		0.11
O Yes No	7 Parallel hedge within 15m	Yes
No No	Have protected species b	een recorded?
l portantdgerow	No	
	as was dominated by Hawthorn. A new	ankment. The hedgerow appears to have been track and associated newly planted hedge is ground flora is present.

		andscape criteria of th hedgerow considered		O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		New hedgerow					
2 - Managed 'gappy' hedgerow		L		101			
O 3 - Unmanaged 'leggy' hedgerow		Hedge height	Hedge wi	atn 	Hedge	ength (m):	0.40
O 4 - Hedgebank with occasional shrub	os	O-1m	⊚ 0-1r	m			240
5 - Managed hedgerow with mature t	rees	● 1-2m	O 1-2r	m			
O 6 - Treeline		O 2-4m	O 2-4r	m			
		O >4m	O >4m	ı			
O 8 - Fenceline							
Woody species							
Oak Birch Rowan Sycamore Alde			Hazel Blackthor	n Elder ✓	Willow Ro	se Holly	
Other:			y-planted saplin		horn Hazel		_
Zuici.	Oom		e, Guelder-rose,			Lidei,	
Number of woody species per 30m sample	elength						
○ 7 or more ○ 6 ● 5 ○ 4	O Les	s than 4					
	Notal	ble features					
Are 3	ivotai	DIE IEALUIES					
notable	1 🖪	Rank O or Wall	☐ for at least	half of the	hedgerows	length	
notable features		_	for at least		-	_	
notable		Bank ☐ or Wall			hedgerows hedgerows	_	¬;
notable features present? Are 4 notable	2 [_	for at leas	t half of the	-	lengt	
notable features present?	2 D	Ditch	for at leas	t half of the	e hedgerows	lengt	
notable features present? Are 4 notable features	2 E 3 L 4 S	ess than 10% gaps Standard tree / 50m	for at leas	t half of the	e hedgerows	lengt	
notable features present? Are 4 notable features present?	2 E 3 L 4 S	ess than 10% gaps	for at leas	t half of the	e hedgerows	lengt	
notable features present? Are 4 notable features	2 C 3 L 4 S 5 A	ess than 10% gaps Standard tree / 50m	for at leas None Snecies her hedge (1 points)	t half of the	e hedgerows	>30 >30	2 points
notable features present? Are 4 notable features —— present? Is the hedge adjacent to a bridalway, footpath or byway to —— all traffic and contains	2 C 3 L 4 S 5 A	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another	for at leas None Snecies her hedge (1 points	t half of the	e hedgerows	>30 >30 woodland (:	2 points
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to	2 C 3 L 4 S 5 A	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another or more dedgerow connections	for at leas None Snecies her hedge (1 points	t half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (:	2 points
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	2 C 3 L 4 S 5 A	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another and the coring 4 points or more	for at leas None Snecies her hedge (1 points) (2) 4 or m	t half of the	e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (:	2 points
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	2 C 3 L 4 S 5 A 6 C 8	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another or more dedgerow connections	for at leas None Snecies her hedge (1 points) for at leas	t half of the	e hedgerows 10-30% 2 points) or v	>30 >30 woodland (:	2 points
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	2 C 3 L 4 S 5 A 6 C 8	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another and the coring 4 points or more dedgerow connections Note	for at leas None Snecies her hedge (1 points 4 or m Yes	t half of the	e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (:	2 points
notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	2 C 3 L 4 S 5 A 6 C 8	ess than 10% gaps Standard tree / 50m At least 3 Woodland Connections with another and a points or more dedgerow connections Note Parallel hedge within 1	for at leas None Snecies her hedge (1 points 4 or m Yes	t half of the	e hedgerows 10-30% 2 points) or v Less tha	>30 >30 woodland (:	2 points

Ref: B3	Date	12/07/2017	Su	rveyors	Р		
Re		andscape criteria of the hedgerow considered		O Yes (Likely	⊚ No	
Hedgerow category		Note:					
O 1 - Intact managed hedge	erow	Unmanaged outgro	wn hedgerow				
O 2 - Managed 'gappy' hedg	erow	⊩ Hedge height	Hedge wid	dth	Hedge le	ngth (m):	
	dgerow						71
O 4 - Hedgebank with occas	sional shrubs	O 0-1m	O 0-1n		1		
O 5 - Managed hedgerow wi	th mature trees	O 1-2m	O 1-2n				
O 6 - Treeline		O 2-4m	② 2-4n				
7 - New / reinstated hedge	erow	● >4m	O >4m	1			
O 8 - Fenceline							
Woody species							
Oak Birch Rowan Sycam	ore Alder Ash	Beech Hawthorn Ha	azel Blackthorr	n Elder W	illow Rose	e Holly	
Other:	Com	position:					
lumber of woody species per 3	Om sample length						
7 or more 6 6 5	O 4	ss than 4					
Are 3 notable features present? Are 4 notab features present? Is the hedge to a brid footpath or all traffic and 2 notable for	le 3 L adjacent alway, 6 C byway to d contains	Ditch	None Sycar Sycar Sycar er hedge (1 points) 4 or mo	t half of the h	edgerows l	oodland (2 p	points
	7 F	Parallel hedge within 15	m O Yes	•) No		
O Yes) No 8	Have protected specie	s been recorde	ed?			
pportant		No					
edgerow		P					
		vthorn and a Sycamore th-western end. Nettle-o				ection of	
Photo1 DSCN100	Photo2	Photo3		Photo4			

Regulation 'important'	is 1997, is t				MP		
	?	I Landscape criteria of the Hec the hedgerow considered to be		O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Hawthorn dominated					
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge widt	th	Hedae	length (m):	
O 3 - Unmanaged 'leggy' hedgerow		Triange marght	Trouge with		riougo	iongui (m).	143
O 4 - Hedgebank with occasional sh	nrubs	O 0-1m	O 0-1m				
O 5 - Managed hedgerow with matu	re trees	● 1-2m	● 1-2m				
O 6 - Treeline		O 2-4m	O 2-4m				
7 - New / reinstated hedgerow		O >4m	O >4m				
O 8 - Fenceline							
Voody species							
Dak Birch Rowan Sycamore A	Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder	Willow Ro	se Holly	
				\checkmark			
Other:	Co	omposition: Hawthorn domina	ated				
lumber of woody species per 30m sam	nple length	1					
○ 7 or more ○ 6 ○ 5 ○		_ess than 4					
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and conta 2 notable features	1 2 3 4 5 ent 6 to ins	Less than 10% gaps Standard tree / 50m At least 3 Woodland Special Connections with another he scoring 4 points or more	for at least	half of the	hedgerows	>30 >30 woodland (2 points
	7	Parallel hedge within 15m	O Yes		No No No		
O Yes	8	Have protected species be					
'		No					
portant							

		12/07/2017	Su	rveyors	MP		
	ations 1997, is th	Landscape criteria of the ne hedgerow considered t		O Yes	O Likely	● No	
Hedgerow category		Note:					
O 1 - Intact managed hedgerov	N/	Hawthorn dominated	d				
2 - Managed 'gappy' hedgero		Lie door bestand	H. day od	141.	Hadaa I	tl- ()	
O 3 - Unmanaged 'leggy' hedge		Hedge height	Hedge wid	atn	Heage I	ength (m):	00
O 4 - Hedgebank with occasion		O-1m	O 0-1r	n	-		80
● 5 - Managed hedgerow with r	mature trees	● 1-2m	● 1-2r	n			
O 6 - Treeline		O 2-4m	O 2-4r	n			
7 - New / reinstated hedgerov	W	O >4m	O >4m	1			
O 8 - Fenceline		-					
Voody species							
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Ha	zel Blackthori	n Elder	Willow Ros	se Holly	
Other:	Cor	mposition: Hawthorn do	minated				
umber of woody species per 30m	sample length						
7 or more 6 5	O 4	ess than 4					
Are 3	Not	table features	_				
notable features	1	Bank or Wall	for at least	half of the	hedgerows	ength	
present?	2	Ditch L	for at leas	t half of the	e hedgerows	lengt	-
Are 4 notable	3	Less than 10% gaps	None O	1-10% (10-30%	O >30	
features —— present?	4	Standard tree / 50m	⊘ Oak				
	5	At least 3 Woodland S					
		Woodland S	necies III				
In the headers are		Woodland S	necies				
Is the hedge ac to a bridalw footpath or by	djacent vay, 6 way to	Connections with anothe scoring 4 points or more	er hedge (1 poi	nt), pond (2 points) or v	voodland (2	? points
to a bridalw	djacent vay, 6 way to ontains	Connections with another	er hedge (1 poi		2 points) or v		? points
to a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains	Connections with anothe scoring 4 points or more	er hedge (1 poi				? point:
to a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains tures?	Connections with anothe scoring 4 points or more Hedgerow connections Note:	er hedge (1 poi		O Less tha		? point:
to a bridalw footpath or by — all traffic and co 2 notable feat	djacent vay, 6 way to ontains tures?	Connections with anothe scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15	er hedge (1 poi	ore			? points
to a bridalw footpath or by — all traffic and co	djacent vay, 6 way to ontains tures?	Connections with another scoring 4 points or more Hedgerow connections Note: Parallel hedge within 156 Have protected species	er hedge (1 poi	ore	O Less tha		? points
to a bridalw footpath or by — all traffic and co 2 notable feat	djacent vay, 6 way to ontains tures?	Connections with anothe scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15	er hedge (1 poi	ore	O Less tha		? point

Using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997, is the hedgerow considered to be Yes Likely Note
Clipped Hedgerow with standard Oaks Hedge height
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 0-1m
O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - Managed hedgerow O 2 - Managed hedgerow O 2 - Managed hedgerow O 3 - Managed hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline O 8 - Fenceline O 9 - Managed 'leggy' hedgerow O 0 - 1m O 1 - 2m O 2 - 4m O > 4m O
3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holl Other: Composition: Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Notable features 1 Bank or Wall for at least half of the hedgerows length for at least half of the hedgerows length Are 4 notable features 4 Standard tree / 50m A Standard tree / 50m Volume 1 - 10% 10-30% > 30
3 - Mail aged nedgerow with matthe trees 3 - Mail aged nedgerow 6 - Treeline 7 - New / reinstated hedgerow 0 > 4m 0 >
O 7 - New / reinstated hedgerow O 8 - Fenceline Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holl Other: Composition: Hawthorn interspersed by Elder, Dogrose and mature tree of Oak O 7 or more O 6 O 5 4
Notable features present? Are 4 notable features Are 5 notable features Are 4 notable features Are 5 notable features Are 4 notable features Are 5 notable features Are 5 notable features Are 4 notable features Are 4 notable features Are 5 notable features Are 5 notable features Are 4 notable features Are 5 notable features Are 5 notable features Are 4 notable features Are 5 notable features Are 5 notable features Are 4 notable fe
Voody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holl I
Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holl Other:
Composition: Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Notable features
Composition: Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Hawthorn interspersed by Elder, Dogrose and mature tree of Oak Oak
of Oak Sumber of woody species per 30m sample length
7 or more 6 5 • 4 Cless than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% > 30 None 1-10% 10-30% > 30 Non
Notable features 1 Bank or Wall for at least half of the hedgerows length features present? 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps O None 1-10% 10-30% > 30 4 Standard tree / 50m
Are 3 notable features present? 1 Bank or Wall for at least half of the hedgerows length for at least half of the hedgerows lengt 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% >30
Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland scoring 4 points or more
2 notable features? Hedgerow connections
Note: Woodland and other hedgerows
7 Parallel hedge within 15m Yes No
O Yes No No Have protected species been recorded?
l l No No ligerow

Ref: B7	Date	12/07/2017	Surveyors MP
	Using the Wildlife at Regulations 1997, is 'important'?	nd Landscape criteria of the Hedger s the hedgerow considered to be	O Yes O Likely No
ledgerow category		Note:	
O 1 - Intact managed h	nedgerow	Clipped hedgerow with stand	dard Oaks
O 2 - Managed 'gappy' I	hedgerow	Hedge height Hed	dge width Hedge length (m):
O 3 - Unmanaged 'leggy	y' hedgerow	O 0-1m) 0-1m
4 - Hedgebank with o) 1-2m
5 - Managed hedgero	w with mature trees		2-4m
6 - Treeline) >4m
7 - New / reinstated h	leagerow		
8 - Fenceline			
loody species			
-	camore Alder As		•
other:	(Composition: Hawthorn dominated	(3spp/30m)
lumber of woody species p	per 30m sample lengt	<u> </u> h	
7 or more	O 5 O 4 ©	Less than 4	
to a footpat — all traffic	edge adjacent bridalway, th or byway to c and contains ble features?	2 Ditch for a 3 Less than 10% gaps None 4 Standard tree / 50m 5 At least 3 Woodland Species 6 Connections with another hedge scoring 4 points or more Hedgerow connections Note: Other	Oaks (1 point), pond (2 points) or woodland (2 pour more O Less than 4 er hedgerows
O Year		7 Parallel hedge within 15m	Yes
O Yes	No	8 Have protected species been r	ecorded?
l I portant		No	
dgerow		,	
dgerow	erow with two mature	Oaks (with a DBH of >100cm). Nett	ele-dominated ground flora present.

	Date	12/07/2017 Surveyors MP
		d Landscape criteria of the Hedgerow the hedgerow considered to be
Hedgerow category		Note:
1 - Intact managed hedgerow		Clipped hedgerow
O 2 - Managed 'gappy' hedgerow		Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow		104
O 4 - Hedgebank with occasional shru	ubs	O 0-1m
O 5 - Managed hedgerow with mature	trees	O 1-2m
O 6 - Treeline		② 2-4m
O 7 - New / reinstated hedgerow		O >4m
O 8 - Fenceline		
Woody species		
Oak Birch Rowan Sycamore Ald	der Ash	n Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Grey Alder (Alnus incana)	Co	omposition: Hawthorn/Grey Alder mix (3spp/30m)
Number of woody species per 30m samp	le length	
7 or more 0 6 0 5 0 4		Less than 4
Are 3	No	otable features
notable features	1	Bank ☑ or Wall ☐ for at least half of the hedgerows length
present?	2	Ditch for at least half of the hedgerows lengt
Are 4 notable	3	Less than 10% gaps
features —— present?	4	Standard tree / 50m
	5	At least 3 Woodland Species
Is the hedge adjacen to a bridalway,	6	Connections with another hedge (1 point), pond (2 points) or woodland (2 points
footpath or byway to all traffic and contain		scoring 4 points or more
2 notable features?	•	Hedgerow connections 4 or more Less than 4
		Note:
	. 7	Parallel hedge within 15m O Yes No
O Yes No	7	
Yes No No nportant edgerow		Have protected species been recorded?
nportant	8	Have protected species been recorded?
nportant edgerow Farget notes Clipped hedgerow on slight	8 bank wit	Have protected species been recorded?
nportant edgerow Clipped hedgerow on slight	8 bank wit	Have protected species been recorded? No h adjacent shallow ditch. A mix of Hawthorn and Grey Alder dominate the

Regulations 19	life and Landscape criteria of the Hedgerow 997, is the hedgerow considered to be
'important'?	<u> </u>
Hedgerow category	Note:
O 1 - Intact managed hedgerow	Outgrown roadside hedge
2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	
O 4 - Hedgebank with occasional shrubs	0.0.1m
O 5 - Managed hedgerow with mature tr	
⑥ 6 - Treeline	○ 2-4m ○ 2-4m
7 - New / reinstated hedgerow	● >4m ○ >4m
O 8 - Fenceline	
Voody species	
ak Birch Rowan Sycamore Alder	- Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
other:	Composition: Oak dominated interspersed by Hawthorn and other
umber of woody species per 30m sample	occasional woody species (4spp/30m)
	lerigui
7 or more 6 5 6 4	O Less than 4
Ara 2	Notable features
Are 3 notable	1 Bank or Wall for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
	0 1 11 100
Are 4 notable features	3 Less than 10% gaps
Are 4 notable	3 Less than 10% gaps
Are 4 notable features	3 Less than 10% gaps
Are 4 notable features present?	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m Oak 5 At least 3 Woodland Species
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to	3 Less than 10% gaps
Are 4 notable features present? Is the hedge adjacent to a bridalway,	3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m Oak 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps O None O 1-10% 10-30% O >30 4 Standard tree / 50m Oak 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	3 Less than 10% gaps
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	3 Less than 10% gaps
Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	3 Less than 10% gaps

	Date	12/07/2017	Surveyors	MP	
	tions 1997, is t	Landscape criteria of the Hedge he hedgerow considered to be	O Yes	S C Likely No	
Hedgerow category		Note:			
O 1 - Intact managed hedgerow		Outgrown hedgerow compr fenceline	rising individual s	shrubs/small trees and	
O 2 - Managed 'gappy' hedgerow	,	" Hedge height He	edge width	Hedge length (m)):
3 - Unmanaged 'leggy' hedgere	ow				198
O 4 - Hedgebank with occasional	l shrubs		O-1m	,	
O 5 - Managed hedgerow with ma	ature trees		O 1-2m		
O 6 - Treeline			② 2-4m		
O 7 - New / reinstated hedgerow		● >4m	O >4m		
O 8 - Fenceline					
Voody species					
ak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel Bla	ackthorn Elder	Willow Rose Holly	
ther: Apple	Co	mposition: Occasional woody s	shrubs (2spp/30r	n)	_
umber of woody species per 30m s	sample length				
7 or more	O 4	ess than 4			
Are 3 notable features present? Are 4 notable features — present? Is the hedge adj to a bridalwa footpath or byw — all traffic and coi 2 notable feature O Yes No	acent ay, 6 ray to ntains ires?	Ditch	r at least half of the O 1-10% The O 1-10% The (1 point), pond The 4 or more	ne hedgerows length he hedgerows lengt 10-30% >30 2 points) or woodland Less than 4	(2 points
1 1		No			
dgerow arget notes Unmanaged hedgerow		persed along a low bank and wire ird supporting Harebell and Foxg		ground flora is grazed a	and of
				ground flora is grazed a	and of

			Guiv	reyors MP		
ledgerow category	ons 1997, is th	Landscape criteria of the He e hedgerow considered to b		○ Yes ○ Li	kely (a) No	
		Note:				
1 - Intact managed hedgerow		Clipped hedge and ditc	:h			
O 2 - Managed 'gappy' hedgerow		l Hedge height	Hedge widtl	h He	dge length (m):	
3 - Unmanaged 'leggy' hedgerov	w	Treage freight	rieuge widti		uge length (III).	220
O 4 - Hedgebank with occasional	shrubs	O 0-1m	O 0-1m			220
O 5 - Managed hedgerow with ma	ture trees	1 -2m	● 1-2m			
O 6 - Treeline		O 2-4m	O 2-4m			
7 - New / reinstated hedgerow		O >4m	O >4m			
O 8 - Fenceline		'				
Voody species						
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder Willow	Rose Holly	
					\checkmark	
Other:	Cor	Hawthorn domir (3spp/30m).	nated with fre	quent Elder and	Dogrose	_
Number of woody species per 30m sa	ample length	(озрружин).				
		and them 4				
7 or more 6 5 () 4	ess than 4				
Are 3		able features				
notable features	1			alf of the hedge	_	
present?	2	Ditch 🗹	for at least h	nalf of the hedge	rows lengt	
Are 4 notable	3	Less than 10% gaps	None O 1	-10% 🔘 10-3	0% 🔘 >30	
features —— present?	4	Standard tree / 50m				
	5	At least 3 Woodland Spec	ries			
In the headers of the						
Is the hedge adja to a bridalway	y , 6	Connections with another h scoring 4 points or more	edge (1 point), pond (2 points	s) or woodland (2 point
footpath or bywa — all traffic and cont 2 notable featur	tains	Hedgerow connections	O 4 or mor	e O le	ss than 4	
2 Hotable feature	001	Note:	<u> </u>	<u> </u>		_
		Parallel hedge within 15m	O Yes	● No		
O Yes	8	Have protected species be	een recorded	?		
O Yes No		No				
portant		P.				
portant dgerow Clipped hedgerow according to the control of the c		ditch at its eastern end. Wh				
portant dgerow Clipped hedgerow according to the control of the c		ditch at its eastern end. Wheggy (reaching 4-5m in heigh				
portant dgerow Clipped hedgerow accorend it is unmanaged and						

Using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997, is the hedgerow considered to be	Ref: B12	Date	12/07/2017	Surve	yors MP		
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Notable features present? Are 4 notable features 1 Bank or Wall for at least half of the hedgerows length 3 Less than 10% gaps None are 1-10% 10-30% > 30 At least 3 Monordland Snecies Woodd Are features Are 4 notable features? Are 4 notable features 1 Bank or Wall for at least half of the hedgerows length Connections with another hedge (1 point), pond (2 points) or woodland (2 points) or woodland (2 points) or woodland (2 points) or woodland (2 points) or more Hedgerow connections Are 4 notable features Are 4 notable features 1 Bank or Wall for at least half of the hedgerows length Are 4 notable features 1 Bank or Wall for at least half of the hedgerows length Are 4 notable features 1 Bank or Wall for at least half of the hedgerows leng		Regulations 1997, is		gerow) Yes O Likely	No No	
O 1 - Intact managed hedgerow O 2 - Managed 'gapy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Notable features 1 Bank Or Wall or at least half of the hedgerows length features present? Are 4 notable features 1 Bank Or Wall or at least half of the hedgerows length 1 Standard tree / 50m Oak To rome O 10 - 1m O - 1m Oa - 2m Oak Notable features 1 Bank Or Wall of rat least half of the hedgerows length 1 Standard tree / 50m Oak Standard tree / 50m Oak Standard tree / 50m Oak To rome O 10 - 1m Oa - 1m Oa - 1m Oa - 1m Oa - 2m Oak Standard tree / 50m Oak Standard tree / 50m Oak Standard tree / 50m Oak To rome O 10 - 1m Oa - 1m Oa - 1m Oa - 2m Oak Standard tree / 50m Oak Standard tr	Hedgerow category		Note:				
2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Hawthorn dominated Number of woody species per 30m sample length 7 or more 6 5 4	1 - Intact managed I	hedgerow	Clipped hedgerow with st	andard Oaks	;		
O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs S 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Number of woody species per 30m sample length O 7 or more O 6 O 5 O 4 O Less than 4 Are 4 notable features present? Are 4 notable features O 2-4m O 2-4m O 3-4m O 4-4m O 5-4m O 6 O 7 or more O 6 O 5 O 4 O Less than 4 Notable features O 7 or more O 6 O 5 O 4 O Less than 4 Are 4 notable features O 8 O None O 1-10% O 10-30% O 30 Oak At least 3 O None O 1-1	O 2 - Managed 'gappy'	hedgerow	Hedge height	Hedae width	Hedae	length (m):	
O 4 - Hedgebank with occasional shrubs ⑤ 5 - Managed hedgerow with mature trees ○ 6 - Treeline ○ 7 - New / reinstated hedgerow ○ 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly ○ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	O 3 - Unmanaged 'legg	y' hedgerow	Trougo noight				30
O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Notable features Present? Are 3 notable features Present? Are 4 notable features Present? Are 4 notable features Present? Are 4 notable features Present? Are 5 notable features Present? Are 6 notable features Present? Are 7 or more ○ 6 ○ 5 ○ 4 ● Less than 4 Notable features Present? Are 8 notable features Present? Are 9 notable features Present? Are 1 notable features Present? Are 3 notable features Present? Are 4 notable features Present? Are 4 notable features Present? Are 5 notable features Present? Are 6 notable features Present? Are 7 notable features Present? Are 8 notable features Present? Are 9 notable features Present? Are 9 notable features Present? Are 1 notable features Present? Are 4 notable features Present? Are 5 notable features Present? Are 6 notable features Present? Are 6 notable features Present? Are 7 notable features Present? Are 8 notable features Present? Are 9 notable features Present? Are 4 notable features Present? Are 4 notable features Present? Are 9 notable features Present? Are 1 notable feature	O 4 - Hedgebank with o	occasional shrubs		-	, '		
O there O > 4m		ow with mature trees		-			
Woody species Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features present? 1 Bank or Wall for at least half of the hedgerows length features present? 2 Ditch for at least half of the hedgerows length 3 Less than 10% gaps None 1-10% 10-30% >30 4 Standard tree / 50m or At least half of the hedgerows length 5 At least 3 Mondland Species 1 Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features? 1 Hedgerow connections Note: Pond to north 7 Parallel hedge within 15m Yes No No Note: No	-			-			
Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn dominated Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features present? Are 3 notable features present? Are 4 notable features Are 5 Ditch for at least half of the hedgerows length 5 At least 3 None 1-10% 10-30% >30 At least 3 None 1-10% 10-30% 10	_	hedgerow					
Oak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other:							
Other: Composition: Hawthorn dominated Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length features present? Are 4 notable features 1 Bank or Wall for at least half of the hedgerows lengt 2 Ditch for at least half of the hedgerows lengt 3 Less than 10% gaps None 1-10% 10-30% > >30 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) scoring 4 points or more Hedgerow connections Note: Pond to north 7 Parallel hedge within 15m Yes No 8 Have protected species been recorded? No	Woody species						
Number of woody species per 30m sample length O Tor more O O O O O O				_		ose Holly	
Number of woody species per 30m sample length 7 or more 6 5 4 Less than 4 Notable features 1 Bank or Wall for at least half of the hedgerows length features present? Are 4 notable features Are 4 no							
Notable features Are 3 notable features present? Are 4 notable features Doak 5 At least 3 Woordland Snecies Connections with another hedge (1 point), pond (2 points) or woodland (2 point scoring 4 points or more Hedgerow connections Note: Pond to north 7 Parallel hedge within 15m Yes No No No No	54161. <u> </u>		Tiawarem deministra				
Notable features notable features present? Are 4 notable features Are 4 notable features	Number of woody species	per 30m sample length	1				
Are 3 notable features present? Are 4 notable features present prese	O 7 or more O 6	O 5 O 4 •	Less than 4				
	notable features present? Are 4 r features present? Is the r to a footpa all traffi 2 nota	anotable ures seent? 5 medge adjacent a bridalway, 6 th or byway to ic and contains able features?	Bank or Wall for Ditch for Less than 10% gaps Nor Standard tree / 50m At least 3 Woodland Specie Connections with another hed scoring 4 points or more Hedgerow connections Note: P Parallel hedge within 15m C Have protected species beer	Oak Jone 1-1 Oak Jone 4 or more Jone 1-1 Oak Jone 1-1 Jone 1-1 Oak Jone 1-1 Jone 1-1 Oak Jone 1-1	of the hedgerows 10-30% 10-30% pond (2 points) or Less th	o >30 o >30 o o o o o o o o o o o o o o o o o o o	oints
			o Oaks (75-80cm DBH). A large	pond with s	urrounding trees of	Crack Willow	is
Clipped Hawthorn hedgerow with two Oaks (75-80cm DBH). A large pond with surrounding trees of Crack Willow is present to the north.	Photo1 DCS	N1015 Photo2	Photo3	Ph	oto4		

Ref: B13	Date	12/07/2017	Sur	veyors	MP		
R		Landscape criteria of the Hennie hedgerow considered to be		O Yes	O Likely	No No	
Hedgerow category		Note:					
O 1 - Intact managed hedg	gerow	Fragmented Hawthorn h	nedgerow				
2 - Managed 'gappy' hed	gerow	⊩ Hedge height	Hedge widt	:h	Hedge I	ength (m):	
O 3 - Unmanaged 'leggy' he	edgerow	3 3				3 ()	68
O 4 - Hedgebank with occa	sional shrubs	O-1m	O 0-1m		,		
O 5 - Managed hedgerow w	vith mature trees	O 1-2m	● 1-2m				
O 6 - Treeline		● 2-4m	O 2-4m				
7 - New / reinstated hedg	gerow	O >4m	O >4m				
O 8 - Fenceline							
Woody species							
Oak Birch Rowan Sycar	nore Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder	Willow Ro	se Holly	
Other:	Cor	mposition: Hawthorn domin	ated				
lumber of weeds on seize per	20m comple length						
Number of woody species per							
to a bri footpath o — all traffic ar	ble 3 5 7 4 5 ge adjacent dalway, 6 r byway to	Bank or Wall Ditch Ditch Dess than 10% gaps On Standard tree / 50m Description At least 3 Woodland Special Connections with another he scoring 4 points or more Hedgerow connections Note:	for at least	half of the	hedgerows	>30 >woodland (2	point
	7	Parallel hedge within 15m	O Yes		No		
O Yes (● No 8	Have protected species be	en recorded	i?			
nportant edgerow		No					
arget notes Fragmented rem		dominated hedgerow.	F	Photo4			

Ref: B14		Date	12/07/2017	Sı	ırveyors	MP	
		ions 1997, is	d Landscape criteria of the the hedgerow considered		O Yes	O Likely	No
Hedgerow cat	egory		Note:				
O 1 - Intac	et managed hedgerow		Clipped hedgerow	with occasional	mature Oa	aks on break	in slope.
O 2 - Mana	aged 'gappy' hedgerow	•	Hedge height	Hedge wi	dth	Hedge I	ength (m):
O 3 - Unm	anaged 'leggy' hedger	OW		0.04			205
	gebank with occasiona		○ 0-1m ○ 1-2m	O 0-1		·	
_	aged hedgerow with m	ature trees	O 2-4m	② 2-4i			
O 6 - Tree			O >4m	O >4n			
_	/ reinstated hedgerow						
O 8 - Fend	celine						
Voody specie	es .						
ak Birch	Rowan Sycamore	Alder As	n Beech Hawthorn H	azel Blackthor	n Elder	Willow Ros	se Holly
							Z 🗆
Other:		C	omposition: Hawthorn de	ominated with 0	Dak, Dogro	se and Goat	Willow
umber of wo	oody species per 30m s	amnle lenath					
idilibei oi wo			<u> </u>				
7 or more	9 0 6 0 5	O 4	Less than 4				
	A 2	N	otable features				
	Are 3 notable	1	Bank 🗹 or Wall	for at leas	t half of the	hedgerows	length
	features present?	2	Ditch 🔽	for at leas	t half of the	e hedgerows	lengt
		3	Less than 10% gaps	○ None	1-10% (10-30%	O >30
	Are 4 notable features	4	-	_		10-30%	O >30
	present?			Oaks			
		5	At least 3 Woodland 9	Snecies			
	Is the hedge adj		0 " " "		. ()		W 1.60
	to a bridalwa footpath or byw		Connections with anoth scoring 4 points or more		int), pond (2 points) or v	woodland (2 po
	all traffic and co		Hedgerow connections	● 4 or m	ore	O Less tha	an 4
			Note	: Pond and	multiple he	edgerow con	nections
		-	7 Parallel hedge within 15	om O Yes		No	
O Yes	s 🔘 No					U NO	
			Have protected specie	es been record	ed?		
portant dgerow							
-90.011							
	break in slope and a d	tch at the so	row with occasional matu uthern side connects with uding Creeping Foxtail, Pe	a pond at the w	estern end	d. The ditch s	supports a
ļ	Photo1 DSCN1018	Photo2	Photo3		Photo4		_
	1.1.5.6 1	1 110102	1 110103		. 110104		

Ref: B15	Date	12/07/2017 Surveyors MP
		e and Landscape criteria of the Hedgerow 7, is the hedgerow considered to be O Yes O Likely No
Hedgerow category	у	Note:
O 1 - Intact ma	anaged hedgerow	Clipped hedge and standard Oaks
O 2 - Managed	'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanag	ged 'leggy' hedgerow	178
	nk with occasional shrubs	○ 0-1m ○ 1-2m
	hedgerow with mature tree	O 2-4m
6 - Treeline		O >4m O >4m
0 7 - New / rein	nstated hedgerow	
	,	
Woody species		
	wan Sycamore Alder	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other:		Composition: Hawthorn dominated with two standard Oaks (3spp/30m)
Number of woody	species per 30m sample le	ngth
O 7 or more	6 05 04	Less than 4
	ble ires	Notable features 1 Bank ☐ or Wall ☐ for at least half of the hedgerows length 2 Ditch ☑ for at least half of the hedgerows lengt 3 Less than 10% gaps ☐ None ☐ 1-10% ☐ 10-30% ☐ >30 4 Standard tree / 50m ☐ 5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points) scoring 4 points or more Hedgerow connections ☐ 4 or more ☐ Less than 4 Note: Multiple hedgerow connections
		7 Parallel hedge within 15m O Yes O No
O Yes	● No	8 Have protected species been recorded?
Importanthedgerow		No
	ped Hawthorn dominated hopresent.	edgerow and ditch with two small oaks (45cm DBH). Rank Nettle-dominated ground

Ref: B16	Date	12/07/2017	Sı	ırveyors	MP	
	ons 1997, is t	I Landscape criteria of the He the hedgerow considered to b		O Yes	O Likely	● No
Hedgerow category		Note:				
1 - Intact managed hedgerow		Clipped hedgerow form	ing wester	n boundary	to a farm tra	ack.
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge wi	dth	Hedge I	ength (m):
O 3 - Unmanaged 'leggy' hedgerov	N	riedge rieignt	rieuge wi	<u> </u>	Tiedge i	26
O 4 - Hedgebank with occasional s	shrubs	O-1m	0 0-1		'	20.
O 5 - Managed hedgerow with mat	ture trees	● 1-2m	O 1-2			
O 6 - Treeline		O 2-4m	② 2-4			
O 7 - New / reinstated hedgerow		O >4m	O >4n	n		
O 8 - Fenceline						
loody species						
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthor	n Elder	Willow Ro	se Holly
			\checkmark	\checkmark		
ther: Cherry	Co	omposition: Hawthorn domin	nated			
umber of woody species per 30m sa	ample length					
		ess than 4				
Are 3 notable features present? Are 4 notable features —— present? Is the hedge adjacto a bridalway footpath or bywa — all traffic and cont	1 2 3 4 5 cent 6 y to tains	Ditch	for at leas	t half of the	e hedgerows e hedgerows 10-30% 2 points) or v Less tha	lengt O >30 woodland (2 pc
	7	Parallel hedge within 15m	Yes		O No	
O Yes ● No	8	Have protected species b	een record	ed?		
O Yes O No	8	Have protected species b	een record	ed?		

