
EXTENDED PHASE 1 HABITAT SURVEY

**Bloomhouse Lane, Darton,
Barnsley**

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Field Investigations and Data

Where field investigations have been carried out these have been restricted to a level of detail required to achieving the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by AES-LTD for inaccuracies in the data supplied by any other party.

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1.0 INTRODUCTION

BACKGROUND

- 1.1 Applied Ecological Services Ltd. was commissioned to undertake an Extended Phase 1 Habitat Survey at land off Bloomhouse Lane, Darton, Barnsley. The purpose of the survey was to map and identify habitats and species that are present within the site boundary (see **Figure 1** and **Appendix 2**). The aim of the survey was to provide baseline data of the site and highlight areas for further investigation that may provide a constraint to development. The habitats on site were verified on 3rd August 2016 and bat activity surveys undertaken throughout the 2016 season. This report presents an assessment of potential ecological constraints to redevelopment based on the results of survey.
- 1.2 The 11.5 hectare (approximate) site consists of a range of habitat types including tall ruderal vegetation, dense and scattered scrub, defunct and intact hedges and hedges with trees, broad-leaved semi-natural woodland, neutral and improved grassland. To the north of the site is arable fields, the residential area of Darton lies to the east and south. To the west there is a sports ground with ground clearance works surrounding that.

2.0 THE PROPOSED DEVELOPMENT

SITE LOCATION

- 2.1 The site is located approximately 5km north-west of Barnsley Town Centre and approximately 800m east of the M1 motorway and is located within a suburban setting at grid reference SE 314 103 (approximate central point).

Figure 1: Site location



DEVELOPMENT PROPOSALS

- 2.2 A new link-road and residential development is proposed within the site boundary (outlined in Figure 1).

2.0 METHODOLOGY

DESK STUDY

- 2.1 In order to compile existing baseline information, relevant¹ ecological information was requested from the following organisations which for the purposes of this report, included:
- Multi Agency Geographic Information for the Countryside (Magic) website;
 - Sheffield Biological Records Centre
 - South Yorkshire Badger Group
 - South Yorkshire Bat Group
- 2.2 A 5km radius was searched for sites of International nature conservation importance, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), a 2km radius was searched for statutory sites of national, regional and local importance, such as Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs), and non-statutory designated sites such as Local Wildlife Sites (LWS) and also for records of protected and notable species.
- 2.3 Further inspection, using colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

HABITATS / FLORA

- 2.4 The site was surveyed on the 19th August 2015 by Ecologist Daniel Madden¹ (AES-LTD) and the habitats verified by Dr Caroline Hillier MCIEEM on 3rd August 2016 in order to update the survey, using the standard Extended Phase 1 Habitat Survey methodology (JNCC, 2010)² as recommended by Natural England to identify specific habitats of ecological interest. Whilst the species list should not be regarded as exhaustive, sufficient information was gained during the survey to enable classification and assessment of major habitat types.

¹ Daniel Madden has a first Class Honours Degree from Newcastle University in Environmental Management and Ecology. Daniel has three years' experience working within the Ecology field. Prior to working with AES-LTD Daniel Worked as a Reserves Officer with Durham Wildlife Trust. Daniel has also worked with a number of other Ecological Consultancies based in the North East of England including Total Ecology, E3 and EcoNorth. Daniel has had training with Durham Bat Group and Echoes Ecology in Bat Ecology, behaviour and monitoring and has undertaken various risk assessments, emergence surveys and activity surveys. Daniel has also volunteered with the Batlife Project.

² JNCC, (2010), Handbook for Phase 1 habitat survey - a technique for environmental audit

FAUNA

BAT SURVEYS

- 2.5 Preliminary ground level roost assessments of the trees were undertaken on the 19th August 2015. Trees were inspected for signs of use by bats and features which have the potential to be used by bats as indicated in **Table 1**. Each inspected tree was placed into a category representing the signs of use by bats and the potential of the tree to support roosting bats as described in **Table 2**.

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

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes	Tiny scratches around entry point
Woodpecker holes	Staining around entry point
Cracks/splits in major limbs	Bat droppings in/around/below entrance
Loose bark	Audible squeaking at dusk or in warm weather
Behind dense, thick-stemmed ivy	Flies around entry point
Hollows/cavities	Distinctive smell of bats
Within dense epicormic growth	Smoothing of surfaces around cavity
Bird and bat boxes	

Table 2. Categorisation of tree roosting opportunities and signs of bat use from ground-based observations.

BCT category	Level of bat roost potential	Tree roosting opportunities and signs of bat use
Roost Present	Known or Confirmed bat roost	Field evidence of the presence of bats e.g. scratch marks, oil or urine stains, droppings, audible bat social calls, distinctive odour of bats.
1*	High	High quantity and quality of bat roosting features e.g. abundant holes/cracks/splits in major limbs, dense thick-stemmed ivy, dense epicormic growth. Possible signs of bat use e.g. flies around a hole, smoothing of surfaces.
1	Medium	Trees with definite bat potential, supporting fewer suitable features than category 1* trees or with potential for use by single bats
2	Low	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
3	Negligible	Trees with no potential to support bats

- 2.6 A programme of four activity surveys were carried out during the 2016 season. Surveys were planned and supervised by Dr Caroline Hiller MCIEEM Licenced bat surveyor (2015-15581- CLS-CLS). The habitats within the site are assessed as moderate. For transect surveys, from sunset surveyors walked a pre-determined route for 2-3 hours after dusk. Bats were counted and the species, time and location of detected bats were noted, as was their direction of flight. The transect surveys started on each occasion at the farmhouse to see if there were any bats emerging from the building.
- 2.7 AES-LTD licensed bat surveyors were equipped with Echo Meter (EM3+) detectors which were used to record the calls of bats on site, these bat calls were transferred to Kaleidoscope for analysis of species composition. Batbox III or Magenta 5 bat detectors were used by the other surveyors to assist in bat detection. Bat activity on site was mapped, including direction of flight, foraging areas and any points of emergence.
- 2.8 The RAW files recorded by the EM3+ were analysed using Wildlife Acoustics' Kaleidoscope post-processing software. The free version of this software can convert from WAC, WAV and Zero Crossing (ZC) formats whilst filtering out unwanted signals. Bat calls recorded in the field were analysed using AnaLook Analysis software. The output is recorded as WAC files which were analysed to produce sonograms and frequency spectra. The heterodyne channel also provided further audible verification of identity, especially for species with distinctive heterodyne calls.

