

# A1 Birtley to Coal House

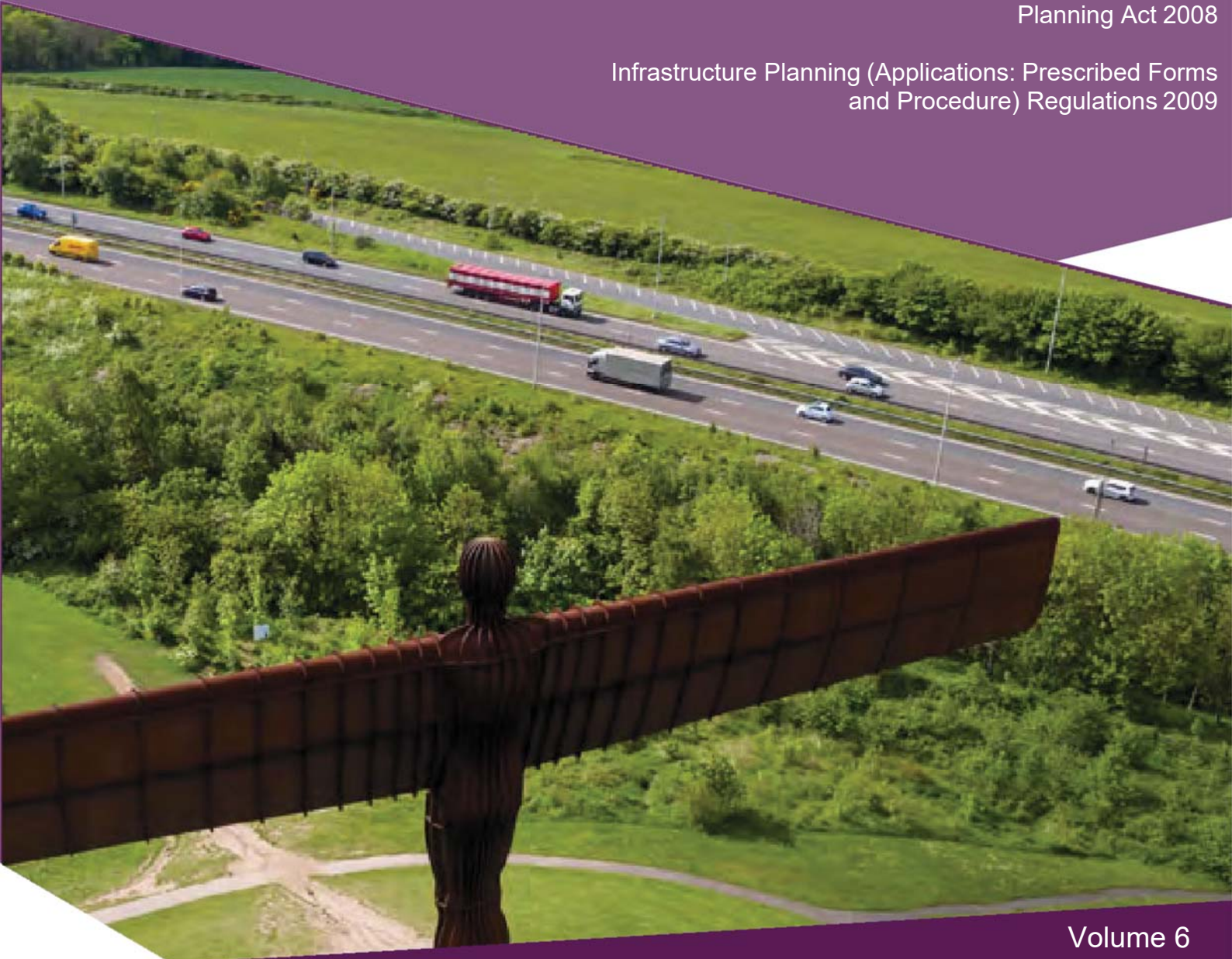
## Scheme Number: TR010031

### 6.3 Environmental Statement – Appendix 8.1 Preliminary Ecological Appraisal

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms  
and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms and  
Procedures) Regulations 2009**

**A1 Birtley to Coal House  
Development Consent Order 20[xx]**

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**Environmental Statement -  
Appendix**

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## EXECUTIVE SUMMARY

WSP Ltd. (WSP) was commissioned by Highways England to undertake an update Ecological Appraisal in support of the proposed widening Scheme of the A1 between Birtley and Coal House. The A1 Birtley to Coal House Scheme consists of the widening and upgrading of the existing road to provide a four lane carriageway on the southbound and three lanes on the northbound and replacement of Allerdene Bridge. This is hereby referred to as the 'Scheme'.

A previous extended Phase 1 assessment was completed in 2015, undertaken by WSP (at the time WSP | Parsons Brinckerhoff (PB)). Following the recommendations of this report (WSP | PB, 2016), at the time of reporting, subsequent dedicated species surveys were commissioned and have either been completed or are ongoing (at the time of writing, July 2018).

This report comprises; a desk study exercise, a field survey and appraisal/recommendations. The desk study reviewed and collated publicly available data and requested biological records to gather existing information regarding the presence of protected sites, habitats of importance and protected/notable species on or within proximity to the Scheme. The field survey was undertaken in March 2018 and involved a walkover of the Scheme Footprint (as defined within this report) to document the habitats present, particularly where changes have occurred since the previous assessment. The habitat assessment was also supported by a protected species risk assessment, to determine the potential for protected/notable species to be within a zone of influence (Zoi) from the Scheme (as discussed within the report).

The desk study identified a single statutory site (a Local Nature Reserve) within 2km of the Scheme and fifteen non-statutory designations (Local Wildlife Sites). There were no European designations recorded within a 10-km buffer of the Scheme. Two sites of ancient woodland are located immediately adjacent to the Scheme. There are five wildlife corridors crossed by the Scheme, of which three represent Local Wildlife Sites (LWS).

The surveyed area recorded a range of habitats that include agricultural farmland (grazed pasture), plantation and semi-natural woodland (broadleaved, coniferous and mixed), grasslands and boundary features (including hedgerows, fences and tree lines). Hedgerows and woodlands represent UK Biodiversity Action Plan (BAP) priority habitats and archived Highways Agency BAP habitats. The habitats present both within and surrounding the surveyed area hold potential value to support a wide variety of wildlife, including bats, amphibians (great crested newt), wintering and breeding birds, reptiles, badger, red squirrel, riparian mammals and other terrestrial mammals (brown hare and hedgehog). Japanese knotweed and giant hogweed were recorded within the Survey Area; both are listed as non-native invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

To ensure compliance with legislation and planning policy, further survey effort is identified and recommended, with several of these surveys already underway or completed. The recommended further surveys are outlined within this report, with the findings to be presented in separate reports (as referenced within this report, as applicable).

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The impacts of the Scheme will be fully assessed and presented within an Environmental Statement (ES) Chapter, which will also contain details of the proposed avoidance, mitigation, compensation and enhancement measures to address the potential impacts to protected and notable fauna, flora and sites.

Indicative avoidance and mitigation has been provided within this report, which will be fully outlined within the ES Chapter. The Chapter will also include details of enhancement opportunities and proposals, to further improve the ecological value for biodiversity.

# 1 INTRODUCTION

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## 1.1 BACKGROUND

### PROJECT BACKGROUND

- 1.1.1 WSP Ltd. (WSP) was commissioned by Highways England to undertake an update Ecological Appraisal (EA) in support of the proposed widening Scheme of the A1 between Birtley and Coal House.
- 1.1.2 The A1 Birtley to Coal House Scheme, hereafter referred to as “the Scheme”, is 6.5km in length and will include replacement of Allerdene Bridge. Most of the work will take place within the highway boundary, however, some additional land will be required alongside the A1 at certain points to enable the additional lanes to be constructed.
- 1.1.3 The Scheme will provide additional capacity by widening to four lanes between junction 65 and 67 on the southbound carriageway and three lanes with an additional lane to help manage traffic joining and leaving the A1 between junctions on the northbound carriageway. It also includes a replacement structure of Allerdene Bridge to the immediate south of the current structure, which will tie in to the existing junction 67 Coal House roundabout. The Scheme will also look to install electronic signage to provide driver information along the road.

### ECOLOGICAL BACKGROUND

- 1.1.4 The surveyed area extends between junction 65 of the A1(M) near Birtley (southern end of the Scheme) extending to near junction 68 (northern end of the Scheme), including the existing highway, soft estate and surrounding land contained within the red line boundary. This will hereafter be referred to as the ‘Scheme Footprint’ and is illustrated in **Figure 1** which can be found at the end of this report. The National Grid References for the southern and northern ends of the Scheme are NZ 2856 3720 and NZ 2360 8332 respectively.
- 1.1.5 WSP (at the time WSP | Parsons Brinckerhoff) undertook an extended Phase 1 habitat survey in 2015 (WSP | PB, 2016) within the initial red line boundary<sup>1</sup>. The dominant habitats recorded at the time were hard standing, broadleaved semi-natural woodland, broadleaved plantation woodland, mixed plantation woodland and semi-improved neutral grassland. The Phase 1 habitat survey has been followed by a suite of targeted species surveys, which are ongoing (described and referenced within this report). This includes survey effort for great crested newts, bats, badger, red squirrel, breeding and wintering birds and reptiles.

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<sup>1</sup> As detailed within the Extended Phase 1 habitat survey report (WSP | Parsons Brinckerhoff), 2016.



## 1.2 SCOPE OF REPORT

1.2.1 The scope of this report was to provide an update to the following:

- Baseline ecological information about the Scheme Footprint and a surrounding Study Area with particular reference to whether legally protected and/or notable sites, species or habitats are present or likely to be present.
- Conduct a walkover assessment of the Scheme Footprint to determine any changes to the baseline previously recorded and to affirm the findings of the previous assessment.
- Determine the potential for protected/notable species to be supported by the habitats within the Scheme Footprint.

1.2.2 Detailed mapping of any invasive plant species listed on Schedule 9 of the WCA 1981 (as amended) such or a full survey of the Scheme Footprint for all invasive plant species is beyond the scope of this commission. However, any incidental observations evident during the Phase 1 habitat survey were target noted.

## 1.3 RELEVANT LEGISLATION AND POLICY

1.3.1 The appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England. The context and applicability of each item is explained as appropriate in the relevant sections of the report and additional details are presented in **Appendix A**.

- The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)
- The Wildlife and Countryside Act 1981 (as amended) (WCA)
- Countryside Rights of Way Act 2000
- The Natural Environment and Rural Communities (NERC) Act 2006
- The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012)
- UK Biodiversity Action Plan (UKBAP)<sup>2</sup>
- The National Planning Policy Framework (NPPF) 2018 (DCLG, 2012)
- Planning for the Future – Core Strategy and Urban Core Plan for Gateshead and Newcastle-upon-Tyne 2010-2020 (hereby referred to as the ‘Local Plan’)
- Action for Wildlife: The Durham Biodiversity Action Plan (applicable for Gateshead)
- Highways England Biodiversity Plan, June 2015

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<sup>2</sup> The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant.

## 2 METHODS

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### 2.1 OVERVIEW

2.1.1 This appraisal has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017a and 2017b), and Joint Nature Conservation Committee (JNCC, 2010); and guidance contained in the British Standard - Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institute (2013)).

2.1.2 This Ecological Appraisal is based on the following data sources:

- An ecological desk study
- A habitat survey
- A protected/notable species assessment

### 2.2 DESK STUDY

2.2.1 The desk study was undertaken in March 2018 to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. For the purpose of the desk study exercise, records were collated within various radii around the Survey Area, as detailed below. This approach is consistent with current good practice guidance published by the CIEEM, 2017a and 2017b). To provide the baseline data for the ecological desk study, the following information was requested from the Environmental Records Information Centre (ERIC) North East:

- Records of legally protected and notable species within 2km of the Survey Area.
- Bat records within a 5km radius of the Survey Area.
- Records of non-statutory sites designated for nature conservation value within 2km of the Survey Area.

2.2.2 Freely downloadable datasets (available from Natural England) were consulted for information regarding the presence of statutory designated habitats<sup>3</sup> within 2km of the Survey Area. This search was extended to 10km for Natura 2000 sites of European importance (Special Areas of Conservation (SAC) (including candidate SAC) and Special Protection Areas (SPA) (including possible SPA)) and internationally designated Ramsar sites.

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<sup>3</sup> Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR).

- 2.2.3 Habitats of Principal Importance (HPI)<sup>4</sup> within 2km of the Scheme were provided by ERIC North East. Freely downloadable datasets (available from Natural England) were consulted for information regarding woodland listed on the Ancient Woodland Inventory<sup>5</sup>.
- 2.2.4 In addition, open source 1:25,000 Ordnance Survey mapping was used to identify any mapped water bodies and watercourses within 500 m of the survey area.
- 2.2.5 The findings of the desk study have been incorporated within Section 3 and **Appendix B** of this report.
- 2.2.6 The ecological desk study was carried out by a Senior Ecologist and Associate member of CIEEM, who has completed numerous ecological desk studies.

## 2.3 HABITAT SURVEY

- 2.3.1 An update extended Phase 1 habitat survey of the Scheme Footprint was carried out between the 5 and 7 March 2018. The survey covered the entire Scheme Footprint, where accessible<sup>6</sup>, including boundary features. Any inaccessible areas are shown on **Figure 2** and have been mapped and assessed in accordance with the previous Phase 1 assessment and a review of aerial imagery and desk study data. The extended Phase 1 habitat survey was carried out by a Consultant and Senior Ecologist, with Graduate and Associate CIEEM membership (respectively), who both have extensive experience of completing similar assessments.
- 2.3.2 Habitats were described and mapped following the standard Phase 1 habitat survey methodology (JNCC, 2010). Phase 1 habitat survey is a standard technique for classifying and mapping British habitats. The dominant plant species are recorded and habitats are classified according to their vegetation types. Where appropriate consideration was given to whether habitats qualify, or could qualify, as a Habitat of Principal Importance (HPI) following habitat descriptions published by the Joint Nature Conservation Committee (JNCC, 2008).
- 2.3.3 A list of plant species was compiled (see **Appendix C**), with relative plant species abundance estimated using the DAFOR scale<sup>7</sup>. Due to the size of the Scheme Footprint

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<sup>4</sup> Mapped locations of HPI are usually not available, but HPI aligns in the most part with UKBAP habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Natural England priority habitat inventory) and local scale (e.g. by local records centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.

<sup>5</sup> The ancient woodland inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

<sup>6</sup> Areas were not accessible due to Health and Safety restrictions see section 2.5

<sup>7</sup> The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare

and distribution of habitats within, an indicative abundance has been estimated for each species within the Scheme Footprint as a whole. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2010).

- 2.3.4 Habitats were marked on a paper base map during the site visit and were subsequently digitised using a Geographical Information System (GIS). The smallest area to be mapped was approximately 10m by 10m, which was selected as a suitable scale to sample the range of different vegetation types present.
- 2.3.5 Target notes were made to provide information on specific features of ecological interest (e.g. a badger *Meles meles* sett) or habitat features too small to be mapped. These are included in **Appendix D**.
- 2.3.6 Any invasive plant species listed on Schedule 9 of the WCA 1981 (as amended) that were evident during the Phase 1 habitat survey were also target noted. Detailed mapping of such species; or a full survey of the Scheme Footprint for all invasive plant species is beyond the scope of this commission.

## 2.4 PROTECTED SPECIES ASSESSMENT

- 2.4.1 The potential for the Scheme Footprint to support legally protected and notable species was assessed using the desk study results and combined with field observations during the habitat survey. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups including: birds (Gilbert *et al*, 1998 and Bibby *et al*, 2000), great crested newt (Gent and Gibson, 2003 and English Nature, 2001); reptiles (Froglife, 1999 and Gent and Gibson, 2003); bats (Collins, 2016 and Mitchell-Jones, 2004) and badger (Harris *et al*, 1991 and Roper, 2010).

## 2.5 NOTES AND LIMITATIONS

- 2.5.1 Every effort has been made to provide a comprehensive description of the Scheme Footprint; however, the following specific limitations apply to this assessment:
- The site assessment followed a period of snow fall, with some snow remaining on the ground, particularly during the first day (5<sup>th</sup> March 2018). Whilst this provided limitation to the identification of grassland and similar ground level cover, other habitats (such as hedgerows, scrub and woodland) could be confidently classified. In addition, repeat visits throughout the assessment period were made to gather information once snow levels depleted. Where snow drifts and accumulation of snow remained along the bases of exposed hedgerows and road verges, the Phase 1 habitat type against the previous

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(R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

assessment was verified through spot checking of the habitat (scraping back the snow to assess the habitat beneath in several areas). However, it is considered that sufficient information was gathered to enable an assessment of the habitat types present, in line with standard Phase 1 habitat categories and the potential for these to support protected or notable species.

- Access could not be gained to several areas within the Scheme Footprint (see **Figure 2**) where access was not permitted or for health and safety reasons. For the purposes of this report, an assessment was made from a combination of visual assessment from adjacent land, review of aerial imagery and desk study data and a review of the previous Phase 1 survey. The assessment conducted is considered to be suitable for the purposes of this report and further access is to be gained to inform an impact assessment (within the ES).
- Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.
- Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.
- The extended Phase 1 Habitat survey was carried out over the period of three days, as such only a selection of all species that occur within the Scheme Footprint will have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Scheme Footprint to support protected species or those of conservation concern was possible.
- The extended Phase 1 habitat map (see **Figure 3** which can be found at the end of this report) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of an ecological appraisal, the maps are not intended to provide exact locations of key habitats.

### 3 RESULTS

#### 3.1 DESIGNATED SITES

##### 3.1.1 STATUTORY SITES

3.1.2 The desk study identified a single statutory nature conservation site (a Local Nature Reserve (LNR)) within 2km of the Study Area. A description of the site is detailed in **Table 3-1** below and shown on **Figure 4**.

**Table 3-1 - Statutory designated sites of national importance**

Site Name	Designation	Size (ha)	Approximate Distance and orientation from Study Area	Description
Norwood Nature Park	LNR	1.45	770m north	Habitat inventories indicate the presence of broadleaved and deciduous woodland.
Shibdon Pond	SSSI Impact Risk Zones	14.6	Over 4km north west	An important wetland habitat noted for its botanical and wintering wildfowl assemblage.

##### NON-STATUTORY SITES

3.1.3 The desk study identified 15 no. non-statutory nature conservation sites (Local Wildlife Sites (LWS)) within 2km of the Survey Area. A description of these sites is detailed in **Table 3-2** below and shown in **Figure 4**.

**Table 3-2 - Non-statutory designated sites**

Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
Dunkirk Farm West	Gateshead LWS	1	Within Survey Area	The site includes grazed paddock and a disused wagon way (an extension of the Bowes Railway Line LWS). The site is noted for its breeding hedge sparrow and

Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
				song thrush, and frequent presence of hedgehog. This site also represents a wildlife corridor crossed by the Scheme.
Longacre Wood	Gateshead LWS	12	Within Survey Area	A substantial area of semi-natural deciduous woodland in an otherwise industrial and urban setting. The site is considered an important reservoir of local wildlife, with the presence of common spotted <i>Dactylorhiza fuchsia</i> and northern marsh <i>Dactylorhiza purpurella</i> orchids. This site also represents a wildlife corridor crossed by the Scheme.
Longacre Dene	Gateshead LWS	2	Adjacent to the south	An area of ancient semi-natural woodland in the valley of the River Team. The site is noted for its bird assemblage, including breeding hedge sparrow and song thrush, and frequent presence of hedgehog.
Ravensworth Ponds and Wood	Gateshead LWS	148	Adjacent to the west	This is one of the largest wildlife sites in Gateshead, conferring added importance as a refuge for wildlife, including badger and red squirrel <i>Sciurus vulgaris</i> . The site includes ancient replanted woodland, broadleaved and coniferous woodland in addition to several ponds. Great crested newts <i>Triturus cristatus</i> have been reported within the ponds. The site is

Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
				considered ecologically diverse and supports a wide range of wildlife.
Bowes Railway	Gateshead LWS	5	Adjacent to the south	A six kilometre linear length of recolonised disused railway line with patches of heathland and acid grassland. There are small areas of linear woodland and a small pond. This site also represents a wildlife corridor crossed by the Scheme.
Birtley Northside	Gateshead LWS	1.2	50m south	A small stream with a woodland dene and small adjacent areas of herb-rich grassland, scrub and wetland. The site has good populations of birds and small mammals, including pipistrelle bats <i>Pipistrellus</i> spp..
Team Colliery	LWS	Unknown	175 m north west	No information provided within the desk study data. Recorded following a review with the information provided by the council. Habitats within the LWS appear (Assessments undertaken via review of aerial imagery) to support a combination of woodland and parkland.  Given the location of the LWS, it is thought to be renamed from Watergate Forest Park, which is located on the site of the former Watergate colliery. Following reclamation work in the 1990's the site includes woodland, lake and wildflower meadow habitats.



Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
Sheddon's Hill	Gateshead LWS	3.5	340m north-east	This is a herb-rich horse-grazed meadow on the watershed between the Rivers Team and Wear. Herb-rich meadows are locally rare in Gateshead. The designation cites the presence of breeding hedge sparrow <i>Prunella modularis</i> and song thrush <i>Turdus philomelos</i> , and frequent presence of hedgehog <i>Erinaceus europaeus</i> .
Lamesley Meadows	Gateshead LWS	20	420m south	A site containing permanent pasture, riverbank, ponds and reed beds. The site supports breeding waders such as lapwing <i>Vanellus vanellus</i> , redshank <i>Tringa tetanus</i> and snipe <i>Gallinago gallinago</i> . Otter <i>Lutra lutra</i> have also occasionally been recorded in the River Team.
Dunkirk Pond	Gateshead LWS	0.024	500m north	Dunkirk Pond is an important component of the "Windy Nook" Wildlife Corridor, which connects the River Team to the River Tyne at Bill Quay, via a number of green spaces including this site. The pond supports breeding common toad <i>Bufo bufo</i> but also contains the invasive New Zealand pygmy weed <i>Crassula helmsii</i> .
Hagg Wood/Gill and	Gateshead LWS	5	800m south-west	The site supports semi-natural woodland and scrub, supporting breeding birds that

Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
Mitcheson's Gill				include spotted flycatcher <i>Muscicapa striata</i> , hedge sparrow and song thrush. Badger are also regularly present.
Lamesley Reedbeds	Gateshead LWS	8	870m south-west	The main habitat is a large reedbed, the largest <i>Phragmites</i> bed in Gateshead. There are also pools and tree planted areas. The wildlife assemblage includes, of particular importance, otter and kingfisher <i>Alcedo atthis</i> (Schedule 1 species, WCA 1981).
Birtley Union Brickworks	Gateshead LWS	7.5	1km south	A disused brickworks with a mosaic of wetland and grassland habitats (including marsh). The site also includes several ponds, which are known to support breeding great crested newt. Much of the southern part of the site has been damaged by infill activities from the adjacent active brickworks, however, the central areas retain considerable wildlife value.
Springwell Ponds	Sunderland LWS	2.53	1.1km north-east	A group of shallow ponds with good common amphibian populations and interesting plant communities in terms of aquatic plants and surrounding grassland.
Bowes Valley Nature Reserve	Gateshead LWS	31	1.2km south-west	Most of the site consists of grasslands, sown with wild-flower mixes, which have established quite successfully

Site Name	Designation	Size (ha)	Distance and orientation from Survey Area	Description
				and support butterfly populations of importance (grayling <i>Hipparchia Semele</i> and dingy skipper <i>Erynnis tages</i> ). The site contains two ponds that support populations of common amphibians. The breeding bird assemblage contains a variety of birds with little ringed plover <i>Charadrius dubius</i> of particular interest (Schedule 1 species, WCA 1981).
River Team Woodlands	Durham LWS	20	1.6km south	An ancient woodland site of mixed deciduous and coniferous woodland, with a diverse ground layer. The rare climbing corydalis <i>Corydalis claviculata</i> occurs within the north-east of the site, which is considered to be of ornithological value.

## OTHER HABITATS OF CONSERVATION IMPORTANCE

- 3.1.4 There are two areas of ancient woodland located adjacent to the Survey Area. This includes Longacre Dene LWS (grid reference NZ 265 573), classed as Ancient Semi-Natural Woodland, and Hill Head Wood (grid reference NZ 239 590), classed as Ancient Replanted Woodland. There is no other ancient woodland within 1km of the Survey Area. The areas of ancient woodland are shown on **Figure 5**.
- 3.1.5 Habitat inventories indicate the presence of broadleaved and deciduous woodland that may be categorised as HPI habitat within the Scheme Footprint presented in **Figure 3** at the end of this report.

## 3.2 HABITAT SURVEY

### OVERVIEW

- 3.2.1 The following account summarises the findings of the extended Phase 1 habitat survey. Twenty Phase 1 habitat types were identified in the Survey Area. They are mapped on **Figure**

**3** which can be found at the end of this report and are listed in **Table 3-3** along with areas in hectares (or length for linear features). A description of the dominant and notable species, the composition and management of each habitat is provided below and an indicative species list is provided in **Appendix C**. Target notes (TN) are provided in **Appendix D** and referenced on **Figure 2**. Alpha-numeric codes used in this section cross-refer to the JNCC Phase 1 habitat survey classification (JNCC, 2010). The order of the habitat descriptions below is in alphabetical order of JNCC code and does not reflect habitat importance. For the purposes of calculating % site coverage of linear features (hedgerows and dry ditch, excludes fences) a width of 1m has been applied.

**Table 3-3 - Phase 1 habitat areas**

<b>Phase 1 Habitat/Code</b>	<b>Area (ha)</b>	<b>Length (m)</b>	<b>% of Scheme Footprint</b>
Broadleaved woodland – plantation – A1.1.1	4.0	-	5.2
Broadleaved woodland – semi-natural – A1.1.2	9.6	-	12.6
Coniferous woodland – plantation – A1.2.2	0.2	-	0.2
Mixed woodland – plantation – A1.3.2	9.1	-	11.9
Scrub – dense/continuous – A2.1	1.1	-	1.4
Scrub – scattered – A2.2	0.7	-	0.9
Scattered broadleaved trees – A3.1	-	-	-
Scattered coniferous trees – A3.2	-	-	-
Neutral grassland – semi-improved – B2.2	9.3	-	12.2
Improved grassland – B4	9.4	-	12.3
Other tall herb and fern – ruderal – C3.1	2.6	-	3.4
Running water – G2	0.2	-	0.2
Arable – J1.1	4.0	-	5.3
Amenity grassland – J1.2	0.5	-	0.7
Intact hedge – species poor – J2.1.2	-	2007.0	0.3

Phase 1 Habitat/Code	Area (ha)	Length (m)	% of Scheme Footprint
Defunct hedge – species poor – J2.2.2	-	256.5	<0.1
Hedgerow with trees – species poor – J2.3.2	-	279.6	<0.1
Fence – J2.4	-	5378.4	-
Dry ditch – J2.6	-	151.4	<0.1
Buildings and hardstanding – J3.6	25.0	-	32.6
Bare ground – J3.4	0.5	-	0.7
TOTAL	76.2		100

### BROADLEAVED WOODLAND - PLANTATION – A1.1.1

- 3.2.2 This habitat category included areas of younger plantation, where trees were still supported by tree guards and are typically up to 4 m in height, and those that were further developed and showed evidence of self-seeding. Younger plantation was found frequently in pockets of land created by the road network at junctions, for example those associated with junction 65 at Birtley. Areas of more mature woodland included Longacre Wood (to the southeast of Smithy Lane Overbridge) and areas to the north of Smithy Lane Overbridge. Where mature woodland has been mapped as plantation, the assessment has been made based on the ordering of trees in straight lines or rows.
- 3.2.3 Species included dominant willow *Salix* sp. and/or oak *Quercus* sp. with abundant alder *Alnus glutinosa* (locally dominant within the woodland to the east of Smithy Lane Overbridge) and frequent silver birch *Betula pendula* and hawthorn *Crataegus monogyna*. Sycamore *Acer psuedoplatanus*, elder *Sambucus nigra*, wild cherry *Prunus avium* and ash *Fraxinus excelsior* were recorded occasionally. Poplar *Populus* sp. and horse chestnut *Aesculus hippocastanum* were recorded rarely within this habitat.
- 3.2.4 The ground flora within plantation woodland was underdeveloped during the 2018 walkover given the weather conditions prior to the survey. However, the previous assessment found the ground flora within plantation woodland to be limited in comparison to areas of semi-natural woodland. In places the density of tree planting had created heavy shading, which had reduced the ground flora significantly, leaving dense patches of moss species growing amongst leaf litter. In areas of very young plantation, the ground flora comprised grassland species including cock's-foot *Dactylis glomerata*, creeping buttercup *Ranunculus repens*, yarrow *Achillea millefolium*, common hogweed *Heracleum sphondylium*, herb Robert

*Geranium robertianum* and cow parsley *Anthriscus sylvestris*. The abundance of ground flora species could not be determined during the 2018 survey.

### **BROADLEAVED WOODLAND – SEMI-NATURAL – A1.1.2**

- 3.2.5 Broadleaved semi-natural woodland was present across the Survey Area, with a greater abundance and distribution within the north of the Survey Area. There was variation in species abundance within each woodland block, however, the species composition remained relatively similar throughout the Survey Area. Species included abundant cherry, willow species and ash, with frequent sycamore, alder, and occasional oak species and hawthorn. Horse chestnut was also recorded in low abundance (rare).
- 3.2.6 An area to the south of junction 67 (TN4), bordering the River Team, was dominant with willow *Salix* sp., with frequent elder and occasional hawthorn and cherry.
- 3.2.7 The ground flora was found to be quite sparse, though this may relate to the early timing of the survey, but notably included frequent bramble *Rubus fruticosus* agg. and common hogweed with occasional dog's mercury *Mercurialis perennis*, cow parsley and snow drop *Galanthus* sp. Lords & Ladies *Arum maculatum* was recorded as rare. Leaf litter formed a carpet across the ground within these woodland habitats. The semi-natural woodland also contained standing and fallen deadwood, which appeared natural.

### **CONIFEROUS WOODLAND – PLANTATION – A1.2.2**

- 3.2.8 Two blocks of coniferous plantation, were located immediately to the north of the A1 carriageway (grid reference NZ 273 572). The species composition of the full plantation was not confirmed<sup>8</sup>, however, it was considered in the field to include Scots pine *Pinus sylvestris*, fir and/or spruce species. There was no discernible ground flora noted, with a layer of pine needles present. There was no obvious management regime recorded, with the high tree density forming a dense canopy.

### **MIXED WOODLAND – PLANTATION – A1.3.2**

- 3.2.9 This habitat formed the majority of woodland across the Survey Area, although only differed marginally from the broadleaved plantation woodland described above through the addition of coniferous species. Scots pine was the dominant coniferous species (although only occasional or frequent within each woodland block) with European larch *Larix europeaus* recorded less frequently.
- 3.2.10 The ground composition was comparable to that of broadleaved plantation woodland. The plantation woodlands were generally semi-mature and therefore did not present significant

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<sup>8</sup> Due to the access restrictions discussed within the limitations.

signs of management. Due to the maturity of these woodlands, there was an absence of mature standards or dead wood.

#### **SCRUB – DENSE/CONTINUOUS SCRUB – A2.1**

- 3.2.11 Dense or continuous scrub has been mapped where common gorse *Ulex europaeus*, broom *Cytisus scoparius*, bramble or young willow scrub is present in dense cover with very limited areas of vegetation interspersed. This habitat is present along the roadside bank to the east of junction 67 (near TN7) and occasionally at woodland edges (such as TN 26).

#### **SCRUB – SCATTERED – A2.2**

- 3.2.12 Scattered scrub has been mapped in several sections of the Scheme Footprint where common gorse, broom, young willow and hawthorn are scattered in areas of semi-improved grassland, tall ruderal herb or along road verges. This habitat is most prevalent at TN23 and TN24, where scattered scrub is located along the length of a roadside bank within an area of recently cleared tall ruderal habitat.

#### **SCATTERED BROADLEAVED (A3.1) AND CONIFEROUS (A3.2) TREES**

- 3.2.13 This habitat has been mapped where scattered trees are present which include a either broadleaved or coniferous species. This included species also recorded within woodland habitats within the Survey Area, including oak, sycamore, alder, willow and Scots pine.

#### **NEUTRAL GRASSLAND – SEMI-IMPROVED – B2.2**

- 3.2.14 This habitat is spread across the Scheme Footprint and includes fallow pasture fields (likely to be improved grassland when actively grazed), grassland banks and woodland margins<sup>9</sup>.
- 3.2.15 The species recorded in this habitat included dominant annual meadow grass *Poa annua* and occasional other grasses such as cock's-foot and red fescue *Festuca rubra*. Abundant creeping buttercup was recorded with frequent clover *Trifolium repens* and occasional herb-Robert, ribwort plantain *Plantago lanceolata*, common nettle *Urtica dioica* and broad-leaved dock *Rumex obtusifolius*. Spear thistle *Cirsium vulgare* and common sorrel *Rumex acetosa* were recorded rarely across the grasslands. Where this habitat represented grassland margins, dandelion and rye grass species were also occasionally recorded.

#### **IMPROVED GRASSLAND – B4**

- 3.2.16 Several improved grassland fields were located within the Survey Area, all representing grazed pasture and/or horse paddocks. The field to the southeast of Junction 67 contained a variety of grass species, including dominant Yorkshire fog *Holcus lanatus*, cock's-foot and fescue *Festuca* sp., although also notably greater abundance of common nettle and

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<sup>9</sup> Access to the fields had not been permitted and so they were viewed from field edges only.

broadleaved dock, indicating enrichment of the soils (particularly along field margins). The field to the south of TN10 also supported patches of occasional soft rush *Juncus effusus* indicating that the field was often wet and possibly held areas of ephemeral standing water.

### **OTHER TALL HERB AND FERN – RUDERAL – C3.1**

- 3.2.17 Ruderal habitat was often recorded along roadside margins or within central reservations, often dominant in rosebay willowherb *Chamerion angustifolium*. Other species recorded in abundance included common hogweed, false oat grass *Arrhenatherum elatius*, broad-leaved dock and common nettle. This habitat was often closely associated with scrub and therefore included the presence of dominant gorse *Ulex europaeus*, bramble, hawthorn and, on occasion, burdock *Arctium lappa*.
- 3.2.18 Whilst the ruderal species formed the dominant growth, common grassland species were also recorded including occasional herb Robert, creeping buttercup, ribwort plantain, cock's foot and thistle species *Cirsium* sp. This was particularly noted at TN1, which contained higher species diversity.
- 3.2.19 The roadside bank at TN23 and TN24 had recently been cut prior to the survey visit, however, from the vegetation remaining on the ground and the habitat recorded during the previous extended Phase 1 habitat survey, the habitat was classified as tall ruderal. The tall ruderal herb in this location was also interspersed with scattered scrub (A2.2).
- 3.2.20 A significant area of Japanese knotweed *Fallopia japonica* was recorded to the north of the A1 (TN16 and TN17), approximately 1 ha in size<sup>10</sup>.

### **RUNNING WATER – G2**

- 3.2.21 The River Team flows northwards through the Survey Area, through the Coal House roundabout. The river is approximately 3 to 5m wide and lined by scattered trees, predominantly willow species. The banks to the south of the roundabout appear relatively shallow (less than 1 m above the water line) with a gentle gradient, however, the section of the river contained within the roundabout could not be accessed during the survey on health and safety grounds.
- 3.2.22 The river is culverted for around 50% of the length that passes through the Survey Area, where the watercourse runs beneath the road network.

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<sup>10</sup> This included an area that was not accessible during the survey, however, could be viewed from the adjacent arable field margin and footpaths.



### **3.2.23 ARABLE – J1.1**

3.2.24 There were two arable fields within the Survey Area, to the north of the Scheme Footprint. The fields were within their winter stage during the site visit and therefore did not present any crop for identification. The boundaries were a mixture of hedgerows, tree lines and fencing.

### **3.2.25 AMENITY GRASSLAND – J1.2**

3.2.26 Small areas of amenity grassland were present along road verges and also within an area of public open space to the north of North Dene in Birtley. The grassland was short-cropped and relatively species poor, typical of this habitat type. Whilst species identification was restricted due to the management regime and time of year, the grassland appeared dominant in rye-grass *Lolium* sp. with the occasional presence of dandelion *Taraxacum officinale* and clover *Trifolium* sp. also noted.

### **INTACT (J2.1.2) AND DEFUNCT (J2.2.2) HEDGES – SPECIES POOR**

3.2.27 Several intact species-poor hedges were recorded within the Survey Area, representing field boundaries. Hedgerows were hawthorn dominant, with frequent elder and occasional blackthorn *Prunus spinosa* also recorded. Within the ground flora abundant bramble, cleavers *Galium aparine*, cow parsley and common nettle were noted. Lesser celandine and garlic mustard *Alliaria petiolata* were noted less frequently (2015 assessment). The hedges recorded were often associated with stock fencing (field boundaries) and with several presenting evidence of management (flailing).

3.2.28 A single defunct hedgerow was recorded within the Scheme Footprint (grid reference NZ 2757 6209), separating two improved grassland fields. The fields could not be accessed at the time of the survey; however, the hedge appeared from nearby vantage points to have a species composition consistent with that above (Section 3.2.26) and had significant gaps (around 40%). The hedge appeared to be unmanaged.

### **HEDGEROW WITH TREES – SPECIES POOR – J2.3.2**

3.2.29 Hawthorn dominant hedgerows ran parallel and bordering the pedestrian footpath that extends north of the A1 carriageway from the Longbank Bridleway underpass at Bowes Railway LWS (national grid reference NZ 2757 2134). The hedgerows were supported by mature trees, including alder, willow and hazel *Corylus avellana*. The two hedges appeared relatively unmanaged, with a rounded, dense canopy.

### **FENCE – J2.4**

3.2.30 The majority of agricultural fields within the Scheme Footprint were bordered by stock and barbed wire fencing. Timber/close-board fences were recorded along boundaries with residential properties.

### **DRY DITCH – J2.6**

3.2.31 Two connected dry ditches were recorded within a mixed woodland plantation at the southern end of the Scheme Footprint (TN 25). Whilst the ditches contained pools of around 5 cm of

standing water at the time of the survey, this was considered a result of recent weather and snow melt. As such, these features have been classified as dry ditches in accordance with the JNCC Handbook. The vegetation around and within the ditches was comparable to that of the surrounding woodlands.

### **BUILDINGS AND HARDSTANDING – J3.6**

- 3.2.32 The Scheme Footprint included two buildings, both associated with the Northern Gas Networks (NGN) Pressure Reducing Station (PRS) (TN 6) located to the south of Chowdene Bank.
- 3.2.33 Hardstanding across the Scheme Footprint primarily related to the existing road network and car parking facility of the NGN PRS.

### **BARE GROUND – J4**

- 3.2.34 Bare ground had been recently created in several relatively small locations to the southeast of junction 67 as a result of ground investigation works. This included areas where bore hole investigations had occurred (TN7) and the location of a temporary site compound (Figure 3 TN8), located south of the A1 adjacent to Lamesley Road.

## **3.3 WILDLIFE CORRIDORS**

- 3.3.1 The Scheme is crossed by the following wildlife corridors:
- River Team
  - Wood LWS
  - Dunkirk Farm West LWS
  - Bowes Railway LWS
  - East Coast Main Line railway line
- 3.3.2 These represent linear features within the landscape that may support resident or commuting species. Therefore, they represent corridors of potential importance to wildlife movement. These corridors may already be used by species to navigate barriers within the wider landscape, including the A1.