Ref: B17	Date	12/07/2017	Surveyors	MP	
		Landscape criteria of the Hed he hedgerow considered to be		es O Likely (No	
Hedgerow category		Note:			
O 1 - Intact managed hedgerow		Treeline dominated by semi-mature Oaks			
O 2 - Managed 'gappy' h	nedgerow	Hedge height	Hedge width	Hedge length (m)):
O 3 - Unmanaged 'leggy' hedgerow			0.0.4		0
O 4 - Hedgebank with occasional shrubs		O 1-1m	O 1.000	· ·	
O 5 - Managed hedgero	w with mature trees	O 1-2m	O 1-2m		
● 6 - Treeline		O 2-4m	② 2-4m		
O 7 - New / reinstated h	edgerow	● >4m	O >4m		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan Sy	camore Alder Ash	Beech Hawthorn Hazel	Blackthorn Elde	er Willow Rose Holly	
\square					
Other: Cherry	Co	mposition:			
lumbar af waady anasiaa r	oor 20m oomala langth				
Number of woody species p	Der Som sample lengti				
to a footpat — all traffic	otable ires	Ditch Less than 10% gaps No N	for at least half o		(2 points
		Note:			
	7	Parallel hedge within 15m	Yes	O No	
O Yes	No 8	Have protected species be	en recorded?		
portantdgerow		No			
arget notes Oak dominate	ed trackside treeline. Oa	aks vary in size between 30-70	cm DBH but mos	st are relatively young.	

	Date	12/07/2017	Surveyors	MP	
	ns 1997, is	d Landscape criteria of the Hedge the hedgerow considered to be	o Yes	O Likely No	Ī
Hedgerow category		Note:			
1 - Intact managed hedgerow		Hawthorn dominated			
O 2 - Managed 'gappy' hedgerow		Hedge height He	edge width	Hedge length (m):	
3 - Unmanaged 'leggy' hedgerow		neage neight ne	eage wiatri	Hedge length (III).	268
O 4 - Hedgebank with occasional sh	nrubs	O 0-1m	O-1m	-	200
O 5 - Managed hedgerow with matu	ire trees	● 1-2m	● 1-2m		
O 6 - Treeline			2-4m		
7 - New / reinstated hedgerow		O >4m	O >4m		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan Sycamore <i>A</i>	Alder Ash	n Beech Hawthorn Hazel Bla	ackthorn Elder	Willow Rose Holly	
Other:	С	omposition: Hawthorn dominate	d with very occas	ional Dogrose and	_
lumber of woody species per 30m san	nnle lenath	Elder (1spp/30m)			
7 or more 6 5 0	14	Less than 4			
Are 3	N	otable features			
notable features	1	Bank or Wall for	at least half of the	e hedgerows length	
present?	2	Ditch for	at least half of th	e hedgerows lengt	
Are 4 notable	3	Less than 10% gaps Non	e 🔘 1-10%	O 10-30% O >30	
features —— present?	4	Standard tree / 50m			
procent					
	5	At least 3 Woodland Species			
	5	At least 3 Woodland Species			
Is the hedge adjace to a bridalway,		Connections with another hedg	e (1 point), pond	(2 points) or woodland (2 points
to a bridalway, footpath or byway	ent 6	WOODBARD SHEETE	e (1 point), pond	(2 points) or woodland (2 points
to a bridalway,	ent 6 to ains	Connections with another hedg scoring 4 points or more	e (1 point), pond 4 or more	(2 points) or woodland (2 points
to a bridalway, footpath or byway — all traffic and conta	ent 6 to ains	Connections with another hedg scoring 4 points or more			2 points
to a bridalway, footpath or byway — all traffic and conta	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note:	4 or more	Less than 4	2 points
to a bridalway, footpath or byway — all traffic and conta	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m	4 or more Yes		2 points
to a bridalway, footpath or byway — all traffic and conta 2 notable features O Yes No	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note:	4 or more Yes	Less than 4	2 points
to a bridalway, footpath or byway — all traffic and conta 2 notable features	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m Have protected species been	4 or more Yes	Less than 4	2 point
to a bridalway, footpath or byway — all traffic and conta 2 notable features O Yes No Iportant —	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m Have protected species been	4 or more Yes	Less than 4	2 point
to a bridalway, footpath or byway — all traffic and conta 2 notable features O Yes No	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m Have protected species been	4 or more Yes	Less than 4	2 points
to a bridalway, footpath or byway — all traffic and conta 2 notable features O Yes No Iportant —	ent 6 to ains s?	Connections with another hedg scoring 4 points or more Hedgerow connections Note: Parallel hedge within 15m Have protected species been	4 or more Yes	Less than 4	2 points

Ref: B19	Da	te	12/07/2017	Sı	ırveyors	MP		
			d Landscape criteria of the Hed the hedgerow considered to be		O Yes	O Likely	● No	
Hedgerow categ	ory		Note:					
	managed hedgerow		Clipped roadside hedger	ow				
O 2 - Manage	ed 'gappy' hedgerow		Hedge height	Hedge wi	dth	Hedge l	ength (m):	
O 3 - Unman	aged 'leggy' hedgerow			ricage wi		Tiedge is	erigui (iii).	143
O 4 - Hedgel	oank with occasional shrub	3	O 0-1m	0-1	m			140
O 5 - Manage	ed hedgerow with mature to	ees	● 1-2m	0 1-2				
O 6 - Treeline	е		O 2-4m	② 2-4				
7 - New / re	einstated hedgerow		O >4m	O >4n	n			
O 8 - Fenceli	ne							
Woody species								
Oak Birch R	Rowan Sycamore Alde	Ash	Beech Hawthorn Hazel	Blackthor	n Elder	Willow Ros	se Holly	
Other: Aspen, 0	Cherry	С	omposition: Hawthorn domina	ted (3spp	/30m)			
lumber of wood	ly species per 30m sample	length						
7 or more	O 6 O 5 O 4		Less than 4					
1								
	ure 3		otable features			la a de a constant	l =4l-	
	table tures	1	Bank ☑ or Wall ☐ f				_	
pre	esent?	2	Ditch L	or at leas	t half of the	e hedgerows	lengt	-
	Are 4 notable	3	Less than 10% gaps O N	one 🔘	1-10% (10-30%	O >30	
	features — present?	4	Standard tree / 50m					
		5	At least 3 Woodland Specie	25				
	lo the hadra adjacent							
	Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains	6	Connections with another he scoring 4 points or more	dge (1 po	int), pond (2 points) or v	voodland (2	2 point
				1	250	A I see that	n 4	
	2 notable features?		-	→ 4 or m	ore	Less that	411 4	
			Note:					
		7	Parallel hedge within 15m	Yes Yes		O No		
O Yes	No	8	Have protected species be	en record	ed?			
 nportant			No					
edgerow								
			s of Sycamore and Oak. The h	edgerows	support H	oneysuckle a	nd Black	
	yony but are otherwise imp							
Ph	oto1 DSCN1022 Pho	to2 DS	6CN1024 Photo3		Photo4			
		- 12	110.00					

Ref: B20	Date	12/07/2017	Sur	veyors	MP		
	ns 1997, is th	Landscape criteria of the Hed e hedgerow considered to be		O Yes	O Likely	● No	
Hedgerow category		Note:					
1 - Intact managed hedgerow		Hawthorn dominated					_
2 - Managed 'gappy' hedgerow		Hedge height	Hedge widt	th	Hedne	length (m):	
O 3 - Unmanaged 'leggy' hedgerow	,	Trouge neight	ricage wia		ricage	icrigiri (iii).	42
O 4 - Hedgebank with occasional sl	hrubs	O 0-1m	O 0-1m		1		72
O 5 - Managed hedgerow with matu	ure trees	● 1-2m	O 1-2m				
O 6 - Treeline		O 2-4m	② 2-4m				
7 - New / reinstated hedgerow		O >4m	O >4m				
O 8 - Fenceline							
Voody species							
Dak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthorn	Elder	Willow Ro	se Holly	
Other:	Con	mposition: Hawthorn domina	ited				
umber of woody species per 30m sar	mnle length	J.					
amber of woody species per com sar	inpic longin						
○ 7 or more ○ 6 ○ 5 ○) 4 (Le	ess than 4					
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta 2 notable feature	Nota 1 2 3 4 5 eent 6 / to ains	able features Bank	one	half of the	hedgerows	>30 >30 woodland (2 point
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta	Nota 1 2 3 4 5 ent 6 / to ains es?	able features Bank	one description	half of the	2 points) or Less th	>30 >30 woodland (2 points
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjac to a bridalway, footpath or byway — all traffic and conta	Nota 1 2 3 4 5 ent 6 / to ains es?	able features Bank	for at least one dge (1 point) 4 or mo	half of the	10-30%	>30 >30 woodland (2 points
Are 3 notable features present? Are 4 notable features present? Is the hedge adjac to a bridalway, footpath or byway all traffic and conta 2 notable feature	Nota 1 2 3 4 5 ent 6 / to ains s:?	able features Bank	for at least one dge (1 point) 4 or mo	half of the	2 points) or Less th	>30 >30 woodland (2 points

Ref: B21		Date	12/07/2017	Sui	rveyors	
		ns 1997, is	d Landscape criteria of the He the hedgerow considered to b		O Yes O Likely	No No
Hedgerow ca	tegory		Note:			
O 1 - Intac	ct managed hedgerow		Roadside hedgerow wi	th standard	Oaks	
O 2 - Man	aged 'gappy' hedgerow		Hedge height	Hedge wid	lth Hedge	ength (m):
O 3 - Unm	nanaged 'leggy' hedgerow			001		113
O 4 - Hed	gebank with occasional s	nrubs	O 0-1m	O 0-1m		
	aged hedgerow with matu	ire trees	● 1-2m ○ 2-4m	① 1-2n		
O 6 - Tree			O >4m	O >4m		
	/ / reinstated hedgerow					
O 8 - Fend	celine					
Woody specie	es					
Oak Birch	Rowan Sycamore	Alder As				se Holly
Other:			omposition: Hawthorn domin	ialcu		
Number of wo	oody species per 30m sar	nple length	1			
O 7 or mor	e	4 0	Less than 4			
	Are 3 notable features present? Are 4 notable features present? Is the hedge adjactor a bridalway, footpath or byway all traffic and contactor and contact	1 2 3 4 5 ent 6 to sins	Ditch ☐ Less than 10% gaps Standard tree / 50m At least 3 Woodland Special	None O Oaks		>30 >30 woodland (2 points
	2 Hotable leature	o í		<u> </u>	2.5	
			Note:			
0.1/		_ ;	7 Parallel hedge within 15m	Yes	O No	
O Ye	s No	8	Trave protected species b	een recorde	d?	
I I Important <u></u> hedgerow			No			
Target notes	Hawthorn dominated roa DBH). Photo1 DSCN1025	dside hedg	erow with occasional Elder ar		as well as two mature	Oaks (60-75cm

Using the Wild	life and Landscape criteria of the Hedgerow
	997, is the hedgerow considered to be Yes O Likely No
Hedgerow category	Note:
O 1 - Intact managed hedgerow	Roadside hedgerow with standard Oaks
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	
O 4 - Hedgebank with occasional shrubs	0.1m
● 5 - Managed hedgerow with mature tre	ees 0 1-2m 0 1-2m
O 6 - Treeline	O 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
oak Birch Rowan Sycamore Alder	r Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other:	Composition: Hawthorn dominated with occasional Dogrose and Oak (2-
	3spp/30m)
lumber of woody species per 30m sample	iengtn
○ 7 or more ○ 6 ○ 5 ○ 4	Less than 4
Ara 2	Notable features
Are 3 notable	1 Bank or Wall for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
	3 Less than 10% gaps
Are 4 notable features	4 Standard tree / 50m
present?	
	5 At least 3 Weedland Species
	Woodland Species
Is the hedge adjacent	vondiand Shecies
to a bridalway, footpath or byway to	vondiand Shecies
to a bridalway,	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
to a bridalway, footpath or byway to — all traffic and contains	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
to a bridalway, footpath or byway to — all traffic and contains	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections Note:
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m Yes No
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections O 4 or more Less than 4 Note: 7 Parallel hedge within 15m Yes O No Have protected species been recorded?
to a bridalway, footpath or byway to all traffic and contains 2 notable features?	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m Yes No

ef: B23	Date	12/07/2017 Surveyors MP
		and Landscape criteria of the Hedgerow, is the hedgerow considered to be
dgerow category		Note:
1 - Intact managed h	nedgerow	Clipped hedgerow with standard Oaks
2 - Managed 'gappy'	_	Hedge height Hedge width Hedge length (m):
3 - Unmanaged 'legg	_	neuge rieight neuge width neuge length (iii).
4 - Hedgebank with o	occasional shrubs	O 0-1m
5 - Managed hedgerd	ow with mature trees	
6 - Treeline		○ 2-4m ○ 2-4m
7 - New / reinstated h	nedgerow	O >4m
8 - Fenceline		
oody species		
ık Birch Rowan Sy	ycamore Alder /	Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
her:		Composition: Hawthorn dominated with occasional Oak, Alder and Elder.
mber of woody species	per 30m sample len	gth
	· · · · · · · · · · · · · · · · · · ·	
7 or more	O 5 • 4 (Characteristics Characteristis Characteristics Characteristics Characteristics Characteristics
 Are 3		Notable features
notable features		1 Bank or Wall for at least half of the hedgerows length
present?		2 Ditch 🗹 for at least half of the hedgerows lengt
Are 4 n	ootable	3 Less than 10% gaps
featu	ures	4 Standard tree / 50m 🔽 Oaks
— pres	eiit f	5 At least 3 Woodland Species
		vyoodiand Species
to a footpat	nedge adjacent bridalway, th or byway to	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
	c and contains able features?	Hedgerow connections
		Note: Pond and hedgerows
	-	
O Yes	● No	7 Parallel hedge within 15m Yes No
		Have protected species been recorded?
ortant gerow		
JO. 011		
	nd ditch with a numb	er of standard Oaks (35-100cm DBH). Hawthorn is the dominant species although
	s form a conspicuou	us presence.
Photo1 DSC		

	Date	12/07/2017	Su	ırveyors	MP		
	ns 1997, is t	d Landscape criteria of the He the hedgerow considered to be		O Yes	O Likely	● No	
ledgerow category		Note:					
1 - Intact managed hedgerow		Hawthorn dominated					
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge wi	dth	Hedae I	ength (m):	
O 3 - Unmanaged 'leggy' hedgerow	,	l loage noigh	l louge in		l longs	,	200
O 4 - Hedgebank with occasional s	hrubs	O 0-1m	O 0-1r	m	,		
O 5 - Managed hedgerow with mate	ure trees	● 1-2m	① 1-2r				
O 6 - Treeline		O 2-4m	O 2-4r				
O 7 - New / reinstated hedgerow		O >4m	O >4m	n			
O 8 - Fenceline							
Voody species							
ak Birch Rowan Sycamore	Alder Ash	Beech Hawthorn Hazel	Blackthor	n Elder	Willow Ro	se Holly	
ther:	Co	omposition: Hawthorn domin	ated (1sp/	30m)			_
umber of woody species per 30m sai	npie iengin						
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjac to a bridalway, footpath or byway — all traffic and contace 2 notable feature	1 2 3 4 5 eent 6 4 to ains	Ditch Ditch Ditch Ditch Ditch Ditch Ditch Days On Standard tree / 50m Ditch Di	for at leas	t half of th	e hedgerows	>30 >30 woodland (2 poin
	7	Parallel hedge within 15m	O Yes		No		
O Yes	8	Have protected species be	en recorde	ed?			
		No					
portant							

Ref: B25	Date	12/07/2017	Surveyors	MP	
		Landscape criteria of the Hedo ne hedgerow considered to be	gerow O Yes	O Likely No	
Hedgerow category		Note:			
1 - Intact managed here	edgerow	Hawthorn dominated			
O 2 - Managed 'gappy' h	nedgerow	Hedge height	ledge width	Hedge length (m):	
O 3 - Unmanaged 'leggy	' hedgerow		0		212
O 4 - Hedgebank with o	ccasional shrubs	O 0-1m	O 0-1m	,	
O 5 - Managed hedgero	w with mature trees	● 1-2m	O 1-2m		
O 6 - Treeline		O 2-4m	② 2-4m		
7 - New / reinstated h	edgerow	O >4m	0 24111		
8 - Fenceline					
Voody species					
Dak Birch Rowan Sy	camore Alder Ash	Beech Hawthorn Hazel E	Blackthorn Elder	Willow Rose Holly	
Other:	Cor	mposition: Hawthorn with infr	equent Elder and [Dogrose (1sp/30m)	
Number of woody species p	per 30m sample length				
		ess than 4			
to a footpati — all traffic	otable res 4	Ditch	or at least half of thome O 1-10%	e hedgerows length ne hedgerows lengt 10-30% >30 (2 points) or woodland (Less than 4	2 points
	L	Parallel hedge within 15m) Yes	⊚ No	
O Yes	● No 8			<u> </u>	
		Have protected species bee	ir recorded?		
portant dgerow		1			
arget notes Clipped Hawtl		nble outgrowth on parts of its i	north-east side but	grazed to the south.	

Using the Wildlife and Landscape criteria of the Hedgerow Regulations 1997, is the hedgerow considered to be Yes Likely No	
O 1 - Intact managed hedgerow O 2 - Managed 'gappy' hedgerow O 3 - Unmanaged 'leggy' hedgerow O 4 - Hedgebank with occasional shrubs O 5 - Managed hedgerow with mature trees O 6 - Treeline O 7 - New / reinstated hedgerow O 8 - Fenceline Noody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Other: Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Number of woody species per 30m sample length O 7 or more O 6 O 5 O 4	
1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Oo-1m	
O 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Noody species Okaba Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Other: Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Other: Other: Other: Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Other: Other: Other: Other: Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Other:	_
③ 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 6 - Treeline 7 - New / reinstated hedgerow 8 - Fenceline Voody species Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly	
5 - Managed hedgerow with mature trees 6 - Treeline	303
0 6 - Treeline 0 7 - New / reinstated hedgerow 0 8 - Fenceline Oz-4m	000
To New / reinstated hedgerow South	
Notable features 1 Bank or Wall for at least half of the hedgerows length	
Are 3 notable features present? Are 4 notable features present? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Are 3 Notable features Are 4 notable features Are 4 notable features Are 4 notable features Are 5 None 10 None 10-30% >30 Are 6 No 10-30% >30 Are 7 None 10 None 10-30% >30 Are 8 No 10-30% >30 Are 9 No 10-30%	
Dak Birch Rowan Sycamore Alder Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly Composition:	
Composition: Hawthorn and Oak dominated with Blackthorn and occasional Willow (3spp/30m) Number of woody species per 30m sample length O 7 or more	
Number of woody species per 30m sample length O 7 or more	_
O 7 or more ○ 6 ○ 5 ○ 4 ● Less than 4 Notable features	
Are 3 notable features present? Are 4 notable features Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable for at least half of the hedgerows length Are 4 notable features Are 4 notabl	
Are 3 notable features present? Are 4 notable features present? At least 3 Woodland Species Standard tree / 50m	
Are 4 notable features present? Standard tree / 50m	
Are 4 notable features present? 4 Standard tree / 50m 5 At least 3 Woodland Species Connections with another hedge (1 point), pond (2 points) or woodland (scoring 4 points or more All traffic and contains 2 notable features? Hedgerow connections O 4 or more D Less than 4 Pond to north 7 Parallel hedge within 15m O Yes No No No No No No No No No N	_
Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Is the hedge adjacent to a bridalway, footpath or byway to—all traffic and contains 2 notable features? Hedgerow connections O 4 or more Less than 4 Note: Pond to north Parallel hedge within 15m O Yes No No No No No No No No No N	
Is the hedge adjacent to a bridalway, footpath or byway to —all traffic and contains 2 notable features? Sometime of the point of th	
to a bridalway, footpath or byway to —all traffic and contains 2 notable features? Hedgerow connections Note: Pond to north Parallel hedge within 15m Yes No No No No No No No No No N	
all traffic and contains 2 notable features? Hedgerow connections Note: Pond to north 7 Parallel hedge within 15m O Yes No No No No No No No No No N	2 point
Note: Pond to north 7 Parallel hedge within 15m Yes No	
7 Parallel hedge within 15m Yes No	
O Yes No No Have protected species been recorded?	
Have protected species been recorded?	
la l	
portantNo	
edgerow	
Leggy unmanaged hedgerow with trees of Oak. Goat Willow are also present (and a pond to the north support Crack Willow and Alder).	S
Photo1 DSCN1030 Photo2 Photo3 Photo4	

	Note: Outgrown roadside hedgerow and shrubs Hedge height Hedge width Hedge length (m):
 1 - Intact managed hedgerow 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 	Outgrown roadside hedgerow and shrubs Hedge height Hedge width Hedge length (m):
 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 	Hedge height Hedge width Hedge length (m):
 2 - Managed 'gappy' hedgerow 3 - Unmanaged 'leggy' hedgerow 4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees 	O 0-1m
4 - Hedgebank with occasional shrubs 5 - Managed hedgerow with mature trees	O 0-1m
O 5 - Managed hedgerow with mature trees	O 0-1m
⑥ 6 - Treeline	○ 1-2m ○ 1-2m
	○ 2-4m ○ 2-4m
O 7 - New / reinstated hedgerow	● >4m
O 8 - Fenceline	
oody species	
ak Birch Rowan Sycamore Alder Ash	Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
ther: Whitebeam, Broom, Pine Cor	mposition: Outgrown hedgerow/treeline of Hawthorn, Oak, Sorbus aria/intermedia, Rowan as well as Brom and Corsican Pine.
umber of woody species per 30m sample length	anamicimoda, Novan as well as Biom and Golsican Fine.
7 or more	ess than 4
Are 3 1	Bank or Wall for at least half of the hedgerows length
features present? 2	Ditch for at least half of the hedgerows lengt
3	Less than 10% gaps
Are 4 notable features	Standard tree / 50m
present?	At least 2
3	Woodland Species
	Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
- all traffic and contains	Hedgerow connections
	Note:
O Ves O No	Parallel hedge within 15m Yes No
O Yes No 8	Have protected species been recorded?
oortant	No
dgerow	,

Ref: B28	Date	12/07/2017	Surveyors	MP	
R	Ising the Wildlife and Regulations 1997, is mportant'?	d Landscape criteria of the Hedgerov the hedgerow considered to be	O Yes	O Likely No	
Hedgerow category		Note:			
O 1 - Intact managed hedg	gerow	Leggy unmanaged hedgerow	with gap near o	domestic property	
O 2 - Managed 'gappy' hed	Igerow	Hedge height Hedg	e width	Hedge length (n	n):
3 - Unmanaged 'leggy' he	edgerow				129
O 4 - Hedgebank with occa	asional shrubs		0-1m	,	
O 5 - Managed hedgerow v	with mature trees		1-2m		
O 6 - Treeline			2-4m >4m		
7 - New / reinstated hedg	gerow	<u> </u>	74111		
O 8 - Fenceline					
Voody species					
Dak Birch Rowan Sycar The Differ:			athorn Elder	Willow Rose Holl	•
Number of woody species per	30m sample length				
7 or more		_ess than 4			
to a bri footpath o — all traffic a	s d	Less than 10% gaps Standard tree / 50m At least 3 Woodland Species Connections with another hedge (scoring 4 points or more Hedgerow connections Note:	least half of the	e hedgerows lengt 10-30% >30 2 points) or woodland Less than 4	
		Parallel hedge within 15m Ye	es	No No	
O.Yes	7 O Na	Parallel hedge within 15m		9 110	
O Yes	7No8	· _		9 110	
O Yes (⊘ No			9 110	_

'important'?	997, is the hedgerow considered to be Yes O Likely No
edgerow category	Note:
O 1 - Intact managed hedgerow	Clipped roadside hedgerow with occasional standard trees
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	
O 4 - Hedgebank with occasional shrub	0.0.1m
O 6 - Treeline	O 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	, <u> </u>
oody species	
ak Birch Rowan Sycamore Alde	er Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
her: Lime	Composition: Hawthorn dominated with occasional Dogrose and Elder
,	(3spp/30m)
umber of woody species per 30m sample	e length
7 or more	● Less than 4
	Notable features
Are 3 notable	1 Bank ☐ or Wall ☐ for at least half of the hedgerows length
features present?	2 Ditch for at least half of the hedgerows lengt
present?	
Are 4 notable features	3 Less than 10% gaps None 1-10% 10-30% >30
present?	4 Standard tree / 50m 🔽 Oak
	5 At least 3 Woodland Species
Is the hedge adjacent	
to a bridalway,	6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
footpath or byway to — all traffic and contains	
2 notable features?	Hedgerow connections
	Note:
	7 Parallel hedge within 15m Yes No
	8 Have protected species been recorded?
O Yes No	
Yes No	No

Ref: B30	Date	12/07/2017	Sur	veyors		
	s 1997, is t	Landscape criteria of the Ho he hedgerow considered to l		O Yes O Lik	ely () No	_
Hedgerow category		Note:				
1 - Intact managed hedgerow						
O 2 - Managed 'gappy' hedgerow		Hedge height	Hedge wid	th Hec	dge length (m):	
O 3 - Unmanaged 'leggy' hedgerow		O 0-1m	O 0-1m			137
4 - Hedgebank with occasional sh		● 1-2m	● 1-2m			
5 - Managed hedgerow with matur	e trees	O 2-4m	O 2-4m			
6 - Treeline		O >4m	O >4m			
7 - New / reinstated hedgerow						
8 - Fenceline						
loody species						
′ _	lder Ash		Blackthorn	Elder Willow	Rose Holly	
ther:	Co	mposition: Hawthorn with	occasional H	olly and Dogrose		
umber of woody species per 30m sam	ple lenath	1				
7 or more		ess than 4				
Are 3 notable features present? Are 4 notable features — present? Is the hedge adjace to a bridalway, footpath or byway — all traffic and contai 2 notable features	1 2 3 4 5 mt 6 to ns	Ditch	for at least		rows lengt	2 point
	-			0.11		
O Yes No		Parallel hedge within 15m	O Yes	● No		
	8	Have protected species b	een recorde	d?		_
portantdgerow		No				
gerow		,				
arget notes Clipped Hawthorn domina	ted hedger	ow with occasional Dogrose	and Holly.			
Photo1 DSCN1037	Photo2	Photo3		Photo4		

'important'?	·
ledgerow category	Note:
1 - Intact managed hedgerow	Hawthorn and locally Elm dominated
O 2 - Managed 'gappy' hedgerow	Hedge height Hedge width Hedge length (m):
O 3 - Unmanaged 'leggy' hedgerow	Floage Height Floage Wath Floage Height (III).
O 4 - Hedgebank with occasional shrub	0.0 1m
O 6 - Treeline	⊚ 2-4m
O 7 - New / reinstated hedgerow	O >4m
O 8 - Fenceline	
Voody species	
oak Birch Rowan Sycamore Alde	er Ash Beech Hawthorn Hazel Blackthorn Elder Willow Rose Holly
Other: Elm, Lombardy Poplar	Composition: Largely Hawthorn or Elm dominated with occasional Oak,
umber of woody species per 30m sample	Elder, Dogrose and Lombardy Poplar (2-3spp/30m)
7 or more 6 5 4	● Less than 4
Are 3	Notable features
notable features	1 Bank ☐ or Wall ☐ for at least half of the hedgerows length
present?	2 Ditch for at least half of the hedgerows lengt
Are 4 notable	3 Less than 10% gaps
features	4 Standard tree / 50m 🔽 Oak, Poplar
	5. At least 3
features — present?	5 At least 3 Woodland Species
features	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points)
features — present? Is the hedge adjacent to a bridalway, footpath or byway to	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
features — present? Is the hedge adjacent to a bridalway,	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections O 4 or more Less than 4
features — present? Is the hedge adjacent to a bridalway, footpath or byway to — all traffic and contains	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections Note: 7 Parallel hedge within 15m Yes No
features present? Is the hedge adjacent to a bridalway, footpath or byway to all traffic and contains 2 notable features?	5 At least 3 Woodland Species 6 Connections with another hedge (1 point), pond (2 points) or woodland (2 points scoring 4 points or more Hedgerow connections O 4 or more Note: 7 Parallel hedge within 15m Yes No

Annex 10.1.4

SERC Bird Records and Breeding Assessment

ANNEX 10.1.4 BIRD LISTS

This annex to the West Midlands Interchange Ecology Baseline Report and should be read in conjunction with the report. The annex presents two tables.