BADGER

- 2.9 Land within the survey area and peripheral adjacent habitat (where suitable), approximately 30m from the redline boundary was surveyed on 3rd August 2016 following the methodology outlined by Harris *et al* (1989)³. This involves a walkover of the site searching for field signs which would indicate the presence of badgers as follows:
- Setts: including earth mounds and evidence of bedding and or runways between identified setts;
 - Latrines: often located close to setts; at territory boundaries or adjacent to favoured feeding areas;
 - Prints and established track or runways;
 - Hairs caught on rough wood or fencing; and
 - Other evidence: including snuffle holes, feeding and playing areas and scratching posts.

³ Harris, S., Cresswell, P. & Jefferies, D. 1989. Surveying for badgers. Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol.

SURVEY LIMITATIONS

- 2.10 The habitat surveys were undertaken at an optimum time of year for vegetation surveys, however some areas were inaccessible and so had to be viewed from a short distance away. This was due to either dense vegetation creating an obstacle or impenetrable barbed wire fencing.

SITE ASSESSMENT

- 2.11 In order to determine the value of the habitats and species found through the surveys detailed above, the baseline and survey results were assessed against the criteria in **Table 3**, below:

Table 3: Hierarchy of Receptors

Designation
International (Europe);
National (UK);
Regional (Yorkshire & Humber);
County (South Yorkshire);
Local (up to approximately 2km from the Proposed Site);
Less than local or value in the Proposed Site only

- 2.12 Receptors of less than local value are referred to as being of 'less than local' value. Effects are only assessed for receptors of sufficient value that impacts upon them could be significant in terms of either legislation or policy, i.e. in this case, those considered to be of local, or greater, ecological value.

3.0 RELEVANT LEGISLATION & POLICY⁴

LEGISLATION

HABITAT REGULATIONS

- 3.1 The Conservation of Habitats and Species Regulations 2010 transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb⁵ wild animals listed under Schedule 2 of the Regulations (such as all bat species and great crested newts). It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

WILDLIFE & COUNTRYSIDE ACT

- 3.2 The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CROW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), making it an offence to:

- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection; and
- Pick or uproot any wild plant listed under Schedule 8 of the Act. Sites of Special Scientific Interest (SSSI) are designated under this Act.

POLICY

NATIONAL PLANNING POLICY FRAMEWORK

- 3.3 The Government published the National Planning Policy Framework (NPPF) on 27th March 2012. This sets out new guidance for local authorities, focusing on helping to produce planning policies that are clear and easier to understand. The NPPF is effective immediately; however the local plans are still valid, for the time being, even if they have

⁴ Please note that this legal information is a summary and intended for general guidance only. The original legal documents should be consulted for definitive information.

⁵ Disturbance, as defined by the Conservation of Habitats and Species Regulations 2010, includes in particular any action which impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant); or which affects significantly the local distribution or abundance of the species.

been produced prior to the NPPF. There is emphasis on the need for economic growth through designing planning policies which are in favour of development but this will not be achieved in isolation from social and environmental development. Section 11 sets out the requirements for conserving and enhancing the natural environment. Land previously used for development (brownfield sites) should be favoured as long as they are not considered to be of high environmental value. Of particular note is paragraph 152 of the Plan-Making Section which states, “Local planning authorities should seek opportunities to achieve each of the economic, social and environmental dimensions of sustainable development, and net gains across all three. Significant adverse impacts on any of these dimensions should be avoided and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact should be considered. Where adequate mitigation measures are not possible, compensatory measures may be appropriate”. The Framework is guidance for local planning authorities on the content of their Local Plans, but is also a material consideration in determining planning applications. The NPPF has replaced much existing planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. However, the government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and their Impact within the Planning System, which accompanied PPS9 remains valid.

BIODIVERSITY ACTION PLANS

- 3.4 The UK Biodiversity Action Plan (UKBAP) (Anon, 1995) was organised to fulfill the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A list of national priority species and habitats has been produced with all listed species/habitats having specific action plans defining the measures required to ensure their conservation.
- 3.5 The UKBAP is no longer an active strategy, and has been replaced by biodiversity strategies in England, Northern Ireland, Scotland and Wales. While the UKBAP is no longer an active policy, species listed on the UKBAP have been incorporated into the new biodiversity strategies for each country. In England under Biodiversity 2020: A strategy for England's wildlife and ecosystem services and under section 41 of The Natural Environment and Rural Communities (NERC) Act 2006, where UKBAP species were recognised as of principal importance for the conservation of biodiversity. Section 40 of the NERC Act 2006 requires all public bodies to have regard for biodiversity conservation when carrying out their function. This is commonly referred to as the '**biodiversity duty**'.

- 3.6 Regional and local BAPs have also been organised to develop specific plans for species/habitats of nature conservation importance at regional and local levels, these plans remain valid.

LOCAL STRUCTURE PLANS

- 3.7 County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity. These are used by Planning Authorities to inform planning decisions

NATURAL ENVIRONMENT AND RURAL COMMUNITIES (NERC) ACT (2006)

- 3.8 Public authorities have a duty to conserve biodiversity under the Natural Environment and Rural Communities (NERC) Act, which came into force in 2006. This states that ‘any public body or statutory undertaker in England and Wales must have regard to the purpose of conservation of biological diversity in the exercise of their function and that decisions of public bodies work with the grain of nature and not against it’ (Part 3, Paragraph 60). The Act also includes a range of measures to strengthen the protection of wildlife and habitats.

WILDLIFE LEGISLATION

- 3.9 In addition to the above, a range of legislation is in place to ensure that habitats and species of conservation importance are protected from harm, either directly or indirectly. A summary of this legislation is given in **Table 4**.