## **3.4 PROTECTED AND NOTABLE SPECIES**

- 3.4.1 The potential for the Scheme Footprint to support legally protected species and notable species has been assessed using the results of the desk study and observations made during the site survey of habitats within and immediately surrounding the Survey Area. A summary of desk study information is included within **Appendix B** and discussed in each section below where relevant. Desk study records have only been considered below if they are recent (from the last 10 years) and/or if they relate to species that may be supported by habitats at the Survey Area. Habitats present within the Scheme Footprint are suitable for the following species; further consideration is given below to the likelihood for these species to be present within the Survey Area:
- Amphibians

- Bats
- Badger
- Birds
- Reptiles
- Red squirrel
- Otter
- Water vole
- Invertebrates
- Brown hare
- Hedgehog

3.4.2 The Scheme Footprint is not likely to provide suitable habitat for other protected or notable species and other species, beyond those listed above, will not be considered further in this PEA.

3.4.3 As this report is intended to provide an update to the previous extended Phase 1 habitat survey conducted, species survey effort is underway and therefore an overview of the potential for the Scheme Footprint to support the species/species group is provided below. Further detail and findings of the survey effort are documented in separate reports, as referenced below.

#### **AMPHIBIANS**

3.4.4 The biological records obtained from ERIC North East included records for common toad, palmate newt *Lissotriton helveticus*, common frog *Rana temporaria* and great crested newt within the 2km search area. The great crested newt records were all over 600m distance from the Scheme Footprint and therefore, not considered to reflect populations likely to be impacted by the Scheme.

3.4.5 There were no waterbodies recorded within the Scheme Footprint that hold value for amphibians, however, a total of nineteen waterbodies were identified within 500m of the Scheme from a review of aerial imagery and site investigation (undertaken as part of the further survey effort). The Scheme Footprint included terrestrial habitat of value to amphibians, including areas of scrub, woodland and grassland that may be connected to waterbodies through linear features such as hedgerows.

3.4.6 Full details of the great crested newt assessment, survey effort and findings are presented in the separate report (WSP, 2018g).

#### **BATS**

3.4.7 The biological records included the presence of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, unconfirmed *Pipistrellus* species and unconfirmed bat species. Of the thirty-two bat records returned, only a single roost record is present; a small common pipistrelle roost that was destroyed under licence in 2013 (over 1.5km from the Scheme).

- 3.4.8 The Scheme Footprint included mature trees of a suitable age to contain characteristic features that may offer roosting value to bats, such as knotholes or other internal voids, cracked trunk or limbs, hazard beams, flaking bark or dense ivy. In addition, there were several structures along the route of the existing A1 that may offer potential to roosting bats. These include rail bridges, over and underbridges and footbridges. There were several residential properties adjacent to the Study Area, however, it was considered that further survey was not required as there would be no direct impacts. A pedestrian underbridge connecting the Bowes Railway corridor at either side of the A1 (Longbank Bridleway underpass, grid reference NZ 275 143) did not contain artificial lighting and therefore may be used by commuting bats as a potential crossing point of the A1. The footpaths at either end of the underpass were lined with trees and hedgerows, creating connective corridors that further increase the likelihood of bat presence.
- 3.4.9 The Scheme Footprint is considered to offer foraging and commuting value for bats. A network of linear features (including hedgerows and tree lines) and woodland provides connectivity to habitats that are likely to be invertebrate rich and therefore attract foraging bats.
- 3.4.10 Further information regarding the assessments for bat roosting and bat activity are presented in separate reports (WSP, 2018a and 2018b).

#### **BADGER**

- 3.4.11 The biological records returned two badger records within the 2km search area, both located over 500m from the Scheme.
- 3.4.12 The Scheme Footprint includes a variety of woodland habitats, both semi-natural and plantation. Those parcels of woodland that are contained within the road network, for example at junctions, are fragmented from wider habitats and unlikely to be of value to badger due to levels of disturbance and barriers. Longacre Wood is more mature, on a sloping bank and slightly more secluded, providing potential foraging and sett building habitat. Similar woodland can be found along the northern banks of the existing A1 carriageway. Adjacent semi-improved neutral grassland provides potential foraging habitat. There were no signs of badger activity recorded during the walkover survey.
- 3.4.13 The presence/likely absence of badger within the Scheme Footprint is documented within a separate badger report (WSP, 2018d).

#### **BIRDS**

- 3.4.14 The biological records returned a large number of bird records (7528 in total) within the 2km search area. Of particular interest are the following fourteen Schedule 1 (WCA 1981) species: kingfisher, little ringed plover *Charadrius dubius*, Bewick's swan *Cygnus columbianus* subsp. *Bewickii*, peregrine *Falco peregrinus*, hobby *Falco subbuteo*, Mediterranean gull *Larus melanocephalus*, black-tailed godwit *Limosa limosa*, red kite *Milvus milvus*, osprey *Pandion haliaetus*, wood sandpiper *Tringa glareola*, greenshank *Tringa nebularia*, green sandpiper *Tringa ochropus*, redwing *Turdus iliacus* and fieldfare *Turdus pilaris*. Greylag goose *Anser*

*anser* and golden eye *Bucephala clangula* are also present within the records, protected by Schedule 1 during the close season.

- 3.4.15 The Scheme Footprint includes woodland, scrub, hedgerows and trees that offer potential nesting for a wide range of species. The bridge structures along the existing A1 notably supported pigeon *Columba livia domestica*, however, contained features (ledges and crevices) that may support other nesting birds. Semi-improved and improved grassland fields offer foraging habitat and the potential for over-wintering species, with curlew *Numenius arquata* recorded on site at the time of the survey.
- 3.4.16 The value of the Scheme Footprint for birds is to be addressed within separate reports; breeding (not completed at the time of writing) and wintering birds (WSP, 2018e).

### **REPTILES**

- 3.4.17 There are no records of reptiles within 2km of the Scheme. The railway sidings (TN9) consist of ballast/aggregate substrate with developing grassland/ephemeral vegetation in places. Scattered scrub and dense bramble is present at the edge of the railway sidings, providing potential shelter for reptiles. In addition, areas of scrubby grassland (semi-improved) across the Scheme Footprint may offer potential for sheltering reptiles.
- 3.4.18 The presence/likely absence of reptiles within the Scheme Footprint is addressed within the separate report (WSP, 2018c).

### **RED SQUIRREL**

- 3.4.19 There is a single record of red squirrel located 1.3km to the north-east of the Scheme near the village of Springwell (2009). The location of the record is partially connected to the Scheme Footprint due to the presence of linear woodland running parallel and adjacent to the A194(M), which is approximately 250m from the record location and connected via hedgerow.
- 3.4.20 Woodland within the Scheme Footprint includes small-seeded broadleaved species (ash, alder, silver birch and willow) that benefit red rather than grey squirrel *Sciurus carolinensis* and Scots pine and has the potential to support red squirrel. The trees and hedgerows within the Scheme Footprint could be used for commuting between areas with more mature trees.
- 3.4.21 The potential for the Scheme Footprint to support red squirrel is addressed in a separate report (WSP, 2018f).

### **OTTER AND WATER VOLE**

- 3.4.22 Three water vole *Arvicola amphibius* records are present within the search area, although only a single record is in close proximity to the Scheme Footprint (within 500m). The record is located at the Angel of the North Fishing Lakes, to the north of junction 65, approximately 75m from the Scheme. The habitats between the Scheme and the record location are understood to be grassland, hedgerows and scrub that provide moderate connectivity.

- 3.4.23 There are twenty-nine records of otter *Lutra lutra* within the search area, clustered approximately 750m to the south of the Scheme Footprint (near Lamesley) and 1.25km to the north of the Scheme Footprint within the Team Valley Industrial Estate. The River Team flows between these two locations, although is partially fragmented by a long length of culverted watercourse through the industrial estate.
- 3.4.24 The River Team is considered the only suitable watercourse to support otter within the Survey Area, although the section of river that passes through the Scheme Footprint is disturbed and fragmented by culverts where the watercourse flows beneath the road network. The river may be used by otter for movement within the landscape.
- 3.4.25 The River Team has shallow sparsely vegetated banks with a gentle gradient that have the potential to support burrowing water vole, however as mentioned above, the watercourse is subject to higher levels of disturbance.

### **INVERTEBRATES**

- 3.4.26 The Scheme Footprint comprises a mixture of habitats suitable to support a common assemblage of terrestrial invertebrates. The desk study also identified the presence of the following Species of Principal Importance (NERC Section 41) that may be supported by the habitat composition of the Survey Area:
- Dingy skipper *Erynnis tages*
  - Small heath *Coenonympha pamphilus*
  - Grayling *Hipparchia semele*
  - Wall *Lasiommata megera*
  - Large garden bumblebee *Bombus (Megabombus) rederatus*
  - Flounced chestnut *Agrochola helvola*
  - Dusky thorn *Ennomos fuscantaria*
  - Shaded broad-bar *Scotopteryx chenopodiata*
  - Cinnabar *Tyria jacobaeae*
  - Banded general *Stratiomys potamida*
- 3.4.27 The grassland and woodland habitats within the Scheme Footprint are considered of greater importance to these species, although the floral composition of the habitats may dictate the potential to support each invertebrate species. For example, the dingy skipper usually feeds on common bird's-foot-trefoil *Lotus corniculatus*, which was not recorded during the Phase 1 survey. There were no aquatic invertebrates present within the biological records.

### **FISH**

- 3.4.28 There were no fish records presented within the biological records. The River Team is considered the only suitable watercourse to support fish within the Survey Area, with the other watercourses representing shallow drainage ditches.

### **BROWN HARE**

- 3.4.29 There are nine records of brown hare within the data search, with the majority located over 1km to the south-west near Kibblesworth (closest records).
- 3.4.30 The semi-improved neutral grassland fields, hedgerows, woodland edges and scrub within the Scheme Footprint provide potential foraging habitat for brown hare. These areas are also connected to the wider landscape, particularly to the south-west, which includes an expanse of agricultural land that is of high value to brown hare.

### **HEDGEHOG**

- 3.4.31 The desk study returned thirty-six records of hedgehog within the 2km search area. Of these records, only eight contained an accurate grid reference (above four digits). The data search confirms the presence of hedgehog within 100 m of the Scheme (at junction 65), with records largely obtained in or near urban areas.
- 3.4.32 The Scheme Footprint includes grassland and scrub of potential value for foraging and sheltering hedgehog.

### **NON-NATIVE INVASIVE PLANT SPECIES**

- 3.4.33 A stand of Japanese knotweed was recorded to the north-east of junction 67 (TN5), along the margin of the semi-natural broadleaved woodland. Further to this, a significant area (approximately 1ha) of Japanese knotweed was recorded to the north of the A1 near the Angel of the North (grid reference NZ 270 574), TN16 and TN17.
- 3.4.34 A possible giant hogweed *Heracleum mantegazzianum* plant was recorded approximately 20m from the Scheme Footprint in Longacre Wood (TN14).

## 4 DISCUSSION AND RECOMMENDATIONS

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4.1.1 This section considers the potential for effects on designated sites, legally protected species, notable species and notable habitats as a consequence of the Scheme. Where further surveys or detailed assessment of potential effects are required in order to design suitable mitigation this is identified.

4.1.2 An overview of the potential impacts is provided below, with full details to be provided within each of the individual species survey reports and outlined in full within the ES.

### 4.2 STATUTORY DESIGNATED SITES

4.2.1 Given the distance from the nearest site of European and/or International importance (Natura 2000 sites) (Northumbria Coast SPA/Ramsar, 13km), the lack of connectivity and the absence of functional habitats for cited species within the Survey Area, there are unlikely to be any significant effects as a result of the Scheme.

4.2.2 The Norwood Nature Park LNR is located approximately 770m to the north of the Scheme and therefore direct impacts as a result of habitat loss will not occur. The LNR is directly hydrologically linked to the Scheme Footprint via the River Team and therefore impacts may occur to the aquatic environs within the designated site as a result of run-off. The likelihood and magnitude of any impacts to the LNR will be addressed within the ES, and mitigation measures would be included in a Construction Environmental Management Plan (CEMP). The CEMP will detail measures to be adopted during construction to prevent run-off or accidental pollution of the watercourse.

4.2.3 Shibdon Pond SSSI is located over 4km to the northwest of the Scheme. However, the Scheme falls within the Impact Risk Zone (SSSI) for the SSSI. The Scheme falls in to the IRZ categories under all planning applications and infrastructure. The Scheme will not result in any direct loss to the SSSI and as the Scheme is downstream to the SSSI, it is considered the Scheme would not impact the SSSI via hydrological connections. However, the likelihood and magnitude of any impacts to the SSSI will be addressed within the ES, and mitigation measures would be included in a Construction Environmental Management Plan (CEMP). The CEMP will detail measures to be adopted during construction to prevent run-off or accidental pollution of the watercourse.

### 4.3 NON-STATUTORY DESIGNATED SITES

4.3.1 Six of the fifteen non-statutory designated sites are located within the Scheme Footprint or in close proximity (100m buffer):

- Ravensworth Ponds and Wood LWS
- Longacre Wood LWS
- Longacre Dene LWS
- Bowes Railway LWS
- Dunkirk Farm West LWS



- Birtley Northside LWS

- 4.3.2 It is currently proposed to extend the Longbank Bridleway underpass that runs beneath the A1 carriageway to accommodate the widened carriageway. The underbridge connects the two adjoining linear LWS, Dunkirk Farm West LWS to the north and Bowes Railway LWS to the south, and therefore extension of the underbridge may encroach into these protected sites and result in direct loss of habitat due to land take.
- 4.3.3 In addition, the widening of the carriageway may also encroach into Longacre Wood LWS and Longacre Dene LWS, the latter of which is also designated as an ancient woodland habitat.
- 4.3.4 If any works are planned in the vicinity of these sites, mitigation may be required to safeguard the sites and their ecological value. Any habitat loss should be compensated in the form of like-for-like compensation using native species and those with local provenance. Further appropriate mitigation, management and enhancement may also be required to address the potential impacts. Impacts to ancient woodland should be avoided as a priority, with alternative options considered to avoid or reduce impacts. Any impacts to ancient woodland will need careful consideration and loss of this habitat will require a salvage plan<sup>11</sup>.
- 4.3.5 A full impact assessment will be detailed within the ES Chapter, with any mitigation agreed through further detailed consultation with the local authority and statutory consultees.

## 4.4 HABITATS

- 4.4.1 None of the habitats recorded within the Scheme Footprint are afforded legal protection, they are however considered of ecological value. A number of these are identified as HPI in accordance with Section 41 of the NERC Act 2006. Under Section 40 of this legislation, every public body (including planning authorities) must, 'in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. These include:
- Hedgerows
  - Rivers and streams
  - Arable field margins
- 4.4.2 The Scheme may result in the loss and/or damage of all three habitats types. The hedgerows within the Scheme Footprint were species-poor and would not qualify as important under the Hedgerows Regulations. The A1 crosses several watercourses and ditches. Any pollution incident in the vicinity of the watercourses from any proposed works

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<sup>11</sup> The loss of ancient woodland cannot be mitigated and compensated for as this habitat is considered irreplaceable.

may be in breach of the Water Resources Act 1991 and the Water Framework Directive (2000).

4.4.3 There are two areas of ancient woodland located adjacent to the Survey Area, as discussed in Section 3.1.3. The works in proximity to Hill Head Wood are understood to include modifications to signage and therefore do not represent intrusive or destructive works. Due to the proximity of the Scheme to the ancient woodland of Longacre Dene LWS, there is potential for disturbance impacts (noise, light, vibration) and impacts as a result of dust deposition. Any impacts to ancient woodland habitat will be discussed with statutory consultees and mitigation addressed within the ES.

4.4.4 The Scheme is crossed by the following wildlife corridors:

- River Team
- Longacre Wood LWS
- Dunkirk Farm West LWS
- Bowes Railway LWS
- East Coast Main Line railway line

4.4.5 Measures to maintain wildlife corridors during and following construction should be devised to prevent disturbance impacts to wildlife and fragmentation of the landscape. This may include retention and protection of habitat during construction and implementation of a suitable lighting scheme, to reduce light spill onto habitats of value to nocturnal species. Further measures will be defined through consultation with the local authority and statutory consultees.

## 4.5 PROTECTED AND NOTABLE SPECIES

4.5.1 The results of the desk study, Phase 1 habitat Survey and protected species assessment highlighted the potential presence of several protected species or species of conservation concern within the Survey Area, or within the immediate surroundings of the Survey Area. These include amphibians, bats, badger, birds, reptiles, red squirrel, otter, water vole, brown hare and hedgehog. The legal protection afforded to these species is outlined below and, where appropriate, the requirement for further survey and/or mitigation measures is identified in **Table 4-1**.

### AMPHIBIANS

4.5.2 Great crested newts are protected from killing, injury and disturbance<sup>12</sup> and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats and Species Regulations 2017. Protection is also afforded under the Wildlife and Countryside

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<sup>12</sup> Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.

- 4.5.3 Great crested newts and common toad are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.4 There are a number of ponds within 500m<sup>13</sup> of the Scheme that require further assessment to determine the presence/likely absence of great crested newts and therefore inform the requirements for mitigation and compensation to address any impacts. An overview of the survey effort undertaken is detailed in **Table 4-1** with the findings of the surveys presented in a separate report (WSP, 2017a). Any impacts to amphibians will be addressed within the ES.

### **BATS**

- 4.5.5 All species of bats recorded within the UK are protected from killing, injury and disturbance<sup>14</sup> and their roosts protected from damage or destruction under the Habitats Regulations, 2017. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.6 Certain species of bats, including the noctule, brown long-eared bat and soprano pipistrelle bat are also listed as Species of Principal Importance (SPI) for the conservation of biodiversity in England in accordance with Section 41 of the NERC 2006. Section 40 obliges public bodies (including local planning authorities) to have regard for the conservation of biodiversity (including SPI) when discharging their duties (including determining planning applications).
- 4.5.7 The Scheme will result in the modification to a number of bridge structures to facilitate the widening of the A1 carriageway. This may include direct impacts to abutments and expansion joints, which hold potential value for roosting bats. The Scheme may also result in the loss of mature trees that have potential to support roosting bats.
- 4.5.8 Longbank Bridleway underpass will be closed during construction. However, it is currently unknown whether the openings at each end of the underbridge will remain open and unlit during construction, thereby retaining use for bats. Closure and obstruction of this underpass may cause bats to fly over the carriageway, which may result in traffic collisions and fatalities of bats.

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<sup>13</sup> Typical migration distance for great crested newts.

<sup>14</sup> Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

- 4.5.9 The Scheme may result in the loss of foraging and commuting habitats of value to roosting bats. As the Scheme is the widening of an existing carriageway, it is unlikely that the works will incur permanent loss of flight lines.
- 4.5.10 An overview of the recommended and completed survey effort is presented in **Table 4**, with the results of these surveys presented in the separately commissioned reports (WSP, 2018a and 2018b). Any impacts to bats will be addressed within the ES.

### **BADGER**

- 4.5.11 The Protection of Badgers Act 1992 makes it illegal to wilfully kill, injure or take any badger, or attempt to do so. It also makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.12 There were no signs of any badger setts on or within 30 m of the Scheme during the walkover survey, however, dedicated badger surveys have been undertaken. Impacts to badger will be addressed within the ES.