The first table presents desk study information received from Staffordshire Environmental Records Centre (SERC) and provides general comments on whether suitable breeding habitat for the birds recorded by SERC occurs on the site.

The second table presents a list of the birds recorded in the breeding and wintering bird surveys carried out in 2016 and 2017. The birds of conservation concern are summarised in the main text of the Ecology Baseline Report.

Birds records from SERC and notes on whether suitable breeding habitat occurs on site

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Acanthis cabaret	Lesser Redpoll	No	7	2015	2007	Woodland species that may also visit gardens. Eat seeds of tree and herbaceous plants	>
Alauda arvensis	Sky Lark	No	23	2014	1966	Farmland in large open blocks	>
Alcedo atthis	Common Kingfisher	Yes	17	2015	1979	Found in wetland, canals, rivers etc, always near open water. Eats fish.	Z
Anas acuta	Northern Pintail	Yes	1	2011	2011	Wintering species only. Water edge species.	Z
Anas clypeata	Northern Shoveler	No	17	2015	2002	Breeds on shallow lakes with rich vegetation cover with sufficient areas of open water	Z
Anas crecca	Eurasian Teal	No	10	2015	1979	Mainly wintering species but does breed. Uses wide variety of well vegetated waterbodies to nest	Z
Anas platyrhynchos	Mallard	No	109	2014	1979	Common widespread species	>
Anas querquedula	Garganey	Yes	2	2008	2006	Schedule 1 species. Rare breeding species. Breeds on shallow lakes nesting in surrounding grassland	Z
Anas strepera	Gadwall	No	61	2015	2004	Breeds on reedbed lined pools. Widespread wintering species	Z
Anser albifrons	Greater White- fronted Goose	No	4	2013	2005	Rare winter migrant	N
Anser albifrons subsp. albifrons	European White-fronted Goose	No	16	2013	2013	Rare winter migrant	Z
Anser anser	Greylag Goose	Yes	47	2015	2000	Mainly feral population in Staffordshire, some genuine wild migrants possible in winter	z

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Anser brachyrhynchus	Pink-footed Goose	No	1	2014	2014	Uncommon winter migrant, small number of feral birds in Staffordshire	Z
Anthus pratensis	Meadow Pipit	No	10	2014	2000	Widespread breeding species. Breeds on open habitats including grassland, heathland, moorland	>
Anthus trivialis	Tree Pipit	No	9	2015	2006	Breeding species. Breeds mainly on heathland, open woodland glades and scrubby grassland	>
Apus apus	Common Swift	No	27	2015	1966	Widespread breeding species. Breeds almost exclusively in manmade structures	>-
Arenaria interpres	Ruddy Turnstone	No	2	2009	2000	Accidental occurrence	N
Asio flammeus	Short-eared Owl	No	1	2004	2004	Breeding restricted to upland habitats in Staffordshire. Widespread wintering species on wetlands, rank grassland, heathlands. Very difficult to survey for breeding activity and susceptible to disturbance	z
Aythya ferina	Common Pochard	No	67	2015	1995	Widespread wintering species. Open water species	Z
Aythya fuligula	Tufted Duck	No	86	2015	1979	Widespread open water species	Z
Aythya marila	Greater Scaup	Yes	52	2014	2001	Uncommon winter migrant. Open water species	Z
Aythya nyroca	Ferruginous Duck	No	4	2005	1960	Rare vagrant, small number of feral birds in UK	Z
Branta bernicla	Brent Goose	No	1	1987	1987	Rare winter migrant	Z
Branta bernicla subsp. bernicla	Dark-bellied Brent Goose	No	1	2014	2014	Rare winter migrant	Z

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Branta leucopsis	e Goose	No	_	2003	2003	Rare winter migrant. Large wintering population in Scotland	Z
Bucephala clangula	Common Goldeneye	Yes	99	2015	1995	Wintering on lakes and reservoirs in Staffordshire	z
Calidris alpina	Dunlin	No	4	2014	2004	Passage migrant to wetlands and reservoirs	Z
Calidris canutus	Red Knot	No	1	2001	2001	Passage migrant to wetlands and reservoirs	Z
Calidris pugnax	Ruff	Yes	2	2013	2013	Passage migrant	Z
Charadrius dubius	Little Plover	Yes	ω	2011	2006	Schedule 1 species. Uncommon, requires shingle or gravel near to water. Will breed in active quarries, waste ground, reservoir shorelines	٦
Charadrius hiaticula	Ringed Plover	No	2	2015	2011	Passage migrant to wetlands and reservoirs	z
Chlidonias niger	Black Tern	Yes	29	2012	2000	Passage migrant.	z
Chroicocephalus ridibundus	Black-headed Gull	No	77	2014	2004	Widely distributed. Range of habitats and food	Z
Circus aeruginosus	Eurasian Marsh Harrier	Yes	വ	2015	2009	Uncommon passage migrant. Not yet confirmed breeding in Staffordshire. Breeds in large reedbeds, but will feed across wetlands/rank grassland	z
Circus cyaneus	Hen Harrier	Yes	1-	2002	2002	Rare winter migrant. Occasionally summering birds. Not believed to breed in Staffordshire	z
Clangula hyemalis	Long-tailed Duck	Yes	2	2015	1996	Rare winter migrant	Z
Columba oenas	Stock Dove	No	29	2015	1995	Widespread breeding species. Nests in tree cavities	>
Crex crex	Corn Crake	Yes	-	1980	1980	Rare passage migrant	z

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Cuculus canorus	Common Cuckoo	No	8	2014	1966	Wide range of habitats, usually nesting in woodland, woodland edges, scrub and wetlands. Declining.	*
Cygnus columbianus	Tundra Swan	ХөХ	25	2011	2010	Rare winter migrant	Z
Cygnus cygnus	Whooper Swan	Yes	2	2013	2011	Rare winter migrant	Z
Delichon urbicum	House Martin	No	23	2015	1985	Widespread breeding species, mainly on manmade structures	>
Dendrocopos minor	Lesser Spotted Woodpecker	No	9	2012	2006	Rare breeding species in woodland. Serious decline	>
Egretta garzetta	Little Egret	No	19	2015	2002	Widespread and increasing at wetlands. Not yet confirmed breeding in Staffordshire	Z
Emberiza calandra	Corn Bunting	ON	-	2009	2009	Farmland bird in arable land and other habitats. Declining and now rare in Staffordshire	>
Emberiza citrinella	Yellowhammer	No	21	2014	1966	Open habitats, hedges and scrub	\
Emberiza schoeniclus	Reed Bunting	No	20	2014	1966	Wetland and farmland habitats.	>
Falco columbarius	Merlin	Yes	7	2015	2005	Mainly wintering species but does breed in moorland habitat	Z
Falco peregrinus	Peregrine Falcon	Yes	38	2015	2002	Schedule 1 species. Nests on cliffs and tall buildings	Z
Falco subbuteo	Eurasian Hobby	Yes	52	2015	2004	Tree nesting species, in a range of habitats.	>
Falco tinnunculus	Common Kestrel	ON.	26	2013	1966	Widespread breeding species, although believed to be declining. Range of nest sites and habitats. Eat small mammals and birds.	>
Fringilla montifringilla	Brambling	Yes	24	2013	2006	Wintering species only.	Z

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Gallinago gallinago	Common Snipe	OZ	25	2015	1966	Now a rare breeding species in wetland habitats. Very localised. Wetland habitats. Ground nesting so vulnerable to disturbance and to predation by crows etc., so avoid nesting near trees and other perching posts.	z
Gavia arctica	Black-throated Diver	Yes	3	1958	1948	Rare winter migrant	z
Gavia immer	Great Northern Diver	Yes	29	2014	1992	Occasional winter migrant to reservoirs	Z
Gavia stellata	Red-throated Diver	Yes	5	2005	1990	Rare winter migrant	Z
Haematopus ostralegus	Eurasian Oystercatcher	No	47	2015	2002	Widespread species, uncommon breeder mainly on reservoirs/gravel pits but also wetlands	Z
Hirundo rustica	Barn Swallow	No	40	2015	1966	Nest on ledges in buildings or outbuildings. Feed on insects over grassland, usually near water.	>
Larus argentatus	Herring Gull	No	12	2014	2000	Widespread wintering species. Does breed	Z
Larus canus	Common Gull	No	4	2010	2008	Winter resident, usually near large lakes.	Z
Larus fuscus	Lesser Black- backed Gull	No	30	2014	2004	Widespread wintering species. Does breed	Z
Larus glaucoides	Iceland Gull	No	1	2009	2009	Uncommon winter migrant, usually roosting on large reservoirs	Z
Larus hyperboreus	Glaucous Gull	No	3	2013	2013	Uncommon winter migrant, usually roosting on large reservoirs	Z
Larus marinus	Great Black- backed Gull	No	4	2014	2007	Uncommon winter migrant	z
Larus melanocephalus	Mediterranean Gull	Yes	78	2015	2005	Uncommon passage and winter migrant	Z
Larus michahellis	Yellow-legged Gull	No	25	2015	2009	Uncommon winter migrant	z

							Suitable Breeding
Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Habitat on Site*
Limosa lapponica	Bar-tailed Godwit	No	ო	2015	2013	Mainly coastal species although will occur inland on passage	z
Limosa limosa	Black-tailed Godwit	Yes	8	2015	2004	Passage migrant.	Z
Linaria cannabina	Linnet	No	19	2015	1966	Heathland, grassland and scrub habitats	>
Locustella naevia	Common Grasshopper Warbler	No	33	2011	1966	Breeds in scrub, marshes and dense vegetation. Eats mainly insects. Declining.	Ω
Loxia curvirostra	Common Crossbill	Yes	1	2012	2012		Z
Melanitta fusca	Velvet Scoter	Yes	2	1934	1896	Accidental occurrence	Z
Melanitta nigra	Common Scoter	Yes	12	2013	2006	Uncommon passage migrant	Z
Mergellus albellus	Smew	No	1	1988	1988	Rare winter migrant, mainly to reservoirs	Z
Milvus milvus	Red Kite	Yes	6	2015	2007	Rare but increasing vagrant to Staffordshire from nearby breeding populations (mainly Wales)	Z
Morus bassanus	Northern Gannet	No	2	2003	2001	Accidental occurrence	Z
Motacilla cinerea	Grey Wagtail	No	22	2015	1995	Widespread breeding species. Breeds on fast flowing rocky shallow watercourses	>
Motacilla flava	Yellow Wagtail	No	28	2015	1966	Grassland and wetland habitats	\
Muscicapa striata	Spotted Flycatcher	No	54	2015	2004	Mature trees, especially in open areas. Woodland edges, parks and garden habitats.	>
Numenius arquata	Eurasian Curlew	No		2015	1966	Very localised. Wetland, grassland and moorland habitats. Ground nesting so vulnerable to disturbance and to predation by crows etc., so avoid nesting near trees and other perching posts.	ח

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							Breeding
Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Habitat on Site*
Numenius phaeopus	Whimbrel	Yes	7	2013	2011	Uncommon passage migrant	Z
Oceanodroma leucorhoa	Leach's Storm- petrel	Yes	1	1989	1989	Accidental occurrence	Z
Oenanthe oenanthe	Northern Wheatear	No	26	2014	2004	Passage migrant to wide variety of habitats, except woodland. Breeds in moorland and fringe habitats	Z
Pandion haliaetus	Osprey	Yes	9	2012	2002	Passage migrant	Z
Panurus biarmicus	Bearded Tit	Yes	2	2007	1991	Rare vagrant from UK breeding populations	Z
Passer domesticus	House Sparrow	No	25	2014	1966	Range of habitats, including gardens, grassland and scrub, usually near human habitation	>
Passer montanus	Eurasian Tree Sparrow	No	18	2013	2001	Fairly widespread but uncommon. Open woodland and gardens.	>
Perdix perdix	Grey Partridge	No	12	2011	1966	Ground nesting in arable and other habitats, including rushy pastures.	>
Pernis apivorus	European Honey-buzzard	Yes	1	2006	2006	Rare passage migrant	Z
Phalacrocorax aristotelis	European Shag	No	11	2011	1984	Rare winter vagrant, accidental occurrence	Z
Phalaropus lobatus	Red-necked Phalarope	Yes	-	2002	2002	Rare passage migrant	Z
Phoenicurus ochruros	Black Redstart	Yes	47	2012	2011	Urban species, breeding in Birmingham and possibly Stoke and other areas.	Z
Phoenicurus phoenicurus	Common Redstart	No	2	2015	2008	Widespread but uncommon breeding species in woodland	Z
Phylloscopus trochilus	Willow Warbler	No	13	2014	1966	Found in open woodland and scrub, eating insects and berries.	>
Picus viridis	Green Woodpecker	No	11	2013	1990	Parkland type habitat, with grassland and trees / woodland edge. Feed on insects in grassland, nest in dead wood.	>

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Platalea leucorodia	Eurasian Spoonbill	Yes	-	1966	1966	Rare migrant, rare breeding species in eastern England	z
Pluvialis apricaria	European Golden Plover	No No	29	2015	2002	Winter species of farmland, eating seeds. Breeds on moorland in Peak District.	z
Pluvialis squatarola	Grey Plover	No	1	2012	2012	Uncommon passage migrant	Z
Podiceps auritus	Slavonian Grebe	Yes	9	2011	2008	Rare winter migrant	Z
Podiceps grisegena	Red-necked Grebe	No	25	2011	1996	Rare passage migrant	Z
Podiceps nigricollis	Black-necked Grebe	Yes	98	2014	2005	Uncommon passage migrant. Potential to breed in Staffordshire but not yet confirmed	Z
Poecile montana	Willow Tit	o Z	17	2015	2005	Usually in willow scrub in damp places, around gravel pits and marshes. Feed on insects, seeds and berries. Serious decline	٦
Poecile palustris	Marsh Tit	No	11	2015	2006	Mainly woodland and scrub species.	\
Prunella modularis	Dunnock	No	48	2014	2005	Range of habitats, including grassland and scrub.	>
Pyrrhula pyrrhula	Common Bullfinch	No	14	2014	2005	Woodlands, orchards and hedges. Eat seeds, buds and insects.	>-
Regulus ignicapilla	Firecrest	Yes	-	2013	2013	Rare winter migrant, usually seen in conifer plantations. Possibly breeds in Staffordshire	⊃
Riparia riparia	Sand Martin	No	30	2015	2004	Nests in riverbanks but also artificial sites provided	Z
Rissa tridactyla	Black-legged Kittiwake	No	11	2013	2010	Accidental occurrence	Z
Saxicola rubetra	Whinchat	No	17	2014	2006	Uncommon passage migrant, any breeding restricted to Staffordshire moorlands	z
Scolopax rusticola	Eurasian Woodcock	No	12	2013	2008	Widespread wintering species, breeds in woodland, scrub, conifer plantation	>

		70100400			• • •		Breeding
Latin Name	Name	Schedule I	Records	Record	Record	Habitat Preference	Site*
Somateria mollissima	Common Eider	No	7-	2011	2011	Accidental occurrence	Z
Sterna hirundo	Common Tern	No	88	2015	2004	Open water species, breeds on gravel pits	Z
Sterna paradisaea	Arctic Tern	No	56	2015	2004	Passage migrant. Species of open water	Z
Sterna sandvicensis	Sandwich Tern	No	4	2011	2004	Uncommon passage migrant	Z
Streptopelia turtur	European Turtle Dove	No	2	1990	1966	Found in woodland edges and hedgerows and more open habitats with scrub. Serious decline and very restricted breeding species in Staffordshire	n
Sturnus vulgaris	Common Starling	o Z	48	2014	1966	Found in woodland, reedbeds and gardens throughout the county; less frequent in moorland areas.	>
Sylvia communis	Common Whitethroat	No	11	2014	1966	Widespread breeding species in scrub	>
Tachybaptus ruficollis	Little Grebe	No	100	2015	1998	Widespread breeding species of open water with well vegetated margins	z
Tadorna ferruginea	Ruddy Shelduck	No	4	2013	2006	Possibly genuine wild vagrants but most records believed to be feral birds	Z
Tringa erythropus	Spotted Redshank	No	1	1980	1980	Uncommon passage migrant	Z
Tringa nebularia	Common Greenshank	Yes	3	2009	2007	Passage migrant.	Z
Tringa ochropus	Green Sandpiper	Yes	3	2015	1996	Uncommon passage migrant, some overwintering birds	Z
Tringa totanus	Common Redshank	ON	ی	2015	1981	Very localised. Wetland habitats. Ground nesting so vulnerable to disturbance and to predation by crows etc., so avoid nesting near trees and other perching posts.	z
Turdus iliacus	Redwing	Yes	18	2014	2005	Winter visitor, feeding in fields, hedges and orchards.	Z

Latin Name	Common Name	Schedule 1 WCA	Number of Records	Most Recent Record	First Record	Habitat Preference	Suitable Breeding Habitat on Site*
Turdus philomelos	Song Thrush	NO NO	20	2014	1966	Woods, hedgerows, parks and gardens in shrubs and trees. Feed on invertebrates and fruit.	>-
Turdus pilaris	Fieldfare	Yes	19	2015	2005	Winter visitor, feeding in a range of habitats.	z
Turdus torquatus	Ring Ouzel	No	4	2005	2005	Rare passage migrant, any breeding restricted to Staffordshire moorlands	Z
Turdus viscivorus	Mistle Thrush	No	24	2014	1982	Widespread breeding and wintering species	>
Tyto alba	Barn Owl	Yes	29	2015	1998	Very local, especially outside Staffs Moorlands. Feeds over rough grassland, often along verges/hedges. Usually nests on ledges in buildings	>
Uria aalge	Common Guillemot	No	2	1901	1889	Accidental occurrence	Z
Vanellus vanellus	Northern Lapwing	No	77	2015	1966	Fairly widespread. Wetland and farmland habitats, usually near water. Ground nesting so vulnerable to disturbance and to predation by crows etc., so avoid nesting near trees and perching posts.	>

Note: * Y = Yes, N = No, U = Unlikely

Birds recorded during Breeding Bird and Wintering Bird Surveys

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Mute Swan	Cygnus olor				*		N/A	Present on Gailey Reservoirs throughout the winter season. One adult pair were noted each time with 4-5 juveniles. One adult Black Swan Cygnus atratus was recorded on two visits (Nov-Dec).
Whooper Swan	Cygnus cygnus				*	*	N/A	One individual recorded feeding on Gailey Lower reservoir in wintering survey.
Pink-footed Goose	Anser brachyrhynchus				*		N/A	A pair recorded in November feeding in fields parallel to the reservoirs, SE of Gailey Lea Farm. 46 noted in February 2017 on Gailey Lower Reservoir.
Greylag Goose	Anser anser				*	*	Two in flight over site heading east. Presumed nesting off site.	Six were recorded during the November 2016 visit on main site; three in the north westerly section flying north, two more recorded nearby flying west and an individual in flight heading west from the south east corner of the site parallel to Vicarage road. Individuals also recorded Jan- Mar 2017 feeding on Gailey Reservoirs and Calf Heath Reservoir. A pair was also recorded roosting on pools within the quarry area north east of Calf Heath Woods.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Canada goose	Branta canadensis						All records 2016: Two in flight over site, Two on the ground in the east of the site near Calf Heath Reservoir. Two with four juveniles there on a separate occasion. Unknown whether breeding was on site or on adjacent reservoir site.	Common on Gailey Reservoirs, possibly resident population. Individuals were also recorded feeding in fields along the northern border of the Reservoirs. A pair was recorded within the main site roosting at the pools located within the quarry site.
Mallard	Anas platyrhynchos				*		At least seven pairs on site, widespread across site. Calf Heath Reservoir 2017: Several pairs breeding; 16 males maximum counted. Adults with groups of 10, 5 and 5 juveniles recorded.	Widespread across the main site, common on all Reservoirs. Pairs recorded on pools within the quarry area. Hybrid mallards were present on Calf Heath Reservoir (likely domestic escapees).
Tufted Duck	Aythya fuligula						N/A	A large population present each month on the Gailey Reservoirs.
Pheasant	Phasianus colchicus						Common in Calf Heath Wood where there are rearing pens and feeders. Occasional elsewhere. Probable breeder supplemented by releases.	Common throughout the main site and in areas surrounding Calf Heath and Gailey Reservoirs.
Red legged partridge	Alectoris rufa						One bird seen at Gravelly Way in 2016. Possible breeder.	None recorded on Main site or Reservoirs during survey period.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Cormorant	Phalacrocorax carbo						N/A	Common on Calf Heath and Gailey Reservoirs during all visits. Large numbers noted using heronry (grid reference SJ 93567 10456) on Gailey upper Reservoir as a drying perch.
Grey heron	Ardea cinerea						2016: Bird seen in flight over quarry towards Calf Heath Reservoir/eastwards and one seen next to water in quarry excavation north of Vicarage Road. Presumed nesting offsite.	Common throughout survey period on Gailey Reservoirs. Possible heronry located in Lower Gailey Reservoir; grid reference SJ 93567 10456. Individuals also recorded each month fishing on Calf Heath Reservoir in smaller numbers.
Little Grebe	Tachybaptus ruficollis						N/A	Recorded each month in small numbers feeding on the Gailey Reservoirs.
Great Crested Grebe	Podiceps cristaus						Calf Heath Reservoir 2017: Up to four pairs displaying, one seen with nesting material in south on visit 2 and up to three family groups seen (max three chicks in each family).	Common on Calf Heath and Gailey Reservoirs each month. Two pairs observed building/ sitting on nests on Calf Heath Reservoir in March. Grid references; SJ 92814 10088 and SJ 93047 09852.
Sparrowhawk	Accipiter nisus						2016: Seen carrying prey into Calf Heath Wood and in flight over wood on separate occasion. Probable breeder there.	Adult female recorded perching nearby Gravelly Way Farm. Pluckings recorded approx. 150m nearby at grid reference SJ 915 096. Another female recorded flying north east from Croft Lane within the main site boundary. Another female was recorded perching north east of Calf Heath Bridge, just outside the main site boundary.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Buzzard	Buteo buteo						2016: Singles and twos seen across the site, seen close to Calf Heath Wood, Reservoir Plantation and woodland close to Woodside Farm. Probable breeder.	Commonly recorded over the main site. Possible territory in Calf Heath woods, near quarry site. A nest is known to locals.
Новьу	Falco subbuteo					*	Calf Heath Reservoir 2017: One bird high over flying north-east on the third visit.	N/A
Moorhen	Gallinula chloropus						2016: Single bird on northern boundary near Galley Wharf in survey visit 2.	Common on Calf Heath and Gailey Reservoirs. Individuals also recorded within the Main site boundary along Gailey Canal and Wharf.
Coot	Fulica atra						Adult and two juveniles seen south of Vicarage Road in visit 3 2017	Common each month in large numbers on the Gailey Reservoirs. Individuals also recorded each month along Gailey Canal within the Main site boundary.
Oystercatcher	Haematopus ostralegus				*		N/A	Few individuals recorded on Calf Heath and Gailey Reservoirs. Also recorded feeding in fields surrounding Gailey Farm. A pair recorded in March within the main site boundary roosting in pools north east of Calf Heath Woods.

¹ Pers. Comm. (Anglers on Calf Heath Reservoir have noted there to be Buzzards nesting in Calf Heath Woods).

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Lapwing	Vanellus vanellus	*	*	*			Five to six pairs, one west of railway, remainder in fields north and south of Vicarage Road	Large group (~50) recorded in February flocking above Gailey Reservoirs. Individuals noted occasionally in arable fields within the main site boundary. Forty lapwing were recorded in a field south of the A5 on the 11th October 2017 during bat survey fieldwork
Snipe	Gallinago gallinago		*		*		One flushed from set aside on first visit. Likely late wintering bird.	None recorded on Main site or Reservoirs during survey period.
Black-Headed Gull	Chroicocephalus ridibundus				*		Party of six on second survey visit to Calf Heath Reservoir in 2017. Not breeding.	Common over all sites. Largest numbers recorded each month on Gailey Reservoir.
Mediterranean Gull	Larus melanocephalus				*	*	N/A	One individual recorded on Gailey Lower Reservoir (Feb), had red ring. Roosting with Black-headed Gulls on heronry (grid reference SJ 93567 10456).
Common Gull	Larus canus				*		N/A	Common on Gailey Reservoirs. Flights recorded over main sites and Calf Heath Reservoirs.
Lesser Black-backed Gull	Larus fuscus				*		Birds in flight over site on all three visits in 2016, not nesting.	Recorded throughout all sites, greatest numbers recorded on Gailey Reservoirs.
Feral pigeon / fancy pigeon	Columba livia domestica						Noted in proximity to houses (e.g. seven near quarry entrance on one visit in 2016). Probably nesting off site.	Roosting behaviour recorded circling Pool House at north west corner of Calf Heath Reservoir.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Stock dove	Columba oenas				*		Display seen and pairs/small groups noted. At least 6 pairs.	None recorded on Main site or Reservoirs during survey period.
Wood pigeon	Columba palumbus						Probably breeding throughout site, seen in display, common.	Common over all sites.
Collared dove	Streptopelia decaocto						Pair seen on one occasion at Croft Lane in 2016. Possible breeder.	Recorded on main site, one record.
Cuckoo	Cuculus canorus	*		*			2016: Two birds seen on one occasion south of canal, one calling off site in adjacent land on separate visit. Possible breeder, dunnock most likely host.	None recorded on Main site or Reservoirs during survey period.
Tawny owl	Strix aluco				*		2016: One bird near Woodside Farm (also seen/heard during bat work). Probable breeder, at least one pair.	Not record however present in area. Local birder noted a roosting pair in woodland surrounding the Gailey Reservoirs (Feb). ²
Barn owl	Tyto alba					*	Single bird hunting over field south of Station Road on two occasions in 2017 (recorded during bat surveys).	
Little owl	Athene noctua						Adults and juveniles at Heath Farm in 2017 in association with large tree with hole in and seen leaving a barn. Probable breeder.	
Swift	Apus apus				*		Four records of single birds in flight in 2016. Unlikely to be nesting on site.	None recorded on Main site or Reservoirs during survey period.
Kingfisher	Alcedo atthis				*	*	Calf Heath Reservoir 2017: Two sightings of single bird (one calling) along south-eastern bank of reservoir. Possible breeder.	Various registrations on Calf Heath Reservoir.

² Pers Comm.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Green woodpecker	Picus viridis						Single bird south of Station Road on one occasion in 2017. Possible breeder.	An individual recorded in woodland west of Stable Farm- within Main site boundary.
Greater spotted woodpecker	Dendrocopos major						Birds drumming and seen in flight. Probable breeder.	Recorded each month within woodland area alongside canal within Main site boundary, south of Croft Lane.
Kestrel	Falco tinnunculus				*		Two birds seen at Woodside Farm in vicinity of suitable building (2016). Two birds flushed from open barns in Heath Farm (2017). Possible nester (1 or 2 pairs).	Uncommon throughout survey period. Individual observed on two occasions perched on telephone wire across Gailey Lea Lane.
Magpie	Pica pica						Common, probable breeder, juvenile seen at Firtree Cottage in 2016.	Common throughout main site over entire survey period. Individuals also recorded in lesser numbers around Calf Heath and Gailey Reservoirs.
Jay	Garrulus glandarius						Common, most frequently recorded from in and near Calf Heath Wood in 2016. Probable breeder.	Recorded in woodland area within Main site boundary west of Woodland farm.
Jackdaw	Corvus monedula						Recorded across the site, often close to buildings. Three birds seen to enter a property north of A5 (off site) in 2016; assumed nesting.	Common throughout all sites.
Rook	Corvus frugilegus						Rookery in the eastern part of the site south of Station Road, with approximately 25 nests recorded in woodland there in 2017. Further nests in woodland south of Straight Mile (off site).	Rookery located at grid reference SJ 93421 09244.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Carrion crow	Corvus corone						Common. 2016: Old nests recorded in several locations, medium size, assumed corvid nests for instance on boundary of railway line and in woodland north of Gravelly Way and east of the A449.	Common throughout. Rookery at SJ 93421 09244 appeared to be populated by Carrion Crow but had been 'taken over' by Rook population by March.
Raven	Corvus corax						2016: Seen over Calf Heath Wood, and heard calling from a perch (unseen) in the wood. Also recorded over quarry. Probable breeder.	Recorded flying from/near Calf Heath woods. Thought to be nesting in this area3.
Goldcrest	Regulus regulus						2016: Recorded in coniferous northern section of Calf Heath Wood where common, probable breeder.	None recorded on Main site or Reservoirs during survey period.
Blue tit	Cyanistes caeruleus						Common. 2016: Bird seen entering a bird box on a building in Firtree Cottage property. Subsequently juvenile bird noted at same location. Family groups recorded in hedge around Police Station on A5, in hedge east of Gailey Wharf, in Reservoir Plantation, south of the quarry workings, two families south of the Quarry entrance and three families at eastern tip of Calf Heath Wood.	Common throughout wooded areas of main sites and woodlands surrounding reservoirs.