Table 4: Overview of Key Legislation

Legislation	Relevance
The Conservation of Habitats and Species Regulations 2010	This transposes the EC Habitats Directive 1992 (<i>Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna</i>) and the EC Birds Directive 1979 (<i>Council Directive 79/409/EEC on the protection of wild birds</i>) into UK law. Annexes I and II of the Habitats Directive list (respectively) habitats and species for which member states are required to establish and monitor SACs. The EC Birds Directive provides a similar network of sites (SPAs) for all rare or vulnerable species listed in Annex I and all regularly occurring migratory species, with particular focus on wetlands of international importance. Together with SACs, SPAs form a network of pan-European protected areas known as 'Natura 2000' sites. The Habitats Regulations also make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4.
The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979)	The Bern Convention aims to ensure conservation and protection of all wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to afford special protection to the most vulnerable or threatened species (including migratory species).
The Wildlife and Countryside Act (WCA) 1981 (as amended)	The WCA is the primary UK mechanism for statutory site designation (Sites of Special Scientific Interest, SSSIs) and the protection of individual species listed under Schedules 1, 2, 5 and 8 of the Act, each subject to varying levels of protection
The Countryside and Rights of Way Act 2000	This legislation strengthens the provision of the 1981 WCA (as amended), both in respect of statutory sites such as SSSIs and protected species. It also places a statutory obligation on Local Authorities and other public bodies to further conservation of biodiversity in the exercise of their functions, thus providing a statutory basis to the Biodiversity Action Plan (BAP) process, which began in 1994. Section 74 of the Act lists the habitat types and species of principal importance in England.
Hedgerow Regulations 1997	The Hedgerow Regulations 1997 are intended to protect important countryside hedges from destruction or damage in England and Wales.
Natural Environment and Rural Communities Act 2006	The 'NERC' Act makes provision in respect of biodiversity, pesticides harmful to wildlife, protection of birds and invasive non-native species. Section 40 of the act also introduced a new duty on public bodies to have regard to the purpose of conserving biodiversity in the exercise of their functions.

3.10 Due to its location the site may have the potential to support or provide habitat for a number of those species protected by the various pieces of legislation summarised in **Table 4**. A summary of the key legislation is given in **Table 5**.

Table 5: Key Legislation for protected species

Species	Key legal protection
Bats (all species)	All European species of bat are listed on Annex IV of the EC Habitats Directive as being in need of “strict protection”. This is implemented in Britain under The Conservation of Habitats and Species Regulations 2010. All British bats are included on Schedule 5 of the WCA (1981) and the whole of Section 9 of The Act applies to European bat species. In summary, the above legislation collectively prohibits the following: • Deliberately or recklessly capturing, injuring, taking or killing of a bat; • Deliberately or recklessly harassing a bat; • Intentionally or recklessly disturbing of a bat in its place of rest (roost), or which is used for protection or rearing young; • Deliberately or recklessly damaging, destroying or obstructing access to any resting place or breeding area used by bats; • Deliberately or recklessly disturbing a bat in any way which is likely to significantly affect the local populations of the species, either through affecting their distribution or abundance, or affect any individuals ability to survive, reproduce or rear young; • Possession or advertisement/sale/exchange of a bat (dead or alive) or any part of a bat. In England, licenses are issued by Natural England for any actions that may compromise the protection of a European protected species, including bats, under the Habitats Regulations 2010. This includes all developments, regardless of whether or not they require planning permission. Bats are also protected by the Wild Mammals (Protection) Act 1996 and selected species are listed on the UK Biodiversity Action Plan (BAP) and the Local Biodiversity Action Plan (LBAP)
Great crested newt	Great crested newts are protected under European and British law, having the same level of protection as bats (see above). Licenses are issued by Natural England for any actions that may compromise the protection of this species, under the Habitat Regulations 2010. This includes all developments, regardless of whether or not they require planning permission. The species is also listed on the UK and Local BAPs.
Birds	The majority of bird species, with the exception of some species listed on Schedule 2, are protected under the WCA 1981 (as amended). This makes it an offence to intentionally or recklessly: • Kill, injure or take any wild bird; • Take, damage or destroy any nest which is in use or being built; and • Take, damage or destroy the eggs of any such bird.

	Additional protection against disturbance whilst at the nest is also afforded to any bird species, whether an adult bird or their dependant young, which is listed on Schedule 1 of the Act. Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') provides for the conservation and management of all wild bird species naturally occurring in the European Union, their nests, eggs and habitats. The Birds Directive bans activities that directly threaten birds (e.g. deliberate killing and destruction of nests and young), regulates hunting of selected species, bans non-selective and large scale killing of birds, and promotes research for bird conservation and management. Article 4(4) of the Birds Directive requires that member states "should strive to avoid pollution or deterioration of habitats." The Conservation of Habitats and Species (Amendment) Regulations 2012 provide a fuller transposition of the Birds Directive into English law. Regulation 8 introduces a new Regulation 9A to the Habitats Regulations for duties of appropriate authorities in relation to wild bird habitat. Regulation 9A(3) addresses the transposition of Article 2 of the Birds Directive, while Regulation 9A(8), requiring competent authorities to "use all reasonable endeavours" to "avoid any pollution or deterioration of habitats of wild birds." Certain species are also listed as being of priority conservation importance on the UK and Local BAPs.
Badger	Badger are protected under the Protection of Badgers Act 1992, which makes it an offence to: • Knowingly kill, capture, injure or disturb any individual; • Intentionally damage or destroy a badger sett, or any part thereof; • Obstruct access to an area which is used for breeding, resting or shelter; and • Disturb a badger while it is using any place used for breeding, resting or shelter. The species is also protected by the Wild Mammals (Protection) Act 1996.

4.0 RESULTS

DESK STUDY

DESIGNATED SITES

- 4.1 There are no International Sites of nature conservation concern within 5km of the site. There are **no statutory or non-statutory sites** of nature conservation interest within a 2km radius of the site.
- 4.2 The nearest statutory site of nature conservation interest is **Norton Wood** local nature reserve (LNR), 2.4km to the east north east of the site. This site is designated due to its mixed woodland, stream and pond habitats which are of ornithological and invertebrate interest.

ECOLOGICAL RECORDS

- 4.2 A total of 303 records of protected and notable species were returned from a data search by Sheffield Biological Records Centre, within a search area of a 2km radius of the site. 260 of these records were recorded from the year 2005 onwards and are discussed below.