### **BIRDS**

- 4.5.13 Under the amendments to the Habitat Regulations (30th November 2017) Part 1 Section 10(1) & (3) state that local authorities (as the appropriate authority) '*must take such steps in the exercise of their functions as they consider appropriate to ... the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat...*'. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.
- 4.5.14 Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.
- 4.5.15 The desk study identified sixteen bird species protected under Schedule 1 which have been recorded within 2km of the Scheme. It is considered unlikely that these species would breed within the Study Area due to the high level of disturbance and in addition, the absence of preferred habitat of some of the species.
- 4.5.16 Kingfisher is associated with water and could potentially use the River Team and other water courses that run adjacent to and cross underneath the A1. Grasshopper warbler breeds in areas of scrub, thick grassland, the edges of reedbeds, new forestry plantations and gravel pits with plenty of scattered bushes and could potentially use the Scheme Corridor (Svenson, L. (2009) and [www.rspb.org.uk](http://www.rspb.org.uk)). Red kite normally nests in large trees close to the forest edge and hunts in open country and therefore is less likely to be present given the low abundance of mature woodland.

- 4.5.17 The habitats favoured by the other species are not present within the Scheme Footprint and as such, these species are considered unlikely to breed within the Survey Area. Merlin roost in reed beds, bogs and heaths. Peregrine breed along rocky sea cliffs and upland areas. Hobby is found in heathland, open woodland and farmland habitats. Osprey is typically found in large bodies of freshwater.
- 4.5.18 Barn owls suffer significant mortality from traffic collisions on motorways (Shawyer & Dixon, 1999). Whilst potential barn owl roosting and nesting habitat may be present in the wider area, the Proposed Scheme involves the widening of an existing carriageway, for which barn owl are likely to be acclimatised and therefore unlikely to be subject to a significant increase in risk.
- 4.5.19 Little ringed plover is found in gravel pits, reservoirs, sewage works and shingle river banks. Black-tailed godwit are found in estuaries and coastal lagoons. Greenshank breeds in boggy moorland and peatland pools in the north and west of Scotland. Green sandpiper breeds in water logged woody areas, on bogs and marshes. Wood sandpiper breeds in bogs and marshes in Taiga (Svenson, L. (2009) and [www.rspb.org.uk](http://www.rspb.org.uk)).
- 4.5.20 Redwing, fieldfare and Bewick's swan are winter visitors and may forage within the Scheme Footprint during winter but are considered unlikely to breed within the Scheme Footprint (Svenson, L. (2009) and [www.rspb.org.uk](http://www.rspb.org.uk)).
- 4.5.21 Habitats identified in the Scheme Footprint including woodland, trees, hedgerow, scrub and semi-improved neutral grassland are suitable for supporting breeding birds. Therefore, it is recommended that any vegetation is cleared outside the main bird nesting season (which is generally considered to be from March to September inclusive). If clearance is to occur between March and September inclusive, a visual check to confirm the absence of nesting birds is recommended before works commence to minimise the risk of an offence in relation to the above legislation.
- 4.5.22 Further information regarding the presence of bird species within the Scheme Footprint will be documented in separate reports; breeding (not completed at the time of writing) and wintering birds (WSP, 2018e). The findings of these surveys will be used to inform mitigation proposals, which will be documented in the ES.

## REPTILES

- 4.5.23 Native widespread reptile species (common or viviparous lizard *Zootoca vivipara*, adder *Vipera berus*, grass snake *Natrix natrix* and slow worm *Anguis fragilis*) are partially protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This includes protection from killing and injury.
- 4.5.24 All reptile species are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.25 The East Coast mainline railway corridor is considered to offer the highest value to reptiles within the Survey Area, with suitable sheltering and basking sites present. Reptile surveys

have been undertaken and documented separately (WSP, 2018c), with any impacts to be addressed in the ES.

### **RED SQUIRREL**

- 4.5.26 The red squirrel is a protected species in the UK and is included in Schedules 5 and 6 of the WCA 1981 (amended by the Countryside & Rights of Way Act 2000). It is an offence to intentionally kill or injure a red squirrel or intentionally or recklessly damage or destroy any structure or place a red squirrel uses for shelter or protection, or disturb a red squirrel while it occupies such a place.
- 4.5.27 The Scheme may result in the loss or damage to areas of woodland suitable to support red squirrel. As such, further survey effort is recommended in **Table 4**. The findings of these surveys are to be documented separately (WSP, 2018f) and impacts addressed in the ES.

### **OTTER AND WATER VOLE**

- 4.5.28 The European otter is protected from killing, injury and disturbance<sup>15</sup> and its place of rest or shelter (holt) is protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.29 The water vole is protected from killing and injury and its place of rest or shelter (burrow) is protected from damage, destruction or obstruction under the Wildlife and Countryside Act 1981 (as amended). Additional protection from disturbance is extended to individuals occupying places of rest or shelter. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.30 Otters and water vole are also listed as SPI in accordance with Section 41 of the NERC Act 2006. Public bodies have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.31 Current proposals involve the temporary culverting of the River Team as it passes through the roundabout at junction 67. As such, this will incur direct impacts to the banks of the watercourse, which may support areas of shelter and protection for otter and water vole. Any direct loss of burrows (water vole), holts (otter) or resting places for either species may require a European Protected Species (EPS) licence to permit actions and detail appropriate compensation.

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<sup>15</sup> Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

## **INVERTEBRATES**

- 4.5.32 The invertebrates listed in Section 3.4.26 of this report are named on Section 41 of the NERC Act 2006 and therefore need to be taken into consideration. However, it is considered that impacts to these species can be addressed through habitat compensation (like-for-like or better) and enhancement, including selective floral species planting that includes larval and adult food species. Should habitat compensation be undertaken, it is not anticipated that the Scheme would incur any impacts to the population status of the invertebrate SPI.

## **FISH**

- 4.5.33 Current proposals involve the temporary culverting of the River Team as it passes through the roundabout at junction 67. There is the potential of temporary direct impacts to fish passage as a result. Targeted surveys are not considered necessary in order to inform the Scheme design, however, the ES will investigate the potential impacts to fish passage and the requirements for mitigation. This may include the installation of baffles or similar structures within the temporary culvert to aid fish movement.

## **BROWN HARE AND HEDGEHOG**

- 4.5.34 Although neither species has any particular legal protection, both have undergone significant decline due to habitat loss and fragmentation. The Scheme Footprint has the potential to support both species. Targeted surveys are not considered necessary in order to inform the Scheme design, however, the mitigation plan contained within the ES should consider potential impacts to brown hare and hedgehog. If possible, habitat retention and creation to the benefit of both species should be included. It should be noted that it is considered that the minimum loss associated with edge habitat would not likely impact the conservation status of either species.

## **NON-NATIVE INVASIVE PLANT SPECIES**

- 4.5.35 Japanese knotweed and giant hogweed were both recorded in and adjacent to the Scheme Footprint and may potentially be directly encountered as part of the Scheme. As Schedule 9 listed species (WCA 1981), it is an offence to cause these species to spread in the wild therefore, it is recommended that a Biosecurity Method Statement is developed and implemented prior to, during and following construction. The Method Statement should detail the location and extent of any invasive growth, appropriate measures to control or eradicate the species from an area, measures to prevent the spread of the species and good site hygiene practices.

## **4.6 FURTHER SURVEY REQUIREMENTS**

- 4.6.1 Potential ecological constraints for which further surveys are required to ensure legal and planning policy compliance are listed in **Table 4-1**.

**Table 4-1 - Key ecological constraints and further survey requirements**

<b>Ecological Receptor</b>	<b>Potential Constraints</b>	<b>Survey Requirements (as outlined in 2016)</b>	<b>Seasonal Constraints</b>	<b>Surveys undertaken to date (September 2018)</b>
Great crested newts	Destruction/damage to suitable terrestrial habitat within 500m of suitable aquatic habitats that may support GCN, which may result in killing or injuring of individuals and destruction of a resting place.	A GCN habitat suitability assessment of water bodies within 500m of the Scheme is recommended in accordance with good practice guidance (English Nature (now Natural England), 2001), Amphibian and Reptile Groups of the UK (ARG UK) (2010) and Oldham <i>et al.</i> (2000)).	A GCN habitat suitability assessment can be undertaken at any time of year.  Pond activity surveys can be undertaken between mid-March and mid-June, with at least half of the surveys conducted within the peak period, mid-April to mid-May.	A combination of survey effort, including Habitat Suitability Index, environmental DNA analysis and waterbody population size class assessment have been. This included the survey of 8 No. ponds carried out in 2017.  A survey of an additional three ponds has been undertaken in 2018. Full details to be presented in a separate great crested news report (not issued at time of writing).
Bats	Felling of trees and demolition or modification to structures (bridges, underbridges, etc), which may result in the damage or destruction of a bat	Roost surveys of any trees scheduled for removal with bat roost potential are recommended in accordance with good practice guidance (Hundt, 2012). For trees and built structures with low/moderate/high potential a	External ground level inspections can be undertaken at any time of year but, for trees, are most conclusive in the autumn and winter months where no leaf cover exists.	Further assessment of structures and trees has been undertaken to determine the presence, potential presence or likely absence of roosting bats.



Ecological Receptor	Potential Constraints	Survey Requirements (as outlined in 2016)	Seasonal Constraints	Surveys undertaken to date (September 2018)
	<p>roost and killing and injury of individuals. Construction within close proximity to other structures and trees.</p>	<p>minimum of one/two/three emergence/re-entry surveys respectively is recommended to have confidence in negative results.</p> <p>It is recommended that any buildings potentially affected by the Proposed Works are externally assessed for their potential to support roosting bats. The survey will be undertaken in accordance with good practice guidance (Hundt, 2012 and Mitchell-Jones <i>et al</i>, 2004).</p>	<p>Dusk emergence/dawn re-entry surveys must be undertaken between May and September and are optimal between May and August.</p>	<p>Dusk emergence and/or dawn re-entry surveys will be undertaken to determine the presence/likely absence of roosting bats for those structures requiring further survey effort. Full details will be presented in the separate bat assessment report (WSP, 2018b).</p>
	<p>Loss of habitat of value to foraging and commuting bats.</p>	<p>A bat activity survey of the area proposed for a new road south west of junction 66-67 is recommended to identify the species active within the Scheme Corridor and to quantify levels of activity. The approach should be in accordance with</p>	<p>Activity surveys must be undertaken between April and October.</p>	<p>Further assessment of habitats within and bordering the Scheme Footprint to determine the value of the habitats present has been undertaken.</p> <p>The survey effort included walked transects of the Scheme</p>

Ecological Receptor	Potential Constraints	Survey Requirements (as outlined in 2016)	Seasonal Constraints	Surveys undertaken to date (September 2018)
		<p>good practice guidance (Hundt, 2012).</p> <p>An automated detector survey using one detector location with data to be collected on 4 consecutive nights on three occasions, with one survey each season.</p>		<p>Footprint during the active period and also use of static detectors deployed within the field. The findings of the survey effort and recommendations will be documented within a report (not issued at the time of writing).</p>
	<p>Potential temporary obstruction of crossing point (Longbank Bridleway underpass) causing bats to move across the carriageway.</p>	<p>Further assessment to determine the usage of the feature as a crossing point to inform mitigation proposals. Surveys in accordance with the Defra methods (Berthinussen and Altringham, 2015) to include an initial two surveys and a total of six surveys (as required) that should be repeated post-construction.</p>	<p>Activity surveys are best completed between June and August. May and September are acceptable, but bat activity may be lower than in other months.</p>	<p>Crossing point surveys are being undertaken between June and August 2018. Survey findings and recommendations will be provided within a full report upon completion.</p>
<p>Badger</p>	<p>Loss of habitat of value for badger</p>	<p>A badger survey of Longacre Wood is recommended prior to the commencement of</p>	<p>No time constraints to this type of survey.</p>	<p>Further assessment included a comprehensive walkover of the Scheme and a minimum of 30m</p>

Ecological Receptor	Potential Constraints	Survey Requirements (as outlined in 2016)	Seasonal Constraints	Surveys undertaken to date (September 2018)
	sett creation and foraging.	construction activities on the Scheme Footprint. The survey would be undertaken in accordance with Harris <i>et al.</i> (1989).		buffer to record any setts or signs of badger activity. The findings of the survey are documented within a separate report (WSP, 2018d).
Birds	<p>Loss of bird nesting habitat and habitats (including trees, woodland and hedges).</p> <p>Disturbance to migratory and wintering habitat.</p>	<p>Breeding bird surveys (BBS) to establish bird populations within one section of the Scheme Footprint (a grassland field).</p> <p>Autumn migratory and wintering bird surveys were completed establish presence and usage of the Scheme Footprint during these times and therefore potential impacts of the Scheme.</p>	<p>BBS can be conducted between the period March and August.</p> <p>Autumn migratory surveys should be undertaken in August and September.</p> <p>Wintering bird surveys should be conducted between October and March.</p>	Surveys are ongoing and will be documented within a separate report.
Reptiles	Loss of habitat of value to sheltering and foraging reptiles.	A targeted reptile survey of suitable habitat in the railway sidings with reference to Froglife (1999) is recommended.	Surveys can be undertaken between March and October, although are optimal in April, May and September.	Activity surveys were completed in 2017 with the use of artificial refugia (felt tiles, metal sheets) deployed across the Scheme Footprint and visited on seven occasions to collect data. The

Ecological Receptor	Potential Constraints	Survey Requirements (as outlined in 2016)	Seasonal Constraints	Surveys undertaken to date (September 2018)
				findings are documented within a separate report (WSP, 2018c).
Red squirrel	Loss of habitat that may support red squirrel.	A targeted red squirrel survey of suitable woodland in the north with reference to Gurnell <i>et al.</i> (2009) is recommended.	No time constraints to this type of survey.	Further assessment was completed in 2018 determine the value of Scheme Footprint for red squirrel and determine the requirements for further survey effort. The findings of the survey are presented in a separate report (WSP. 2018f).

## 4.7 PRELIMINARY AVOIDANCE, MITIGATION AND COMPENSATION MEASURES

4.7.1 To enable compliance with relevant legislation and planning policy, as described above within Section 4.2, 4.3 and 4.4 the following avoidance, mitigation and compensation measures should be designed into the Scheme. These will be refined following completion of further survey recommended in **Table 4-1** above and fully detailed within the ES Chapter. Mitigation and compensation is likely to include:

- Construction works should be constrained to the essential area, to minimise the extend of impacts to wider habitats.
- All site clearance and construction works should be completed in accordance with good practice methodologies to prevent environmental effects from the release of contaminants to the water courses on and adjacent to the Scheme.
- Retention and protection of habitats, where possible, including appropriate avoidance measures to reduce unintentional damage or destruction of habitats during the construction period. This is considered most important for the two areas of ancient woodland (southern section of Longacre Dene LWS and Hill Head Wood) that are located adjacent to the Scheme.
- Provision of compensatory habitat to off-set those lost or damaged as a result of the Scheme. The area of the compensatory habitat should be at least equal to that lost (like-for-like).
- Timing of activities to avoid sensitive ecological periods, such as the completion of site clearance (vegetation removal) outside the breeding bird season (March to August inclusive). Should these activities be conducted within this period, they should be preceded by an ecological assessment to confirm the absence of any active nesting. If an active nest is recorded, a suitable buffer should be implemented (5 m minimum) and remain in place until nesting activity has ceased.
- Creation of a suitable lighting scheme to be adopted both during construction and operation, detailing efforts to reduce the levels of light spill onto natural areas that offer value for wildlife, particularly nocturnal species such as foraging bats.
- Development of a CEMP to detail measures to avoid or reduce impacts during the construction phase. This would include potential impacts to the Norwood Nature Park LNR.
- Consideration of fish passage and potential mitigation measures in association with the temporary culverting of the River Team.
- Provision of European Protected Species (EPS) licences to permit actions that may incur impacts to European protected species, such as bats and great crested newts. EPS licences will also include details of compensatory features to mitigate those lost, such as the provision of replacement bat roost(s);
- Implementation of a Biosecurity Method Statement, detailing measures to be adopted prior to and during construction to avoid and prevent the spread of invasive species. This may

include such measures as designated wash stations for vehicles and human movement through areas near invasive growth; and

- Implementation of Precautionary Working Methods (PWM) to avoid or reduce impacts to species not covered by EPS licensing.

## **ENVIRONMENTAL GOOD PRACTICE**

4.7.2 In addition, general environmental protection measures must be implemented during the construction phase of the Scheme. Such measures include Good environmental practice guidance outlined in the EA Guidance for Pollution Prevention documents and those outlined by the Construction Industry Research and Information Association (CIRIA) guidance. The following minimum standards must be adhered to prevent ecological impacts beyond the Site boundary:

- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Scheme.
- Chemicals and fuels must be stored in secure containers located away from watercourses or water bodies. Spill kits must be available.
- Excavations must be covered or securely fenced (with no potential access points beneath fencing) when the Site is closed (e.g. overnight) to prevent entrapment of animals.
- Retained trees must be protected in accordance with BS5837: 2012: *Trees in relation to design, demolition and construction*.

## **4.8 RECOMMENDATIONS**

- Noise and vibration must be controlled and kept to the minimum necessary.
- Lighting used for construction must be switched-off when not in use and positioned so as not to spill on to adjacent land or retained vegetation.

## **4.9 ECOLOGICAL ENHANCEMENT OPPORTUNITIES**

4.9.1 The National Planning Policy Framework (NPPF) (2018) states that at an overview level the '*planning system should contribute to and enhance the national and local environment by... minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*'. At a local level, the Local Plan states within Policy CS18 the aims to maintain, protect and enhance the integrity, connectivity, multifunctionality and accessibility of the Strategic Green Infrastructure Network and other green infrastructure.

4.9.2 Ecological enhancements will also deliver other green infrastructure benefits such as storm water attenuation and reducing the urban heat island effect.

4.9.3 Enhancement measures are to be determined, devised and presented within the ES Chapter, however may include the following.

- Where possible, it is recommended that the Scheme should seek to achieve a net gain in biodiversity within the Scheme Corridor; as promoted under the NPPF (2018).

- Enhancement of existing and/or replacement of any habitats lost within the Scheme Corridor should focus upon the provision of fast growing, locally sourced native tree species which support large numbers of invertebrates, to maximise foraging and commuting resources for bats and birds. Appropriate tree species might include willow species, silver birch, native poplars *Populus* sp., alder, ash (subject to confirmation of resistance to *Chalara fraxinea*), oak and similar.
- Where possible, the landscaping should include native shrubs, including a range of native species to provide further foraging resources for bats and foraging/nesting/refuge opportunities for birds. The use of native species of local provenance and/or species with specific nature conservation benefits (for example invertebrate rich and/or early-late flowering nectar-rich species and fruit bearing species). Appropriate shrub/hedge species might include hawthorn, blackthorn, crab apple *Malus sylvestris*, hazel, holly, elder, rowan *Sorbus aucuparia* and similar.

#### 4.9.4 Key recommendations include:

- Planting of native trees and hedgerows to enhance the wildlife corridors between Longacre Wood LWS and Longacre Dean LWS.
- Planting of native trees and hedgerows to enhance the Dunkirk Farm West LWS and Bowes Railway LWS wildlife corridor.
- Additional planting of strategically placed native hedgerows to increase diversity of native species and strengthen wildlife corridors.

## 5 CONCLUSIONS

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- 5.1.1 The Scheme Footprint recorded a range of habitats that include agricultural farmland (grazed pasture), plantation and semi-natural woodland (broadleaved, coniferous and mixed), grasslands and boundary features (including hedgerows, fences and tree lines). The habitats present both within and surrounding the Scheme Footprint hold potential value to support a wide variety of wildlife, including bats, amphibians, birds, reptiles, badger, red squirrel, riparian mammals and other terrestrial mammals (brown hare and hedgehog). The survey recorded the presence of two non-native invasive species, Japanese knotweed and giant hogweed, listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Six non-statutory Local Wildlife Sites are located within the Survey Area, with two areas of ancient woodland located adjacent to the Survey Area. The nearest statutory site (Norwood Nature Park LNR) is located 770m to the north of the Survey Area.
- 5.1.2 To ensure compliance with legislation and planning policy, further survey effort is identified and recommended, with several of these surveys already underway or completed. These surveys are outlined in **Table 4-1** with the findings presented in separate reports (as referenced within this report, as applicable).
- 5.1.3 The Scheme is crossed by the following wildlife corridors and designated sites: River Team; Longacre Wood LWS; Dunkirk Farm West LWS; Bowes Railway LWS and East Coast Main Line railway line. Measures to maintain wildlife corridors and designated sites during and following construction should be devised to prevent disturbance impacts to wildlife and fragmentation of the landscape.
- 5.1.4 The impacts of the Scheme will be fully assessed and presented within the upcoming ES Chapter, which will also contain details of the proposed avoidance, mitigation, compensation and enhancements to address the potential impacts to protected and notable fauna, flora and sites.
- 5.1.5 Indicative avoidance and mitigation has been provided within this report; however, design, mitigation and compensation measures will be developed in the EIA and informed by the outcome of further surveys. The ES Chapter will also include details of enhancement opportunities and proposals, to further improve the ecological value for biodiversity.