³ Pers. Comm.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Great tit	Parus major						Common. 2016: Bird seen entering a hole in a tree west of Gailey Magazine, east of the canal. Assumed nest site. Juveniles recorded nearby on subsequent visit and family groups recorded east of Gailey Wharf and in hedge north of Vicarage Road.	Common throughout wooded areas of main sites and woodlands surrounding reservoirs.
Coal tit	Periparus ater						2016: Recorded in Calf Heath Wood in coniferous parts of the wood, not common. Probable breeder.	Recorded throughout woodland areas within main site boundary.
Skylark	Alauda arvensis	*	*	*			At least 14 territories, largely west of the canal and in set aside north of Calf Heath Wood.	Individuals recorded in farmland (Feb-Mar) within the main site, parallel to Vicarage Road. One flight recorded over farmland north of Gailey Reservoirs.
Swallow	Hirundo rustica				*		Four birds in and out of barns at Woodside Farm in 2016 (assumed nesting). Other birds associated with Avenue Cottages and Gailey Farm (2016) and seen entering/ suspected of entering two buildings north of Straight Mile (2017) and probable breeders at these properties. Other birds in flight over site.	None recorded on Main site or Reservoirs during survey period.
Long tailed tit	Aegithalos caudatus						Seen at Gravelly Way and the quarry. Flock north of Calf Heath Wood. Probable breeder.	Common within Main site along Gailey Canal/Wharf and at edges of Calf Heath woods and quarry site.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Chiffchaff	Phylloscopus collybita						Widespread, typically in woodland/scrub. Probable breeder.	Recorded in wooded areas surrounding Calf Heath Reservoir.
Willow warbler	Phylloscopus trochilus				*		Two clusters and one singing record suggests three pairs north of Station Road (2016). A further signing male south of Station Road in 2017	None recorded on Main site or Reservoirs during survey period.
Garden warbler	Sylvia borin						Two records west of Woodside Farm adjacent to Bericote Land 2017. Probable breeder.	None recorded on Main site or Reservoirs during survey period.
Blackcap	Sylvia atricapilla						Recorded in small numbers. Probable breeder in woodland/scrub.	None recorded on Main site or Reservoirs during survey period.
Lesser whitethroat	Sylvia curruca						Single record in the south east of the site adjacent to Vicarage Road in 2016. Possible breeder.	None recorded on Main site or Reservoirs during survey period.
Whitethroat	Sylvia communis						Widespread, typically recorded in hedges across the site. Probable breeder.	None recorded on Main site or Reservoirs during survey period.

Common name	Species	5.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Nuthatch	Sitta europaea						Recorded in Reservoir Plantation and small woodland north of Gravelly Way adjacent to the A449 in 2016.	None recorded on Main site or Reservoirs during survey period.
Tree creeper	Certhia familiaris						Single birds calling in two locations in Calf Heath Wood (2016). Possible breeder.	An individual recorded in wooded areas surrounding Calf Heath Reservoir.
Wren	Troglodytes troglodytes						Common breeder.	Individuals common throughout wooded areas within the Main site and woodland surrounding Reservoirs.
Starling	Sturnus vulgaris	*		*			At least two pairs likely breeding in buildings off site (2016); all 2016 records near Croft Lane including five with two juveniles on the second visit. 2017: flock on third visit close to southern boundary of the site, not suspected of breeding in land south of Station Road.	Relatively common over the main site in groups, feeding in farmland areas within the Main site boundary. Two groups recorded feeding in farmland north of Gailey Reservoirs, 1 flight recorded here also. Group of 4 recorded within wooded perimeter of Calf Heath Reservoir.
Blackbird	Turdus merula						Common breeder. Juveniles seen, for instance east of the canal, south of the A5 in 2016. Pair with juveniles in hedge north of Vicarage Road in 2016.	Common throughout all sites.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Fieldfare	Turdus pilaris			*			N/A	Large groups commonly recorded Nov-Feb. Flocks were observed feeding in woodland areas surrounding Calf Heath Reservoir and within hedgerows and fields along Gailey Lea Lane. Flocks were also recorded throughout the main site boundary, namely in fields and woodlands to the north west near Croft Lane. None recorded in March.
Song thrush	Turdus philomelos	*		*			c. 12 territories with several in Calf Heath Wood, although widespread across whole site. Seen carrying food into wood on one visit in 2016.	Recorded in small numbers over the main site feeding in farmland fields. 1 record at Calf Heath within wooded perimeter.
Redwing	Turdus iliacus			*			N/A	Large flocks recorded within main site boundaries in Jan-Feb. Groups noted feeding in treelines and fields between Stable Land and the M6, also in farmland west of Stable Lane.
Mistle thrush	Turdus viscivorus			*			Three to four pairs; pair with two juvenile seen on northern boundary of Calf Heath Wood in 2016.	Relatively common in farmland throughout the main site. Two recorded within wooded perimeter of Calf Heath Reservoir. 1 recorded feeding along Gailey Lea Lane.
Robin	Erithacus rubecula						Common breeder. Juvenile seen south of Gravelly Way in 2016.	Common throughout wooded areas within each site.
Dunnock	Prunella modularis	*			*		Widespread although mostly in the west of the site. At least 20 pairs.	Common in wooded areas throughout all sites.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
House sparrow	Passer domesticus	*	* *	*			Seven locations/colonies recorded of which three probably involve nesting off site. Birds noted at Fir Tree Cottage and Woodside Farm (where seen to enter building, assumed to be visiting nest in 2016). Number of pairs involved is unknown, but no more than 5 pairs suspected north of Station Road. South of Station Road two locations with significant concentration at Heath Farm which has several nest boxes (2017).	Recorded in Calf Heath woodland and once within wooded areas surrounding Gailey reservoirs. Various registrations within hedgerows along Straight Mile Road. Larger groups of 10-30 individuals located within hedgerows lining Croft lane at the NW corner of the site. Individuals were also recorded scattered throughout the main site in smaller numbers.
Yellow wagtail	Motacilla flava	*		*			Pair noted north of Gravelly Way on second visit in 2016, male plus possible other bird at Gailey on visit 3 2016. Probable breeder, 1-2 pairs.	None recorded on Main site or Reservoirs during survey period.
Pied wagtail	Motacilla alba						2016: Birds seen in quarry and at Woodside Farm. Juvenile seen east of Firtree Cottage, west of railway line.	Individuals noted at Gailey Reservoirs feeding along division bank.
Chaffinch	Fringilla coelebs						Common. 2016: Pair seen with nesting material by Canal east of Gravelly Way Farm. Pair with juveniles in hedge north of Vicarage Road.	Common throughout wooded areas within each site.
Bullfinch	Pyrrhula pyrrhula	*	*		*		2016: Possible breeder in two locations (potentially off site).	Individual male recorded feeding in hedgerows along Gailey Canal during February and March visits.
Greenfinch	Chloris chloris						Not common. 2016: Recorded in the north of the site and next to the railway line. Possible breeder.	None recorded on Main site or Reservoirs during survey period.

Common name	Species	s.41	LBAP	Red	Amber	Sch.	Breeding status / notes	Wintering Birds
Linnet	Linaria cannabina	*	* *	*			Four colony locations; at least seven pairs in 2016. Concentration of records in set aside fields north of Calf Heath Wood.	Small groups and individuals recorded in wooded areas throughout the main site. No sightings in Jan or Mar. 1 record within woodland at the edge of Calf Heath Reservoir. 1 flight recorded over Gailey Lower Reservoir.
Goldfinch	Carduelis carduelis						Small groups recorded across the site. Probable breeder.	Recorded across the main site and along Gailey Canal (attracted by feeders).
Yellowhammer	Emberiza citrinella	*	* *	*			At least 13 pairs, notable concentrations north of Calf Heath Wood and fields north of Vicarage Road (2016) and south of Station Road (2017).	None recorded on Main site or Reservoirs during survey period.
Reed bunting	Emberiza schoeniclus	*	* *		*		Singing birds in two locations on single dates in 2016 (one just off site), calling bird in third location. Probable breeder, 1-2 pairs.	Recorded along marsh areas of division bank between Gailey Upper and Lower Reservoirs. 1 record near pools neat Calf Heath woods. 2 recorded east of the Gailey Canal and Croft Lane.

**: part of 'Farmland seed eating birds' local BAP

Annex 10.1.5

Biocensus Invertebrate Survey Report



An Invertebrate survey and assessment of Four Ashes, Staffordshire

Presented to Ramboll Environ

Date: September 2017

Version: 1.0

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Executive Summary

Purpose of the report

This report details an assessment of the invertebrate interest at Four Ashes, Staffordshire. The survey undertaken is to appraise the key habitats and/or features and assess the conservation value of the habitats for key assemblage and scarce species.

Context of the project

This report is part of a wider suite of ecological surveys being undertaken at Four Ashes prior to a proposed development.

Key findings

The site includes a quarry, woodland, grassland, wetland features and tree-lined boundary features. The overall assemblage of invertebrates utilising this landscape is one represented by common and largely ubiquitous species. There are suites of higher fidelity species associated with the key areas of the site including those that require bare ground, deadwood or wet ground, including marshes, wet woodland and pools. There are eight species of genuine rarity associated with the site and one Staffordshire Biodiversity Action Plan (SBAP) representative.

Conclusions

The site is a landscape-scale proposed development that includes a range of habitats. The habitat diversity is broadly poor with only a few invertebrate assemblage types noted. The principal assemblages relate to woodland, wood edge and trees, bare ground and early succession and wetlands. The niches of value are few and not particularly well-developed, as highlighted by the ISIS analyses.

There are only a few species with a national status that supports the assessment of the habitat being of low to moderate quality and lacking significant niche development, being largely populated by common and localised species indicative of a broad suite of preferences rather than a tight set of habitat criteria.

Although the resource of invertebrates of the landscape is generally considered of low conservation value, the footprint of the site is large and therefore impacts across large areas of the site could affect local populations of species. However, through suitable mitigation there are no species recorded in the area that would be considered to be at risk by the proposed development.



I confirm the information provided in this document is truthful and accurate at the time of completion.

Andy Jukes (BCs (Hons) FRES MIEEM



Date: 03.09.17

Biocensus QA: Gavin Wilson



Date: 04/09/2017



Introduction

1.1. Background

The survey was carried out by Andy Jukes, (B.Sc. (Hons), CIEEM, FRES.).

The survey was commissioned by Malcolm Robertson of Ramboll UK.

The site comprises a number of specific survey locations, surveyed in 2016:

• Calf Heath wood (central grid reference SJ922095)

An area of coniferous plantation and secondary broad-leaved woodland. The majority of the broad-leaved woodland is birch (*Betula pendulus*) with smaller areas of oak (*Quercus* spp). The woodland is bisected by two wide rides. Surveyed in 2016.

• Calf Heath quarry (central grid reference: SJ928097)

An active sand and gravel extraction site with areas of disuse that includes mounds of aggregate and regenerating flora. Surveyed in 2016.

Calf Heath 'landscape' (grid reference: SJ914099)

The landscape of the site is broadly arable with hedgerows with trees and small units of woodlands or clusters and lines of trees. Surveyed in 2016.

• Sample area 1 (central grid reference: SJ91840984)

Area of woodland fringe against tall grassland and wet ditch.

• Sample area 2 (central grid reference: SJ91360856)

A small grassland bordered by tree lines and unmanaged hedgerows. It includes a spring blossom resource and pignut-rich (*Conopodium majus*) grassland. Surveyed in 2016.

• Sample area 3 (central grid reference: SJ91120988)

An area of marshy grassland, arable weeds and wet ditch.



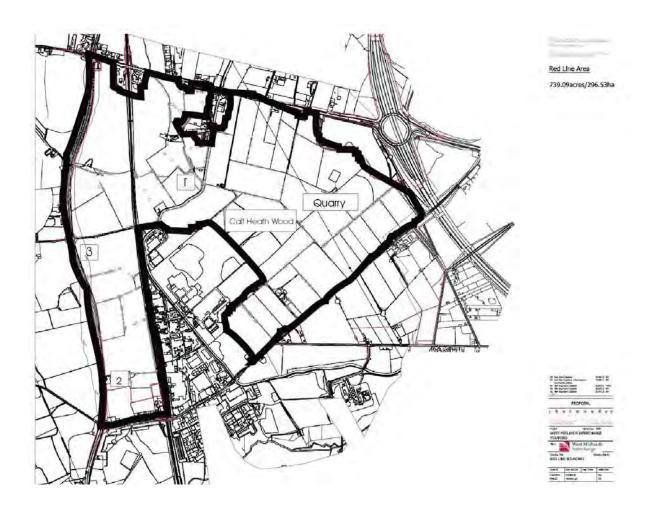


Figure 1 Map of site surveyed in 2016

Key to figure 1:

Thick black line boundary demarcates the area assessed

Points 1-3 are the focal survey points

Land south of Vicarage Road was surveyed in 2017 and comprises of a further two sample areas.



• Sample area 4 (central grid reference: SJ93290883)

A small part of a larger wet woodland that is separated by a road (Straight Mile). Surveyed in 2017.

• Sample area 5 (central grid reference: SJ92800898)

A mosaic of tall grassland, arable margins, pond and unmanaged hedges with mature trees.

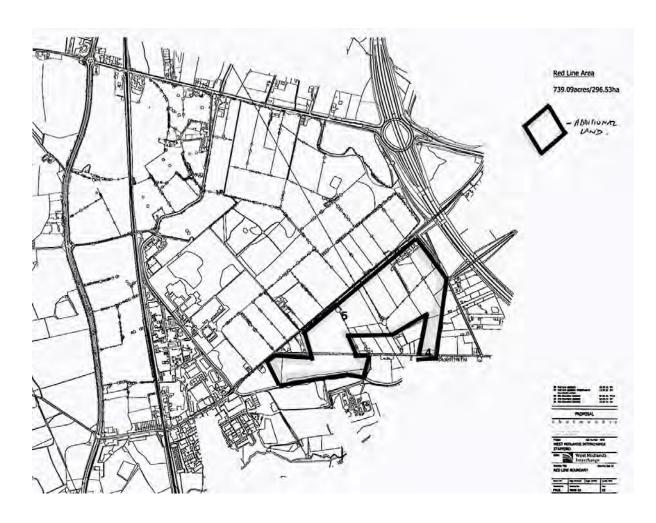


Figure 2 Map of Land south of Vicarage Road surveyed in 2017

Key to figure 2:

Thick black line boundary demarcates the area assessed

Points 4-5 are the focal survey points



2. Methods

2.1. Field methods

The methods utilised for the assessment are those recommended in the Natural England guidance document 'Surveying terrestrial and freshwater invertebrates for conservation evaluation' (Drake, 2007). In some instances the method has been made bespoke for the site assessment but still retains the overall approach to assessing features and habitats for conservation assessment.

Sweep netting

This method provides the main proportion of the survey element, and is the most efficient method of cataloguing a site's invertebrate resource.

Spot sampling

Spot sampling is employed to collect large, conspicuous invertebrates such as bees and wasps from flowering plants, and to supplement the sweep samples. Spot sampling is often the most effective method of recording species from high-fidelity niches.

Grubbing

Fallen deadwood, piles of rotting timber (for deadwood beetles), short turf (for surface running beetles) and bare ground are fingertip searched for any hiding or crawling invertebrates, principally beetles.

Pitfall traps

Pitfall traps set in a grid pattern were placed in two locations; sample area 4 and sample area 5.

2.2 Taxonomic groups covered

The groups that formed the assessment are those that are widely used and accepted as of greatest value to site assessment and appraisal and the key indicator groups used in the Natural England Invertebrate assessment software programme ISIS (Lott *et al.*, 2010) and recommended by Drake *et al.* (2007) The principal groups are likely to include:

- Bees and wasps (early succession, bare ground, flowery habitats and structural variation);
- Various fly families including hoverflies (range of habitats types, especially structural habitats);
- Butterflies and day-flying moths (particularly early succession, short swards and woodland fringe):
- Heteropteran bugs (range of habitats including bare ground, scrub fringe and grasslands);
- Beetles including leaf beetles, ground beetles and water beetles (range of habitats including bare ground, structural habitats and flowering plants);
- Orthoptera (grasshoppers and crickets); and
- Odonata (dragonflies and damselflies).



Other incidental records from other groups were also included.

Specimens were identified to species level.

Details of the survey coverage and dates undertaken is presented in Table 1.

Table 1. Survey dates

Date	Environmental	Calf	Calf	Calf Heath	Sample	Sample	Sample	Sample	Sample
	conditions	Heath	Heath	landscape	area 1	area 2	area 3	area 4	area 5
		wood	quarry						
24.05.16	Sunny, 19°C	*							
05.06.16	Sunny 16-23°C		*	*	*	*	*		
06.06.16	Sunny, 19°C	*	*						
22.06.16	Sunny 16-19°C		*						
23.06.16	Sunny, 18-23°C		*						
04.07.16	Cloudy-sunny, 16- 19°C	*	*		*	*	*		
05.07.16	Sunny, 19-21°C		*						
04.08.16	Light cloud-sun, breezy16-18°C	*			*		*		
05.08.16	Light cloud-sun 17-18°C			*					
09.08.16	Cloud and sun 16- 18°C	*	*						
09.09.16	Sunny 15-19°C		*		*		*		
23.09.16	Light cloud and sun 17-19°C	*							
22.05.17	Sunny 16-20°C							*	*
17.06.17	Sunny 22-28°C							*	*
22.07.17	Sunny 17-20°C							*	*

2.1.1. Analysis of data

ISIS (Invertebrate Species—habitat Information System) is used in the analysis of invertebrate data to assist the specialist in the appraisal of any features or habitats of potential value to invertebrates. ISIS is a computer application that can be used to identity assemblages of importance when species lists are inputted into the computer software. This is particularly useful for identifying key areas of



interest and importance and monitoring site changes as management alters habitat structure and species composition. A full explanation of ISIS can be found in Appendix V.

2.1.2. Interpretation of data

Rarity scores for each BAT (Broad Assemblage Type) generated by ISIS have a favourable condition threshold. This threshold is a benchmark used for the condition assessments (Common Standards Monitoring - CSM) of Sites of Special Scientific Interest (SSSI) but can also be used as a guide to the value of sites outside of the SSSI system. There is no national guidance on benchmarking wider countryside sites but a professional judgement can be made on the quality of an assemblage based on the scores returned by ISIS. The judgement is translated into a valuation on the assemblages though using the broad categories of 'low', 'moderate' or 'high' based on the returned ISIS scores and interpretation by the specialist.

Table 2. Threshold scores table

BAT code	BAT name	Favourable condition threshold score
A1	Arboreal canopy	170
A2	Wood decay	190
F1	Unshaded early	160
	successional mosaic	
F2	Grassland and scrub matrix	160
F3	Shaded field and ground	150
	layer	
W1	Flowing water	160
W2	Mineral marsh and open	150
	water	
W3	Permanent wet mire	180

Specific Assemblage Types (SAT) are characterised by stenotopic species (those that can only withstand a narrow range of environmental conditions). These sit within a parent BAT as presented in the table above and provide additional detail and definition. More than one SAT can sit within a parent BAT.

Table 3. Table of SAT threshold scores

SAT code	SAT name	Number of scoring species
		to reach favourable
		condition
A211	Heartwood decay	6
A212	Bark and sapwood decay	19
F111	Bare sand and chalk	18
F112	Open short sward	12
F001	Scrub edge	12
F002	Rich flower resource	14
F003	Scrub-heath and moorland	8



SAT code	SAT name	Number of scoring species
		to reach favourable
		condition
W122	Riparian sand	4
W312	Sphagnum bog	7
W314	Reedfen and pools	10

2.1.3. Limitations

The site includes areas that could not be sampled for health and safety reasons including the silt lagoon areas, bank sides of the quarry and horse paddocks.

3. Results

3.1. General

420 species were recorded during the survey across the study area as shown in Figure 1 and Figure 2.

A dedicated ISIS (2010) analysis table and species list was prepared for each component of the study area as shown in Figure 1 and Figure 2 including:

- Calf Heath wood;
- Calf Heath quarry;
- Calf Heath 'landscape' which includes:
 - o Sample area 1;
 - o Sample area 2;
 - o Sample area 3;
- Land south of Vicarage Road which includes:
 - o Sample area 4;
 - o Sample area 5.

The results of the ISIS analysis are presented in Appendices I-III.

Table 4. Species of importance identified during survey

Scientific name	Vernacular	National	Habitat preferences	Sample location
	name	status	and species notes	
Bombus rupestris	Cuckoo	NS B	No specific habitat	Calf Heath wood.
	bumblebee		preferences. More	
			common than status	
			suggests.	



Scientific name	Vernacular	National	Habitat preferences	Sample location
	name	status	and species notes	
Chiasmia	Latticed	S41	Dry grassland,	Found across the
clathrata	Heath		brownfields and heaths	landscape along
			with trefoils.	sparse, fine-
				leaved grass
				track verges with
				trefoils.
				Specifically along
				the edges of
				arable fields.
Diogma glabrata	A cranefly	NS	Damp woodlands	Calf Heath wood.
Rhamphomyia	A dancefly	NS	Shaded woodland	Specific to
тісгоруда			floor	sample area 4
Rhaphium	A dolyfly	NS	Wetlands on peat	Specific to
albomaculatum				sample area 4
Rhaphium	A dolyfly	NS	Wetlands on peat	Specific to
lanceolatum				sample area 4
Tyria jacobaeae	Cinnabar	S41	Open habitats where	Found across the
			there is ragwort.	landscape.
Aculeate	Ground-	Staffordshire	Bare ground and	Quarry (19
hymenoptera	nesting	Biodiversity	flowery swards.	species – all
	solitary bees	Action Plan	Structured sites.	common or local)
	and wasps	(SBAP)		and, to a lesser
				extent, landscape
				(6 species – all
				common or
				local).

3.2. Calf Heath wood

133 species of invertebrates from the target groups were recorded in Calf Heath Wood.

The woodland is represented by a range of common and ubiquitous invertebrate species synonymous with low quality woodlands as noted by the poor ISIS scores in Appendix I. The typical woodland assemblage 'shaded field and ground layer' scores 140 which can be described as a moderate score and the arboreal canopy (BAT: A1) has a score of 119, a low score, although this assemblage is difficult to sample effectively.

The SAT scores are also poor but do present species from typical assemblages associated with woodlands including the scrub edge (F001) with 3 species of association, heartwood decay (A211) and barkwood decay (A212) both with two species of association.

The majority of the woodland is birch dominated or coniferous plantation. There are however small areas of oak woodland with mature trees and also a series of mature beech trees (*Fagus sylvatica*).



There is one genuinely scarce species recorded from the woodland. *Diogma glabrata* is normally associated with calcareous sites but can be found in other locations that are damp. There are damp features within this woodland and it was along the shaded damp rides at SJ 92341 09614 on 4 July that this species was swept from.

Bombus rupsestris was recorded from a visual observation on 4 July 2016 from the south east-northwest ride of the woodland (SJ 92176 09351). It is still listed as being Nationally Scarce B but has expanded its range significantly and sustainably over the past 20 years and it is likely to be downgraded in the upcoming aculeate hymenoptera review.

See Appendix I for the ISIS table.

3.3. Calf Heath quarry

90 species from the targeted groups were recorded from the quarry, including solitary bees and wasps (principal survey requirement).

The quarry includes a large component of bare ground, including unshaded areas with a southerly exposure. However, results of the survey have shown the fauna associated with bare ground to be limited and it includes only common and local species.

The ISIS results for the quarry illustrate this low value of the site with a low rarity score (119), favourable status threshold being 160, for the key unshaded early successional mosaic BAT (BAT code: F1). See Appendix II for ISIS table.

The range of species recorded from the quarry does however include typical species of open bare ground sites. This suite of species includes spider-hunting wasps and mining bees such as *Lasioglossum parvulum*, all indicative of open, sparsely vegetated ground.

3.4. Calf Heath landscape

172 species from the targeted groups were recorded across the landscape, including the three sample points (Sample Areas 1 -3).

The strongest rarity score and most representative invertebrate assemblage in terms of extent across the site is the F2 grassland and scrub matrix. This has a score of 127 and can be described as a moderate score with 160 being the threshold for 'favourable status'. The assemblages across the landscape are the unshaded early successional mosaic BAT with a rarity score of 120 (threshold = 160), permanent wet mire with 125 (threshold = 180) and the arboreal canopy with a rarity score of 129 (threshold = 170).

The landscape around the quarry and woodland is predominately arable fields with a variety of boundary features such as hedgerows, lines of deciduous trees, to gravelly tracks and verges with flowers.

This is reflected in the species recorded whose habitat preferences range from woodland and wood edge species to those more characteristic of open, sparse swards on heathlands and brownfield



sites. On a landscape scale, the ISIS results (see Appendix III) have a set of scores that can be described as moderate in their value with respect to the rarity scores.

There are very few species of high conservation value in the landscape. These are listed in Table 1. Most are common in open or shaded habitats. There are suites of species though more selective in their requirements and a range of niche 'high fidelity' species are present. The most obvious is the scrub edge assemblage (F001). Although only six species were recorded from the feature including the speckled wood butterfly it is thought to be a stronger SAT (Specific Assemblage Type) than this analysis suggests, as the presence of unmanaged boundary tree lines and woodland fringes are present across the site. See Appendix IV for a description of SATs.

The bark and sapwood decay SAT (A212) is also present at a moderate level across the site found at most wooded areas, including tree lines but as there is not a significant deadwood component at each location, the resource of invertebrate species appears to be small. Seven species are recorded from this SAT (threshold for favourable status = twelve). The site includes a number of large oak trees that exhibit some deadwood including rot on the trunks or prominent limbs.

The rich flower resource (F002) includes four species including hoverflies, which is not a high number relative to the threshold for favourable condition (14) but does suggest that there is a resource of flowering plants around the site that support pollinators.

3.5. Land South of Vicarage Road

179 species from the targeted groups were recorded from sample areas 4 and 5.

The most representative invertebrate assemblage in terms of extent across the site is the F2 grassland and scrub matrix. This has a score of 120, which can be described as a low to moderate score, with 160 being the threshold for 'favourable status'.

The assemblage with the greatest value was the permanent wet mire with 169 (threshold = 180) and is largely restricted to the wet woodland of sample area 4. Three species of national significance were identified, which were not recorded elsewhere across the application area (*Rhamphomyia micropyga*, *Rhaphium albomaculatum* and *Rhaphium lanceolatum*).

The arboreal canopy element is not strong or well developed, with a low score of 114 (threshold = 170). The value for invertebrates of the woodlands, and specifically the trees, is in the deadwood element. Eleven species were recorded that have a fidelity to deadwood, mainly from the A212 bark and sapwood decay SAT.

Generally, across the Calf Heath Extension area, the landscape presents a range of features from rich flower resources to open short swards. However none of these specific assemblages were strong on the basis of species lists, where common species only were recorded on the open habitats.



4. Discussion and assessment of invertebrates at Four Ashes

4.1. General

Overall, the varying sites, features and landscape are of low to moderate quality mainly being represented by common and local species that have a broad habitat preference such as 'open grassland', 'scrub fringe' or 'tree cover'.

There is however a suite of species that have a higher demand from a landscape or site and if not catered for could be lost from the area if all the resources are impacted through a proposed development.

4.2. Woodland and trees

The key areas of the woodland habitats, including Calf Heath Wood, identified to be of value to invertebrates include deadwood that is either on the tree or has fallen. Some of the fallen deadwood that was recorded as being utilised was in a sunny exposed situation which was shown to be favoured by solitary bees and wasps. Deadwood that was noted to be present in semi-shaded and sometimes damp situation was observed to be favoured by flies and beetles. The mature beech and oak trees within Calf Heath Wood offer the most important or potentially important features in the woodland, however, they are shaded heavily from surrounding lower value trees. Haloing of these trees to expose them to greater levels of sunlight would increase the chances of them getting to a veteran age and state and be utilised by the corresponding fauna.

The landscape includes a number of trees that are of some current interest to invertebrates. The value and interest of these trees to invertebrates will increase in the future as they become veteran and exhibit more deadwood and other rotting features.

Trees with deadwood growing in open situations and exposed to strong sunlight are the source location of a suite of solitary wasps and bees.

4.3. Wet areas

Permanent wet mire was recorded on site in both open situations and also in a wet woodland situation. These habitats were not considered to be prominent features in the landscape but were present at a small spatial extent across the application site. The wet woodland of sample area 4 is notable due to the presence of three species of national significance not recorded elsewhere across the application area (*Rhamphomyia micropyga*, *Rhaphium albomaculatum* and *Rhaphium lanceolatum*). Outside the wet woodland, wetland invertebrate fauna included a number of common and also local species such as the localised soldierflies *Oxycera rara*, *Oplodontha viridula* and a suite of snail-killing flies (Sciomyzidae) that have fidelity to wet grasslands, marshes and pond/wet ditch margins.



4.4. Quarry (bare ground and early succession)

The quarry does not support a significant early successional mosaic assemblage but does contain species that are localised and require a mosaic of habitats including; bare ground, short sward flowery grassland that includes a range of herbs including yellow composites and Fabaceae, and scrub/rough grassland to survive. This resource is mainly contained in the quarry but there is a landscape scale presence of bees and wasps including *Andrena synadelpha* a local species of mining bee.

There is no single reason for the lack of aculeates (bees, wasps and ants) at the quarry site. It is considered that the relatively short list of species recorded may be attributable to a cumulative set of factors including:

- The quarry area lacks the early successional swards that include plentiful flowers such as common bird's-foot trefoil (*Lotus corniculatus*) and especially yellow composites including common cat's-ear (*Hypochoeris radicata*); and
- The consistency of the waste material that forms the bare ground. At the quarry this material is hard and compacted, possibly too hard for many species that prefer a more friable substrate.