Amphibians

- 4.3 Sheffield Biological Records Centre returned seven records of amphibian species; one of common frog *Rana temporaria* and three records of smooth newt *Triturus vulgaris* all over 1.5km away from the site. **Great crested newt** (GCN) *Triturus cristatus* eggs have been recorded in three ponds along Barnsley canal, however these were almost 2km away from the site and are separated from the site by the residential areas associated with Darton and the River Dearne which would be a considerable barrier to the movement of GCN from this area to the site.
- 4.4 A search on Multi Agency Geographic Information for the Countryside (Magic) website for granted European Protected Species Applications indicates that there are no GCN license applications within 2km of the site. The nearest application is EPSM 2012-4510, approximately 3.64km to the north west of the site, for the damage and destruction of a resting place between January 2013 and June 2018. This licensable activity was separated from the site by the River Dearne and the M1 motorway.

Bats

- 4.5 Sheffield Biological Records Centre returned no records of bats within the site boundary. Only 3 records of bats were returned within a 2km radius of the site. Two of these were **common pipistrelle** *Pipistrellus pipistrellus* in flight and one record of an unidentified roosting bat from 2005 at Staincroft 0.84km to the north east.
- 4.6 Records received from South Yorkshire Bat Group on 19th January 2017 comprised 44 bat records with 2km of the site, 5 of which were roost records. The nearest roost is of a colony of unidentified bats in 0.54 km to the south west, the next nearest roost record is of an unidentified bat found under a ridge tile during building works 0.89km to the north, north east. The remainder of the roost records are over 1.0km from the site and include a roost of brown long-eared bats in a barn 1.36km to the west, a roost of unidentified bat 1.88km south, south west at Baraugh Green and a roost of pipistrelle bats 1.99km north, north west. There is also a roost record within a mansion 1.2km to the west, but this roost is known to have been lost. The remainder of the records are of bats foraging or commuting or those recorded after being downed. Species recorded in the area include unidentified bats, pipistrelle bats, brown long-eared bats, noctule, natterer's, common pipistrelle and Leisler's.
- 4.7 A search on Multi Agency Geographic Information for the Countryside (Magic) website for granted European Protected Species Applications indicates that there are no bat license applications within 2km of the site. The nearest application is EPSM 2010-1760, approximately 4.05km to the west north west of the site, for the damage and destruction of a resting and breeding place of a roost of common pipistrelle and brown long-eared bats between March 2010 and July 2011.

Terrestrial mammals

- 4.8 The data search returned only 5 records from 3 species of terrestrial mammals. Two records of **badger** *Meles meles* field signs exist; one record of field sign is present within the site boundary, the other being almost 2km away from the site. 1 record of an old **harvest mouse** *Micromys minutus* nest exists from 2012 almost 2km away from site. 2 records of **hedgehog** *Erinaceus europaeus* are present with one record of roadkill in Kexbrough and another being released in Barugh Green after rehabilitation.
- 4.9 Records from South Yorkshire Badger Group have been requested, but no data is available – the following was received from the group:

'Unfortunately this area is at the very extreme of our territory and we have never done any surveys there. We have no records to indicate presence or absence of setts. Sorry we can't help this time.'

Bird species

- 4.10 Bird species make up the majority of the records returned from the 2km radius around the site, with records of 234 birds from 32 species over the last ten years. Many of these records are common song birds, such as blackbird *Turdus merula* and goldfinch *Carduelis carduelis*, occurring in or around local private gardens and arable fields and hedgerows. However some are legally protected and/or classified as a UK BAP priority species. The most notable of these species includes one record of **red kite** *Milvus milvus* in 2011 flying over an area of arable fields and farm buildings on the western side of the M1 road, approximately 1.5km west of the site. Two records of **green sandpiper** *Tringa ochropus* were returned from 2013 occurring in and around Darton Sewage Treatment Works. One record of **redwing** *Turdus iliacus* from 2013 also nearby the Darton Sewage Treatment Works, alongside the river Dearne. Two records of **fieldfare** *Turdus pilaris* with notes attached indicating a large flock of the species located in a similar area, near the Sewage Treatment Works, over 1km from the site. These four species, red kite, green sandpiper, redwing and fieldfare are afforded the highest degree of legal protection under Schedule 1 of the Wildlife and Countryside Act 1981. Other notable species within a 2km radius of the site include birds that are classified as being priority species in the UK BAP, such as **lesser redpoll** *Carduelis cabaret*, **yellowhammer** *Emberiza citrinella*, **reed bunting** *Emberiza schoeniclus*, **grasshopper warbler** *Locustella naevia* and **lapwing** *Vanellus vanellus*.

Butterfly and moth species

- 4.11 There are records of three species of invertebrates within 2km of the site. These species include butterflies: **small heath** *Coenonympha pamphilus* and **dingy skipper** *Erynnis tages*; and one species of moth, **cinnabar** *Tyria jacobaeae*. There are four records of small heath, all from 2013; six records of dingy skipper, five from 2013 and one from 2011; and one record of cinnabar from 2013. All of these records have been submitted from the area of Mapplewell Tip.

FIELD RESULTS - HABITATS/FLORA

GENERAL SITE DESCRIPTION

- 4.12 The site consists of a range of habitat types including tall ruderal vegetation, dense and scattered scrub, defunct and intact hedgerows and hedgerows with trees, broad-leaved plantation woodland, semi-improved neutral grassland, improved grassland and ephemeral/short perennial vegetation.
- 4.13 The locations of the habitats described in the following sections can be found on the Phase 1 Habitat Plan. Photographs of the habitats within the site are provided in **Appendix 1**.

TALL RUDERAL

- 4.14 Tall ruderal vegetation is present in several areas within the site (e.g. T1, T14, T17). This habitat included common hogweed *Heracleum sphondylium*, broad-leaved dock *Rumex obtusifolius*, ragwort *Jacobaea vulgaris*, mugwort *Artemisia vulgaris*, prickly sow-thistle *Sonchus asper*, spear thistle *Cirsium vulgare*, rosebay willowherb *Epilobium angustifolium*, common teasel *Dipsacus sylvestris*, nettle *Urtica dioica*, creeping thistle *Cirsium arvense* and hedge bindweed *Calystegia sepium*. The tall herb habitat to the south of the semi-improved grassland cut for hay included abundant false-oat grass with tansy *Tanacetum vulgare*, hogweed *Heracleum sphondylium*, broad-leaved dock *Rumex obtusifolius*, creeping thistle, nettle, common ragwort, cock's-foot, bramble, field bindweed *Convolvulus arvensis*, great lettuce *Lactuca virosa* and mugwort. The tall ruderal to the south of the farm house was characterised by locally abundant bramble with abundant hedge bindweed, creeping thistle and broadleaved-willowherb with frequent nettle.