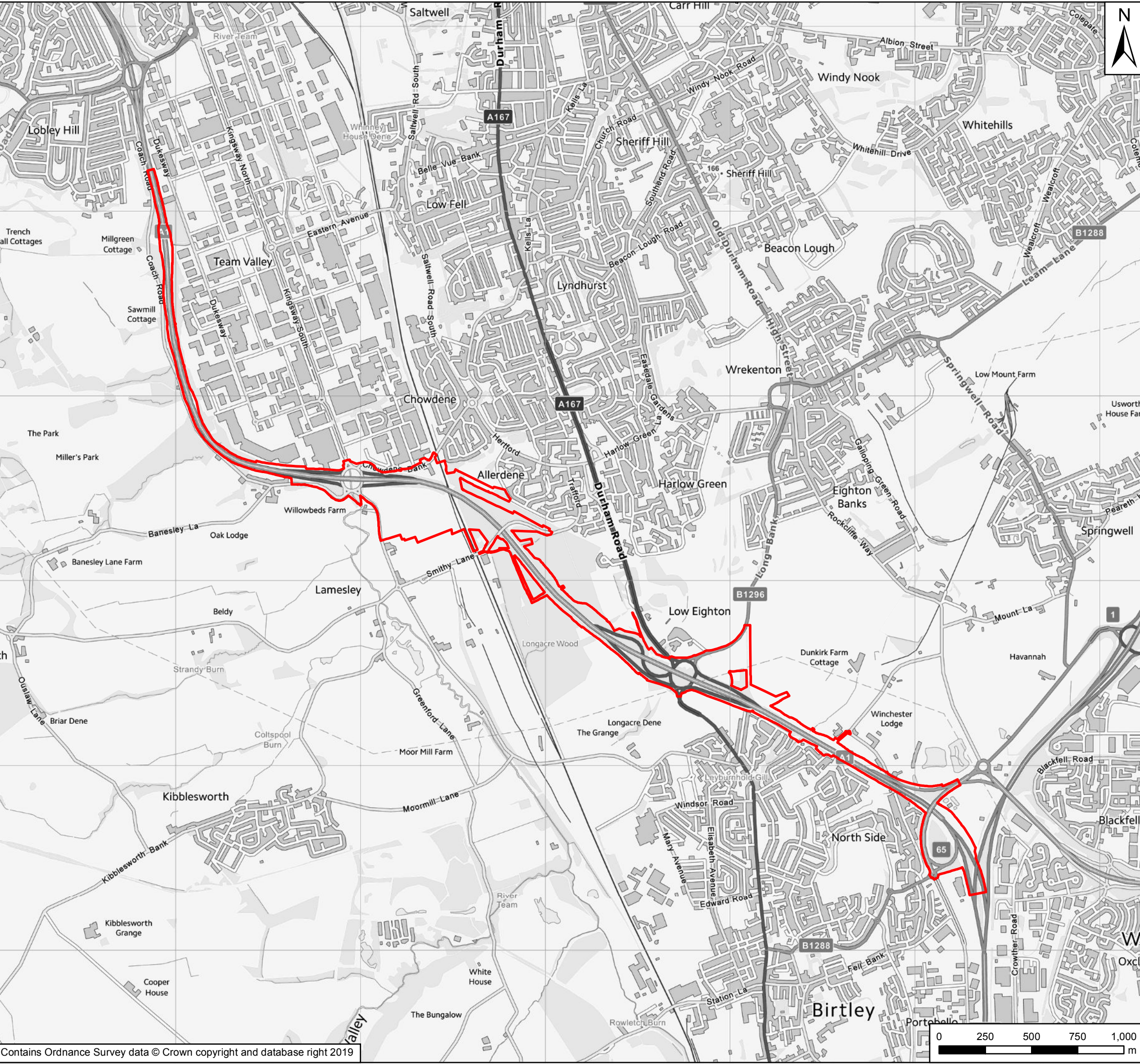


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- WSP (2018c), A1 Birtley to Coalhouse, Reptile Survey Report, Revision 1, March 2018: HE551462-WSP-EBD-ZZ-RP-LE-00003
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- WSP (2018e), A1 Birtley to Coalhouse, Wintering Bird Survey Report, March 2018: HE551462-WSP-EBD-ZZ-RP-LE-00009
- WSP (2018f), A1 Birtley to Coalhouse, Red Squirrel Survey Report, March 2018: HE551462-WSP-EBD-ZZ-RP-LE-00002
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**Key**

Scheme Footprint



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability Status

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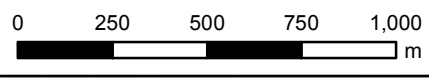
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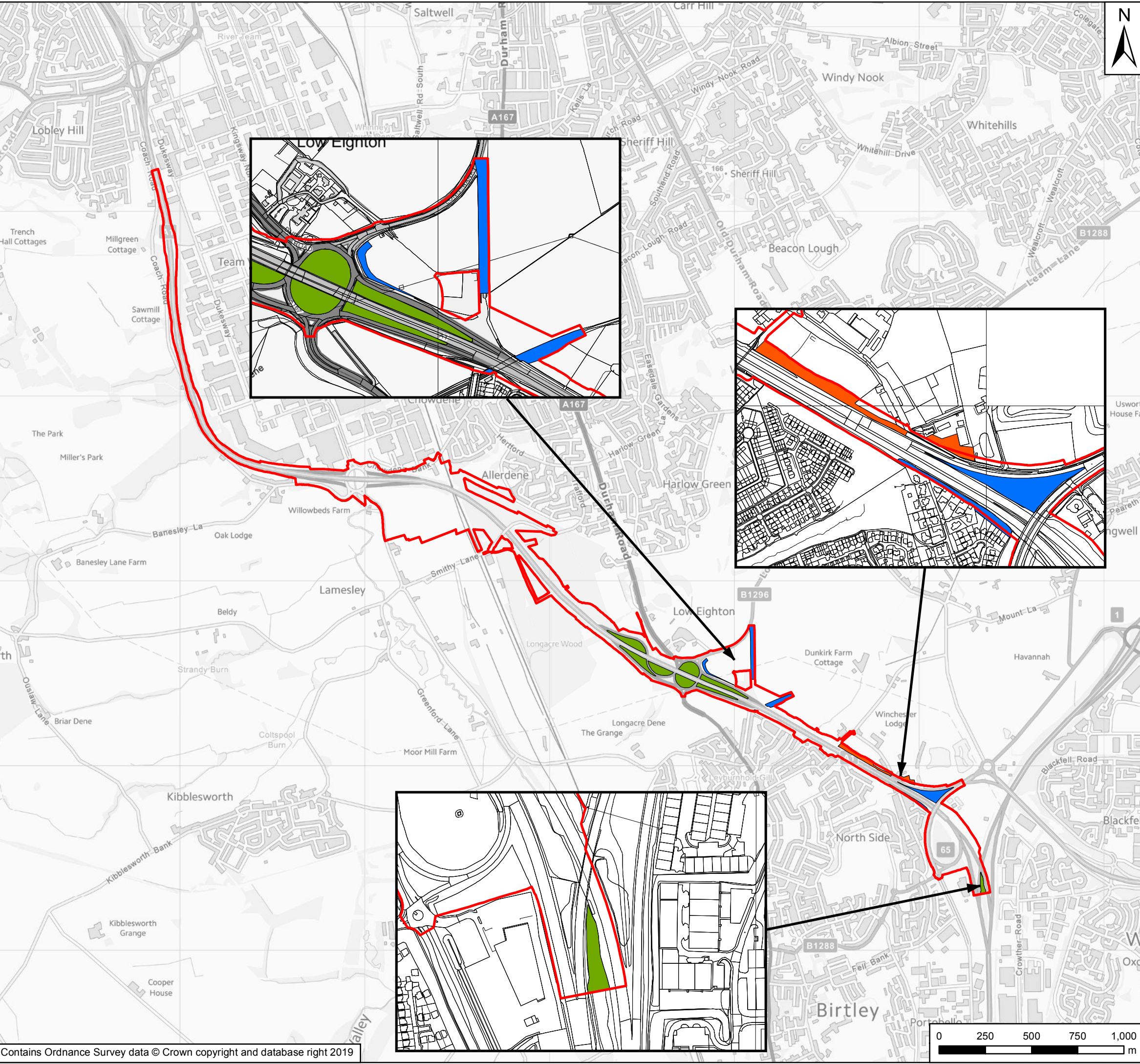
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Drawing Title: Figure 1 Survey Area

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Drawing Number	HE PIN	Originator	Volume	Revision
HE551462		WSP	6.3	P03
				PW Stage Code

B2CH					
Section	Type	ID	Direction	Type	Role





**Key**

- Scheme Footprint
- Access Restrictions**
- No Access - Safety Reasons/Obstacle
- No Access
- Surveyed Without Access

Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability: \_\_\_\_\_ Status: \_\_\_\_\_  
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Project Title: **A1 Birtley to Coal House Scheme**  
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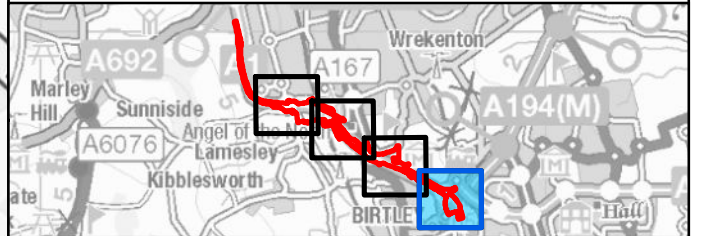
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Drawing Number	Originator	Volume	Revision	
HE551462	WSP	6.3	P03	
PW Stage Code				

B2CH	Section	Type	ID	Direction	Type	Role	Number

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Key	
	Scheme Footprint
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Neutral grassland - semi-improved
	Improved grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Hard standing
	Cultivated/disturbed land - amenity grassland
	Buildings
	Bare ground
	Intact hedge - species-poor
	Fence
	Dry ditch



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability: \_\_\_\_\_ Status: \_\_\_\_\_

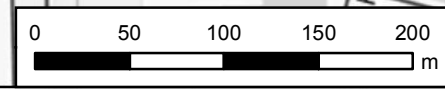
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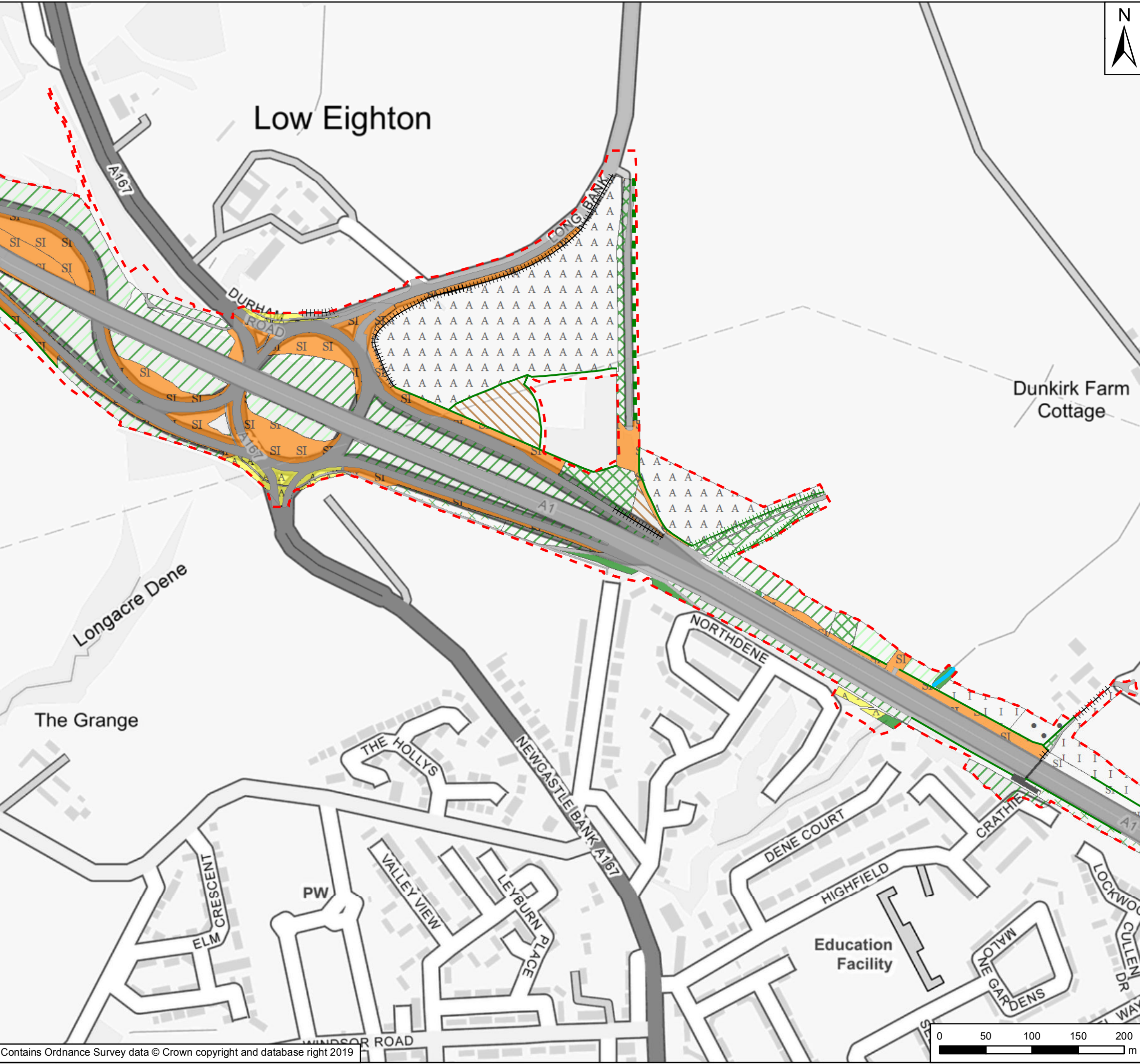
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Drawing Title: Figure 3 Phase 1 Habitat Survey  
Page 1 of 4

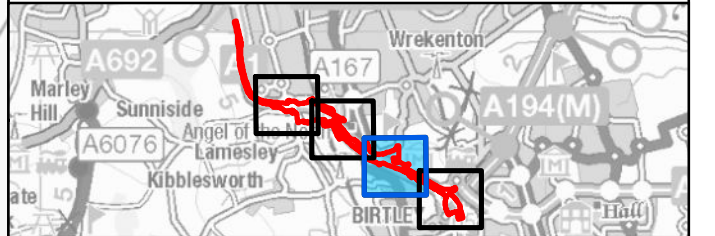
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Drawing Number	Originator	Volume	Revision			
HE551462	WSP	6.3	P03			
PW Stage Code						
B2CH						
Section	Type	ID	Direction	Type	Role	Number



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Key	
	Scheme Footprint
	Broadleaved woodland - semi-natural
	Broadleaved woodland - plantation
	Coniferous woodland - plantation
	Mixed woodland - plantation
	Scrub - dense/continuous
	Scrub - scattered
	Broadleaved Parkland/scattered trees
	Neutral grassland - semi-improved
	Improved grassland
	Poor semi-improved grassland
	Other tall herb and fern - ruderal
	Hard standing
	Cultivated/disturbed land - arable
	Cultivated/disturbed land - amenity grassland
	Buildings
	Bare ground
	Running water
	Intact hedge - species-poor
	Defunct hedge - species-poor
	Hedge with trees - species-poor
	Fence



Rev	Date	Description	By	Chk'd	App'd	Status
P03	Apr 2019	Third Issue	GH	JR	KS	
P02	Mar 2019	Second Issue	GH	JR	KS	
P01	Dec 2018	First Issue	GH	JR	NJA	

PINS Reference Number: TR010031



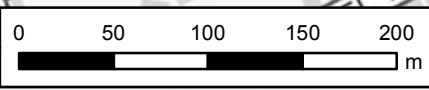
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Page 2 of 4

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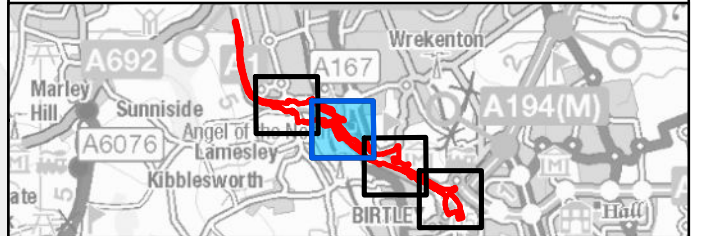


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**Key**

- Scheme Footprint
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Neutral grassland - semi-improved
- Improved grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Hard standing
- Buildings
- Bare ground
- Running water
- Intact hedge - species-poor
- Fence



P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA
Rev	Date	Description	By	Chk'd	App'd
Suitability					Status

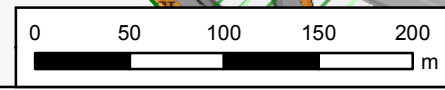
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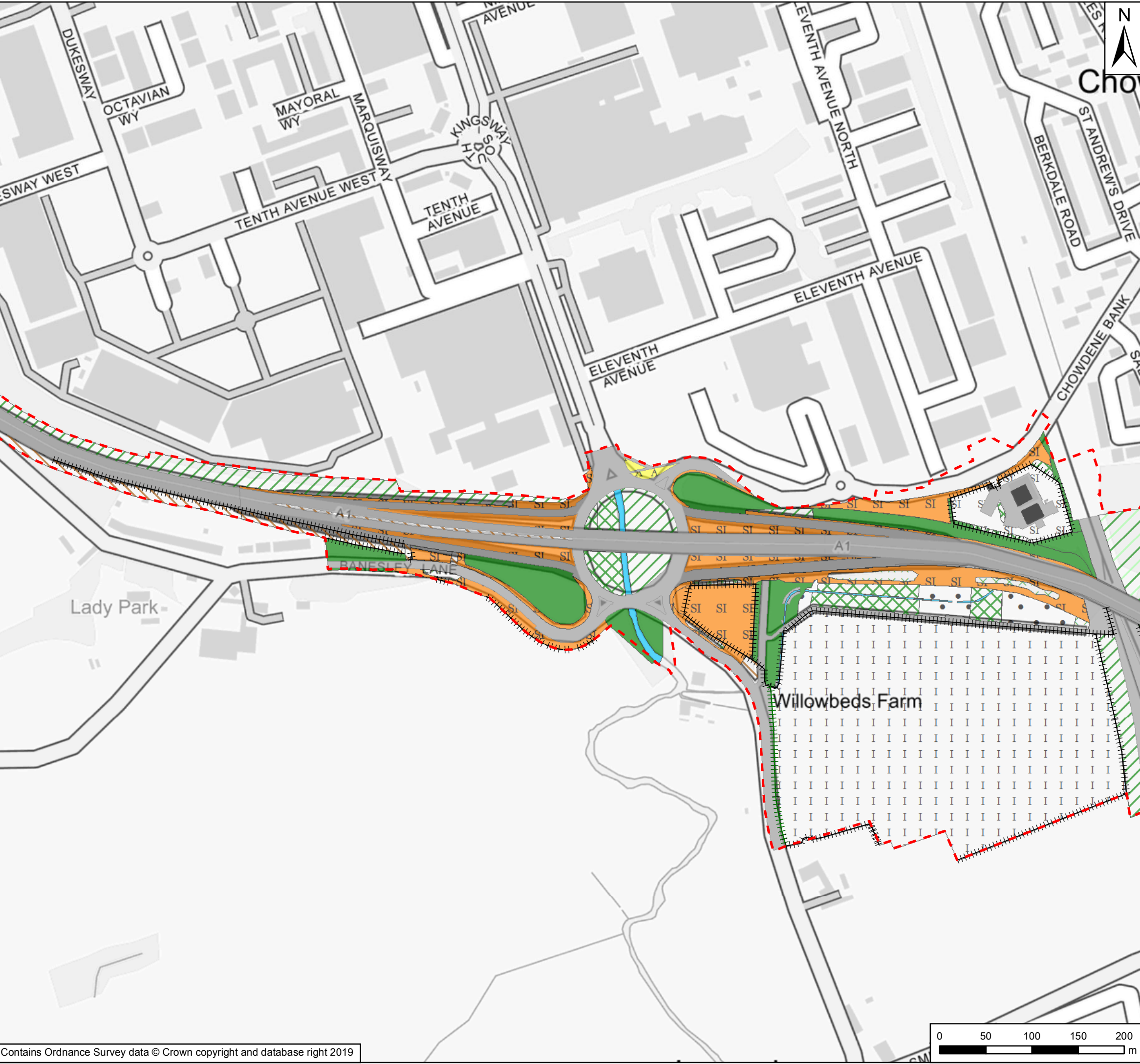
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Page 3 of 4