5. Conclusions

The site is a landscape-scale proposed development site that includes a range of habitats. The habitat diversity is broadly poor in terms of invertebrate assemblage types. The principal assemblages relate to woodland, wood edge and trees, bare ground and early succession and wetlands. The niches of value are few and not particularly well-developed as highlighted by the ISIS analyses.

Seven species with a national status and one Staffordshire Biodiversity Action Plan species group were identified. These findings support the assessment of the habitat being of low to moderate quality and lacking significant niche development, with the exception of the small wet woodland area of sample area 4, which is of true value despite being a small fragmented wet woodland unit. The habitats identified are largely populated by common and localised species indicative of a broad suite of preferences rather than a specialised set of habitat criteria.

6 Valuation

All of the sample locations that form the landscape-scale survey have very few species of high or moderate value pertaining to it and those that are recorded are likely to be found at other similar sites as the landscape of the site is representative of the local area.

The valuation of the site takes into consideration all of the preceding information and discussion, the range of species recorded, including the few scarce species but also the overall quality of the assemblages discovered and analysed using ISIS (2010). This valuation also considers the potential for other scarce species to be present.

Based on the experience of the surveyor, his knowledge of invertebrates and specific knowledge of Staffordshire's invertebrate fauna, and also by consulting the guidance notes prepared by Colin Plant



Associates for CIEEM (Chartered Institute of Environmental Managers and Ecologists) (Appendix V) it is suggested that the site, as a landscape-scale site should be considered to be of **Local (low) importance** (Plant, 2009). See Appendix VI for an explanation of Plant (2009).

The site is not thought to be of a higher value due to the generic species lists the sample sites produce and the likelihood that these locations are replicated repeatedly in other similar field systems of the area.

The only exceptions include the following species:

The nationally scarce *Diogma glabrata*, a species of cranefly recorded from Calf Heath Wood and not often seen but has been recorded from Cannock Chase by the author of this report and is likely to be in other damp woodlands and shaded stream courses of the area.

The suite of species only recorded from sample area 4 (wet woodland). These nationally scarce species (*Rhamphomyia micropyga, Rhaphium albomaculatum* and *Rhaphium lanceolatum*) are likely to be recorded on the adjacent larger wet woodland unit and at other wet woodland situations on Cannock Chase.



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Appendices

Appendix I

Calf Heath Wood ISIS output tables and species list

SAT code	SAT name	No. spp.	Percentage of Condition national species pool	Related BAT rarity score
F001	scrub edge	3	2	
F002	rich flower resource	3	1	
A211	heartwood decay	2	1	
W312	Sphagnum bog	1	1	
	scrub-heath &			
F003	moorland	2	1	
	bark & sapwood			
A212	decay	2	0	

All SATs scoring more than zero are listed

The broad assemblage types represented in this list are as follows:

BAT	BAT name	Representation (1-100)	Rarity score	Condition	BAT species richness	IEC
	grassland & scrub					
F2	matrix	25	119		32	
	shaded field &					
F3	ground layer	15	140		20	
A1	arboreal canopy	12	119		16	
W3	permanent wet mire	12			15	
A2	wood decay	8			11	0
	unshaded early					
F1	successional mosaic	8			10	
W1	flowing water	5			6	
	mineral marsh &					
W2	open water	5			6	



Rarity scores are shown only for BATS represented by more than 15 species in the assemblage / fauna being analysed

Acanthosoma haemorrhoidaleHawthorn Shieldbug23-Sep-16Aeshna grandisBrown Hawker04-Aug-16Aglais ioPeacock24-May-16Agriotes acuminatusa click beetle24-May-16Agriotes pallidulusa click beetle06-Jun-16Anaspis thoracicaa beetle04-Aug-16Ancistrocerus gazellaa mason wasp04-Jul-16Anthocharis cardaminesOrange-tip24-May-16Anthocoris confususa true bug24-May-16Anthocoris nemoruma true bug24-May-16Aphantopus hyperantusRinglet04-Jul-16Argyra diaphanaa dolyfly06-Jun-16Athous haemorrhoidalisa click beetle24-May-16Austrolimnophila ochraceaa cranefly04-Jul-16
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Athous haemorrhoidalis a click beetle 24-May-16
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Austrolimnophila ochracea a cranefly 04-141-16
Austrominiophila delirated a craneny 04-jul-10
Baccha elongata a hoverfly 24-May-16
Beris clavipes a soldierfly 24-May-16
Beris geniculata a soldierfly 04-Jul-16
Betulapion simile a weevil 04-Aug-16
Bombus hortorum Small Garden Bumble Bee 06-Jun-16
Bombus hypnorum a bumblebee 04-Jul-16
Bombus lapidarius Large Red Tailed Bumble Bee 24-May-16
Bombus pascuorum Common Carder Bee 24-May-16
Bombus pratorum Early Bumble Bee 24-May-16
Bombus rupestris a cuckoo bumblebee 04-Jul-16
Bombus terrestris Buff-tailed Bumble Bee 06-Jun-16
Bombus vestalis a bumblebee 04-Jul-16
Campyloneura virgula a true bug 04-Aug-16
Cantharis livida a solider beetle 24-May-16
Cantharis nigra a solider beetle 06-Jun-16
Cantharis rustica a solider beetle 24-May-16
Cheilosia albitarsis sens. str. a hoverfly 24-May-16
Cheilosia proxima a hoverfly 04-Jul-16
Cheilosia variabilis a hoverfly 24-May-16
Chrysogaster solstitialis a hoverfly 04-Jul-16
Chrysopilus cristatus a snipefly 06-Jun-16
Clytus arietis Wasp Beetle 06-Jun-16
Crepidodera aurata a leaf beetle 24-May-16
Dalopius marginatus a click beetle 24-May-16



Deporaus betulae	Birch Leaf Roller	04-Jul-16
Dicranomyia chorea	a cranefly	23-Sep-16
Dioctria rufipes	a robberfly	04-Jul-16
Diogma glabrata	a cranefly	04-Jul-16
Dolichocephala guttata	a hybotid fly	24-May-16
Dolichopus campestris	a dolyfly	24-May-16
Dolichopus discifer	a dolyfly	24-May-16
Dolichopus festivus	a dolyfly	04-Jul-16
Dolichopus griseipennis	a dolyfly	04-Jul-16
Dolichopus longicornis	a dolyfly	05-Jul-16
Elasmostethus interstinctus	Birch Shieldbug	23-Sep-16
Epiphragma ocellare	a cranefly	04-Jul-16
Erioptera fuscipennis	a cranefly	23-Sep-16
Eristalis horticola	a hoverfly	06-Jun-16
Eristalis pertinax	a hoverfly	24-May-16
Eristalis tenax	a hoverfly	24-May-16
Eupeodes corollae	a hoverfly	04-Jul-16
Ferdinandea cuprea	a hoverfly	06-Jun-16
Graphocephala fennahi	a froghopper	23-Sep-16
Habrocerus capillaricornis	a rove beetle	06-Jun-16
Haematopota pluvialis	a horsefly	04-Jul-16
Harpocera thoracica	a true bug	24-May-16
Helophilus hybridus	a hoverfly	04-Jul-16
Helophilus trivittatus	a hoverfly	04-Jul-16
Hercostomus aerosus	a dolyfly	04-Jul-16
Homoneura biumbrata	a fly	06-Jun-16
Hybos grossipes	a hybotid fly	04-Jul-16
Lasioglossum villosulum	Shaggy Mining Bee	06-Jun-16
Leptophyes punctatissima	Speckled Bush Cricket	04-Aug-16
Leucozona glaucia	a hoverfly	04-Jul-16
Leucozona lucorum	a hoverfly	24-May-16
Libellula depressa	Broad-bodied Chaser	24-May-16
Limonia nubeculosa	a cranefly	06-Jun-16
Limonia phragmitidis	a cranefly	24-May-16
Liocoris tripustulatus	a true bug	24-May-16
Lygocoris pabulinus	a true bug	04-Aug-16
Meiosimyza rorida	a fly	04-Jul-16
Melangyna lasiophthalma	a hoverfly	24-May-16
Melanostoma mellinum	a hoverfly	24-May-16
Minettia longipennis	a fly	04-Aug-16
Monalocoris filicis	a true bug	06-Jun-16
Myathropa florea	a hoverfly	06-Jun-16
Neoitamus cyanurus	a robberfly	06-Jun-16
Neolimnomyia batava	a cranefly	24-May-16



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Neolimonia dumetorum	a cranefly	06-Jun-16
Nephrotoma quadrifaria	a cranefly	06-Jun-16
Nephrotoma scurra	a cranefly	04-Aug-16
Nomada flava	a cuckoo bee	06-Jun-16
Nomada leucophthalma	a cuckoo bee	24-May-16
Notiophilus biguttatus	a ground beetle	06-Jun-16
Ochlodes sylvanus	Large Skipper	04-Jul-16
Ocydromia glabricula	a hybotid fly	06-Jun-16
Osmia leaiana	a mason bee	06-Jun-16
Otiorhynchus singularis	Raspberry Weevil	24-May-16
Pararge aegeria	Speckled Wood	24-May-16
Parydra coarctata	a shorefly	06-Jun-16
Pemphredon lethifera	a digger wasp	04-Jul-16
Phylidorea squalens	a cranefly	06-Jun-16
Phyllobius argentatus	Silver-green Leaf Weevil	24-May-16
Phyllobius pyri	Common Leaf Weevil	24-May-16
Phytocoris ulmi	a true bug	04-Aug-16
Pieris napi	Green-veined White	24-May-16
Plagiodera versicolora	a leaf beetle	24-May-16
Plagiognathus arbustorum	a true bug	04-Aug-16
Platycheirus manicatus	a hoverfly	24-May-16
Polydesmus angustus	Common Flat-backed	06-Jun-16
,	Millipede	
Polydrusus cervinus	a weevil	24-May-16
Polygonia c-album	Comma	04-Jul-16
Propylea	14-spot Ladybird	24-May-16
quattuordecimpunctata	. ,	,
Pyrrhosoma nymphula	Large Red Damselfly	24-May-16
Rhagio lineola	a snipefly	04-Jul-16
Rhagio scolopaceus	a snipefly	06-Jun-16
Rhagonycha fulva	a solider beetle	04-Jul-16
Rhagonycha lignosa	a solider beetle	24-May-16
Rhamphomyia nigripennis	a dancefly	06-Jun-16
Rhamphomyia tarsata	a dancefly	24-May-16
Rhaphium crassipes	a dolyfly	24-May-16
Rhipidia maculata	a cranefly	23-Sep-16
Saldula saltatoria	a true bug	04-Jul-16
Sargus iridatus	a soldierfly	24-May-16
Scolopostethus thomsoni	a true bug	04-Aug-16
Sericomyia silentis	a hoverfly	23-Sep-16
Sphaerophoria scripta	a hoverfly	23-3ep-10 04-Jul-16
Sybistroma crinipes	a dolyfly	06-Jun-16
Sympetrum striolatum	Common Darter	04-Jul-16
-		04-Jul-16 04-Jul-16
Syrphus ribesii	a hoverfly	U4-JUI-10



Tachyporus solutus	a rove beetle	24-May-16
Tipula fascipennis	a cranefly	04-Aug-16
Tipula oleracea	a cranefly	23-Sep-16
Tipula scripta	a cranefly	04-Jul-16
Tricholauxania praeusta	a fly	24-May-16
Trixagus dermestoides	a beetle	24-May-16
Volucella bombylans	a hoverfly	24-May-16
Volucella pellucens	a hoverfly	06-Jun-16
Xylota segnis	a hoverfly	06-Jun-16



Appendix II

Calf Heath Quarry ISIS output tables and species list

SAT code	SAT name	No. spp.	Condition	Percentage of national species pool	Related BAT rarity score
W122	riparian sand	1		2	
F111	bare sand & chalk	3		1	119
A211	heartwood decay	1		1	

All SATs scoring more than zero are listed

The broad assemblage types represented in this list are as follows:

BAT	BAT name	Representation (1-100)	Rarity score	Condition	BAT species richness	IEC
F1	unshaded early successional mosaic	37	119		32	
F2	grassland & scrub matrix	25	105		22	
W3	permanent wet mire	11			10	
	mineral marsh &					
W2	open water	10			9	
W1	flowing water	6			5	
A2	wood decay	2			2	0

Rarity scores are shown only for BATS represented by more than 15 species in the assemblage / fauna being analysed

Scientific name	Vernacular name	Date first recorded
Adonia variegata	Adonis' Ladybird	04-Jul-16
Adrastus pallens	a click beetle	04-Jul-16
Aeshna mixta	Migrant Hawker	09-Sep-16
Agabus bipustulatus	a water beetle	06-Jun-16
Agabus nebulosus	a water beetle	06-Jun-16
Aglais urticae	Small Tortoiseshell	23-Jun-16
Amara aenea	a ground beetle	23-Jun-16



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Amara plebeja	a ground beetle	23-Jun-16
Amara similata	a ground beetle	23-Jun-16
Ancistrocerus parietum	Wall Mason Wasp	05-Jul-16
Andrena bicolor	Gwynne's Mining Bee	23-Jun-16
Anisodactylus binotatus	a ground beetle	23-Jun-16
Anoplius concinnus	a spider-hunter wasp	05-Jun-16
Anoplius nigerrimus	a spider-hunter wasp	23-Jun-16
Arachnospila anceps	a spider-hunter wasp	23-Jun-16
Argyra argentina	a dolyfly	23-Jun-16
Bembidion lampros	a ground beetle	23-Jun-16
Bembidion tetracolum	a ground beetle	23-Jun-16
Bombus hortorum	Small Garden Bumble Bee	23-Jun-16
Bombus lapidarius	Large Red Tailed Bumble	23-Jun-16
·	Bee	
Bombus pascuorum	Common Carder Bee	23-Jun-16
Bombus sylvestris	a bumblebee	04-Jul-16
Bombus vestalis	a bumblebee	06-Jun-16
Cantharis nigra	a soldier beetle	05-Jul-16
Cantharis nigricans	a soldier beetle	23-Jun-16
Capsus ater	a true bug	05-Jul-16
Cheilosia illustrata	a hoverfly	23-Jun-16
Cheilosia proxima	a hoverfly	05-Jul-16
Chloromyia formosa	a soldierfly	23-Jun-16
Chrysogaster solstitialis	a hoverfly	23-Jun-16
Chrysotus gramineus	a dolyfly	05-Jul-16
Cicindela campestris	Green Tiger Beetle	06-Jun-16
Closterotomus norwegicus	a true bug	04-Jul-16
Colletes daviesanus	a mining bee	05-Jul-16
Crossocerus elongatulus	Slender Digger Wasp	05-Jul-16
Crossocerus ovalis	a digger wasp	05-Jul-16
Dioctria baumhaueri	a robberfly	04-Jul-16
Dolichopus griseipennis	a dolyfly	09-Aug-16
Dolichopus longicornis	a dolyfly	23-Jun-16
Enallagma cyathigerum	Common Blue Damselfly	23-Jun-16
Entomognathus brevis	a digger wasp	23-Jun-16
Eristalinus sepulchralis	a hoverfly	23-Jun-16
Eristalis arbustorum	a hoverfly	23-Jun-16
Eristalis intricaria	a hoverfly	23-Jun-16
Eristalis pertinax	a hoverfly	23-Jun-16
Eristalis tenax	a hoverfly	23-Jun-16
Eupeodes corollae	a hoverfly	06-Jun-16
Eupeodes luniger	a hoverfly	23-Jun-16
Halictus rubicundus	a mining bee	06-Jun-16
Halictus tumulorum	a mining bee	06-Jun-16
ranctus turnulululli	a mining bee	00 1011-10



Helophilus pendulus	a hoverfly	23-Jun-16
Helophilus pendulus	a hoverfly	04-Jul-16
Ischnura elegans	Blue-tailed Damselfly	06-Jun-16
Lasioglossum	Least Mining Bee	05-Jul-16
minutissimum		
Lasioglossum parvulum	a mining bee	23-Jun-16
Lasioglossum rufitarse	a mining bee	05-Jun-16
Lasioglossum villosulum	Shaggy Mining Bee	23-Jun-16
Leptopterna dolabrata	a true bug	05-Jul-16
Libellula depressa	Broad-bodied Chaser	06-Jun-16
Lindenius albilabris	a digger wasp	05-Jul-16
Lygus rugulipennis	a true bug	23-Jun-16
Maniola jurtina	Meadow Brown	23-Jun-16
Meligethes aeneus	Common Pollen Beetle	23-Jun-16
Myathropa florea	a hoverfly	04-Jul-16
Nephrotoma flavescens	a cranefly	05-Jul-16
Nephrotoma submaculosa	a cranefly	23-Jun-16
Notiophilus biguttatus	a ground beetle	23-Jun-16
Notiphila dorsata	a shorefly	09-Aug-16
Ochlodes sylvanus	Large Skipper	04-Jul-16
Oedemera lurida	a flower beetle	22-Jun-16
Oedemera nobilis	Swollen-thighed Beetle	22-Jun-16
Orthetrum cancellatum	Black-tailed Skimmer	04-Jul-16
Oxybelus uniglumis	Common Spiny Digger Wasp	23-Jun-16
Pipizella viduata	a hoverfly	23-Jun-16
Platycheirus albimanus	a hoverfly	09-Sep-16
Platycheirus manicatus	a hoverfly	23-Jun-16
Platycheirus rosarum	a hoverfly	09-Aug-16
Poecilus cupreus	a ground beetle	23-Jun-16
Polyommatus icarus	Common Blue	06-Jun-16
Rhagio tringarius	a snipefly	23-Jun-16
Saldula orthochila	a true bug	09-Sep-16
Scellus notatus	a dolyfly	06-Jun-16
Sphaerophoria scripta	a hoverfly	23-Jun-16
Sphecodes geoffrellus	a cuckoo bee	05-Jun-16
Sympetrum striolatum	Common Darter	23-Jun-16
Syntormon denticulatum	a dolyfly	09-Aug-16
Syritta pipiens	a hoverfly	23-Jun-16
Tiphia femorata	a solitary wasp	05-Jul-16
Vanessa cardui	Painted Lady	09-Aug-16
Volucella pellucens	a hoverfly	23-Jun-16



Appendix III

Landscape (including sample locations 1,2 and 3) ISIS output tables and species list

SAT	SAT name	No. spp.	Condition	Percentage of national species pool	Related BAT rarity score
F001	scrub edge	6		3	
	rich flower				
F002	resource	4		2	
	bark & sapwood				
A212	decay	7		1	
F112	open short sward	1		1	120
	scrub-heath &				
F003	moorland	1		0	
F111	bare sand & chalk	1		0	120

All SATs scoring more than zero are listed

The broad assemblage types represented in this list are as follows:

BAT code	BAT name	Representation (1-100)	Rarity score	Condition	BAT species richness	IEC
F2	grassland & scrub matrix	36	127		81	
F1	unshaded early successional mosaic	11	120		25	
W3	permanent wet mire	9	125		20	
A1	arboreal canopy	8	129		17	
F3	shaded field & ground layer	6			14	
A2	wood decay	5			12	1
W2	mineral marsh & open water	4			8	
W1	flowing water	2			5	



Rarity scores are shown only for BATS represented by more than 15 species in the assemblage / fauna being analysed

Scientific name	Vernacular name	Specific location	Date first
		first recorded	recorded
Aeshna grandis	Brown Hawker	CalfHeathSample3	04-Aug-16
Aglais io	Peacock	CalfHeathSample2	05-Jun-16
Altica lythri	a leaf beetle	CalfHeathSample3	09-Sep-16
Amara plebeja	a ground beetle	CalfHeathSample3	05-Jun-16
Andrena haemorrhoa	Early Mining Bee	CalfHeathSample2	05-Jun-16
Andrena minutula	a mining bee	CalfHeathSample3	04-Jul-16
Andrena nigroaenea	a mining bee	CalfHeathSample2	05-Jun-16
Andrena scotica	a mining bee	CalfHeathSample2	05-Jun-16
Andrena synadelpha	a mining bee	CalfHeathSample2	05-Jun-16
Andrena wilkella	a mining bee	CalfHeathSample2	05-Jun-16
Aphantopus hyperantus	Ringlet	CalfHeathSample3	05-Jul-16
Athous haemorrhoidalis	a click beetle	CalfHeath_Sample1	05-Jun-16
Beris chalybata	a soldierfly	CalfHeath_Sample1	05-Jun-16
Beris geniculata	a soldierfly	CalfHeath_Sample1	04-Aug-16
Bicellaria subpilosa	a hybotid fly	CalfHeathSample2	05-Jun-16
Bombus hortorum	Small Garden Bumble Bee	CalfHeathSample3	05-Jun-16
	Large Red Tailed Bumble		
Bombus lapidarius	Bee	CalfHeathSample2	05-Jun-16
Bombus pratorum	Early Bumble Bee	CalfHeathSample3	05-Jul-16
Bombus rupestris	a cuckoo bumblebee	CalfHeathSample3	05-Jun-16
Bombus vestalis	a bumblebee	CalfHeath_Sample1	05-Jul-16
Calopteryx splendens	Banded Demoiselle	CalfHeath_Sample1	05-Jun-16
Cantharis pallida	a soldier beetle	CalfHeathSample3	05-Jun-16
Cantharis rustica	a soldier beetle	CalfHeathSample3	05-Jun-16
Capsus ater	a true bug	CalfHeathSample3	04-Jul-16
Cercopis vulnerata	a froghopper	CalfHeath_Sample1	05-Jun-16
Ceutorhynchus obstrictus	a weevil	CalfHeath_Sample1	04-Aug-16
Chaetorellia jaceae	a fruitfly	CalfHeathSample2	05-Jun-16
Chalcosyrphus nemorum	a hoverfly	CalfHeathSample3	05-Jun-16
Cheilosia albitarsis sens. str.	a hoverfly	CalfHeathSample3	05-Jun-16
Cheilosia bergenstammi	a hoverfly	CalfHeathSample3	05-Jun-16
Cheilosia illustrata	a hoverfly	CalfHeath_Sample1	04-Aug-16
Cheilosia pagana	a hoverfly	CalfHeath_Sample1	04-Aug-16
Chorthippus albomarginatus	Lesser Marsh Grasshopper	CalfHeath_Sample1	04-Aug-16
Chorthippus parallelus	Meadow Grasshopper	CalfHeathSample3	04-Aug-16
Chrysogaster solstitialis	a hoverfly	CalfHeath_Sample1	04-Aug-16



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Chrysopilus cristatus	a snipefly	CalfHeathSample2	05-Jun-16
Chrysotoxum bicinctum	a hoverfly	CalfHeathSample3	04-Aug-16
Chrysotus gramineus	a dolyfly	CalfHeathSample3	05-Jul-16
Closterotomus norwegicus	a true bug	CalfHeath_Sample1	04-Aug-16
Coccinella septempunctata	7-spot Ladybird	CalfHeath_Sample1	05-Jul-16
Conocephalus discolor	Long-winged Conehead	CalfHeath_Sample1	04-Aug-16
Coreus marginatus	Dock Bug	CalfHeathSample3	05-Jul-16
Crepidodera aurata	a leaf beetle	CalfHeathSample3	05-Jun-16
Cyllecoris histrionius	a true bug	CalfHeath_Sample1	05-Jun-16
Dalopius marginatus	a click beetle	CalfHeath_Sample1	05-Jun-16
Dioctria atricapilla	a robberfly	CalfHeathSample2	05-Jun-16
Dolichopus campestris	a dolyfly	CalfHeath_Sample1	05-Jun-16
Dolichopus latilimbatus	a dolyfly	CalfHeathSample2	09-Sep-16
Dolichopus pennatus	a dolyfly	CalfHeathSample2	04-Jul-16
Dolichopus planitarsis	a dolyfly	CalfHeath_Sample1	05-Jun-16
Dolichopus trivialis	a dolyfly	CalfHeathSample3	05-Jul-16
Dolichopus ungulatus	a dolyfly	CalfHeath_Sample1	05-Jun-16
Dolycoris baccarum	Hairy Shieldbug	CalfHeathSample3	05-Jun-16
Dorytomus taeniatus	a weevil	CalfHeath_Sample1	05-Jun-16
Ectemnius continuus	a digger wasp	CalfHeath_Sample1	04-Aug-16
Elasmucha grisea	Parent Bug	CalfHeath_Sample1	04-Aug-16
Empis livida	a dancefly	CalfHeathSample2	04-Jul-16
Empis tessellata	a dancefly	CalfHeathSample2	05-Jun-16
Empis trigramma	a dancefly	CalfHeath_Sample1	05-Jun-16
Episyrphus balteatus	a hoverfly	CalfHeathSample2	05-Jun-16
Eristalinus sepulchralis	a hoverfly	CalfHeathSample2	05-Jun-16
Eristalis arbustorum	a hoverfly	CalfHeathSample3	04-Aug-16
Eristalis horticola	a hoverfly	CalfHeathSample3	04-Aug-16
Eristalis interruptus	a hoverfly	CalfHeathSample2	04-Jul-16
Eristalis intricaria	a hoverfly	CalfHeathSample2	05-Jun-16
Eristalis pertinax	a hoverfly	CalfHeath_Sample1	04-Aug-16
Eristalis tenax	a hoverfly	CalfHeathSample3	05-Jun-16
Eupeodes corollae	a hoverfly	CalfHeathSample3	05-Jul-16
Eupeodes luniger	a hoverfly	CalfHeathSample3	05-Jul-16
Haematopota pluvialis	a horsefly	CalfHeathSample3	05-Jul-16
Helophilus hybridus	a hoverfly	CalfHeathSample2	05-Jun-16
Helophilus pendulus	a hoverfly	CalfHeath Sample1	05-Jun-16
Hercostomus aerosus	a dolyfly	CalfHeathSample2	09-Sep-16
Hilara submaura	a dancefly	CalfHeathSample3	05-Jul-16
Hypera zoilus	a weevil	CalfHeathSample3	04-Aug-16
Ischnopterapion modestum	a weevil	CalfHeath_Sample1	04-Aug-16
Kibunea minuta	a click beetle	CalfHeath_Sample1	05-Jun-16
Lema cyanella	a leaf beetle	CalfHeath_Sample1	04-Aug-16
Leptogaster cylindrica	a robberfly	CalfHeathSample2	05-Jun-16
	,	23	22 2311 20



Leptopterna dolabrata	a true bug	CalfHeath_Sample1	04-Aug-16
Leucozona lucorum	a hoverfly	CalfHeathSample2	05-Jun-16
Limonia nubeculosa	a cranefly	CalfHeath_Sample1	05-Jun-16
Liocoris tripustulatus	a true bug	CalfHeathSample3	04-Aug-16
Lygus rugulipennis	a true bug	CalfHeathSample3	04-Aug-10 04-Aug-16
	Malachite Beetle	CalfHeathSample2	04-Aug-10 05-Jun-16
Malachius bipustulatus		•	05-Jul-16
Maniola jurtina	Meadow Brown	CalfHeath_Sample1	
Medetera impigra	a dolyfly	CalfHeathSample2	04-Jul-16
Melanostoma mellinum	a hoverfly	CalfHeath_Sample1	04-Aug-16
Melanostoma scalare	a hoverfly	CalfHeath_Sample1	05-Jul-16
Meligethes aeneus	Common Pollen Beetle	CalfHeath_Sample1	04-Aug-16
Merodon equestris	a hoverfly	CalfHeathSample2	05-Jun-16
Metrioptera roeselii	Roesel's Bush Cricket	CalfHeath_Sample1	04-Aug-16
Minettia inusta	a fly	CalfHeath_Sample1	04-Aug-16
Minettia longipennis	a fly	CalfHeath_Sample1	05-Jun-16
Minettia rivosa	a fly	CalfHeath_Sample1	04-Aug-16
Nabis flavomarginatus	a true bug	CalfHeath_Sample1	04-Aug-16
Neoascia podagrica	a hoverfly	CalfHeathSample2	05-Jun-16
Neoascia tenur	a hoverfly	CalfHeathSample2	09-Sep-16
Neocrepidodera transversa	a leaf beetle	CalfHeathSample2	04-Jul-16
Neoitamus cyanurus	a robberfly	CalfHeath_Sample1	05-Jun-16
Nephrotoma flavescens	a cranefly	CalfHeath_Sample1	05-Jun-16
Nephrotoma quadrifaria	a cranefly	CalfHeath_Sample1	05-Jun-16
Ochlodes sylvanus	Large Skipper	CalfHeath_Sample1	05-Jul-16
Ocydromia glabricula	a hybotid fly	CalfHeath_Sample1	05-Jun-16
Odezia atrata	Chimney Sweeper	CalfHeathSample2	05-Jun-16
Oedalea flavipes	a hybotid fly	CalfHeath_Sample1	05-Jun-16
Oedemera lurida	a flower beetle	CalfHeathSample2	05-Jun-16
Oedemera nobilis	Swollen-thighed Beetle	CalfHeathSample2	05-Jun-16
	Common Green	·	
Omocestus viridulus	Grasshopper	CalfHeathSample2	09-Aug-16
Oulema melanopus	a leaf beetle	CalfHeathSample2	04-Jul-16
Oxycera rara	a soldierfly	CalfHeathSample2	04-Jul-16
Palloptera modesta	a fly	CalfHeath Sample1	05-Jun-16
Parydra coarctata	a shorefly	CalfHeathSample3	05-Jun-16
Pherbellia cinerella	a snail-killing fly	CalfHeathSample3	05-Jun-16
Pherbina coryleti	a snail-killing fly	CalfHeathSample3	05-Jun-16
Philonthus cruentatus	a beetle	CalfHeath Sample1	04-Aug-16
Phyllopertha horticola	Bracken Chafer	CalfHeath_Sample1	05-Jul-16
Pieris brassicae	Large White	CalfHeathSample2	09-Aug-16
Pieris napi	Green-veined White	CalfHeath_Sample1	05-Aug-10 05-Jun-16
•	Small White	CalfHeathSample3	05-Jun-16 05-Jun-16
Pieris rapae		•	
Pipizella viduata	a hoverfly	Calf Heath Sample 2	05-Jun-16
Plagiodera versicolora	a leaf beetle	CalfHeathSample2	04-Aug-16