DENSE SCRUB

- 4.15 Dense scrub is found in large areas within the site. Species present included bramble *Rubus fruticosus*, *Salix* spp. and hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and blackthorn *Prunus spinosa*.

SEMI-IMPROVED GRASSLAND

- 4.16 The east of the site was classified as species poor grassland (T13) and the area in the east of the site was distinctly different to that in the west. Fields in the eastern section of the site appear to have been unmanaged through grazing and or cutting and were becoming encroached by scrub, they were dominated by false oat-grass *Arrhenatherum elatius*, with annual meadow grass *Poa annua*, timothy *Phleum pratensis*, Yorkshire fog *Holcus lanatus*, *Deschampsia caespitosa* and tall ruderal species including locally abundant rosebay

willowherb and creeping thistle. Common knapweed *Centaurea nigra* was frequent and bush vetch *Vicia sepium* was locally abundant. Scrub species included elder, hawthorn and apple *Malus domestica* and there is a small stand of raspberry *Rubus idaeus* at the edge of the plantation woodland.

- 4.17 Fields in the west of the site are still cut for hay and had a high ratio of grass to herbaceous species (T2). The field denoted by T8 has a similar sward to T2. The sward had become tussocky in areas and grass species noted were false oat-grass, cock's-foot *Dactylis glomerata*, Yorkshire fog, perennial rye-grass *Lolium perenne*, meadow foxtail *Alopecurus pratensis*, sweet vernal-grass *Anthoxanthum odoratum*, creeping bent *Agrostis stolonifera*, common bent *Agrostis capillaris*, with a much lower occurrence of fescues *Festuca rubra* and *Festuca ovina* and crested dog's-tail *Cynosurus cristatus*. Tufted hair-grass *Deschampsia caespitosa* was also occasional. Numerous herbaceous species were noted throughout the grasslands but were generally infrequent within the sward: ribwort plantain *Plantago lanceolata*, creeping buttercup *Ranunculus repens*, lesser stichwort *Stellaria graminea*, dandelion *Taraxacum* agg., cut-leaved crane's-bill *Geranium dissectum*, red clover *Trifolium pratense*, perforate St. John's wort *Hypericum perforatum*, yarrow *Achillea millefolium*, meadow vetchling *Lathyrus pratensis*, common vetch *Vicia sativa*, hairy tare *Vicia hirsuta*, meadow buttercup *Ranunculus acris*, red dead-nettle *Lamium purpureum*, cat's-ear *Hypochaeris radicata*, common sorrel *Rumex acetosa* and white clover *Trifolium repens*. These fields are species diverse but still have a high proportion of negative indicators of agricultural improvement including locally abundant nettle, locally frequent perennial rye-grass, white clover and creeping thistle, occasional cow parsley and the presence of grasses such as Timothy and Yorkshire fog which were negative indicators within the sward.

IMPROVED GRASSLAND

- 4.18 Improved grassland is present in the centre of the site between areas of scattered scrub. This sward comprises abundant perennial rye grass with greater plantain *Plantago major*, ribwort plantain, common ragwort, lesser trefoil and broad-leaved dock. Many areas were also heavily horse-grazed and as a result localised manure enrichment occurred and there were patches of creeping thistle and nettle.

BUILDINGS

- 4.19 Many residential buildings surround the site to the east and south, none of which are to be effected by the proposed development within the site. There is one main residential building (Manor Cottage), with several sheds and outhouses surrounded by the site boundary (TN

9), this building is located outwith the site boundary.

HARDSTANDING AND EPHEMERAL/SHORT PERENNIAL VEGETATION

- 4.20 To the north and west of Manor Cottage there are two areas of ephemeral short perennial (ESP) (T14 & T15) and an area of ESP where the school site has been cleared (T20). T14 is within the survey area and is quite a diverse area of ESP where the old stable blocks used to stand. The vegetation is growing in the cracked foundations of the buildings and some species such as opium poppy *Papaver somniferum* and garden mint *Mentha sachalinensis* are garden escapees or remnants of a former flowerbed. Scattered scrub includes regenerating sycamore and ash, with hawthorn, bramble and goat willow *Salix caprea*. ESP vegetation includes yarrow *Achillea millefolium*, common mugwort, teasel, perforate St John's-wort *Hypericum perforatum*, nettle, ribwort plantain, red clover *Trifolium pratense*, goat's-beard *Tragopogon pratensis*, pineappleweed *Matricaria discoidea*, common poppy *Papaver rhoeas*, purple toadflax *Linaria purpurea*, black medick *Medicago lupulina*, hedge mustard *Sisymbrium officinale*, shepherd's purse *Capsella bursa-pastoris*, white stonecrop *Sedum album*, reflexed stonecrop *Sedum rupestre*, hedge bindweed and nipplewort *Lapsana communis*. Grasses include false oat-grass, red fescue, perennial rye-grass, cock's-foot, annual meadow-grass, creeping bent, common bent, Yorkshire fog, creeping soft-grass *Holcus mollis* and barren brome *Anisantha sterilis*. The ESP around the garage foundations (T15) is less species diverse with locally abundant creeping thistle.
- 4.21 The ESP associated with the former school yard is characterised by the presence of red valerian *Centranthus ruber*, mugwort, fox-and-cubs *Pilosella aurantiaca*, lemon balm *Melissa officinalis*, butterfly bush *Buddleia davidii*, hedge woundwort *Stachys sylvatica*, common toadflax *Linaria vulgaris*, colt's-foot *Tussilago farfara*, red clover and grasses such as perennial rye-grass, false oat-grass, Yorkshire fog and red fescue.
- 4.22 The Biodiversity Officer has reported the presence of southern marsh orchid *Dactylorhiza praetermissa* on the cleared school site. Orchids were not recorded on either survey occasion. This is probably due to the survey being carried out in August when the orchids had finished flowering and the vegetation being grazed by rabbits.