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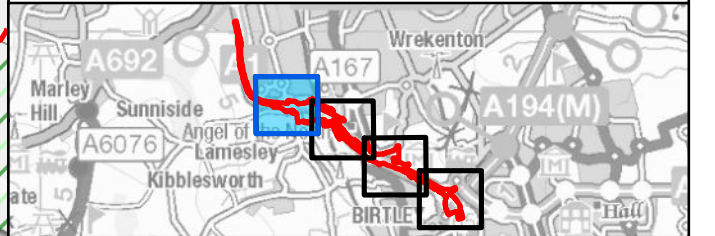


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**Key**

- Scheme Footprint
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Mixed woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Broadleaved Parkland/scattered trees
- Neutral grassland - semi-improved
- Improved grassland
- Poor semi-improved grassland
- Other tall herb and fern - ruderal
- Running water
- Hard standing
- Cultivated/disturbed land - amenity grassland
- Buildings
- Bare ground
- Hedge with trees - species-poor
- Fence



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability: \_\_\_\_\_ Status: \_\_\_\_\_

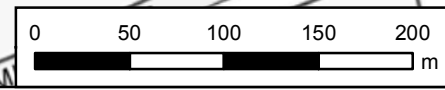
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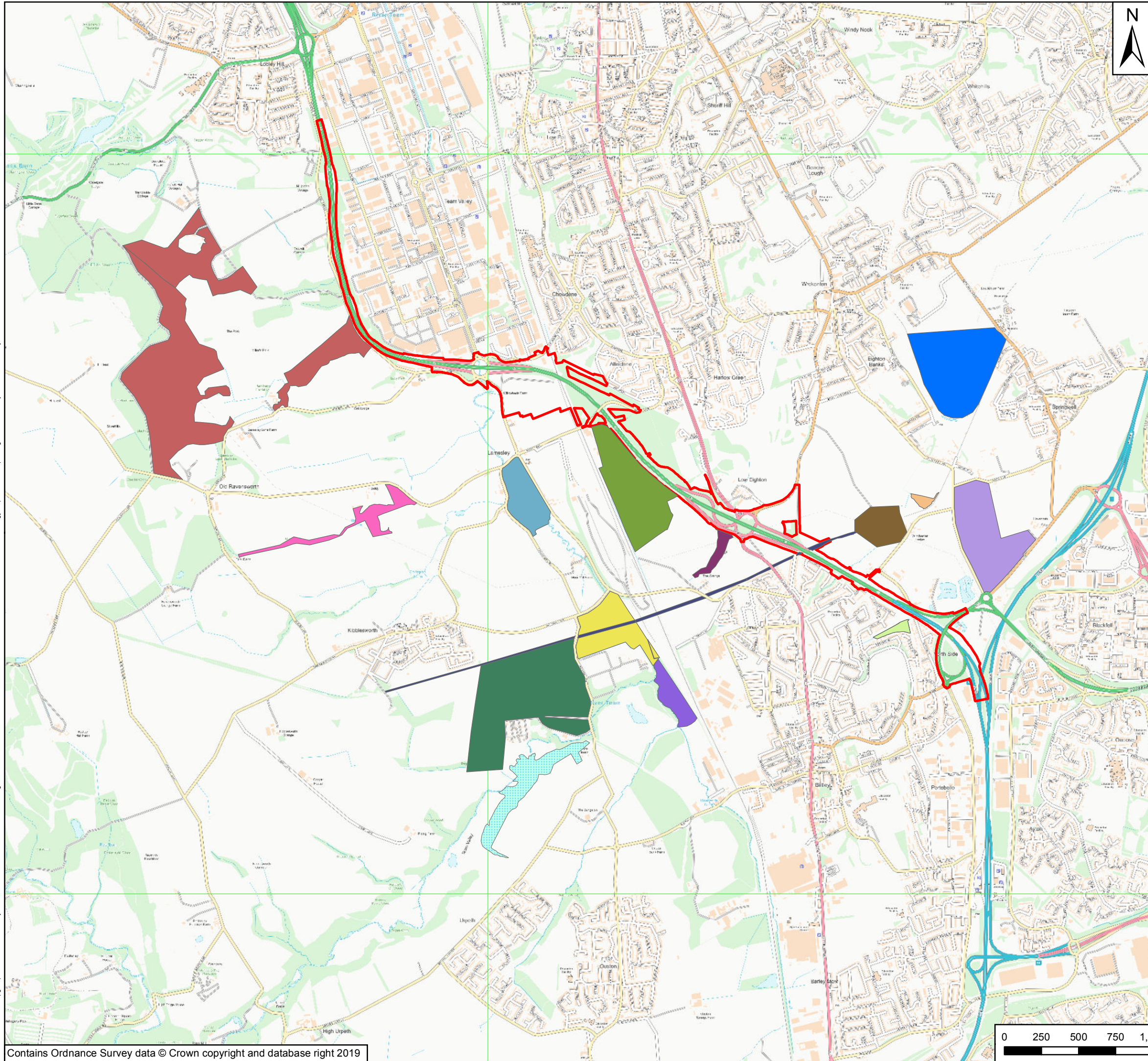
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Drawing Title: **Figure 3 Phase 1 Habitat Survey  
Page 4 of 4**

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Drawing Number	Originator	Volume	Revision			
HE551462	WSP	6.3	P03			
PW Stage Code						
B2CH						
Section	Type	ID	Direction	Type	Role	Number







Key

Scheme Footprint

Gateshead Local Wildlife Sites

- Birtley Northside
- Birtley Union Brickworks
- Bowes Railway
- Bowes Valley Nature Reserve
- Dunkrik Farm Pond
- Dunkrik Farm West
- Hagg Wood/Mitchelsons Gill
- Lamesley Meadows
- Lamesley Reedbeds
- Long Acre Dean
- Long Acre Wood
- Ravensworth Pond & Woods
- Sheddon's Hill

Durham Local Wildlife Sites

River Team Woodland

Sunderland Local Wildlife Sites

Springwell Ponds

P03	Apr 2019	Third Issue	GH	JR	KS
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P01	Dec 2018	First Issue	GH	JR	NJA
Rev	Date	Description	By	Chk'd	App'd
Suitability					Status

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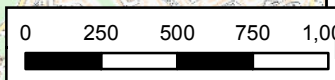


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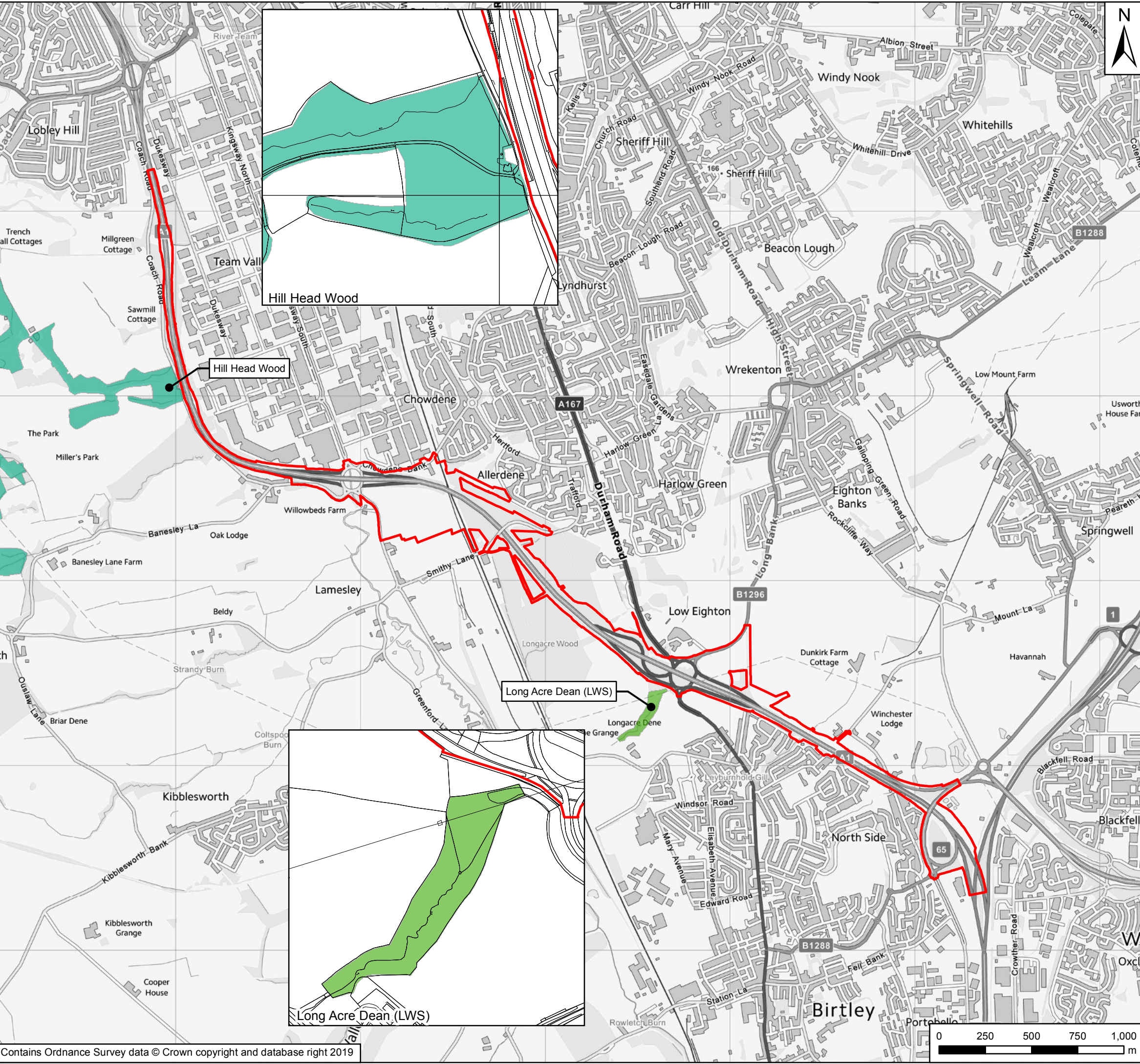
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Drawing Number	Originator	Volume	Revision
HE551462	WSP	6.3	P03
PW Stage Code			

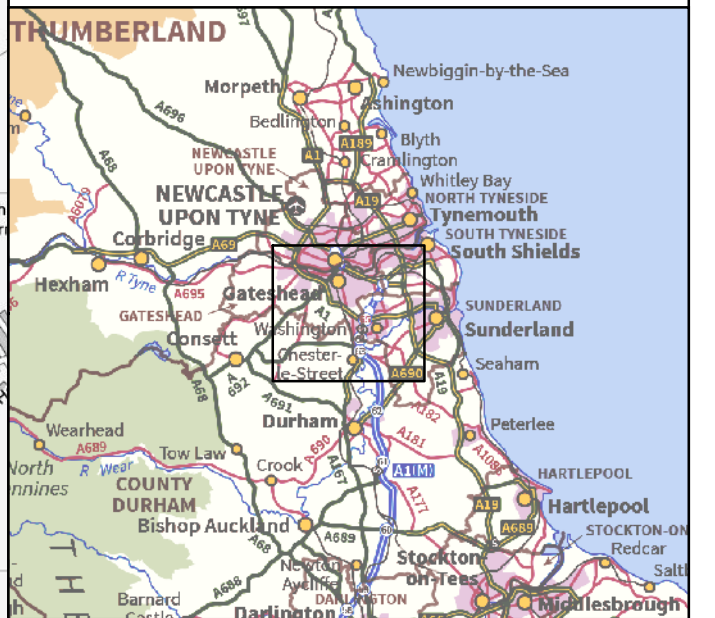


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**Key**

- Scheme Footprint
- Semi-Natural Ancient Woodland
- Replanted Ancient Woodland



Rev	Date	Description	By	Chk'd	App'd
P03	Apr 2019	Third Issue	GH	JR	KS
P02	Mar 2019	Second Issue	GH	JR	KS
P01	Dec 2018	First Issue	GH	JR	NJA

Suitability: Status

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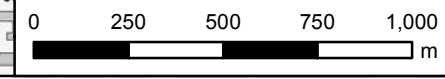
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Drawing Title: **Figure 5 Location of Ancient Woodland**

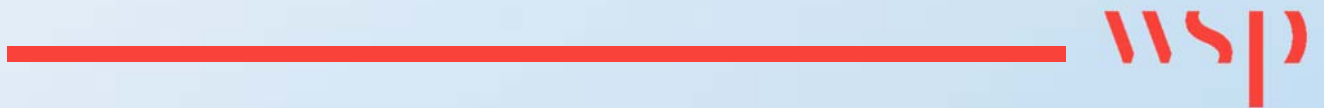
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Drawing Number	Originator	Volume	Revision	
HE551462	WSP	6.3	P03	
PW Stage Code				

B2CH					
Section	Type	ID	Direction	Type	Role



# Appendix A

RELEVANT LEGISLATION AND  
PLANNING POLICY



## ENGLAND & WALES LEGISLATION AND POLICY CONTEXT

This report has been compiled with reference to relevant wildlife legislation, planning policy and the UK Biodiversity Framework. An overview and context of relevant legislation is provided, with the relevant protection each species groups or species receives summarised in **Table 3-1**.

### **The Wildlife and Countryside Act 1981, (as amended) (WCA)**

Protected birds, animals and plants are listed under Schedules 1, 5, 8 and 9 respectively of the WCA, a description of these Schedules and their meaning is provided below.

Under the WCA (England and Wales) all birds, their nests and eggs (with exception of species listed under Schedule 2) are protected by the WCA. It is an offence to:

- Intentionally kill, injure, or take any wild bird.
- Take or destroy an egg of any wild bird.
- Damage or destroy the nest of any wild bird (whilst being built, or in use). Under the WCA the clearance of vegetation within the survey area boundary, or immediately adjacent to the survey area during the bird nesting season could result in an offence occurring by the disruption or destruction of nest sites. The bird breeding season can be taken to occur between March - August inclusive, although is subject to variations based on species, geographical and seasonal factors.

### **Schedule 1**

Birds listed under Schedule 1 of the WCA<sup>16</sup> are afforded additional protection with regard to intentional or reckless disturbance whilst nest-building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

### **Schedule 5**

Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally:

- Part 1: kill, injure or take;
- Part 2: possess or control (live or dead animal, part or derivative);
- Part 4 (a): damage or destruct any structure used for shelter or protection;
- Part 4 (b): disturb them in a place of shelter or protection;
- Part 4 (c): obstruct access to place of shelter or protection;

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<sup>16</sup> To view the current list of Schedule 1 listed birds visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/1>  
[Accessed March 2018].

- Part 5 (a): sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);
- Part 5 (b): advertise for buying or selling.

### **Schedule 8**

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

### **Schedule 9**

Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or “causing to grow” in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native and captive individuals, this includes barn owl, red kite, goshawk and corncrake.

### **Countryside Rights of Way Act 2000 (CRoW Act)**

The CRoW Act has amended the WCA in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word ‘reckless’ to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.

### **Natural Environment and Rural Communities (NERC) Act 2006**

Species and Habitats of Principal Importance in England and Wales are listed under Section 41 and Section 42 respectively of the NERC Act. The Section 41 and 42 lists detail species that are of principal importance for the conservation of biodiversity in England and Wales, and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.

### **The Protection of Badgers Act (1992)**

It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Act their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as ‘any structure or place, which displays signs indicating the current use by a badger’ and Natural England (NE) takes this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers (Natural England, 2009<sup>17</sup>). If impacts to badgers or their setts are unavoidable then authorised sett disturbance requires a licence.

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<sup>17</sup> Natural England, June 2009, Protection of Badgers Act 1992 (as amended), Guidance on ‘Current Use’ in the definition of a Badger Sett WMLG17, Natural England, Peterborough.

### **The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012)**

This Framework lists the UK's most threatened species and habitats and sets out targets and objectives for their management and recovery. The UK Biodiversity Action Plan (BAP) process is delivered nationally, regionally and locally and should be used as a guide for decision-makers to have regards for the targets set by the framework and the goals they aim to achieve. The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant (UK Post-2010 Biodiversity Framework, 2012<sup>18</sup>).

### **The Conservation of Habitats and Species Regulations 2017**

The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017, and extend to England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters). In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

All species listed under Annex IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations it is unlawful to:

- Deliberately kill, capture or disturb;
- Deliberately take or destroy the eggs of; and
- Damage or destroy the breeding site/resting place of any species protected under this legislation.

If the Ecologist determines that impacts to an EPS are unavoidable then the works may need to be carried out under a site-specific mitigation licence from Natural England (NE) or Natural Resources Wales (NRW). Low Impact Class licences are also available in both England and Wales for bats and great crested newts. This enables Registered Low Impact Consultants to undertake certain low impact activities reducing the EPS application paperwork and process length.

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<sup>18</sup> JNCC and Defra (on behalf of the Four Countries' Biodiversity Group), July 2012, UK Post-2010 Biodiversity Framework, Available from: [http://jncc.defra.gov.uk/pdf/UK\\_Post2010\\_Bio-Fwork.pdf](http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf) [Accessed March 2018].

Certain EPS are also listed under Annex II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA).

The Birds Directive seeks to maintain populations of all wild bird species across their natural range (Article 2). All bird species listed under Annex I<sup>19</sup> of the Birds Directive are rare or vulnerable and afforded protection by the classification of Special Protection Areas (SPAs), these are also designated under all regularly occurring migratory species, with regard to the protection of wetlands of international importance (Article 4). This means these bird species and communities are a relevant consideration in HRA.