Plagiognathus arbustorum	a true bug	CalfHeath_Sample1	04-Aug-16
Platycheirus albimanus	a hoverfly	CalfHeath_Sample1	05-Jun-16
Platycheirus clypeatus	a hoverfly	CalfHeathSample3	09-Sep-16
Platycheirus granditarsus	a hoverfly	CalfHeathSample3	05-Jun-16
Poecilus versicolor	a ground beetle	CalfHeathSample3	09-Sep-16
Polydrusus cervinus	a weevil	CalfHeath_Sample1	05-Jun-16
Polyommatus icarus	Common Blue	CalfHeathSample2	05-Jun-16
Propylea			
quattuordecimpunctata	14-spot Ladybird	CalfHeathSample3	04-Aug-16
Rhagio lineola	a snipefly	CalfHeath_Sample1	04-Aug-16
Rhagio scolopaceus	a snipefly	CalfHeathSample2	05-Jun-16
Rhagio tringarius	a snipefly	CalfHeath_Sample1	05-Jun-16
Rhagonycha fulva	a soldier beetle	CalfHeathSample2	09-Aug-16
Rhagonycha lignosa	a soldier beetle	CalfHeath_Sample1	05-Jun-16
Rhamphomyia albohirta	a dancefly	CalfHeathSample3	04-Jul-16
Rhamphomyia nigripennis	a dancefly	CalfHeathSample2	04-Aug-16
Rhopalus subrufus	a true bug	CalfHeathSample3	09-Sep-16
Rivellia syngenesiae	a fruitfly	CalfHeath_Sample1	05-Jul-16
Rutpela maculata	a longhorn beetle	CalfHeath_Sample1	05-Jul-16
Sapromyza sexpunctata	a fly	CalfHeathSample2	04-Aug-16
Sciapus platypterus	a dolyfly	CalfHeath_Sample1	05-Jun-16
Sicus ferrugineus	a thick-headed fly	CalfHeath_Sample1	05-Jul-16
Sitona lineatus	a seed beetle	CalfHeath_Sample1	04-Aug-16
Sitona lineatus	a seed beetle	CalfHeathSample3	04-Aug-16
Sphaerophoria interrupta	a hoverfly	CalfHeathSample2	04-Jul-16
Sphaerophoria scripta	a hoverfly	CalfHeathSample3	05-Jul-16
Stenodema calcarata	a true bug	CalfHeath_Sample1	04-Aug-16
Strophosoma melanogrammum	Nut Leaf Weevil	CalfHeath_Sample1	04-Aug-16
Syritta pipiens	a hoverfly	CalfHeathSample3	05-Jun-16
Syrphus ribesii	a hoverfly	CalfHeathSample2	04-Jul-16
Syrphus torvus	a hoverfly	CalfHeath_Sample1	05-Jun-16
Systenus pallipes	a dolyfly	CalfHeathSample2	09-Sep-16
Tachyporus dispar	a rove beetle	CalfHeath_Sample1	05-Jun-16
Tachyporus hypnorum	a beetle	CalfHeathSample3	05-Jun-16
Tephritis leontodontis	a fruitfly	CalfHeathSample3	05-Jun-16
Tetanocera elata	a snail-killing fly	CalfHeathSample3	05-Jul-16
Tetanocera hyalipennis	a snail-killing fly	CalfHeathSample2	04-Aug-16
Tetrix subulata	Slender Ground Hopper	CalfHeathSample3	09-Sep-16
Tetrix undulata	Common Ground Hopper	CalfHeathSample3	09-Sep-16
Thereva nobilitata	a stilettofly	CalfHeathSample3	05-Jun-16
Thymelicus sylvestris	Small Skipper	CalfHeath_Sample1	04-Aug-16
Tipula fascipennis	a snail-killing fly	CalfHeathSample2	05-Jun-16
Tipula oleracea	a cranefly	CalfHeath_Sample1	05-Jun-16
Tyria jacobaeae	Cinnabar	CalfHeath_Sample1	05-Jul-16
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Vanessa atalanta	Red Admiral	CalfHeath_Sample1	04-Aug-16
Vanessa cardui	Painted Lady	CalfHeathSample3	09-Sep-16
Vespa crabro	The Hornet	CalfHeathSample3	05-Jun-16
Vespula germanica	German Wasp	CalfHeathSample3	04-Aug-16
Volucella pellucens	a hoverfly	CalfHeath_Sample1	05-Jul-16
Xanthogramma pedissequum	a hoverfly	CalfHeathSample2	05-Jun-16
Zicrona caerulea	Blue Shieldbug	CalfHeathSample3	04-Aug-16



Appendix IV

Calf Heath extension (including sample locations 4 and 5) ISIS output tables and species list

SAT code	SAT name	No. spp.	Percentage of Condition national species pool	Related BAT rarity score
F002	rich flower resource	6	2	
F001	scrub edge	4	2	
A212	bark & sapwood decay	10	2	
W126	seepage	1	2	
W314	reedfen and pools	1	1	169
A211	heartwood decay	1	1	
F112	open short sward	1	1	
F003	scrub-heath & moorland	1	0	

All SATs scoring more than zero are listed

The broad assemblage types represented in this list are as follows:

BAT code	BAT name	Represent ation (1- 100)	Rarity score	Condition	BAT species richness	IEC
F2	grassland & scrub matrix	41	120		91	
W3	permanent wet mire	12	169		27	
A1	arboreal canopy	9	114		21	
	unshaded early successional					
F1	mosaic	7			15	
A2	wood decay	5			12	1
W2	mineral marsh & open water	5			10	
F3	shaded field & ground layer	4			9	
W1	flowing water	4			8	

Rarity scores are shown only for BATS represented by more than 15 species in the assemblage / fauna being analysed



Scientific name	Vernacular name	Date first
Acronicta psi	Grey Dagger	22-Jul-17
Adalia decempunctata	10-spot Ladybird	22-Jul-17
Agriotes pallidulus	a ground beetle	22-May-17
Anania hortulata	Small Magpie	17-Jun-17
Anaspis frontalis	a beetle	17-Jun-17
Anaspis maculata	a beetle	22-May-17
Andrena bicolor	Gwynne's Mining Bee	17-Jun-17
Andrena cineraria	Grey Mining Bee	17-Jun-17
Andrena haemorrhoa	Early Mining Bee	17-Jun-17
Andrena minutula	a mining bee	22-Jul-17
Anobium punctatum	Woodworm	22-Jul-17
Anthrenus fuscus	a beetle	17-Jun-17
Aphantopus hyperantus	Ringlet	17-Jun-17
Argyra leucocephala	a dolyfly	22-Jul-17
Athous haemorrhoidalis	a click beetle	22-May-17
Beris vallata	a soldierfly	17-Jun-17
Bombus lapidarius	Large Red Tailed Bumble	17-Jun-17
Bruchus rufimanus	Bean Beetle	22-May-17
Byturus ochraceus	a beetle	22-May-17
Byturus tomentosus	Raspberry Beetle	22-May-17
Calvia quattuordecimguttata	Cream-spot Ladybird	22-May-17
Cantharis cryptica	a soldier beetle	22-May-17
Cantharis decipiens	a soldier beetle	22-May-17
Cantharis nigra	a soldier beetle	17-Jun-17
Cantharis nigricans	a soldier beetle	22-May-17
Capsus ater	a true bug	17-Jun-17
Chalcosyrphus nemorum	a hoverfly	22-Jul-17
Cheilosia albitarsis sens. str.	a hoverfly	22-May-17
Cheilosia longula	a hoverfly	17-Jun-17
Cheilosia proxima	a hoverfly	22-Jul-17
Chloromyia formosa	a soldierfly	17-Jun-17
Chorisops tibialis	a soldierfly	22-Jul-17
Chorthippus parallelus	Meadow Grasshopper	22-Jul-17
Chrysogaster solstitialis	a hoverfly	17-Jun-17
Chrysoperla carnea sens. str.	a lacewing	17-Jun-17
Chrysotoxum festivum	a hoverfly	22-Jul-17
Chrysotus blepharosceles	a dolyfly	22-Jul-17
Chrysotus gramineus	a dolyfly	22-Jul-17
Closterotomus norwegicus	a true bug	17-Jun-17
Coccidula rufa	a beetle	22-May-17
Coenia palustris	a shorefly	17-Jun-17
Conocephalus discolor	Long-winged Conehead	22-Jul-17
Crepidodera aurata	a leaf beetle	22-Jul-17



Curculio glandium	Acorn Weevil	22-May-17
Cyphon ochraceus	a beetle	17-Jun-17
Deraeocoris flavilinea	a true bug	17-Jun-17
Dicranomyia chorea	a cranefly	22-May-17
Dicranomyia fusca	a cranefly	22-May-17
Dioctria atricapilla	a robberfly	17-Jun-17
Dioctria baumhaueri	a robberfly	17-Jun-17
Dioctria rufipes	a robberfly	17-Jun-17
Dolichopus griseipennis	a dolyfly	22-Jul-17
Dolichopus plumipes	a dolyfly	22-May-17
Dolichopus popularis	a dolyfly	17-Jun-17
Dolichopus ungulatus	a dolyfly	17-Jun-17
Dolichopus wahlbergi	a dolyfly	22-Jul-17
Dryophilocoris	a true bug	22-May-17
Empis digramma	a dancefly	22-May-17
Empis grisea	a dancefly	17-Jun-17
Empis livida	a dancefly	17 Jun-17
Empis tumida	a dancefly	22-May-17
Eristalinus sepulchralis	a hoverfly	22-Jul-17
Eristalis arbustorum	a hoverfly	22-Jul-17
Eristalis arbastorum Eristalis pertinax	a hoverfly	22-Jul-17
Eristalis tenax	a hoverfly	17-Jun-17
Eupeodes luniger	a hoverfly	22-Jul-17
Eurygaster testudinaria	Tortoise Shieldbug	22-Jul-17 22-Jul-17
Forficula auricularia	Common Earwig	22-Jul-17 22-Jul-17
Grypocoris stysi	a true bug	17-Jun-17
	a dolyfly	22-May-17
Gymnopternus metallicus Haematopota pluvialis	a horsefly	17-Jun-17
Harmonia axyridis	Harlequin Ladybird	17-Jun-17
Harpocera thoracica	a true bug	22-May-17
Helophilus pendulus		22-Way-17 22-Jul-17
Hemerobius humulinus	a hoverfly a lacewing	17-Jun-17
Hilara discoidalis	a dancefly	22-May-17
	a water beetle	•
Hydroporus memnonius	Common Yellow Face Bee	22-May-17 17-Jun-17
Hylaeus communis Iassus Ianio		22-Jul-17
	a true bug a weevil	22-Jul-17 22-Jul-17
Ischnopterapion virens		22-Jul-17 22-Jul-17
Lasinglossum albipes	a mining bee	
Lasioglossum villosulum	Shaggy Mining Bee	22-May-17 17-Jun-17
Leptogaster cylindrica	a robberfly	
Leptopterna dolabrata	a true bug	22-Jul-17
Leptura quadrifasciata	a longhorn beetle	17-Jun-17
Leucozona lucorum	a hoverfly	17-Jun-17
Liocoris tripustulatus	a true bug	22-May-17



Lonchoptera bifurcata	a pointed-winged fly	22-Jul-17
Lycaena phlaeas	Small Copper	22-Jul-17
Lygocoris pabulinus	a true bug	17-Jun-17
Machimus atricapillus	a robberfly	22-Jul-17
Maniola jurtina	Meadow Brown	17-Jun-17
Meconema thalassinum	Oak Bush Cricket	22-Jul-17
Melanostoma mellinum	a hoverfly	22-Jul-17
Melanostoma scalare	a hoverfly	22-Jul-17
Meligethes aeneus	Common Pollen Beetle	22-Jul-17
Meligethes nigrescens	a pollen beetle	22-May-17
Merodon equestris	a hoverfly	17-Jun-17
Metrioptera roeselii	Roesel's Bush Cricket	22-Jul-17
Microcara testacea	a beetle	22-May-17
Microchrysa flavicornis	a soldierfly	17-Jun-17
Microchrysa polita	a soldierfly	22-Jul-17
Nabis flavomarginatus	a true bug	22-Jul-17
Nedyus quadrimaculatus	Small Nettle Weevil	22-May-17
Neoitamus cyanurus	a robberfly	17-Jun-17
Neolygus contaminatus	a true bug	17-Jun-17
Nephrotoma quadrifaria	a cranefly	17-Jun-17
Neria cibaria	a stilt-legged fly	22-May-17
Neria femoralis	a stilt-legged fly	17-Jun-17
Notostira elongata	a true bug	22-Jul-17
Ochlerotatus annulipes	a mosquito	22-Jul-17
Ochlodes sylvanus	Large Skipper	17-Jun-17
Ocydromia glabricula	a dancefly	22-May-17
Oedemera lurida	a beetle	22-Jul-17
Oedemera nobilis	Swollen-thighed Beetle	17-Jun-17
Omocestus viridulus	Common Green	17-Jun-17
Oplodontha viridula	a soldierfly	17-Jun-17
Opomyza florum	a seedfly	22-Jul-17
Oulema melanopus sens. str.	a leaf beetle	17-Jun-17
Oxystoma pomonae	a weevil	22-Jul-17
Pachygaster atra	a soldierfly	22-Jul-17
Pararge aegeria	Speckled Wood	17-Jun-17
Parhelophilus versicolor	a hoverfly	17-Jun-17
Parydra coarctata	a shorefly	22-May-17
Pentatoma rufipes	Red-legged Shieldbug	22-Jul-17
Philonthus carbonarius	a rove beetle	17-Jun-17
Philophylla caesio	a fruitfly	17-Jun-17
Phylidorea fulvonervosa	a cranefly	17-Jun-17
Phyllobius glaucus	a weevil	22-May-17
Phyllobius maculicornis	Green Leaf Weevil	22-May-17
Phyllobius pyri	Common Leaf Weevil	17-Jun-17



Phyllobius virideaeris	Green Nettle Weevil	17-Jun-17
Phyllopertha horticola	Bracken Chafer	17-Jun-17
Pieris brassicae	Large White	22-Jul-17
Pieris napi	Green-veined White	17-Jun-17
Pieris rapae	Small White	22-Jul-17
Platycheirus angustatus	a hoverfly	22-Jul-17
Platycheirus clypeatus	a hoverfly	22-Jul-17
Platycheirus peltatus	a hoverfly	22-Jul-17
Platycheirus rosarum	a hoverfly	22-Jul-17
Polyommatus icarus	Common Blue	22-Jul-17
Ptilinus pectinicornis	Fan-bearing Wood-borer	22-Jul-17
Pyronia tithonus	Gatekeeper	22-Jul-17
Rhabdomiris striatellus	a true bug	22-May-17
Rhagio lineola	a snipefly	, 17-Jun-17
Rhagio scolopaceus	a snipefly	17-Jun-17
Rhagio tringarius	a snipefly	17-Jun-17
Rhagonycha fulva	a soldier beetle	22-Jul-17
Rhagonycha limbata	a soldier beetle	22-May-17
Rhamphomyia longipes	a dancefly	22-May-17
Rhamphomyia micropyga	a dancefly	22-May-17
Rhaphium albomaculatum	a dolyfly	22-May-17
Rhaphium appendiculatum	a dolyfly	22-May-17
Rhaphium lanceolatum	a dolyfly	17-Jun-17
Rhipidia maculata	a cranefly	17-Jun-17
Rutpela maculata	a longhorn beetle	17-Jun-17
Sphaerophoria interrupta	a hoverfly	22-Jul-17
Sphaerophoria scripta	a hoverfly	17-Jun-17
Stenodema calcarata	a true bug	22-May-17
Stenodema laevigata	a true bug	17-Jun-17
Stenus bifoveolatus	a rove beetle	22-May-17
Stenus cicindeloides	a rove beetle	22-May-17
Stigmus solskyi	a digger wasp	17-Jun-17
Syritta pipiens	a hoverfly	17-Jun-17
Syrphus ribesii	a hoverfly	22-Jul-17
Tachyporus solutus	a rove beetle	22-May-17
Tatianaerhynchites aequatus	Apple Fruit Rhynchites	17-Jun-17
Tetanocera elata	a snail-killing fly	22-Jul-17
Thrypticus pollinosus	a dolyfly	22-Jul-17
Thymelicus lineola	Essex Skipper	22-Jul-17
Thymelicus sylvestris	Small Skipper	22-Jul-17
Tipula oleracea	a cranefly	22-Jul-17
Tortrix viridana	Green Oak Tortrix	17-Jun-17
Tricholauxania praeusta	a fly	22-May-17
Tyria jacobaeae	Cinnabar	22-Jul-17



Vespula germanica	German Wasp	22-Jul-17
Vespula vulgaris	Common Wasp	17-Jun-17
Volucella pellucens	a hoverfly	17-Jun-17
Xanthostigma xanthostigma	a snakefly	22-May-17



Appendix V: ISIS explanation

ISIS (Invertebrate Species—habitat Information System) is a computer application that can be used to identity assemblages of importance when species lists are inputted into the computer software. This is particularly useful for identifying key areas of interest and importance and monitoring site changes as management alters habitat structure and species composition.

ISIS was developed by Natural England as a way of assessing sites for their invertebrate value. Although initially developed for assessing the condition of Sites of Special Scientific Interest (SSSI), it has been adopted for a wider use in habitat assessments. As it uses values (numbers) to score sites or features on a site, the computer application is very useful for providing baseline scores to sites and therefore a means of comparing a site either 'intra'spectively (comparing an individual site against itself, normally how it changes with time or after management regime changes) or 'inter'spectively (comparing one site against another or a suite of similar sites).

ISIS provides scores for two types of 'assemblage' (an assemblage is a group of invertebrates that use a similar habitat or feature):

- Broad assemblage type (BAT) often a landscape-scale habitat type that is affected by various environmental factors such as light/shade, hydrology and disturbance factors such as poaching, drainage, drought and water level fluctuation. This is a useful assemblage type, as it provides an overview of habitat quality and, by using it to monitor sites, can help highlight issues that may affect them over time such as over- and under-grazing, drainage and poaching.
- Specific assemblage type (SAT) characterised by stenotopic species (those that can only
 withstand a narrow range of environmental conditions). SATs are therefore more tightly
 defined than BATs and sit within a parent BAT. More than one SAT can sit within a parent
 BAT.

Example:

BAT:

F2 – grassland and scrub matrix

SAT:

F211 – herb-rich dense sward

F212 – dense scrub

Invertebrate species that are associated with a specific assemblage are known as 'fidelity species' and these are the species that score highly and elevate an assemblage's status in the ISIS analysis. The highest fidelity species tend to be those associated with SATs, as these are the most scarce and



restricted assemblage types and, by association, the species using them tend to also be scarce and restricted in distribution.

The site quality score (SQS), also known as the 'rarity score', is a total score of all the species recorded at the site. Each national designation (Red Data Book, Nationally Scarce through to common species) receives a different level of score. The system is not reliant on exhaustive sampling of a site but is more useful for singular surveys or a limited range of closely related surveys.

Fowles et al (1999¹) scoring for SQS is:

- 32 RDB 1
- 32 RDB 2
- 24 RDB 3
- 16 RDB 'K'
- 16 NS A
- 8 NS B
- 4 Regional NS/very local
- 2 Local
- 1 Common

These scores can be used as a baseline for the monitoring of sites post-mitigation if required. The higher the score, the 'better' the site.

Key to BAT and SAT output table	
BAT code	Invertebrate habitat code
BAT name	Invertebrate habitat name
Representation	% of species recorded associated with that BAT
Rarity score	Site quality score (SQS) – the combined score of all species recorded for that BAT
	BATs with no score are those that are below a threshold of 15 species present for that BAT

¹ Fowles, A.P., Alexander, K.N.A. and Key, R.R. (1999). The Saproxylic Quality Index: evaluating wooded habitats for conservation of deadwood Coleoptera. *The Coleopterist* 8:121-141.



Condition	Used in SSSI condition assessment – not relevant
BAT species richness	Total number of species recorded associated with BAT
Index of ecological continuity (IEC)	Used for deadwood sites such as parklands



BAT code	BAT name	Representation (1–100)	Rarity score	Condition	BAT species richness	IEC
F2	grassland & scrub matrix	42	136		56	
W3	permanent wet mire	18	167		24	
F1	unshaded early successional mosaic	10			13	
A1	arboreal canopy	7			9	
W2	mineral marsh & open water	3			4	
F3	shaded field & ground layer	2			2	
A2	wood decay	1			1	0

Example BAT ISIS results (ISIS, 2010)



Appendix VI: Criteria for defining invertebrate sites of significance. Taken from Plant (2009)

Importance	Description	Minimum qualifying criteria	
International (high) importance	European important site (i.e. SAC)	Internationally important invertebrate populations present or containing RDB 1 (Endangered) species or containing any species protected under European legislation or containing habitats that are threatened or rare at the European level (including, but not exclusively so, habitats listed on the EU Habitats Directive).	
National (high) importance	UK important site (SSSI)	Achieving SSSI invertebrate criteria (NCC, 1989) or containing RDB 2 (Vulnerable) or containing viable populations of RDB 3 (Rare) species or containing viable populations of any species protected under UK legislation or containing habitats that are threatened or rare nationally (Great Britain).	
Regional (medium) importance (for border sites, both regions must be taken into account)	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in south-east England	Habitat that is scarce or threatened in the region or that has, or is reasonably expected to have, the presence of an assemblage of invertebrates including at least 10 Nationally Notable species or at least 10 species listed as Regionally Notable for the English Nature region in question in the Recorder database or elsewhere or a combination of these categories amounting to 10 species in total.	
County (medium) importance (for border sites, both counties must be taken into account)	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the county in question	Habitat that is scarce or threatened in the county and/or that contains, or is reasonably expected to contain, an assemblage of invertebrates that includes viable populations of at least five Nationally Notable species or viable populations of at least five species regarded as Regionally Scarce by the county records centres and/or field club.	
District (low) importance	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the administrative district	A rather vague definition of habitats falling below county significance level, but which may be of greater significance than merely Local. They include sites for which Nationally Notable species in the range from one to four examples are reasonably expected but not yet necessarily recorded and where this omission is considered likely to be partly due to underrecording.	
Local (low) importance	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the affected and neighbouring parishes	Habitats or species unique or of some other significance within the local area.	



	(except Scotland, where the local area may best be defined as being within a radius of 5 km)	
Importance within the context of the site only (low importance)	_	Although almost no area is completely without significance, these are the areas with nothing more than expected 'background' populations of common species and the occasional Nationally Local species.

Annex 10.1.6

Bat Roost Assessment for Structures



ANNEX 10.1.6 A BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Woodside Farmhouse
Structure Location	SJ 92402 09099 – Vicarage Road
Approximate	1900
Structure Age:	
Current Structure	Residential Care Home
Use:	

Construction materials:

The dwelling is arranged over three storeys and is of red brick construction with a pitched clay tiled roof. There are no soffits or fascias, the roof overhangs brickwork which extends up to the roof, the gap is mortar filled. The building mortar is in generally good condition with a few localised areas of deterioration. There are two chimneys present, one over each gable end, both with lead flashing present. A single storey extension is present to the rear of the property.

Two bay windows are present on the front (west elevation) of the property, these have slate roof with lead flashing to brickwork.

A small single storey outbuilding is present to the rear mirroring the construction of the main dwelling.

The roof space has been converted but is not currently resided in. There is a plasterboard ceiling with a small (70-80cm) void above up to the apex. The roof is timber 'A' frame with timber battening supporting the clay tiled roof. The void above the hallway on the 2nd floor has a larger void (circa 1m high) which was accessed via an area of damage to the ceiling. The area was full of cobwebs.

Floodlights were noted as present to the rear elevations and two further exterior lights (not motion sensitive) to the front (west) elevation.

The building was in generally sound condition.

Potential access points and assessment of roost suitability:

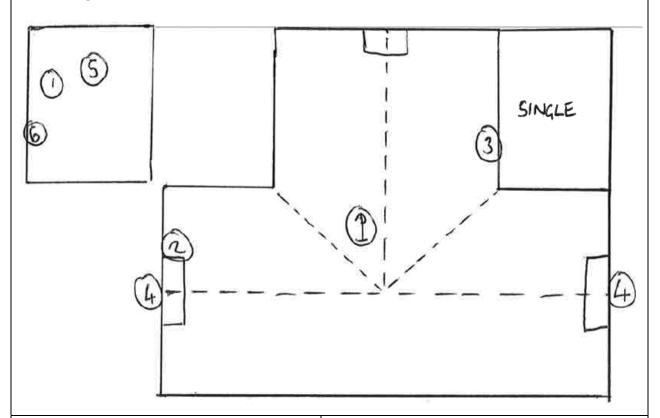
- 1) Minor slipped tile.
- 2) Very small gap under lead flashing.
- 3) Damage/gaps in brickwork noted.
- 4) Security Lights.
- 5) Gap to ridge tile.
- 6) Potential access gap between brickwork and roof.



The building is next to arable fields and a large mixed woodland block within 150m (to the north west).

Potential to support roosting bats: MODERATE

Drawing:





Front (west) elevation



Front (west) elevation



ANNEX 10.1.6 B BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Woodside Barn
Structure Location	SJ 92378 09121 – Vicarage Road
Approximate	1880
Structure Age:	
Current Structure	Barn for storage and workshop
Use:	

Construction materials:

The main barn is of red brick construction with a pitched slate and clay tiled roof with clay ridge tiles. The building comprises single and double storey elements. There are no soffits or fascias. Two mezzanine areas are present within the barn. The barn is timber framed (all exposed). The building has large timber barn doors (open at time of survey) and a large brick portal on the north elevation and some glazed windows, most of which are smashed. Building mortar is in generally poor deteriorated condition.

Brick and block lean-to with corrugated metal flat roof adjoining. There are several further barns which are of open construction with a mixture of timber and metal frames with single skin corrugated roofs. These barns are open fronted.

Potential access points and assessment of roost suitability:

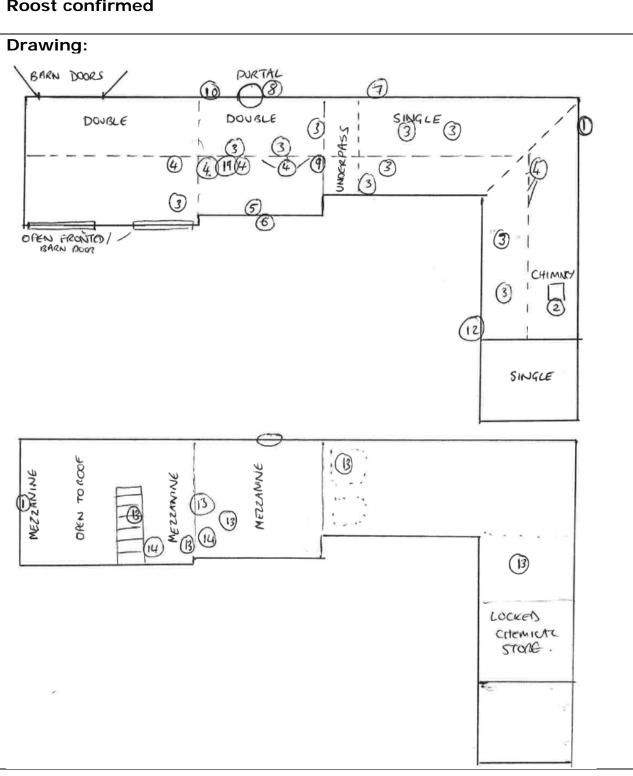
- 1) Semi-mature ivy to wall.
- 2) Gaps in mortar to redundant chimney.
- 3) Lifted/missing/slipped tiles.
- 4) Open access to building via barn doors, portal and smashed windows.
- 5) Gaps under ridge tiles.
- 6) Gaps between exposed timber support beams (to open fronted section) and brickwork.
- 7) Timber doors in poor condition with openings.
- 8) Large portal (circa 1.5m diameter) to mezzanine.
- 9) 'Gappy' tiles suggesting gable end movement.
- 10) 3 x holes through brickwork circa 6cm in diameter.
- 11) Hole in roof, series of adjacent slipped/missing tiles.
- 12) Gap between door frame and brickwork.
- 13) Bat droppings
- 14) Feeding remains butterfly wings.

The interior of the buildings provides ample roost potential for free hanging and crevice dwelling bats on exposed timbers, in timber joints and in gaps and cracks in the brickwork. These features are too numerous to depict. The



building is next to arable fields and a large mixed woodland block.

Potential to support roosting bats on the basis of inspection: HIGH - Roost confirmed





Rear (north) elevation with portal and barn doors



Front (south) elevation with open fronted areas.



Rear east single storey elevation.



Front west elevation – chemical store.



West and north elevations.



Barn roof structure



ANNEX 10.1.6 C BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Fir Tree Cottage
Structure Location: SJ 91296 08600 – Stafford Road	
Approximate Structure Age:	1900
Current Structure Use:	Residential Dwelling and associated outbuildings.

Construction materials:

The main two storey residential dwelling is of red brick construction with a pitched clay tiled roof with clay ridge tiles. There is a single storey extension of similar construction on the southern aspect. There are wooden fascias and soffits to the (3x) dormer windows to the western elevation. Timber lintels are present to the first floor windows. Brick chimneys are present at either end of the building. A single storey timber and glazed porch with a flat bitumen roof is present on the west elevation. Lead flashing to chimney and dormer windows in good condition.

Two outbuildings of similar construction are present. Both have pitched roofs. No fascias or soffits. The outbuilding to the rear has a redundant chimney. Further single skin corrugated metal sheds and wooden sheds are present on the property.

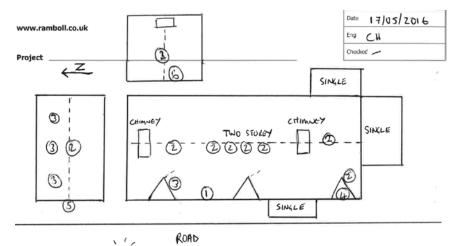
Potential access points and assessment of roost suitability:

- Direct access under tiles where brickwork meets roof. No soffit. True
 of all parts of the two storey building. House sparrow recorded
 accessing.
- 2) Gap present under ridge tile.
- 3) Raised/missing tile.
- 4) Gap in mortar above timber lintel.
- 5) Circular air bricks.
- 6) Edge tiles missing evidence of birds nesting.

Next to busy well-lit dual carriageway with streetlight outside front of property illuminating whole aspect. Roof void present, loft hatch too small to safely access.

Potential to support roosting bats: MODERATE

Drawing:





Front (west) elevation with 3* dormer windows



Rear (east) elevation and outbuildings.