CONTINUOUS BRACKEN

- 4.23 Two areas of bracken *Pteridium aquilinum* were present within the site. A smaller area within a hedge and trees towards the centre of the site, and a larger area along the northern boundary.

SCATTERED SCRUB

- 4.24 This habitat was present in the centre of the site between improved grassland that is grazed by horses. Scattered scrub species predominantly included bramble and hawthorn

BROADLEAVED SEMI-NATURAL WOODLAND

- 4.25 This habitat was present along the northern boundary of the site. Species included ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*, English oak *Quercus robur*, *Salix* spp. and field maple *Acer campestre*.

PLANTATION WOODLAND

- 4.26 An area of plantation woodland occurs to the north of the former school. The canopy included white poplar *Populus alba*, wild cherry *Prunus avium*, field maple and Norway maple *Acer platanoides*. The scrub layer contained hazel *Corylus avellana*, dog-rose *Rosa canina* agg., guelder rose *Viburnum opulus* and willows *Salix* spp.

INDIVIDUAL TREES

- 4.27 Individual trees were present onsite, species included poplar sp. *Populus* sp., *Salix* spp., ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*. Trees were a mix of young and semi-mature. A line of semi-mature poplars and silver birch were present just outside the site boundary to the north-west of the site (TN4)

DEFUNCT SPECIES-POOR HEDGE

- 4.28 These hedges consisted predominantly of hawthorn *Crataegus monogyna* and were present in small areas around the boundary of the site. Hedgerow T18 around the western field comprised a defunct hedgerow of scattered trees such as silver birch, apple, goat willow, hawthorn, cherry and sycamore along the western boundary and an immature species-poor hawthorn hedge (1.5m in height) along the stone wall to the south of the field.

HEDGE AND TREES

- 4.29 This type of hedge is found around the boundary of the site as well as acting as boundaries between several fields within the site. Species present included hawthorn, blackthorn *Prunus spinosa*, field maple *Acer campestre*, holly *Ilex aquifolium*, elder, sycamore and ash. T16 to the north of the site also included English oak *Quercus robur* and rowan trees *Sorbus aucuparia*, many of which were mature.

INTACT SPECIES-POOR HEDGE

- 4.31 This type of hedge was recorded around small areas of the site boundary. Species included a dominance of hawthorn with blackthorn and bramble also present.

FAUNA

- 4.32 Fauna recorded during the habitat survey undertaken in 2016 include the following species: red ants *Myrmica ruginodis*, meadow brown *Maniola jurtina*, large white *Pieris brassicae*, **small heath** *Coenonympha pamphilus*, soldier beetle *Rhagonycha fulva*, golden-bloomed grey longhorn beetle *Agapanthia villosoviridescens* and field grasshopper *Chorthippus brunneus*.

FIELD RESULTS – FAUNA

BATS

- 4.33 As the site has a range of habitats including, various grassland types, hedgerows scrub and woodland, the habitat within the survey is at least of moderate value for foraging bats.
- 4.34 The trees on site did not have any features suitable for bat roosts (as outlined in **Table 1**). All trees within the site boundary were categorised as BCT Category 3 – Negligible (**Table 2**).
- 4.35 The farm house is located towards the centre of the site. It is located outwith the site boundary and it will not be directly affected by the development proposals.
- 4.36 The bat surveys were carried out in June, August and September 2016. Survey times and weather conditions are summarised in **Tables 6 and 7**. A key for the Beaufort Scale is provided in **Table 8**.

Table 6: Survey times

Date	Sunset / Sunrise	Start Time	Finish Time
21/06/16	21:40	21:25	23:10
03/08/16	20:56	20:56	23:00
23/08/16	20:16	20:16	22:34
07/09/16	19:40	19:25	21:25

Table 7: Weather Conditions

Date	Start Temp °C	Finish Temp °C	Wind speed / direction	Cloud cover %	Precipitation (mm)
21/06/16	14	13	B2:SW	40	0
03/08/16	15	14	B3:SW	100	0
23/08/16	21	21	B2:SW	0	0
07/09/16	21	21	B2:W	0	0

Table 8: Key for Beaufort Scale

Beaufort wind scale	Limits of wind speed Metres per second	Descriptive terms
0	<1	Calm
1	1-2	Light air
2	2-3	Light breeze
3	4-5	Gentle breeze
4	6-8	Moderate breeze
5	9-11	Fresh breeze
6	11-14	Strong breeze
7	14-17	Near gale
8	17-21	Gale
9	21-24	Severe gale
10	25-28	Storm
11	29-32	Violent storm
12	33+	Hurricane

4.37 There were insects flying during all surveys.

Activity survey 21st June 2016

4.38 The transect started with surveyors positioned on either side of the farmhouse. The first bats recorded were 2 noctule foraging east to west to the south of the farmhouse at 21:53. Then at 21:58 a common pipistrelle was recorded foraging to the east of the house then a common pipistrelle was noted foraging east to west to the north of the farmhouse at 21:59. At 22:02 2 noctule were noted foraging over the grassland to the west of the farmhouse. At 22:09 a common pipistrelle was foraging to the north east of the farmhouse then at 22:10 2 common pipistrelle were foraging to the south west of the farmhouse. Common pipistrelle were noted foraging around scrub in the fields of improved pasture at 22:15, 22:16, 22:17, 20:23 and 20:40. No other bats were recorded and the survey finished at 23:10.

Activity survey 3rd August 2016

- 4.39 The survey started at 20:56. The first bat recorded was a common pipistrelle foraging back and forth along the hedgerow to the north of the improved pasture grazed by horses adjacent to Bloomhouse Lane. The next bat was a common pipistrelle foraging back and forth the hedgerow further east near the residential properties. The next bat was recorded foraging to the north of the plantation woodland at 22:33 and again at 22:43. No other bats were recorded and the survey finished at 23:00.