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<sup>19</sup> To view birds listed under Annex I visit:  
[http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index\\_en.htm](http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm) [Accessed March 2018]

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**Table A:1: Key species and national wildlife legislation, policy and biodiversity framework applicable in England & Wales**

Species	Legislation, Planning Policy and UK Biodiversity Framework							
	Wildlife and Countryside Act 1981 (as amended), (WCA)				The Conservation of /Habitats and Species Regulations 2010 (as amended) (Habitats Regulations) - Regulation 41	Natural Environment and Rural Communities (NERC) Act 2006/The Environment(Wales) Act (2016)	The Protection of Badgers Act 1992	The UK Post-2010 Biodiversity Framework 2011-2020 (JNCC and DEFRA, 2012)
	Schedule 1	Schedule 5	Schedule 8	Schedule 9	European Protected Species (Annex IV of the EC Habitats Directive),			
Badger							Y	
Bats		Y <sup>20</sup> (part)			Y <sup>21</sup>	Y <sup>22</sup>		Y <sup>23</sup>
Hazel Dormouse		Y 5(part)			Y	Y		Y
Otter		Y 5(part)			Y	Y		Y
Water vole		Y <sup>24</sup> (full)				Y		Y
Birds	Y			Y <sup>25</sup>		Y <sup>26</sup>		Y <sup>27</sup>

<sup>20</sup> These species are partially protected under section 9(4)(b), (4)(c) and (5).

<sup>21</sup> Only Barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteini*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*) are listed on Annex II of the Habitats Directive.

<sup>22</sup> Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*) and barbastelle are listed as Species of Principal Importance in England with the addition of common pipistrelle (*Pipistrellus pipistrellus*) in Wales listed under

Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>.

<sup>23</sup> Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat are listed as UK BAP species of bat.

<sup>24</sup> Class Licences are available to Registered Consultants to intentionally disturb, damage or destroy water vole burrows or to displace water voles from their burrows in relation to a development proposal where the licensed action provides a conservation benefit for water voles. Certain displacement operations may be carried out under a Class licence by a registered person in England, however in Wales all displacement operations must be carried out under a site specific licence.

<sup>25</sup> To view plants and animals listed on Schedule 9 Part 1 visit <http://www.legislation.gov.uk/ukpga/1981/69/schedule/9> [accessed March 2018]

<sup>26</sup> There are 49 species of birds listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and 51 species in Wales under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>.

<sup>27</sup> To view the current list of UK BAP priority birds visit: <http://jncc.defra.gov.uk/page-5163> [Accessed March 2018].



**Table A:1: Key species and national wildlife legislation, policy and biodiversity framework applicable in England & Wales**

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Reptiles		Y <sup>28</sup> (part)		Y <sup>9</sup>	Y <sup>29</sup>	Y <sup>30</sup>		Y <sup>31</sup>
Amphibians		Y <sup>32</sup> (part)		Y <sup>33</sup>	Y <sup>34, 35</sup>	Y <sup>36</sup>		
White-clawed Crayfish		Y <sup>37</sup> (partial)			Y <sup>38</sup>	Y		Y

<sup>28</sup> The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

<sup>29</sup> Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*) are the only reptiles to be designated as European Protected Species.

<sup>30</sup> All 6 reptile species are listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 5 species, excluding smooth snake, listed under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>.

<sup>31</sup> To view the current list of UK BAP priority herptile species visit: <http://jncc.defra.gov.uk/page-5166> [Accessed March 2018].

<sup>32</sup> The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

<sup>33</sup> Common frog (*Rana temporaria*), Common toad (*Bufo bufo*), Smooth newt (*Lissotriton vulgaris*) and Palmate newt (*Lissotriton helveticus*) are offered partial protection under section 9(5). Great crested newt (*Triturus cristatus*) and Natterjack toad (*Epidalea calamita*) are offered partial protection under section 9(4)(b) and (c) and (5). Pool frog (*Pelophylax lessonae*) is offered partial protection under section 9(4)(b) and (c)(1) only and with respect to England only.

<sup>34</sup> Great crested newt, Natterjack toad and Pool frog are the only amphibians to be designated European Protected Species.

<sup>35</sup> Great crested newt is the only amphibian listed on Annex II of the Habitats Directive.

<sup>36</sup> Great crested newt, Natterjack toad and Common toad are listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>.

<sup>37</sup> Under the Wildlife and Countryside Act it is illegal to take or sell white clawed crayfish under the WCA. A licence is required to survey (hand net or trap) for the species. To undertake work within WCC inhabited rivers a Class Licence maybe issued by the relevant authority to move WCC away from harm prior to works. Although WCC are not protected from killing or injury Natural England state in their Class licence that due to declining numbers all efforts should be made to conserve the species.

<sup>38</sup> White clawed crayfish are listed under Annex II and V of the Habitats Directive.

**Table A:1: Key species and national wildlife legislation, policy and biodiversity framework applicable in England & Wales**

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Invertebrates		Y <sup>39</sup> (full/part)		Y	Y <sup>40, 41</sup>	Y <sup>42</sup>		Y <sup>43</sup>
Fish		Y <sup>44</sup> (full/part)		Y9	Y <sup>45, 46</sup>	Y <sup>47</sup>		Y <sup>48</sup>
Plants			Y <sup>49</sup>	Y9	Y <sup>50, 51</sup>	Y <sup>52</sup>		Y <sup>53</sup>

<sup>39</sup> To view the current list of invertebrates that are protected under this Act either in part or full visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/5> [Accessed March 2018].

<sup>40</sup> The Large blue butterfly (*Maculinea arion*), Fisher's estuarine moth (*Gortyna borellii lunata*) and Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) are the only invertebrates to be designated European Protected Species.

<sup>41</sup> There are currently twelve invertebrates listed in Annex II of the Habitats Directive; White-clawed crayfish (*Austropotamobius pallipes*), Southern damselfly (**Coenagrion mercuriale**), Marsh fritillary butterfly (**Eurodryas aurinia**), Violet click beetle (**Limoniscus violaceus**), Stag beetle (**Lucanus cervus**), Freshwater pearl mussel (**Margaritifera margaritifera**), Narrow-mouthed whorl snail (**Vertigo angustior**), Round-mouthed whorl snail (**Vertigo genesii**), Geyer's whorl snail (**Vertigo geyeri**), Desmoulin's whorl snail (**Vertigo moulinsiana**), Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) and Fisher's estuarine moth (*Gortyna borellii lunata*).

<sup>42</sup> There are currently 379 invertebrate species (not including marine species) listed as Species of Principal Importance in England [http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwivvu7J9trSAhXiCsAKHX4TBGcQFggvMAM&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F6518755878240256&usg=AFQjCNEpiUWYuOghVcfSDvi\\_3iK2TJytfQ](http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwivvu7J9trSAhXiCsAKHX4TBGcQFggvMAM&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F6518755878240256&usg=AFQjCNEpiUWYuOghVcfSDvi_3iK2TJytfQ) and 188 species in Wales [http://www.eryri-npa.gov.uk/\\_data/assets/pdf\\_file/0003/486156/SpeciesList.pdf](http://www.eryri-npa.gov.uk/_data/assets/pdf_file/0003/486156/SpeciesList.pdf) listed under Section 41 of the NERC Act 2006 and listed under Section 7 of the of the Environment (Wales) Act 2016. [Accessed March 2018]

<sup>43</sup> To view the current list of UK BAP priority invertebrates visit: <http://jncc.defra.gov.uk/page-5169> [Accessed March 2018].

<sup>44</sup> To view the current list of fish either part or fully protected under the Act visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/5> [Accessed March 2018].

<sup>45</sup> Sturgeon (*Acipenser sturio*) is the only fish to be designated a European Protected Species.

<sup>46</sup> There are eight fish species listed on Annex II of the Habitats Directive. To view the current list visit: <http://jncc.defra.gov.uk/page-1523> [Accessed March 2018].

<sup>47</sup> There are 35 species of fish listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 10 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.

<sup>48</sup> To view the current list of UK BAP priority fish visit: <http://jncc.defra.gov.uk/page-5164> [Accessed March 2018].

<sup>49</sup> To view the current list of Schedule 8 listed plants visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/8> [Accessed March 2018].

<sup>50</sup> There are nine plant species designated as European Protected Species. To view the current list visit: <http://www.legislation.gov.uk/ukxi/2010/490/schedule/5/made> [Accessed March 2018].

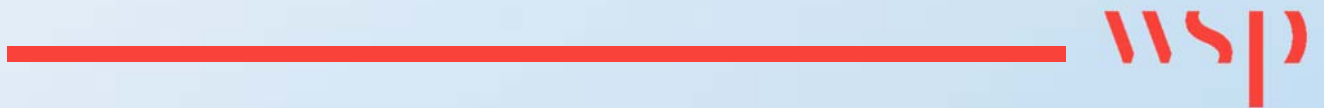
<sup>51</sup> To view the current list of plant species on Annex II of the Habitats Directive visit: <http://jncc.defra.gov.uk/page-1523> [Accessed March 2018].

<sup>52</sup> There are currently 152 vascular plants listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 77 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.<sup>31</sup> To view the current list of UK BAP priority plants visit: <http://jncc.defra.gov.uk/page-5171> and <http://jncc.defra.gov.uk/page-5168> [Accessed March 2018].

<sup>53</sup> To view the current list of UK BAP priority plants visit: <http://jncc.defra.gov.uk/page-5171> and <http://jncc.defra.gov.uk/page-5168> [Accessed March 2018].

# Appendix B

SUMMARY OF ECOLOGICAL DESK  
STUDY DATA



**Protected and notable species (excluding birds) for which records have been identified within 2km of the Scheme Footprint**

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status <sup>54</sup></b>
Common Toad	Bufo bufo	6	250m south	BAP 2007, Bern A3, England NERC S.41, WACA Sch5 Sect 9.5a
Palmate Newt	Lissotriton helveticus	4	500m north-east	Bern A3, WACA Sch5 Sect 9.5a
Smooth Newt	Lissotriton vulgaris	6	500m north-east	Bern A3, WACA Sch5 Sect 9.5a
Common Frog	Rana temporaria	6	250m south	Bern A3, HabDir A5, WACA Sch5 Sect 9.5a
Great Crested Newt	Triturus cristatus	14	1.1km south	BAP 2007, Bern A2, Durham BAP, England NERC S.41, FEP 007, HabDir A2, HabDir A4, HabReg Sch2, Northumberland BAP, WACA Sch5 Sect 9.4b, WACA Sch5 Sect 9.5a, WACA Sch5 Sect 9.4c,
Heather	Calluna vulgaris	1	700m north-east	RedList GB post 2001 NT <sup>55</sup>

<sup>54</sup> HabReg = Conservation of Habitats and Species Regulations (2017), HabDir = Habitats Directive (Council Directive 92/43/EEC), WACA = Wildlife and Countryside Act (1981), NERC = Schedule 41 Natural Environment and Rural Communities Act (2006), FEP = Farm Environment Plan Guidance 001, LBAP = Local Biodiversity Action Plan, RD1 (UK) = UK Red Data Book listing based on IUCN guidelines, RD2 (UK) = UK Red Data Book listing not based on IUCN guidelines (Nationally Rare and Scarce).

<sup>55</sup> NT = Near Threatened

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status <sup>54</sup>
Harebell	Campanula rotundifolia	1	700m north-east	RedList GB post 2001 NT
Scots Pine	Pinus sylvestris	1	800m west	IUCN Nationally Scarce but excluded from Red List
Japanese Knotweed	Fallopia japonica	7	20m north	WCA 1981 (Sch 9 Sct 14 part 2), EPA 1990
Mat-Grass	Nardus stricta	1	600m north-east	RedList GB post2001 NT
Tormentil	Potentilla erecta	1	600m north-east	RedList GB post2001 NT
Lesser Spearwort	Ranunculus flammula	1	600m north-east	RedList GB post2001 VU <sup>56</sup>
Goldenrod	Solidago virgaurea	1	600m north-east	RedList GB post2001 NT
Large-Leaved Lime	Tilia platyphyllos	1	1.5km east	FEP 001, IUCN Nationally Scarce but excluded from Red List
Cup Lichen	Cladonia	1	500m north	Habitat Directive – A5
Flat-topped Bog-moss	Sphagnum fallax	1	1.3km north	Habitat Directive – A5
European Water Vole	Arvicola amphibius	3	100m north	BAP-2007, Durham BAP

<sup>56</sup> VU = Vulnerable

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status <sup>54</sup>
Roe Deer	Capreolus capreolus	11	700 m south-est	Bern-A3
West European Hedgehog	Erinaceus europaeus	36	150m south-west	BAP-2007, Bern-A3, Durham BAP, England NERC S.41, Northumberland BAP
Brown Hare	Lepus europaeus	9	700m south-west	BAP 2007, Durham BAP, England NERC S.41, FEP 007 tab2
European Otter	Lutra lutra	26	50m west	BAP-2007, Bern A2, Durham BAP, ECCITES A, England NERC S.41, FEP 007 tab2, HabDir A2, HabDir A4, HabReg Sch2, Northumberland BAP, RedList Global post 2001 NT, WACA Sch5 sect9.4b, WACA Sch5 sect9.5a, WACA Sch5Sect9.4c
Eurasian Badger	Meles meles	2	1.4km south-west	Bern A3, Durham BAP, Protection of Badgers Act 1992
Stoat	Mustela erminea	5	10m north	Bern A3
Weasel	Mustela nivalis	5	900m south	Bern A3
Feral Ferret	Mustela putorius subsp. furo	1	1.7km south	BAP 2007, Bern A3, Durham BAP, England NERC S.41, HabDir A5, HabReg Sch4
American Mink	Mustela vison	3	700m south west	WACA Sch 9 Part 1
Eurasian Water Shrew	Neomys fodiens	1	1km south	Bern A3, Durham BAP

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status <sup>54</sup>
Common Pipistrelle	Pipistrellus pipistrellus	21	1km west	CMS <sup>57</sup> A2, CMS EUROBATS-A1, HabReg Sch2, WACA Sch5 sect9.1(kill/injuring), WACA Sch5 sect9.4b, WACA Sch5 sect9.5a, WACA Sch5 Sect9.4c
Soprano Pipistrelle	Pipistrellus pygmaeus	5	1km west	BAP 2007, Bern A2, CMS A2, CMS EUROBATS-A1, Durham BAP, England NERC S.41, HabDir A4, HabReg Sch2,  Northumberland BAP, WACA Schsect9.1(kill/injuring), WACA Sch5 sect9.4b, WACA Sch5 sect9.5a, WACA Sch5Sect 9.4c
Noctule Bat	Nyctalus noctula	2	2.2km south	BAP 2007, Bern A2, CMS A2, CMS EUROBATS A1, Durham BAP, England NERC S.41, FEP 007 tab2, HabDir A4, HabReg Sch2, Northumberland BAP, WACA Sch5 sect9.1(kill/injuring), WACA Sch5 sect9.4b, WACA-Sch5 sect9.5a, WACA Sch5 Sect 9.4c
Eastern Grey Squirrel	Sciurus carolinensis	21	300m east	WACA Sch 9 Part 1
Eurasian Red Squirrel	Sciurus vulgaris	1	1.4km north	BAP 2007, Bern A3, Durham BAP, England NERC S.41, FEP 007 tab2, Northumberland BAP, WACA Sch5 sect9.2, WACA Sch5 sect9.4.a, WACA Sch5 sect9.4b, WACA Sch5 sect9.5a, WACA Sch5 Sect9.4c

<sup>57</sup> Secretariat of the Convention on Migratory Species

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status <sup>54</sup>
Eurasian Common Shrew	Sorex araneus	3	400m north	Bern A3

**Protected and notable birds for which records have been identified within 2km from the Scheme Footprint**

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status <sup>58</sup>
Sparrowhawk	Accipiter nisus	70	1.3km south	CMS A2, ECCITES-A
Common Sandpiper	Actitis hypoleucos	6	1.3km south	CMS A2, CMS AEWA <sup>59</sup> A2
Skylark	Alauda arvensis	5	1.3km south	BirdsDir A2.2, Durham BAP, England NERC S.41, FEP 007 tab2, Northumberland BAP
King Fisher	Alcedo atthis	29	1.3km south	Bern A2, BirdsDir A1, FEP 007 tab2, WACA Sch1 part1
Teal	Anas crecca	201	1.3km south	Bird Amber, BirdsDir A2.1, CMS A2, CMS AEWA A2,

<sup>58</sup> HabReg = Conservation of Habitats and Species Regulations (2017), W&CA = Wildlife and Countryside Act (1981), NERC = Schedule 41 Natural Environment and Rural Communities Act (2006), LBAP = Local Biodiversity Action Plan, BoCC Red = Birds of Conservation Concern Red List, BoCC Amber = Birds of Conservation Amber List.

<sup>59</sup> The Agreement on the Conservation of African-Eurasian Migratory Waterbirds



Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status 58
				ECCITES C, Northumberland BAP
Wigeon	Anas Penelope	79	1.3km south	Bird-Amber, BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2, ECCITES-C, Northumberland BAP
Mallard	Anas platyrhynchos	228	1.3km south	Bird-Amber, BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2
Gadwall	Anas strepera	23	1.3km south	Bird-Amber, BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2
White Fronted Goose	Anser albifrons	2	1.3km south	Bird-Red, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2
Greylag Goose	Anser anser	200	1.3km south	Bird-Amber, BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part2
Pink Footed Goose	Anser brachyrhynchus	24	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2
Meadow Pipit	Anthus pratensis	41	1.3km south	Bern-A2, Bird-Amber
Swift	Apus apus	60	1.3km south	Bird-Amber, Northumberland BAP
Grey Heron	Ardea cinerea	121	1.3km south	CMS_AEWA-A2
Little Owl	Athene noctua	3	1.3km south	Bern-A2, ECCITES-A
Pochard	Aythya farina	3	1.3km south	Bird-Red, BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2
Tufted Duck	Aythya fuligula	4	1.3km south	BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status 58</b>
Waxwing	Bombycilla garrulous	2	1.3km south	Bern-A2
Canada Goose	Branta Canadensis	46	1.3km south	BirdsDir-A2.1, CMS_A2, WACA Sch 9 Part 1
Goldeneye	Bucephala clangula	1	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part2
Buzzard	Buteo buteo	136	1.3km south	CMS_A2, ECCITES-A
Dunlin	Calidris alpine	3	1.3km south	Bird-Amber, Bern-A2, CMS_A2, CMS_AEWA-A2, FEP-007_tab2
Goldfinch	Carduelis carduelis	151	1.3km south	Bern-A2, Northumberland BAP
Greenfinch	Carduelis chloris	56	1.3km south	Bern-A2, Northumberland BAP
Tree Creeper	Certhia familiaris	1	1.3km south	Bern-A2
Little Ringed Plover	Charadrius dubius	41	1.3km south	Bern-A2, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part1
Ringed Plover	Charadrius hiaticula	13	1.3km south	Bern-A2, Bird-Red, CMS_A2, CMS_AEWA-A2, Northumberland BAP
Black Headed Gull	Chroicocephalus ridibundus	205	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_AEWA-A2,
Dipper	Cinclus cinclus	6	1.3km south	Bern-A2, Bird-Amber

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status 58</b>
Rock Dove	<i>Columba livia</i>	8	1.3km south	BirdsDir-A2.1, ECCITES-A
Stock Dove	<i>Columba oenas</i>	70	1.3km south	Bird-Amber, BirdsDir-A2.2, Northumberland BAP
Woodpigeon	<i>Columba palumbus</i>	270	1.3km south	BirdsDir-A2.1, Northumberland BAP
Carrion Crow	<i>Corvus corone</i>	240	1.3km south	BirdsDir-A2.2
Rook	<i>Corvus frugilegus</i>	5	1.3km south	BirdsDir-A2.2, Northumberland BAP
Jackdaw	<i>Corvus monedula</i>	246	1.3km south	BirdsDir-A2.2, Northumberland BAP
Cuckoo	<i>Cuculus canorus</i>	1	1.3km south	BAP-2007, Bird-Red, England_NERC_S.41,
Blue Tit	<i>Cyanistes caeruleus</i>	214	1.3km south	Bern-A2
Bewick's Swan	<i>Cygnus columbianus</i> subsp. <i>bewickii</i>	1	1.3km south	BAP-2007, Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, England_NERC_S.41
Whooper Swan	<i>Cygnus Cygnus</i>	13	1.3km south	Bern-A2, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, FEP-007_tab2, WACA-Sch1_part1
Mute Swan	<i>Cygnus olor</i>	60	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2
House Martin	<i>Delichon urbicum</i>	67	1.3km south	Bern-A2, Bird-Amber