Outbuilding west elevation to road. Circular airbricks.



Outbuilding to rear of property. Slipped tiles and gap to ridge tiles. Redundant chimney.



Dormer window to west elevation. Gap above timber lintel.



Single storey extension to east elevation.



ANNEX 10.1.6 D BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Gailey Magazine
Structure Location	SJ 92008 09818
Approximate Structure Age:	1900 - 1980
Current Structure Use:	Secure Store

Construction materials:

Gailey Magazine includes three buildings located in the centre of the Site.

Building 1 (See Pictures) is a single storey store of brick construction with a (half) pitched slate tiled roof. A timber fascia is present to the rear (west) elevation.

Building 2 is another single storey store of brick construction with a flat concrete and bitumen roof. The building was noted to be in sound condition.

Building 3 is of brick construction with a pitched tile roof. The building is surrounded by a bund and is significantly overgrown. The building is in an advanced state of decay.

No access was gained internally as the buildings have been deemed to be unsafe.

Potential access points and assessment of roost suitability:

Building 1:

- 1) Missing / slipped tiles;
- 2) Missing ridge tiles to half of roof;
- 3) Gap above timber frame of door;
- 4) Wooden fascia to west elevation is in a deteriorated condition offering a void between the timber and the brickwork.

Building 2:

1) None noted – sound and well maintained.

Building 3:

- 1) Missing / slipped tiles;
- 2) Hole in roof exposing decaying timber roof beams;
- 3) No roof to 'porch';
- 4) Door to front of building open;
- 5) Mortar and brickwork in deteriorated condition.



The buildings are next to arable fields and proximal to (within 80m) a canal. The buildings are approximately 100m from the edge of Calf Heath Wood.

Potential to support roosting bats on the basis of inspection:

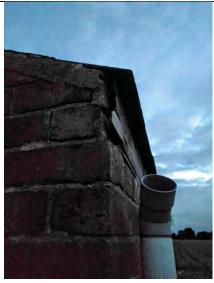
Building 1: **MODERATE**Building 2: **NEGLIGIBLE**Building 3: **MODERATE**



Building 1 (left) and Building 2 (right)



Building 3



Building 1 – Timber Fascia



Building 3



ANNEX 10.1.6 E BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	The Barn – Gravelly Way
Structure Location	SJ 91630 09659 – Gravelly Way
Approximate Structure Age:	1900 – Refurbished 2008 approximately.
Current Structure Use:	Residential property.

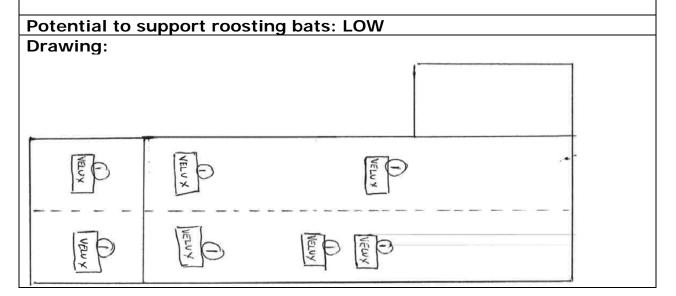
Construction materials:

The dwelling is arranged over two storeys and is of red brick construction with a pitched clay tiled roof. There are no soffits or fascias, brickwork extends up to the roof with gaps being infilled with mortar. There is no roof void, this is part of the living space, 'Velux' windows are present to the roof. The building was in generally sound condition having been recently renovated.

Potential access points and assessment of roost suitability:

1) Small gaps around Velux windows

The building is next to arable fields and proximal to (within 10m) a canal.





Front (west) and side (north) elevations



Rear (east) and side (south) elevations



ANNEX 10.1.6 F BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	The Farmhouse - Gravelly Way
Structure Location	SJ 91630 09659 – Gravelly Way
Approximate Structure Age:	1900
Current Structure	Residential property.
Use:	

Construction materials:

The dwelling is arranged over two storeys. The building is rendered with a pitched clay tiled roof. There are no soffits or fascias, the render extends up to the roof with brickwork edging. Gaps are infilled with mortar. The building had two brick chimneys with lead flashing. A flat roofed extension is present to the rear (north) elevation. A single storey 'lean to' extension is present on the west elevation, the construction of which is consistent with the main house. Tiles are interlocking concrete rather than clay tile. A security light (functional) was present to the single storey extension.

Mortar was noted between the roof tiles and the rendered walls at the gable end. This appeared recent and was in good condition.

The building was in generally sound condition having been recently renovated.

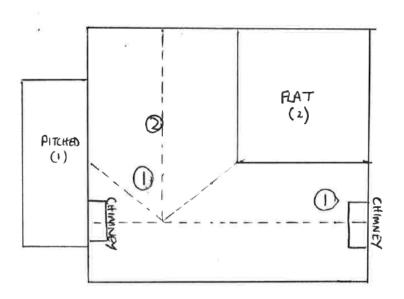
Potential access points and assessment of roost suitability:

- 1) Slipped tiles
- 2) Small bit of mortar missing from ridge tile.

The building is next to arable fields and proximal to (within 10m) a canal.

Potential to support roosting bats: MODERATE

Drawing:





Front (south) and side (west) elevations



Rear (north) and side (east) elevations



ANNEX 10.1.6 G BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	The Stables – Gravelly Way
Structure Location	SJ 91630 09659 – Gravelly Way
Approximate Structure Age:	1900 – Refurbished 2008 approximately.
Current Structure	Residential property.
Use:	

Construction materials:

The dwelling is arranged over two storeys and is of red brick construction with a pitched clay tiled. There are no soffits or fascias, brickwork extends up to the roof with gaps being infilled with mortar. There is no roof void, this is part of the living space, 'Velux' windows are present to the roof.

A metal framed and clad barn building is attached.

The building was in generally sound condition.

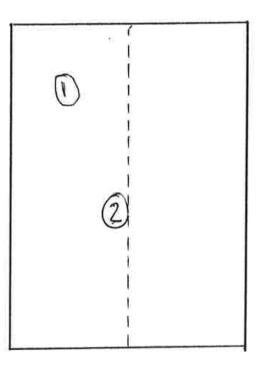
Potential access points and assessment of roost suitability:

- 1) Minor slipped tile.
- 2) Small gap to ridge tile.

The building is next to arable fields and proximal to (within 35m) a canal.

Potential to support roosting bats: LOW

Drawing:





Rear (west) elevation



Front (east) and side (south) elevations



ANNEX 10.1.6 H BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Heath Farm – Main Farmhouse
Structure Location	SJ 93086 09441 – Vicarage Road
Approximate	1900
Structure Age:	
Current Structure	Residential
Use:	

Construction materials:

The property is a traditionally constructed 5 bedroom brick built detached farmhouse over two floors with a pitched clay tiled roof with multiple aspects and pitches. No soffits or fascias, brickwork extends up to roof. Stone lintels and window sills. Three chimneys with mortar bed around base to roof tiles.

An internal inspection of the main Heath Farmhouse building was possible and access was gained into a pitched roof void, approximately 2.5m in height. The construction inside was of timber ridge beams with one side of the building open directly to the tiles above and one side of the same construction but with bituminous sarking felt lining the tiles on the inside.

The property has a cellar however, this was entirely waterlogged at the time of the survey and no access was made.

Further barns and outbuildings are present associated with the farmhouse. A summary description for each is provided below.

- 1. Garage- brick, pitched clay tile roof. Generally in good condition, one lifted ridge tile, lighting on exterior. Negligible bat potential.
- Large barn, block base, corrugated asbestos walls and ceiling, timber cladding to gable end, sparrow terrace, steel framed. Timber cross beam, lighting on gable end. Negligible bat potential.
- 3. Open Barn, steel framed, clad with metal to sides, asbestos cement roof, open to rear. Negligible bat potential.
- 4. End section, 'Lean-to barn supported with old telegraph poles, timber cross beams, metal clad, unsuitable for day roost. Negligible bat potential.
- 5. Steel framed barn, concrete base, timber clad, corrugated concrete, modern timber cross beams. Negligible bat potential.

Potential access points and assessment of roost suitability (Heath Farmhouse):

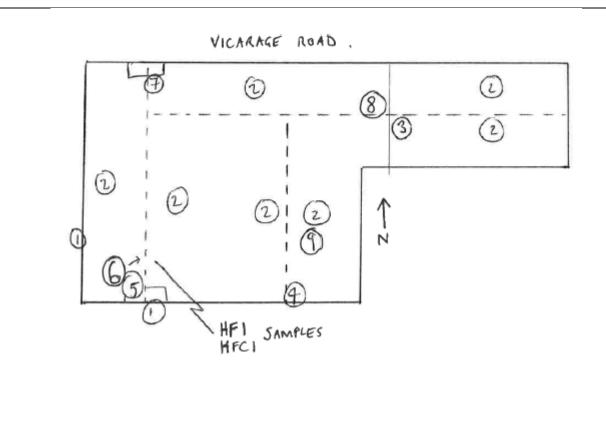
- 1) Gaps in deteriorating mortar;
- 2) Multiple gaps under tiles and slipped/missing tiles;
- 3) ¾ height wing/block adjacent to driveway hole in roof, house sparrow nesting roof here has gaps to ridge tiles and lifted tiles.
- 4) Gaps to mortar on apex of gable end (south elevation).
- 5) Gaps in mortar surrounding chimney

- 6) Lots of droppings (>100) including fresh and degraded on discarded items in roof void. Focused along ridge beam area and chimney. Sample taken (HF1) and Control (HF1C).
- 7) Chimney. 2 areas of missing brickwork providing access adjacent. Multiple potential access points noted with light shining through the walls, the roof and from lead flashing round the chimney. Droppings also present in this location but less numerous.
- 8) Lots of cobwebs. Evidence of birds nesting. No appreciable evidence of current use by bats. Some limited but aged droppings noted.
- 9) As 8.

Potential to support roosting bats:

HIGH – Farmhouse NEGLIGIBLE – Remaining Outbuildings

Drawing:





Farmhouse side (west) elevation



Farmhouse rear (south) elevation



1. Garage outbuilding – Negligible potential



2. Barn - Negligible potential



3. Barn - Negligible potential



4. 'Lean-to' barn – Negligible potential



5. Barn - Negligible potential



6. Brown long-eared bat droppings concentrated in south west elevation by chimney.



7. Typical roof structure



ANNEX 10.1.6 I BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Heath Farm Converted Outbuilding		
Structure Location	SJ 93086 09441 – Vicarage Road		
Approximate Structure Age:	1900 – Renovated 2011		
Current Structure Use:	Residential Property		

Construction materials:

This former outbuilding was converted into two residential units in 2011. The building is of brick construction with a pitched tiled roof.

The building is partly 1 storey, partly 2 storeys. A timber facia is present to the single storey with mesh installed under, and limited access under felt. Single storey section is in sound condition. The two storey and parts of the building of one storey appearance has a converted attic space. Purpose built ecological enhancements are built into / onto building fabric including bird and bat boxes.

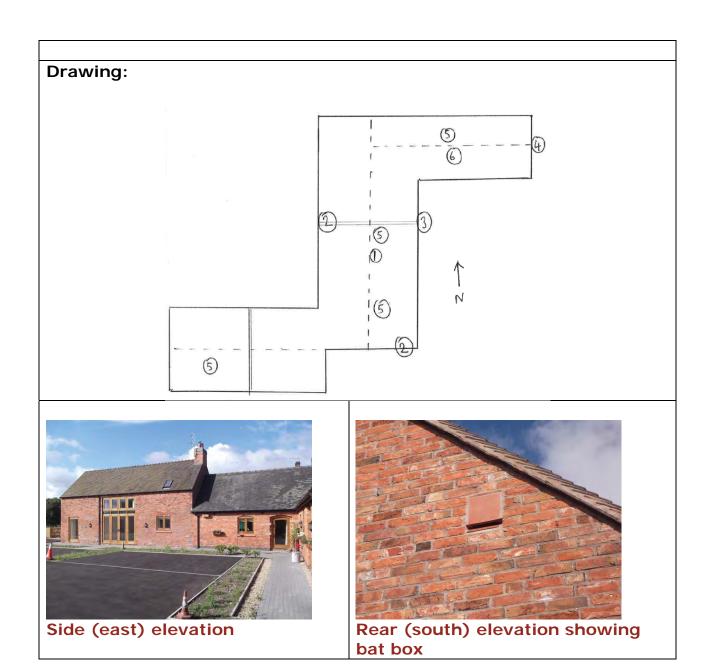
The building was in generally sound condition.

Potential access points and assessment of roost suitability:

- 1) Some gaps noted under ridge tiles;
- 2) Bat box present integral to the building fabric;
- 3) Bird boxes sparrow terraces present which have potential to be used by bats:
- 4) Purpose built bird / bat access points to wall/roof void on eastern elevation.
- 5) Bat access tiles.
- 6) Roof void heavily insulated to roof, brick wall, no gaps, daylight or evidence of bats noted. Timber roof structure sealed with expanding foam. Ceiling height circa 2.5m.

The building is next to arable fields.

Potential to support	roosting	bats:	HIGH
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Rear (south) elevation

Rear (south) elevation



Sparrow terrace



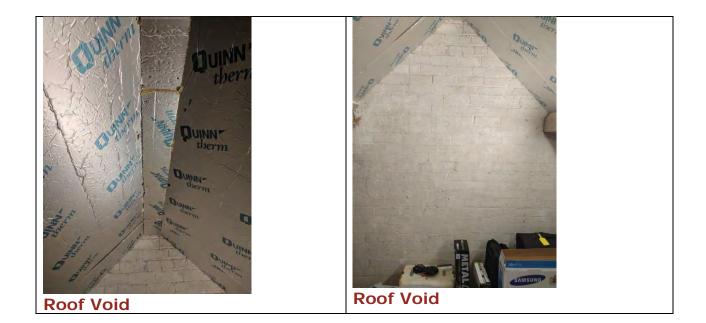
Holes for birds/bats into wall/roof cavity - east elevation



Bat access tiles in roof



Bat access tiles in roof





ANNEX 10.1.6 J BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Clovelly
Structure Location	SJ 92362 10289 – Off A5 to the south
Approximate	1970s
Structure Age:	
Current Structure	Residential property
Use:	

Construction materials:

Large bungalow constructed largely of rendered brick. Concrete roofing tiles on several roof elevations and with modern PVC soffits and fascias.

Separate garage building to the west of the main property was present, constructed in largely the same way as the main property i.e. brick base, rendered upper walls, concrete roof tiles and PVC soffits and fascias. The garage was open to the roof inside with timber batons and sarking felt visible and had negligible bat potential.

A large outbuilding was also present further west and was of the same construction materials as the garage. This building had a rood void approximately 2.5m in height and 20+ old bat droppings were found, although no obvious points of entry were observed. It was not possible to take bat dropping samples from this area as they had degraded badly. No fresh or recent evidence of bats was noted.

A row of horse stables were present to the south west of the main property. They were constructed of brick and render walls with flat bitumen roofing and relatively new PVC soffits and fascias. One dropped soffit board was noted. This was of negligible to low potential.

TN1 - Access was possible into a large roof void in the bungalow building, allowing access over most of the property over a boarded floor. The middle of the roof void ran approximately north to south and was approximately 2m in height. TN2 - Breeze block gable ends were present to the north and the south and sarking cloth, secured by timber batons was present throughout under the roof tiles. Scattered degraded droppings noted – Sample taken CV1.

The middle roof void area had two roof voids, in 'L' shapes, running off it (TN3), approximately to the east and west. These areas were approximately 1.5m in part and rising to 2m in height for a section towards the end of the 'L' (TN4). These areas had a timber ridge boards and timber beams over sarking felt. Around ten scattered degraded droppings were found in this

area (Sample CV2) No light was showing through the roof structure in this area.

The western 'L' had an area of ripped sarking felt and fallen mortar, giving potential access from the roof. Some daylight was visible in this area, but the structure was still generally tight. Scattered bat droppings were also found in this area, though most were degraded.

There was a smaller void space running off of the main roof space towards the north west, approximately 0.75m in height.

Rat, mice and bat droppings were in evidence throughout the roof space.

Potential access points and assessment of roost suitability:

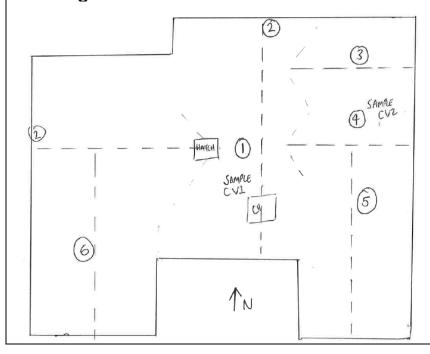
TN5 Ripped sarking cloth and fallen mortar may allow access to the roof void from the outside but very small gaps only and cluttered.

TN6 Some small gaps under roof tiles but generally tight.

The building is bounded to the north by the A5 road, beyond which are arable fields. Arable fields, mostly horse paddocks, are present to the west, east and south of the property. Tall tree line in close proximity to two elevations. Heavily shaded.

Potential to support roosting bats: MODERATE

Drawing:





North elevation and garage



South west elevation



Outbuilding



Outbuilding roof space



ANNEX 10.1.6 K BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Ash House
Structure Location	SJ 92533 08840 – Straight Mile
Approximate Structure Age:	1980s
Current Structure Use:	Residential property – children's home.

Construction materials:

1980s construction of brick with a concrete/clay tile roof. Two storeys with a one storey extension to the rear (north). Generally in good condition to the roof. Brick chimney present. Timber soffits and fascias around the building. There is a front porch built onto the front of the building (south). It is of brick construction with several windows and concrete/clay roof tiles.

The rear extension is constructed of brick with a concrete tile roof and areas of lead flashing to the main house.

There are two rendered brick extensions adjoining the main building to the west. Both have pitched concrete tile roofs and timber panel fascias.

There was no bat roost potential in the trees around the properties.

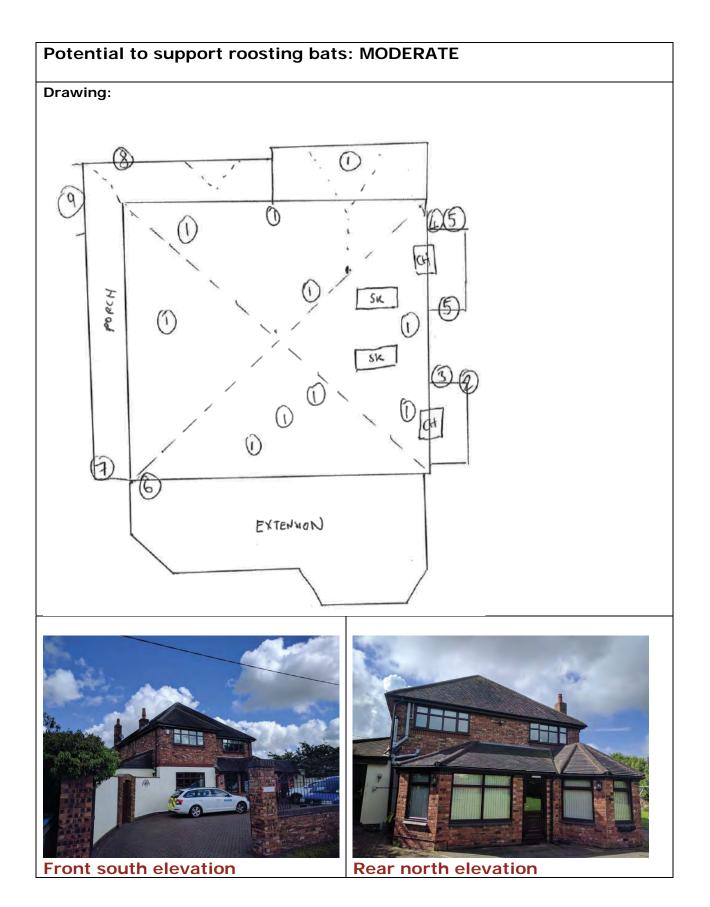
Potential access points and assessment of roost suitability:

- 1) Slipped/ damaged/ lifted tiles.
- 2) Gap in corner of fascia by gutter.
- 3) Gap in mortar bed to tiled roof.
- 4) Slated fascia board missing.
- 5) Gaps between fascia and tiled roof. No concrete bed.
- 6) Gaps around soil pipe. House sparrow coming and going.
- 7) Four slipped raised tiles.
- 8) Hole in soffit box.
- 9) Void over wall. Access possible.

Internal access was achieved. No eaves were available to check in the main house and the loft appeared to have been converted into an unused room to the roof. A loft hatch was observed in the single storey extension on the east side of the house but it was screwed shut and no access was possible.

The building is next to an arable field to the east and a horse paddock to the south (both within 10m).







Degraded soffit board and gaps to roof tiles.



Gaps above fascia board under tiles



Gap around soil pipe



Roof void converted into living space (currently unoccupied)



ANNEX 10.1.6 L BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Stoney Brook Annex
Structure Location	SJ 92438 08881 – Vicarage Road
Approximate	1980s
Structure Age:	
Current Structure	Annex to Stoney Brook Cottage
Use:	

Construction materials:

Small annex to the north of Stoney Brook Cottage. The general construction is the same as the cottage, being of rendered brick with timber soffits boxes and fascias and concrete interlocking tiles on the roof. There are dormer windows in the roof, installed seven years ago as it was converted from a garage. There were no accessible roof voids inside the building.

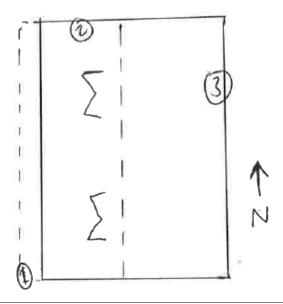
Potential access points and assessment of roost suitability:

- 1) Gap between overhanging fascia and undercloaking.
- 2) Gaps to cement base.
- 3) Timber fascia.

The building is adjacent to a small arable field to the east and is situated in a generally rural wider landscape.

Potential to support roosting bats: MODERATE

Drawing:





West elevation - Gap between overhanging fascia and undercloaking



West elevation



North elevation



East elevation



ANNEX 10.1.6 M BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Stoney Brook Cottage
Structure Location	SJ 92439 08844 – Straight Mile
Approximate	1800s (main body of the house) with multiple
Structure Age:	renovations and additions since
Current Structure	Residential property
Use:	

Construction materials:

The general construction was of rendered brick with timber soffits and fascias around the building. The roof was made of concrete interlocking tiles across the building. There were several roof pitches across the property and a conservatory has been added to the north. There is a garage building at the south west corner of the main house building and constructed in largely the same style.

The access to the loft space was somewhat restricted due to belongings and the majority of the accessible loft space being low in height. The main roof void was approximately 1.5m in height, getting lower towards the edges of the roof spaces. The inside of the roof was of timber frame construction over bituminous sarking felt. MMMF insulation was present in the loft space and several voids into various roof pitches were observed.

The building was in generally sound condition.

Potential access points and assessment of roost suitability:

1) There is potential access for bats in the small gaps under the interlocking concrete tiles, however the building was generally found to offer low/moderate bat roost potential.

Mouse droppings were identified in the roof void.

The building is adjacent to a small arable field to the east and is situated in a generally rural wider landscape.

Potential to support roosting bats: LOW/MODERATE





ANNEX 10.1.6 N BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Croft House
Structure Location	SJ 91676 10124 – Croft Lane
Approximate	1928-1928 with various add-ons and renovations
Structure Age:	since
Current Structure	Residential property
Use:	

Construction materials:

Large two storey house with rendered walls and a double pitched roof covered in clay tiles. PVC soffits and fascias are installed on the property and the house was re-roofed approximately 15 years according to the current tenant. The fascias and soffits are generally flush to the building walls. The property has one brick chimney surrounded by lead flashing to the roof tiles. There is an open porch around the front and side of the property, facing approximately west and north. The porch is supported by a timber frame and has a clay tile roof.

An area of the property towards the north east has a two storey extension built with a flat bitumen covered roof. Some of the bitumen felt is lifted in places. It is constructed of rendered brick with timber fascias, flush to the building walls.

There is also a conservatory built onto the south elevation of the house, built with a block base, glazed walls and plastic roof. There is lead flashing to the rendered wall of the house.

Internal access was gained to two loft spaces, though access was very restricted in both cases due to the size of the loft hatch and access being restricted by the chimney structure. Both loft spaces ran approximately east to west in the two roof pitches.

Void space one was on the northern side of the house and was a long thin area with timber beams over bituminous sarking felt. It was approximately 1.75m in height. No obvious daylight showed through the roof.

Void space two ran adjacent to void space one and was approximately 4m wide, running from the front to the back of the building. The access hatch opened hard against the chimney structure and the centre of the space was approximately 1.75m in height. As void one, the construction was of timber beams over bituminous sarking felt. There was no clear access between the two void spaces apart from an approximate 6 inch gap in places along the floor of the void. A sample of suspected bat droppings were taken from



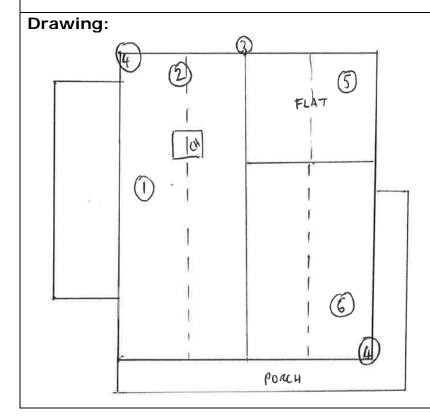
around the access hatch.

Potential access points and assessment of roost suitability:

- 1) Slipped tiles above gutterwork, providing potential access into the roof void.
- 2) Interlocking concrete ridge tiles. Some gaps noted between or underneath the tiles.
- 3) UPVC fascia to gable end. 2cm gap between fascia and rendered wall. Original timber present behind UPVC.
- 4) Undercloaking and mortar to the roof is degraded allowing potential access.
- 5) Single storey extension, shallow grade bitumen felt roof. Rendered walls. Some lifted felt attached to timber frame.
- 6) Two semi-slipped tiles allowing potential access.

The building is surrounded by arable fields to the north, west and south and has an LPG fuel facility to the west.

Potential to support roosting bats: MODERATE





Front (north east elevation)



Front (south east elevation)



Side (south elevation).



Gaps in ridge tile, slipped tiles by gutter – south elevation.



Gaps in ridge tile – south elevation.



Gaps between roof tile and soffit / fascia. North east and south west elevations.



ANNEX 10.1.6 O BAT ROOST ASSESSMENT FOR STRUCTURES

Structure Reference:	Mile End Cottage
Structure Location	SJ 92403 08843 – Straight Mile
Approximate	1800s with multiple additions and renovations
Structure Age:	since
Current Structure	Residential property
Use:	

Construction materials:

The building is constructed from rendered brick. A portion of the building to the north is covered with hung tiles over brick. There are multiple pitched roofs covered with concrete tiles. PVC fascias and soffits are in evidence throughout the property and are tight and well-fitted. There is a modern porch built onto the front of the property with rendered brick and clay tile roof. Lead flashing is coming away from one area of the building.

There is also a conservatory built on to the western elevation of the building. It has a rendered brick base and the walls are roof are glazed.

A garage, now converted into a games room is present to the south east of the main building. It is constructed of rendered brick with a concrete tile roof and PVC fascias. Some gaps to the ridge tile were observed. A roof void was present but not accessible.

Potential access points and assessment of roost suitability:

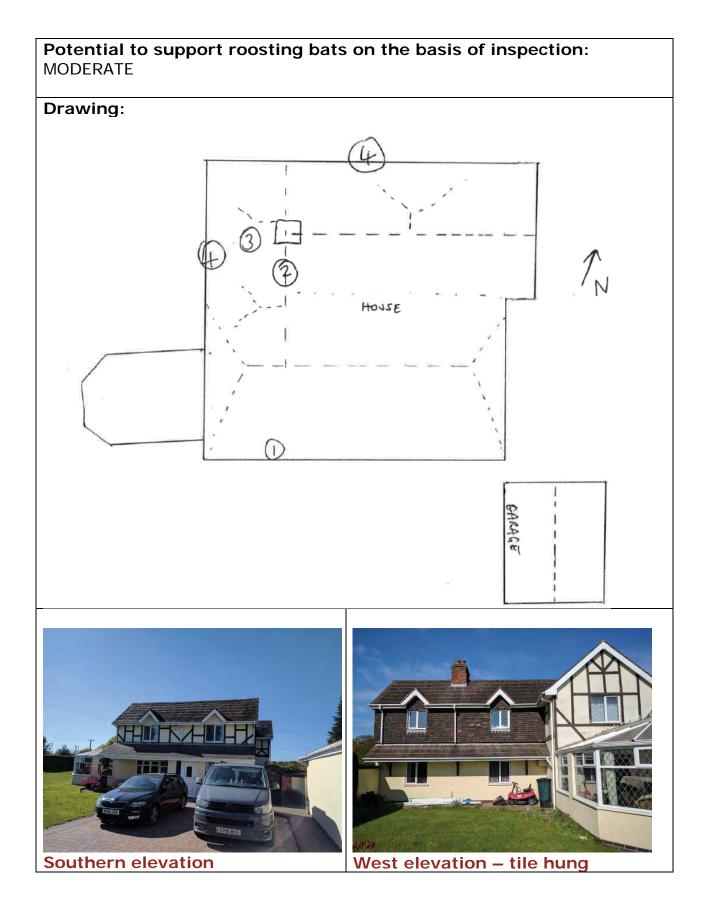
- 1) 5/6 slipped tiles and some ridge tiles with missing mortar.
- 2) Missing mortar to ridge tile.
- 3) Handful of slipped or raised tiles
- 4) Hung tiles, some slipped. One area of lead flashing beneath is sagging.

Internal access to two separate roof voids within the main building was achieved:

Internal void 1 (to south): Approximately 1.75 m in height. Insulation present. Inside of roof constructed of sarking felt secured by timber batons. Water tank limited access. Droppings were found on top of insulation installed in 2012.

Internal void 2 (to north): Approximately 0.5 m in height. Looked inside but no physical access was possible. Plaster ceiling in evidence – likely to be a roof void above this but no access was possible. Droppings were noted in this area. Samples were taken.