Activity survey 23rd August 2016

- 4.40 The survey started at 20:16 and the first bat recorded was a soprano pipistrelle foraging along the hedgerow to the north of the farmhouse at 20:46, 30 minutes after sunset, and again at 20:55. At 20:57 a common and soprano pipistrelle were recorded foraging over the garden and field to the south of the farmhouse. At 21:00 a common pipistrelle and at 21:02 a soprano pipistrelle were recorded foraging along the hedgerow around the semi-improved grassland to the east of the driveway. At 21:14 a common pipistrelle was recorded foraging to the north of the woodland near Bloomhouse Lane and again at 21:49 further east. At 21:59 a noctule was recorded foraging over fields to the east of the site followed by a soprano pipistrelle at 22:05 foraging near the houses to the north of the former school site. At 22:14 a common and soprano pipistrelle were noted foraging up and down the hedgerow and field edge and a noctule was recorded foraging over the field to the east at 22:19. No other bats were recorded. The survey finished at 22:34.

Activity survey 7th September 2016

- 4.41 The survey started at sunset (19:25) under good weather conditions. The first bat recorded was a common pipistrelle at 20:05 30 minutes after sunset foraging along the northern plantation woodland edge. At 20:05 a noctule was noted foraging over the field to the north of the plantation woodland. At 20:12 a common pipistrelle was noted foraging around the hedgerow and field to the north of the allotments and at 20:21 foraging around scrub further north. At 20:23 a common pipistrelle was recorded foraging to the north of the woodland near Bloomhouse Lane and again at 20:31 further east. At 20:38 a common pipistrelle was noted foraging over the ESP vegetation to the west of the house, then another at 20:44 foraging along the hedgerow and dense bracken to the north of the farmhouse and again foraging back and forth along the hedgerow between the two fields of semi-improved grassland to the west of the site at 20:50. The survey finished at 21:25.

BADGER

- 4.42 The site was searched thoroughly for signs characteristic of badger. No field signs characteristic of badger were observed on the site at the time of survey original survey but in 2016 field signs were noted in the field of semi-improved grassland to the west of the site. There was a large scrape where a bee's nest had been partially excavated by a badger at OS grid reference SE 31237 10416. There were no setts located within the survey area.

NESTING BIRDS

- 4.43 The site has potential to support nesting birds. Breeding bird surveys have not been undertaken as it was anticipated that due to its location and situation the site would be used mostly by common and widespread species of scrub/hedgerow and be of local value only to such species. Common species were noted at the time of survey including blackbird *Turdus merula*, great tit *Parus major*, swallows *Hirundo rustica*, pied wagtail *Motacilla alba*, robin *Erithacus rubecula*, blackcap *Sylvia atricapilla* and chiff chaff *Phylloscopus collybita*.

GREAT CRESTED NEWT

- 4.44 There are no ponds within the survey area. A pond was created in a wildlife area of the adjacent allotment gardens but has subsequently been filled in. There is a drainage ditch to the north of the allotments but this ditch was mostly dry at the time of the habitat survey, and just held small, shallow pools of water. The sides were extremely steep and the ditch was heavily shaded by the overgrown dense hawthorn hedge on the west bank of the ditch. As a result the ditch did not have any terrestrial or aquatic vegetation that could be used for egg laying. The semi-improved grassland would provide suitable terrestrial habitat for amphibians, but the site is distant and isolated from local GCN records and GCN are not considered to be an ecological constraint for the development.

INVASIVE/NON-NATIVE SPECIES

- 4.45 An extensive area of Japanese knotweed *Fallopia japonica* was identified towards the northern section in the centre of the site (TN 12), between the area of scattered scrub and dense scrub.

PLANTS/HABITATS

- 4.46 There are no protected or notable plants within the survey area. The invasive, non-native species Japanese knotweed is present within the site.

4.47 Potential UK BAP, NERC S.41 and Local BAP priority habitats within the survey area include:

- **Hedgerows** (UK BAP, S.41 & local BAP);
- **Lowland mixed deciduous woodland** (UK BAP, S.41 & Local BAP)
- **Open Mosaic Habitats on Previously Developed Land** (UK BAP, S. 41),
- **Semi-improved grassland** (Local BAP)

Hedgerows

4.48 A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide (Bickmore, 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this priority habitat. Based on an analysis of Countryside Survey data, using the threshold of at least 80% cover of any UK native woody species, it is estimated that 84% of countryside hedgerows in GB would be included. The hedgerow at the east of Park road and the hedgerow around the arable fields would qualify as priority habitat.

Open mosaic habitat on previously developed land

4.49 Open mosaic habitats on previously developed land corresponds with a variety of habitats on this occasion relevant habitats within the site are the Phase 1 categories ephemeral/short perennial and bare ground. The definition and criteria for field recognition of this habitat comes from a Defra research project (Riding *et al.* 2009). Each of the following criteria must be met:

- The area of mosaic habitat is at least 0.25ha in size.
- Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.
- The site contains some vegetation. This will compromise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.
- The site contains unvegetated, loose bare substrate and pools may be present.

- The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)-(h) above plus bare substrate, within 0.25ha.

4.50 The area of ESP habitat within the proposed development area would not qualify as BAP priority habitat as it does not contain loose bare substrate.

Semi-improved grassland

4.51 The semi-improved grassland does not meet the JNCC Common Standards Monitoring Guidance to be classified as a lowland meadow. In the Barnsley BAP only traditionally managed grassland that has not been improved by, for example, the application of fertiliser or insecticide, is considered to be a BAP priority habitat. The semi-improved grassland within the site is of 'within site' interest only and would not be considered a local conservation priority or a Local Biodiversity Action Plan Priority Habitat in the Barnsley area.

Lowland mixed deciduous woodland

4.52 Lowland mixed deciduous woodland includes woodland growing on the full range of soil conditions from very acidic to base rich, and takes in most semi-natural woodland in south and eastern England, and in parts of lowland Wales and Scotland. It thus complements the ranges of upland oak and upland ash types. It occurs largely within enclosed landscapes, usually on sites with well-defined boundaries, at relatively low altitudes, although altitude is not a defining feature. The woodland to the north of the site would fall into this priority habitat category.