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status 58
Great Spotted Woodpecker	Dendrocopos major	23	1.3km south	Bern-A2
Little Egret	Egretta garzetta	2	1.3km south	Bern-A2, BirdsDir-A1, CMS_AEWA-A2, ECCITES-A
Yellowhammer	Emberiza citronella	3	1.3km south	BAP-2007, Bern-A2, England_NERC_S.41, FEP-007_tab2, Northumberland BAP
Reed Bunting	Emberiza schoeniclus	40	1.3km south	BAP-2007, Bern-A2, England_NERC_S.41, FEP-007_tab2, Northumberland BAP
Robin	Erithacus rubecula	206	1.3km south	Bern-A2
Peregrine	Falco peregrinus	5	1.3km south	Bern-A2, BirdsDir-A1, CMS_A2, ECCITES-A, WACA-Sch1_part1
Hobby	Falco Subbuteo	1	1.3km south	Bern-A2, CMS_A2, ECCITES-A, WACA-Sch1_part1
Kestrel	Falco tinnunculus	186	1.3km south	Bern-A2, CMS_A2, ECCITES-A, FEP-007_tab2, Northumberland BAP
Coot	Fulica atra	49	1.3km south	BirdsDir-A2.1, CMS_AEWA-A2
Snipe	Gallinago gallinag	65	1.3km south	BirdsDir-A2.1, CMS_A2, CMS_AEWA-A2, Durham BAP, FEP-007_tab2, Northumberland BAP
Moorhen	Gallinula chloropus	252	1.3km south	BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status 58</b>
Jay	Garrulus glandarius	12	1.3km south	BirdsDir-A2.2
Oystercatcher	Haematopus ostralegus	68	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_AEWA-A2, Northumberland BAP
Swallow	Hirundo rustica	78	1.3km south	Bern-A2, Northumberland BAP
Great Grey Shrike	Lanius excubitor	1	1.3km south	Bird-Red, BirdsDir-A2.2, CMS_AEWA-A2
Herring Gull	Larus argentatus	198	1.3km south	Bird-Red, BirdsDir-A2.2, CMS_AEWA-A2
Common Gull	Larus canus	41	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_AEWA-A2
Lesser Black Headed Gull	Larus fuscus	84	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_AEWA-A2
Great Black Headed Gull	Larus marinus	18	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_AEWA-A2
Mediterranean Gull	Larus melanocephalus	1	1.3km south	Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part1
Black-tailed Godwit	Limosa limosa	2	1.3km south	BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, FEP-007_tab2, RedList_Global_post2001_NT, WACA-Sch1_part1

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status 58
Linnet	<i>Linaria cannabina</i>	39	1.3km south	Bern-A2, Durham BAP, FEP-007_tab2, Northumberland BAP
Grasshopper Warbler	<i>Locustella naevia</i>	2	1.3km south	BAP-2007, Bird-Red, England_NERC_S.41
Goosander	<i>Mergus merganser</i>	2	1.3km south	BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2
Red Kite	<i>Milvus milvus</i>	23	1.3km south	BirdsDir-A1, CMS_A2, ECCITES-A, FEP-007_tab2, RedList_Global_post2001_NT, WACA-Sch1_part1
Pied Wagtail	<i>Motacilla alba</i>	146	1.3km south	Bern-A2
White Wagtail	<i>Motacilla alba</i> subsp. <i>alba</i>	7	1.3km south	Bern-A2
Grey Wagtail	<i>Motacilla cinerea</i>	10	1.3km south	Bern-A2, Bird-Red
Yellow Wagtail	<i>Motacilla flava</i>	7	1.3km south	Bern-A2, Durham BAP, FEP-007_tab2, Northumberland BAP
Curlew	<i>Numenius arquata</i>	182	1.3km south	Bird-Red, BAP-2007, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, Durham BAP, England_NERC_S.41, FEP-007_tab2, Northumberland BAP, RedList_Global_post2001_NT
Wheatear	<i>Oenanthe oenanthe</i>	1	1.3km south	Bern-A2

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status 58</b>
Osprey	<i>Pandion haliaetus</i>	1	1.3km south	Bird-Amber, BirdsDir-A1, CMS_A2, ECCITES-A, WACA-Sch1_part1
Great Tit	<i>Parus major</i>	213	1.3km south	Bern-A2
House Sparrow	<i>Passer domesticus</i>	240	1.3km south	BAP-2007, Bird-Red, Durham BAP, England_NERC_S.41
Tree Sparrow	<i>Passer montanus</i>	178	1.3km south	BAP-2007, Durham BAP, England_NERC_S.41, FEP-007_tab2, Northumberland BAP
Grey Partridge	<i>Perdix perdix</i>	3	1.3km south	BAP-2007, BirdsDir-A2.1, England_NERC_S.41, FEP-007_tab2, Northumberland BAP
Coal Tit	<i>Periparus ater</i>	156	1.3km south	Bern-A2
Cormorant	<i>Phalacrocorax carbo</i>	17	1.3km south	CMS_AEWA-A2
Pheasant	<i>Phasianus colchicus</i>	134	1.3km south	BirdsDir-A2.1
Redstart	<i>Phoenicurus phoenicurus</i>	1	1.3km south	Bern-A2, Bird-Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	7	1.3km south	Bird-Amber
Magpie	<i>Pica pica</i>	246	1.3km south	BirdsDir-A2.2
Willow Tit	<i>Poecile montana</i>	43	1.3km south	Bern-A2, Bird-Red, FEP-007_tab2

Species common name	Species Latin name	No. of records	Distance and orientation from Survey Area	Legal/Conservation Status 58
Marsh Tit	Poecile palustris	1	1.3km south	Bern-A2, Bird-Red
Dunnock	Prunella modularis	208	1.3km south	Bern-A2, Bird-Amber, Northumberland BAP
Bullfinch	Pyrrhula pyrrhula	20	1.3km south	FEP-007_tab2, Northumberland BAP
Goldcrest	Regulus regulus	7	1.3km south	Bern-A2, Northumberland BAP
Sand Martin	Riparia riparia	68	1.3km south	Bern-A2
Nuthatch	Sitta europaea	4	1.3km south	Bern-A2
Siskin	Spinus spinus	2	1.3km south	Bern-A2
Collared Dove	Streptopelia decaocto	89	1.3km south	BirdsDir-A2.2
Starling	Sturnus vulgaris	234	1.3km south	BirdsDir-A2.2, Durham BAP, FEP-007_tab2, Northumberland BAP
Little Grebe	Tachybaptus ruficollis	1	1.3km south	CMS_AEWA-A2
Shelduck	Tadorna tadorna	88	1.3km south	Bern-A2, Bird-Amber, CMS_A2, CMS_AEWA-A2
Wood Sandpiper	Tringa glareola	2	1.3km south	Bern-A2, Bird-Amber, BirdsDir-A1, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part1



<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Distance and orientation from Survey Area</b>	<b>Legal/Conservation Status 58</b>
Green Sandpiper	Tringa ochropus	3	1.3km south	Bern-A2, Bird-Amber, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part1
Greenshank	Tringa nebularia	5	1.3km south	Bird-Amber, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, WACA-Sch1_part1
Redshank	Tringa totanus	81	1.3km south	BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, Durham BAP, FEP-007_tab2, Northumberland BAP
Wren	Troglodytes troglodytes	91	1.3km south	Bern-A2
Redwing	Turdus iliacus	71	1.3km south	Bird-Red, BirdsDir-A2.2, WACA-Sch1_part1
Blackbird	Turdus merula	233	1.3km south	BirdsDir-A2.2
Song Thrush	Turdus philomelos	50	1.3km south	BirdsDir-A2.2, Durham BAP, FEP-007_tab2, Northumberland BAP
Fieldfare	Turdus pilaris	59	1.3km south	Bird-Red, BirdsDir-A2.2, WACA-Sch1_part1
Mistle Thrush	Turdus viscivorus	72	1.3km south	Bird-Red, BirdsDir-A2.2
Lapwing	Vanellus vanellus	191	1.3km south	BAP-2007, BirdsDir-A2.2, CMS_A2, CMS_AEWA-A2, Durham BAP, England_NERC_S.41, FEP-007_tab2, Northumberland BAP

**Protected and notable invertebrates for which records have been identified within 2km of the Scheme Footprint**

<b>Species common name</b>	<b>Species Latin name</b>	<b>No. of records</b>	<b>Legal / Conservation Status <sup>60</sup></b>
Small Heath	Coenonympha pamphilus	42	BAP 2007, England NERC S.41, RedList GB post 2001 NT
Dingy Skipper	Erynnis tages	2	BAP 2007, Durham BAP, England NERC S.41, Northumberland BAP, RedList GB post 2001 VU
Grayling	Hipparchia semele	10	BAP 2007, Durham BAP, England NERC S.41, RedList GB post 2001 VU
Wall	Lasiommata megera	41	BAP 2007, England NERC S.41, RedList GB post 2001 NT
Large Garden Bumblebee	Bombus (Megabombus) ruderatus	1	BAP 2007, England NERC S.41
Flounced Chestnut	Agrochola helvola	1	BAP 2007, England NERC S.41
Dusky Thorn	Ennomos fuscantaria	1	BAP 2007, England NERC S.41
Shaded Broad-bar	Scotopteryx chenopodiata	14	BAP 2007, England NERC S.41
Cinnabar	Tyria jacobaeae	10	BAP 2007, England NERC S.41
Banded General	Stratiomys potamida	1	Notable

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<sup>60</sup> HabReg = Conservation of Habitats and Species Regulations (2017), W&CA = Wildlife and Countryside Act (1981), NERC = Schedule 41 Natural Environment and Rural Communities Act (2006), LBAP = Local Biodiversity Action Plan, RD1 (UK) = UK Red Data Book listing based on IUCN guidelines, RD2 (UK) = UK Red Data Book listing not based on IUCN guidelines (Nationally Rare and Scarce).

# Appendix C

PLANT SPECIES RECORDED



## Plant species recorded

Common name	Latin name	Frequency (DAFOR <sup>61</sup> )
Amenity Grassland		
Rye-grass	Lolium sp.	D
Common dandelion	Taraxacum officinale	O
Clover	Trifolium sp.	O
Ribwort plantain	Plantago lanceolata	O
Broadleaved Woodland – Plantation		
Oak	Quercus. sp.	D
Willow	Salix sp.	D
Alder	Alnus glutinosa	A
Silver birch	Betula pendula	F
Hawthorn	Crataegus monogyna	F
Sycamore	Acer psuedoplatanus	O
Elder	Sambucus nigra	O
Wild cherry	Prunus avium	O
Ash	Fraxinus excelsior	O
Poplar	Populus sp.	R
Horse chestnut	Aesculus hippocastanum	R
Common hogweed	Heracleum sphondylium	F
Cow parsley	Anthriscus sylvestris	F

<sup>61</sup> The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows:  
Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term ‘Locally’ (L) is also used where the frequency and distribution of a species are patchy and ‘Edge’ (E) is also used where a species only occurs on the edge of a habitat type.

Common name	Latin name	Frequency (DAFOR <sup>61</sup> )
Bramble	Rubus fruticosus agg.	O
Cock's foot	Dactylis glomerata	O
Creeping buttercup	Ranunculus repens	O
Herb Robert	Geranium robertianum	O
Yorkshire fog	Holcus lanatus	R
Yarrow	Achillea millefolium	R
Broadleaved Woodland – Semi-Natural		
Wild cherry	Prunus avium	A
Willow	Salix sp.	A
Ash	Fraxinus excelsior	A
Sycamore	Acer pseudoplatanus	F
Alder	Alnus glutinosa	F
Elder	Sambucus nigra	F
Oak	Quercus. sp.	O
Hawthorn	Crataegus monogyna	O
Silver birch	Betula pendula	O
Horse chestnut	Aesculus hippocastanum	R
Bramble	Rubus fruticosus agg.	F
Common hogweed	Heracleum sphondylium	F
Cow parsley	Anthriscus sylvestris	O
Dog's mercury	Mercurialis perennis	O
Cow parsley	Anthriscus sylvestris	O
Snow drops	Galanthus sp.	O
Lords and Ladies	Arum maculatum	R

Common name	Latin name	Frequency (DAFOR <sup>61</sup> )
Yarrow	<i>Achillea millefolium</i>	R
Coniferous Woodland – Plantation		
Scots pine	<i>Pinus sylvestris</i>	D
Fir species	<i>Abies</i> sp.	D
Larch	<i>Larix europaeus</i>	?
Hedgerows (including those with trees)		
Hawthorn	<i>Crataegus monogyna</i>	D
Elder	<i>Sambucus nigra</i>	F
Blackthorn	<i>Prunus spinosa</i>	O
Ash	<i>Fraxinus excelsior</i>	O
Oak	<i>Quercus</i> . sp.	O
Sycamore	<i>Acer pseudoplatanus</i>	O
Hazel	<i>Corylus avellana</i>	O
Alder	<i>Alnus glutinosa</i>	O
Willow	<i>Salix</i> sp.	O
Bramble	<i>Rubus fruticosus</i> agg.	A
Cleavers	<i>Galium aparine</i>	F
Common nettle	<i>Urtica dioica</i>	F
Ivy	<i>Hedera helix</i>	O
Garlic mustard	<i>Alliaria petiolata</i>	O
Broadleaved dock	<i>Rumex obtusifolius</i>	O
Lesser celandine	<i>Ranunculus ficaria</i>	R
Holly	<i>Ilex aquifolium</i>	R
Neutral Semi-Improved Grassland		

Common name	Latin name	Frequency (DAFOR <sup>61</sup> )
Annual meadow grass	<i>Poa annua</i>	D
Creeping buttercup	<i>Ranunculus repens</i>	A
Clover species	<i>Trifolium</i> sp.	F
Creeping bent	<i>Agrostis stolonifera</i>	F
Dandelion	<i>Taraxacum officinalis</i>	O
Ribwort plantain	<i>Plantago lanceolata</i>	O
Cock's foot	<i>Dactylis glomerata</i>	O
Red fescue	<i>Festuca rubra</i>	O
Herb Robert	<i>Geranium robertianum</i>	O
Common nettle	<i>Urtica dioica</i>	O
Yorkshire fog	<i>Holcus lanatus</i>	O
Yarrow	<i>Achillea millefolium</i>	O
Broadleaved dock	<i>Rumex obtusifolius</i>	O
Common ragwort	<i>Senecio jacobaea</i>	R
Common sorrel	<i>Rumex acetosa</i>	R
Spear thistle	<i>Cirsium vulgare</i>	R
Creeping cinquefoil	<i>Potentilla reptans</i>	R
Other Tall Herb and Fern – Ruderal		
Rosebay willowherb	<i>Chamerion angustifolium</i>	D
Common hogweed	<i>Heracleum sphondylium</i>	A
False oat grass	<i>Arrhenatherum elatius</i>	A
Broadleaved dock	<i>Rumex obtusifolius</i>	A
Common nettle	<i>Urtica dioica</i>	A
Cow parsley	<i>Anthriscus sylvestris</i>	F

Common name	Latin name	Frequency (DAFOR <sup>61</sup> )
Thistle species	Cirsium sp.	O
Scattered Trees		
Oak	Quercus. sp.	O
Alder	Alnus glutinosa	O
Sycamore	Acer psuedoplatanus	O
Willow	Salix sp.	O
Scots pine	Pinus sylvestris	O
Beech	Fagus sylvatica	O
Scrub		
Hawthorn	Crataegus monogyna	A
Gorse	Ulex europaeus	A
Broom	Cytisus scoparius	A
Bramble	Rubus fruticosus agg.	F
Willow	Salix sp.	O



# Appendix D

TARGET NOTES



## Target Notes

Target Note Reference	Description
TN1	A relatively recent acoustic barrier (wooden fence) has been installed along the boundary of the A1 carriageway and to the north of a line of residential properties. The habitat to the immediate south of the fence was tall ruderal, with colonising species most prevalent. A newly planted hedgerow runs parallel and adjacent to the fence, consisting saplings of no more than 0.5 m in height with rabbit guards and stakes.
TN2	This area could not be accessed during the survey visit as permission had not been granted. The area was mapped using aerial imagery and previous site knowledge.
TN3	The River Team flowing northwards through the junction 67 roundabout. The river at this location was bordered by a mixture of dense/continuous scrub and broadleaved plantation woodland.
TN4	The broadleaved semi-natural woodland bordering the River Team to the south of the Junction 67 roundabout was dominant in willow trees, creating a heavily shaded environ around the watercourse.
TN5	A stand of Japanese knotweed recorded along the woodland edge and adjacent to a public footpath/road. Located at grid reference NZ 2558 0261.
TN6	National Gas Networks (NGN) compound, which was assessed from outside the boundary palisade fencing. The compound consisted of two buildings surrounded by hardstanding and semi-improved, managed grassland.
TN7	An area of bare earth recently created from active ground investigation works in the vicinity. The area appeared to have previously contained dense/continuous scrub, with this habitat present and remaining intact adjacent to the bare ground.
TN8	A temporary site compound containing bare ground or a gravel base and porta cabins.
TN9	Railway corridor and sidings consisted of ballast/aggregate substrate with rail infrastructure including rails, lights and switchboxes. Developing grassland/ephemeral vegetation in places. Scattered scrub was present at the edges of railway sidings and dense bramble in places. Potential for habitat to support reptiles.
TN10	A recently installed access track providing a route to the temporary site compound (TN8).

Target Note Reference	Description
TN11	A recently installed access track to provide a route for plant through the surrounding woodland in order to facilitate ground investigation works in the area.
TN12	Playing fields to the immediate north of the mixed plantation woodland, with a small area of semi-improved grassland encroaching into the Survey Area.
TN13	A strip of semi-improved grassland within the surrounding mature woodland, providing access to the drainage watercourse to the south for maintenance.
TN14	A possible giant hogweed plant adjacent to the Survey Area. The plant was thick stemmed and had a height of 2-3 metres.
TN15	A steep bank within the road network boundary that could not be accessed during the walkover survey due to health and safety. The embankment was assessed from the fence line that runs along the top of the embankment.
TN16 TN17	A significant area of Japanese knotweed, approximately 1ha, was recorded within an area of land to the north of the A1. The knotweed area was separated from an adjacent field by several hedgerows and there were no signs of spread from outside the naturally contained area.  TN17 could not be accessed during the survey and was observed from the boundaries.
TN18	A watercourse had previously been recorded within the broadleaved woodland, however, was completely dry at the time of the survey and showed no signs of a recent channel or water flow (ground was dense with ivy and leaf litter).
TN19	North Dene Footbridge. A pedestrian footbridge over the A1. The footbridge had a metal deck with concrete and brick abutments.
TN20	Scattered scrub and self-seeded ash was present beneath the footbridge.
TN21	Birtley Northside Local Wildlife Site.
TN22	A small area previously recorded as hardstanding, which appeared to represent a parking location. The hardstanding was no longer present, with the ground dense with moss coverage and breakthrough sapling trees. The habitat was considered to be consistent with the surrounding woodland.
TN23 TN24	Two areas of an embankment recently cleared habitat as a result of management (strimming). From the vegetation remaining <i>in situ</i> and the previous habitat classification, the habitat has been classified as tall ruderal

<b>Target Note Reference</b>	<b>Description</b>
	herb. The habitat is interspersed with gorse and hawthorn scrub, with some areas of semi-improved tussocky grassland at the top of the embankment near a fence line.
TN25	Two connected dry ditches present within the mixed plantation woodland. The ditches contained shallow pools at the time of the survey; however, this was attributed to the recent weather conditions and snow melt. The water within the ditches was not considered permanent. There were several rabbit warren entrances in close proximity to the ditches, some of which were flooded.
TN26	Scattered gorse within the semi-improved grassland margin between the road and mixed plantation woodland.

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