North and west elevations – tile hung



Converted garage – games room



Northern roof void



Southern roof void



Southern roof void

Annex 10.1.7

Bat Roost Assessment for Trees

Annex 10.1.7 - Tree Survey for Bat Roost Potential Results - 14/02/2017 - 17/02/2017 - Sunny, Clear, 2-5°C *AGL – Above Ground Level

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
623	 Rot hole – 3m AGL, north side Flaky bark – crevice up to 2m north side 	 Multi-stem oak West of scrub area 	row	1	-1
T13	 Ivy – perhaps <50mm diameter 	 No access due to herras fencing – seen from hedge or fence 20m lighting column adjacent 	row	-	-
621	• Ivy - 50mm> diameter	 Group may have been modified by works 	row	ı	ı
G5	 Split – less than 1.5m, north side and south side with rot Flaky bark – 2.5m east side 	 Northern most willow Poached at base Signs of horse scratching Split with cobwebs, no droppings 	LOW	ı	ı
H3/G13	 3 woodpecker holes – 8m, south side Multi-stem ash with basal cavity near eastern protrusion of trees Hazard beam – dead branch with cracks, 7m AGL east side Knot hole – with dead <u>stem,</u> 6m AGL south side 	 Dead tree with flaky bark, likely to come off Oak 10m near north of group 	MODERATE	ı	-1

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
W1(G)	 Rot hole – 4m AGL south west side, fallen/cut limb Flaky bark – all over branches 	• 18m wide crown oak, north east of multi-stem sycamore	ГОМ	1	1
W1(H)	 Rot holes – small holes, all over Flaky bark Knot holes/rot 	• Exposed	LOW	1	1
W1(I)	 Rot holes – small holes, all over Flaky bark Knot holes/rot 	• Exposed	LOW	1	
G19 (OAK)	 Flaky bark – 4m AGL east Knot hole – 3m AGL east, dead limb 	• Exposed	гом	1	
T16	 Flaky bark – 3.5m AGL south west, cut limb Knot hole – 2m AGL south west, approx. 2x 2cm 	N/A	LOW	1	

Tree ID	Features		Comments	Potential	Climbing Results	Revised Potential
W1(C)	 Woodpecker hole – 6m AGL south west, 2x 1.5cm Flaky bark – branch, 3m AGL north east 	– 6m AGL Scm ch, 3m AGL	• 17m oak, east of deadwood stump	row	1	1
W1(D)	 Woodpecker holes – three holes, 12m AGL north Cracks – 4m AGL east and 11m AGL east Knot hole – 4m AGL north 	orth east and SL north	• 17m oak (leaning), south of W1(C)(above)	MODERATE	Tear out on Main stem on S side at 12.5m AGL. No evidence of bats or use by bats.	FOW
W1(E)	 Woodpecker holes – 6m AGL south 	. – 6m AGL	 17 m oak, south of leaning tree (WD(1)) 	LOW	1	1
W1(F)	 Woodpecker holes – 6m AGL north, <15cm deep Flaky bark – approx. 6m AGL 	. – 6m AGL pp ox. 6m AGL	 15m sycamore, in east of wood amongst conifers 	row	1	1
G15(ASH)	 Knot holes – 2x 3m AGL 4m AGL north 	m AGL and	 Western most ash 	row	1	1

Tree ID	Features	0	Comments	Potential	Climbing Results	Revised Potential
G15 POPLAR	 Rot hole – at base, west Flaky bark – large, AGL south Knot hole – shallow Cankers – <2cm 	Rot hole – at base, south west Flaky bark – large, up to 3m AGL south Knot hole – shallow Cankers – <2cm	Diamond lenticels Features all shallow/small	LOW	1	1
G15(ASH)	 Rot hole – at cavity Flaky bark – Knot holes/S AGL north 	Rot hole – at base, large cavity Flaky bark – over 2m AGL Knot holes/Scar – 2x <2m AGL north	Western most ash	MODERATE	Yes, downgrade. No evidence of bats or use by bats.	LOW
G14(EASTERN ASH)	• Rot hole – at	Rot hole – at base, droppings	Collected droppings – tubes 1,6, 10, 14	MODERATE	1	1
626	Flaky bark –Knot holes –	Flaky bark – 3.5m AGL south Knot holes – 5.2m AGL	Second oak south of bridge Rail land	LOW	1	1
G26	 Knot holes – three k at 1.5-2m AGL east 	Knot holes – three knot holes • at 1.5-2m AGL east	Multi-stem oak by second gantry Rail land	ГОМ	1	1

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
G26	 Cracks – split branch, 3m AGL east 	 South of other G26 bat trees (above) north of tag 9623 Rail land 	LOW	-	1
G27	 Cracks – 10m+ AGL split of main stem, likely to get wet Knot holes – two, 3m AGL east and north 	 20m oak Next to largest of three gantries Rail land 	LOW	•	-1
629	 Overlapping stem/branch – two at 2m AGL east Exposed 	Large multi-stem oakNear south of groupRail land	LOW	-	1
٧٧	 Rot holes – 4m AGL south on main stem and 6m AGL east branch 	 15m oak North east of wood Two large bird nests in scrub elder 	LOW		1
W1	 Rot holes – ground level Knot holes – 2.5m east, large. 2x cavities with bird droppings, 3.5m west 	• 12m oak • Closest to T15	MODERATE	Scar South side, 2m AGL, and space for 1 bat. No evidence of bats or use by bats.	NEGLI GIBLE /LOW

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T18(OAK)	 Cracks – 4.5m AGL north 	Generally soundDamaged/split limb	NEGLIGIBLE /LOW	1	ı
T131(V)	 Rot holes – 1.5m AGL south Flaky bark – throughout 	Standing dead	нісн	Yes, downgrade. No evidence of bats or use by bats.	MODERATE
G60(B)	 Overlapping stem/branch – 3-4m dual 	 Voids created large by overlapping stems 	LOW	1	ı
T83	 Flaky bark – 2m AGL north, at wound 	Limited potentialExposed	NEGLIGIBLE /LOW	1	ı
T80	 4m AGL north, one small hole 	Generally soundLimited potential	NEGLIGIBLE /LOW	1	1
G48	 Knot holes – alder 	 Bees in dead tree Freshly broken off limbs in nearest road 	MODERATE	Negligible potential.	NEGLI GI BLE

Tree ID	Fe	Features	Comments	Potential	Climbing Results	Revised Potential
T16	• •	Hazard beam – 3.5m AGL east Cracks	 Bark wound Hazard beam does not appear to go anywhere 	гом	ı	1
G26(B)		N/A	Recorded as retainedBy road	/LOW	1	1
G26(B)(OAK)	• • •	Hazard beam Flaky bark Knot holes	 Centre of hedge Field centre position to be lost Dead limb with bark 	MODERATE	No obvious features upon climbing.	NEGLIGIBLE
120	• • •	Rot holes Cracks – From ground to 6m AGL Flaky bark in places	 Lightning strike Features throughout to all aspects 	нген	Lightning strike Long split; narrow on S side at 4.5m AGL. No evidence of bats or use by bats.	FOW
T27(HORNBEA M)	• •	Rot holes – 4m AGL south Hazard beams – 3m AGL south	 Features either too exposed or insufficiently developed 	ГОМ	ı	-1
T28(ASH)	• • • •	Woodpecker holes – 4m+, multiple holes Rot holes – cavity, north facing limb/stem Cracks Knot holes	Multiple featuresDeveloped limb scars/cavities	нісн	Inspected knot holes on main stem at 5m AGL on south west side and woodpecker holes in limb on south west side at	нен

Tree ID	Fe	Features	Comments	Potential	Climbing Results	Revised Potential
					13m AGL. No evidence of bats or use by bats.	
T32(OAK)	• •	Rot/woodpecker holes Flaky bark – on deadwood	 Deadwood Declining condition 	MODERATE	Woodpecker hole identified on large limb, S of the main stem, 5m AGL facing down 10. No evidence of bats or use by bats.	LOW
T25(OAK)	• •	Hard wood split Flaky bark – around split limbs	Major deadwoodSplit limbs	MODERATE	Broken branch split wood, S facing, 7m AGL and scar on main stem on S side, 6m AGL. No evidence of bats or use by bats.	NEGLI GI BLE
T32(U)	• •	Cracks Flaky bark – 3m AGL north	 Dead oak Deadwood splits but to small limbs only 	LOW	-	
T198(OAK)	• • •	Cracks – most to south around 4m AGL Flaky bark – on dead limbs Knot holes	 Inspection limited to north side due to quarrying activities and standing water Dead limbs 	LOW	ı	

Tree ID	H e	Features	Comments	Potential	Climbing Results	Revised Potential
T140(ALDER)	• • •	Rot at knot holes Flaky bark Knot holes – 2.5m AGL east	Upper stem snappedDeadwoodPoor condition	нен	-	ı
T139(ALDER)		N/A	Upper stem failed but exposed	MODERATE	1	1
T134	•	Flaky bark – up to 2.5m AGL east	N/A	MODERATE	1	1
G80(A) (ASPEN)	•	Woodpecker holes – approx. 5m AGL south, in limb scar	N/A	LOW	ı	1
G80(DEAD STEM)	• •	Woodpecker holes – throughout Flaky bark – throughout	3.5m AGL woodpecker holes with potential Full of cavities but exposed limbs	MODERATE	ı	1
T203	• •	Rot holes – 2.5m south Cracks – 3-4m south	 Deadwood, generally minor limbs 	MODERATE	ı	ı

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T207	 Cracks – flail damage, 1m east and cut limb, 3m south 	• Cut limb	гом	1	1
T12	 Hazard beam – cut Flaky bark – peeled off 	 Ivy seems to have been removed at some stage 	NEGLIGIBLE /LOW	1	1
T147	 Rot holes – many at ends of broken branches Flaky bark Knot holes – more than 5 	N/A	нен	1	ı
T194	 Cracks – exposed holes in branch, 4m AGL west Knot holes – 4m AGL south 	 A little exposed which may limit potential 	MODERATE	1	1
T321	 Rot holes – deadwood branch Hazard beam – 4m AGL west 	N/A	MODERATE	1	1
T19(C)	• Flaky bark	 Deadwood with encasing bark 	ГОМ	1	1

Tree ID	Features	Se	Comments	Potential	Climbing Results	Revised Potential
(D)669	• Rot • Kno nori	Rot holes Knot holes – three at 2m AGL north, 4m AGL north east	 Deadwood with rot hole 	MODERATE	-	ı
G99(E)	• Lim Sou	Limb scar— at 3m AGL South, Cavity	N/A	MODERATE	ı	ı
T163(OAK)	• Flak • Kno	Flaky bark – to deadwood Knot holes – 6m AGL south	Some deadwoodFeatures exposed	ГОМ	1	
T153	Rot exp Flak bass	Rot holes – 1-2m AGL east, exposed deadwood Flaky bark – east, around base to stump, exposed	 Veteran regrowth from old stump Open heartwood is very exposed Exposure of limbs limits potential 	MODERATE	No obvious features upon climbing.	NEGLIGIBLE
T156(CHERRY)	Flakybase	Flaky bark – to damage at base	Damage at base	row	ı	
T102(H.BLACK POPLAR)	• Flaky • Knot west	Flaky bark – to deadwood Knot holes – approx. 6m AGL west Ivy – 250mm diameter	 Deadwood Impact marks by access road In rapid decline Features not very well developed but likely to deteriorate and become more suitable 	нісн	Not safe to climb.	MODERATE/ HIGH

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T119	 Rot holes – at broken end of hazard beam, 4m AGL east, one rot hole Hazard beam – road side, access limited inspection, possible cavity Knot holes – 3.5m AGL south 	• Some deadwood	MODERATE	Cavity at the end of snapped limb, NE at 4m AGL. No evidence of bats or use by bats.	MODERATE
T301(ASH)	 Woodpecker holes – 8m AGL south east Rot holes – several 	No obvious defectsInspected from site only	нен	Knot hole main stem on S side at 4m AGL. No obvious features upon climbing.	NEGLI GI BLE
T302(ASH)	 Rot holes – 4m AGL west Knot holes – 4m AGL west 	N/A	row	1	1
T159	 Rot holes – several, 3m AGL south east Flaky bark – up main stem 	Deadwood By access road	H GH	Flaking bark on main stem on N side at 6m AGL and split stem all around at approx. 7m AGL. No evidence of bats or use by bats.	MODERATE

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T150(ASH)	Cracks – 0.5m AGL west	 Multi-stem One stem split at 0.5m Next to access road Inspected – no bats present 	MODERATE	Split in the hard wood of multiple steam ash on N and S at 0.5m AGL -	NEGLI GI BLE
T151(OAK)	 Flaky bark – minor, no void Overlapping stem/branch – but no void 	DeadwoodCollision damagePoor suitabilityNext to haul road	NEGLI GI BLE		ı
T178	 Cracks – split at 3-10m AGL north 	N/A	нісн	1	1
T177	 Cracks – 10m AGL and 2m AGL south 	 Limited inspection due to quarry 	MODERATE	1	1
T175	 Rot holes – 5m AGL north Knot holes – 3-8m AGL east 	 Deadwood Hard to see if features are high potential due to cluttered crown. 	MODERATE	1	

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T184	 Knot holes – socket, not deep 	N/A	LOW	1	1
T186	 Rot holes –deadwood 	 Mature Would benefit from off- ground inspection 	LOW		1
T187	 Hazard beam –cavity, 8m AGL south east Cracks – 2-6m AGL south Knot holes – 2m AGL south 	N/A	нісн	1	ı
T180	N/A	 Lots of damage to lower limbs No inspection from north west 	NEGLIGIBLE /LOW		ı
T182	 Knot holes – two at 8m AGL south and south west and 5m AGL north 	N/A	нісн	Knot hole Stem on S side 5m AGL. No evidence of bats or use by bats.	MODERATE
T174	 Rot holes – three at 3-5m AGL south and 2.5m AGL north 	• Deadwood	нен	1	1

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T171	 Rot holes – two in north west branch 	Deadwood Limb damage	MODERATE	1	1
1170	 Rot holes – not deep 	 Mature but no cavities 	LOW	1	1
T188	 Rot holes – 2m AGL south east in deadwood knot Cracks – cut in split limb, 6m AGL west, also deadwood Knot holes – 5m AGL south west 	 Large tree Limited inspection from ground 	MODERATE	1	
T189	 Rot holes – 3m AGL south Knot holes – 5m AGL north, 3m AGL south, 3m AGL west 	Lots of deadwood	нісн	1	1
T190	N/A	 Limb scars but no cavities 	LOW	1	
T322	 Woodpecker holes – 5m AGL south west and 5m AGL south east Rot holes – 6m AGL on north east branch Knot holes – 4m AGL east, 	 South east corner of big woodland 	нісн	1	1

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
	6m AGL north, 8m AGL east				
G97(C)	 Hazard beam – cavity 	 20m oak 10m south of haul road on eastern edge 	MODERATE		1
G98(A)	 Rot holes –3m AGL east, may lead to cavity 	 Western most with damage 	нен	1	1
G62(A)	 Cracks – over water, 3m AGL south 	Ivy covered willow	LOW	1	1
T117	 Rot holes – 2m AGL east Hazard beam – top branches, 4m AGL east Cankers 	 Deadwood with living part to south 	нен	Canker cavity. Dead stem on E side at 1m AGL. No evidence of bats or use by bats.	MODERATE

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T116	 Knot holes – 2m AGL south, no claw marks/droppings 	N/A	LOW	1	1
T115	 Rot holes – large hole, 4m AGL west on trunk Hazard beams – 6m AGL west 	 Hole does not appear to go anywhere but limited view from ground 	MODERATE	Rot hole + split wood – negligible potential. No evidence of bats or use by bats.	NEGLIGIBLE
T114	 Rot holes – various up to 6m Cracks – various up to 7m AGL Flaky bark – 1.5m AGL east Knot holes – around dead branch 	 Not safe to climb 	нен	1	1
T112	 Knot holes – 3m AGL south, hole around dead branch 	Black tarry marking	LOW	1	1
T111	 Rot holes – 2m AGL south, over water Cracks – 3m AGL west and 3.5m AGL north on west branch Flaky bark – various up to 5m 	N/A	MODERATE	Rot hole under the bark at the base of the snapped limb on the S side at 1.8m AGL and partially	MODERATE

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
				dead branch on NW	
				side at 2m AGL	
				facing down. No	
				evidence of bats or	
				use by bats.	
			LOW		
T108	 Rot holes – 3m AGL north Flaky bark – negligible 	N/A			
			MODERATE	Rot hole Middle stem	MODERATE
				on NW side 4m AGL	
	 Rot holes – in long crevice, 6-8m west, middle trunk 			and woodpecker	
T101	• Cracks – 3m north, bracket	Northern knot hole with black		hole above long	
	 Knot holes – 4m, south west, 	שמחת שמחת		crevice, NW side 5m	
	4m north west			AGL. No evidence of	
				bats or use by bats.	
			LOW		
861	 Cracks – likely to collect water, 8m AGL north west, 	4/2			
)	above dead cut branch, 6m AGL north east				

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T308	 Woodpecker holes – 2m AGL south, large cavity 	• 8m oak • Deadwood	MODERATE	Woodpecker hole inspected. No evidence of bats or use by bats.	MODERATE
T309	 Woodpecker/rot holes – 2m AGL north 	Silver birch trunk	нісн	Checked with ladder. No evidence of bats or use by bats.	MODERATE
T311	 Hazard beam – open to rain, 2m AGL Flaky bark – 2m AGL Knot holes – 2m AGL west 	• 20m oak • Large deadwood	MODERATE	Hazard beam + broken beam + knot hole – Negligible potential.	NEGLI GI BLE
T312	 Cracks – gully on south side 	• 20m silver birch	ГОМ		1
T313	N/A	 Dead silver birch Significant rot Exposed so limited potential 	ГОМ		
197	 Rot holes – 3m east, 5m north east Cracks – 15m east Knot holes – 3m south, 4m south, two at 6m south east 	N/A	нісн	Knot hole main stem on SW side at 3m AGL. Rot hole in snapped limb on S	нен

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
				side at 3m AGL. Rot	
				hole limb on E side	
				at 3m AGL –	
				droppings found and	
				sent away for DNA	
				analysis.	
T307	Woodpecker holes – six woodpecker holes, 9m AGL east and one on north east side of branch at 8.5m AGL	 20m oak with wide crown Minor deadwood 	MODERATE	Limited opportunity for use by bats. No evidence of bats or use by bats.	ГОМ
T314	 Woodpecker holes – 4m north Cracks – two at 4m north 	• 17m oak • Deadwood	MODERATE	Limited opportunity for use by bats. No evidence of bats or use by bats.	ГОМ
T315	N/A	 30m oak No features seen but mature with deadwood 	NEGLIGIBLE /LOW	1	1
Т316	 Flaky bark – various Woodpecker hole on stem growing towards field, W side at 7m AGL. Rot holes – Stem growing towards field, W side at 6-8m AGL 	 10m oak Deadwood on south 	HBH	Yes, no evidence of bats or use by bats but potential exists.	MODERATE

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
T317	 Rot holes – 3m east, with cavity 	Silver birch	MODERATE	Rot holes inspected, negligible potential for roosting bats.	NEGLI GI BLE
T318	 Knot holes – 6m north Scar on large limb on N side, 7m AGL 	• 20m oak	нен	Yes, no evidence of bats or use by bats but high potential exists.	нен
T319	 Cracks – open at top Knot holes – 2m east Rot holes under the snapped limb, N side at 4m AGL 	 Pollard-like oak 	MODERATE	Limited opportunity for use by bats. No evidence of bats or use by bats.	row
T320	 Woodpecker/ rot holes – 2m and 3m AGL to the east Knot holes – two at 2.5m AGL north 	 Wide grown oak on north side of ditch 	нісн	Yes, no evidence of bats or use by bats but high potential exists.	нен
T92	 Knot holes – 1m AGL south, cluttered 	N/A	LOW	-	1
G108 A	 Woodpecker holes – two in decline 	Dead cherry treeLikely to fallUnder two oaks	MODERATE	1	1

Tree ID	Features	Comments	Potential	Climbing Results	Revised Potential
G108 B	 Large cavity with bird droppings 	• Large oak	MODERATE	1	1
G108 C	Cavity (cobwebs over cavity)	Along boundary line	MODERATE	1	1
G108 D	Cracked limbDamaged structure	Along boundary line	MODERATE	1	1
G108 E	 Rear side from track with old damaged lower trunk Hole at the top of damaged area into trunk 	 Oak, midway along boundary line 	MODERATE	1	1
G108 G	 Several dead limbs One fractured limb with multiple splits, voids and cavities 	• Oak	MODERATE	_	1

Annex 10.1.8

Bat Trapping Details

Annex 10.1.8 - Bat Trapping Details

Date	Trap ref	Time	Species	Sex	Age	Breeding status	Tag ref
	1	23:40	Soprano pipistrelle	Female	Adult	Preg	
	1	23:40	Common pipistrelle	Male	Adult		
	2	23:51	Brown long-eared	Female	Adult	Preg	
	1	23:57	Common pipistrelle	Male	Adult		
	1	00:38	Brandt's	Male	Adult		
	1	00:38	Natterer's	Female	Adult	non breeding	
	2	01:05	Brown long-eared	Male	Adult		
27/06/2016	1	01:50	Daubenton's	Male	Adult		
	1	01:50	Whiskered	Male	Adult		
	5	22:40	Daubenton's	Male	Adult		Bat1
	5	23:40	Common pipistrelle	Female	Adult	non breeding	
	9	23:40	Brown long-eared	Female	Adult	non breeding	Bat2
	9	23:55	Common pipistrelle	Female	Adult	Preg	
	5	00:40	Natterer's	Female	Adult	non breeding	Bat3
	4	01:10	Brown long-eared	Male	Adult		
	10	22:42	Soprano pipistrelle	Female	Adult	Preg	
7100/70/00	10	22:42	Soprano pipistrelle	Female	Adult	non breeding	
0107/00/07	10	22:42	Soprano pipistrelle	Female	Adult	non breeding	
	10	01:30	Soprano pipistrelle	Female	Adult	Lact	
30/06/2016							
			No bat captures				
			_				

Date	Trap ref	Time	Species	Sex	Age	Breeding status	Tag ref
	1	21:05	Common pipistrelle	Female	Juv		
	4	22:00	Serotine	Male	Adult		
	1	22:05	Soprano pipistrelle	Male	Adult		
	1	22:26	Common pipistrelle	Male	Juv		
71/00/00/	l	22:26	Whiskered/ Brandt's	Female	Adult	Post Lact	Bat4
0102/00/27	2	22:35	Brown long-eared	Female	Adult	Post Lact	Bat5
	1	23:15	Natterer's	Female	Adult	non breeding	
	l	00:20	Common pipistrelle	Male	Adult		
	1	01:05	Noctule	Male	Adult		
	1	01:10	Soprano pipistrelle	Female	Juv		
	4	21:15	Whiskered	Male	Adult		
	5	21:41	Soprano pipistrelle	Male	Juv		
	5	22:20	Noctule	Female	Juv		
	9	22:22	Noctule	Female	Juv		
	7	23:07	Brown long-eared	Male	Adult		
22/00/2016	7	23:07	Serotine	Male	Adult		
23/00/2010	5	23:26	Whiskered/Brandt's	Female	Juv		
	5	23:26	Whiskered/Brandt's	Female	Adult	Post Lact	
	7	23:20	Brown long-eared	Female	Adult	Post Lact	
	7	00:15	Whiskered/Brandt's	Female	Adult	Post Lact	
	9	00: 28	Brown long-eared	Male	Adult		Bat6
	7	01:00	Soprano pipistrelle	Female	Adult		
	Woodland	00:00	Natterer's	Female	Adult	Lactating	Bat106
	strip north	02:42	Brown long-eared	Female	Adult	Heavily pregnant	
25/06/2017	bank Ctoffordobiro						
	Worcester		No captures				
	canal						

				((Bat406	Heavily pregnant	Heavily pregnant	Heavily pregnant	Heavily pregnant							Bat206										
				Lactating	Lactating		Heavily p	Heavily p	Heavily p	Heavily p	Lactating					n/a	n/a				n/a					n/a	
Adult	Adult	Adult	Adult	Adult	Adult	Adult	Adult	Adult	Adult	Adult	Adult					Adult	Adult				Adult					Adult	
Male	Male	Male	Male	Female	Female	Male	Female	Female	Female	Female	Female					Male	Male				Male					Male	
Whiskered	Whiskered	Daubenton's	Brown long-eared	Soprano pipistrelle	Soprano pipistrelle	Brown long-eared	Natterer's					Brown long-eared	Daubenton's				Common pipistrelle					Common pipistrelle					
22:29	00:15	00:15	00:15	98:00	01:11	00:00	00:00	02:00	00:00	02:11	23:32					23:43	23:22				00:16					00:16	
								Unnamed	copse, Calf	Heath	Small copse	on south	boundary of	Staffordshire	Worcester	canal	Staffordshire	Worcester	canal	(towpath	location 1)	Staffordshire	Worcester	canal	(towpath	location 2)	
														7 102/90/97													

	canal (towpath	23.50	Sonrano ninistrelle	Fomalo	+ - -	l actating	
	Small copse	00:05	Daubenton's	Male	Adult	6	
	on south						
	boundary of Staffordshire						
	Worcester						
	canal	01:35	Soprano pipistrelle	Female	Adult	Lactating	
		22:15	Noctule	Female	Juvenile		Bat208
		23:12	Brown long-eared	Female	Adult	Post-lactating	
	Woodland	23:12	Brown long-eared	Male	Adult		
	strip north	23:12	Brown long-eared	Male	Juvenile		
	bank	23:12	Brown long-eared	Female	Juvenile		
	Staffordshire	23:42	Noctule	Female	Juvenile		
27/08/2017	Worcester	00:29	Brown long-eared	Female	Juvenile		
	canal	02:22	Common pipistrelle	Female	Adult	Post-lactating	
		N/A	N/A	N/A	N/A	N/A	
							Bat
	Small copse	20:40	Brown long-eared	Female	Juvenile	N/A	108
	on the edge	21:06	Noctule	Male	Adult	N/A	
	of the field	21:45	Natterer's	Male	Juvenile	N/A	Bat308
		21:34	Brown long-eared	Female	Adult	Post-lactating	
		22:07	Brown long-eared	Female	Adult	Post-lactating	
	3	22:07	Brown long-eared	Female	Juvenile		
7100/00/00	Official red	22:13	Natterer's	Female	Juvenile		
7102/00/27	Lopse, call	22:39	Soprano pipistrelle	Male	Juvenile		
		22:44	Soprano pipistrelle	Male	Juvenile		
		23:21	Soprano pipistrelle	Male	Adult		
		23:21	Daubenton's	Female	Adult	Non-reproductive	Bat408

	23:53	Natterer's	Male	Adult		
	00:02	Daubenton's	Female	Juvenile		
	00:11	Daubenton's	Female	Juvenile		
	00:15	Daubenton's	Female	Juvenile		
	00:54	Daubenton's	Male	Adult		
	00:54	Daubenton's	Male	Adult		
	00:54	Soprano pipistrelle	Female	Juvenile		
	00:54	Noctule	Female	Juvenile		
	01:25	Brown long-eared	Female	Adult	Post-lactating	
	01:30	Daubenton's	Female	Adult	Non-reproductive	
	21:40	Common pipistrelle	Male	Adult		
Woodland	21:56	Natterer's	Female	Adult	Non-reproductive	
strip north	23:44	Common pipistrelle	Female	Adult	Post-lactating	
bank	00:24	Brown long-eared	Female	Juvenile		
Staffordshire	9 00:55	Noctule	Male			
Worcester	01:19	Daubenton's	Male			
canal	01:22	Daubenton's	Male			
	02:40	Soprano pipistrelle	Male			

Annex 10.1.9

Bat Dropping DNA Analysis Results





Re: Bat Identification Results for James Fraser, Ramboll Environ

Phylogenetic analysis identification: Pipistrellus pipistrellus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

The EcoWarwicker Team

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Bat job number 8841, received 05 December 2016
Sample labelled: Ramboll- Woodside- Barn - 03
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCTCACCCCCTAATGAAAATTATCAATAACTCCTTTATTGA
CCTACCCGCTCCATCAAATATCTCTTCCTGATGGAATTTCGGATCTCTTTTAGGAATC
TGCTGGCATAC

Phylogenetic analysis identification: Myotis nattereri

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

The EcoWarwicker Team

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Bat job number 8842, received 05 December 2016
Sample labelled: Ramboll- Woodside- Barn - 04
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCTCACCCCCTAATGAAAATTATCAATAACTCCTTTATTGA
CCTACCCGCTCCATCAAATATCTCTTCCTGATGGAATTTCGGATCTCTTTTAGGAATC
TGCTGGCA

Phylogenetic analysis identification: Myotis nattereri

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

The EcoWarwicker Team

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Bat job number 8839, received 05 December 2016
Sample labelled: Ramboll- Woodside- Barn - 01
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGATTCATTGACTTACCTGCTCCCTCAAATATTTCATCATGGTGAAACTTTGGGTCTCTTCTAGGTATT

Phylogenetic analysis identification: Plecotus auritus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

The EcoWarwicker Team

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Bat job number 9475, received 10 May 2017
Sample labelled: ME1 Ramboll- Mile End Cottage-01
PCR amplification successful. DNA sequence:
ATGACTAACATCCGAAAAACCCACCCATTAATAAAAATCGTTAACAGCTCATTTATTG
ATTTACCTGCCCCATTCAATATTTCATCATGATGAAACTTTGGCTCCCTC

Phylogenetic analysis identification: Sorex minutus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Phylogenetic analysis identification: Plecotus auritus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500 Email: r.g.allaby@warwick.ac.uk





18 June 2017

Re: Bat Identification Results for James Fraser, Ramboll Environ

Bat job number 9552, received 23 May 2017

Sample labelled: Ramboll-Croft-House-01. CH1 Four Ashes, Croft House. 18/5/17 PCR amplification successful. DNA sequence:

TCAGCCGTAGTTTACGTCTCGGCAGATTGCGTGACTGATGAGAAGGCAGTTATTGTGTCTGATGTGTAG

Phylogenetic analysis identification: Sorex minutus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Phylogenetic analysis identification: Apodemus sylvaticus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500





Re: Bat Identification Results for James Fraser, Ramboll Environ

Phylogenetic analysis identification: Plecotus auritus

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

School of Life Sciences, Gibbet Hill Campus, University of Warwick, Coventry CV4 7AL Tel: 02476575059 Fax: 02476574500