5.0 SUMMARY

- 5.1 There are no statutory sites within 2km of the survey area. No negative impact is expected on any statutory sites of nature conservation interest as there is no feasible mechanism by which the development of the site at Bloomhouse Lane could negatively impact upon them.
- 5.2 Bloomhouse Lane, Darton, supports a range of habitat types and has some potential for protected/priority species to be present. These include foraging bats, breeding and nesting birds, common and widespread BAP species of terrestrial invertebrates and badger.
- 5.3 The site supports individual trees which are of negligible potential based on a ground-based risk assessment, for roosting bats. The farmhouse was assessed as having some potential for roosting bats, but no bats were recorded emerging from the building during the activity surveys. Bats were generally not recorded soon after sunset and there were low levels of bat activity across the site, with the maximum number of two bats recorded at any one time by surveyors.
- 5.4 The hedgerows, scrub, woodland and semi-improved grassland provide suitable foraging habitat for bats and noctule, common pipistrelle and soprano pipistrelle were recorded foraging within the survey area.
- 5.5 The improved grassland within the site is assessed as being of limited conservation interest as is the bare ground and ESP habitat. Hedgerows are UK BAP, local BAP and NERC S.41 priority habitats. Continuous native hedgerow within and at the periphery of the site fulfil the criteria to be considered a priority habitat and are of local conservation interest. The lowland mixed deciduous woodland would also be considered BAP priority habitat.
- 5.6 A small heath, a UK BAP & NERC S. 41 priority species, was recorded in the semi-improved grassland to the west of the site.
- 5.7 Field sign indicative of badgers foraging was recorded in the semi-improved grassland to the west of the site.
- 5.8 Southern marsh orchid were recorded within the (cleared) school site to the south east.

6.0 RECOMMENDATIONS

- 6.1 Best practice dictates that a sensitive lighting regime is used within the development to minimise impacts of lighting on foraging bats. This should include the following:
- Use low pressure sodium lamps or high pressure sodium instead of mercury or metal halide where glass glazing is preferred due to its UV filtration properties;
 - Lighting should be directed to where it is needed and light spillage avoided. This can be achieved through design and using accessories such as hoods, cowls, louvres and shields;
 - The lighting should be as low as guidelines permit, if lighting is not needed don't light;
 - Many security lights may be fitted with movement sensors which if well installed and aimed will reduce the amount of time a light is on each night; and
 - The light should be aimed to light only the immediate area required by using as sharp a downward angle as possible.
 - Do not light hedgerows, mature trees and scrub edges.
- 6.2 The site has potential to support nesting bird species and several common species were noted during the phase 1 survey. It is recommended that site preparation works i.e. vegetation clearance, are conducted outside of the breeding bird season. This includes all ground level vegetation as well as scrub, hedgerows and standard trees. The bird breeding season can extend from March until August (inclusive), weather and species depending. Where vegetation clearance cannot be undertaken outside the bird breeding season, all such areas would be subject to a thorough walkover survey by a suitably qualified ecologist prior to any clearance or disturbance work being undertaken.
- 6.3 Japanese knotweed was identified within the site boundary. To ensure compliance with the Wildlife and Countryside Act 1981 (as amended) the works must not cause Japanese knotweed to spread. It is recommended that a Japanese knotweed survey be completed and a Method Statement developed to ensure that the proposed works do not result in the spread of this invasive non-native species.
- 6.4 Retain mature trees and hedgerows where at all possible, especially around the periphery of the site. The hedgerow adjacent to Bloomhouse Lane to the north of the horse paddock, although used by low numbers of bats appeared to be used for foraging and commuting and its retention as a bat flyway is recommended.

- 6.5 Although there is no specific legal protection for the southern marsh orchid, a walkover of the cleared school site would be undertaken earlier in the season (May / June) to mark out the specific locations of any plants in order for them to be relocated in their dormant period to grassland within the landscape scheme. AES-LTD are experienced in the production of method statements and the translocation of orchids and available to offer advice.
- 6.6 Site clearance has the potential to impact on hedgerows, plantation woodland and individual trees where they are being retained. Adhering to the guidelines in British Standard BS 5837: 2012 Trees in relation to design, demolition and construction is recommended in situations such as this, in particular implementing measures to prevent root damage, for example, protective measures to prevent heavy plant vehicles etc. from entering the root protection area. This usually involves identifying the root protection area and erecting a protective barrier around the trees, hedgerow or woodland to be retained.
- 6.7 Grassland habitats suitable for small heath should be retained within the site, i.e. a sward containing bents and fescues, food plants of this species. 4 parcels of land totalling 1.35ha are being retained to the north of the main access road to act as a wildlife corridor running from east to west across the site. This grassland if undisturbed by civil engineering works will retain grassland habitat suitable for terrestrial invertebrates such as small heath. If these habitats are disturbed during the works it is recommended they are restored with biologically diverse grasslands, trees and scrub species which are native and of local provenance. The Barnsley Metropolitan Borough Council Agricultural Land Classification report states that in the Darton area the soils are either freely draining alluvial soils with a silty clay loam top and sub-soil or soils produced where the Carboniferous Coal Measures Shales have weathered to produce silty clay loam topsoils over clayey, slowly permeable sub-soils. An ideal wildflower meadow seed mix in such a location would be an EM4 – Meadow mixture for clay soils, available from Emorsgate Seeds (<http://wildseed.co.uk/mixtures/view/5>). This mixture contains 15 herbaceous species, including yellow-rattle which helps to keep the sward open, thus leaving bare patches for butterflies such as dingy skipper and wall and providing bare areas for plants to colonise thus providing potential to improve biodiversity. Other species include yarrow, betony, common knapweed, lady's bedstraw, oxeye daisy, bird's-foot-trefoil, ribwort plantain, cowslip, self-heal, meadow buttercup, common sorrel, ragged robin, red clover and tufted vetch. Grasses include common bent, meadow foxtail, sweet vernal-grass, quaking grass, crested dog's-tail, slender creeping red fescue, meadow barley and smaller cat's-tail.
- 6.8 In addition, there are other areas of open space being retained off Wooley Colliery Road, to the south west of the farm house. This area of semi-improved grassland should be

managed sensitively as a lowland hay meadow. Walker *et. al.* (2004)⁶ state that extensive cutting and grazing management has been shown to diversify improved grassland over a relatively short period of time. Methods such as cutting twice or cutting twice and grazing show good results for increasing sward biodiversity and should be employed for this area. The sward should be cut once in autumn (late September) and once in early spring (late March to early April). It is vital that the arisings are removed to ensure that the wildflowers are allowed to grow, and to prevent thistles, docks, brambles and scrub from taking over.

- 6.9 Small linear strips of grassland along road verges are normally seeded or turfed with a species-poor amenity mix. It is recommended that to increase biodiversity and provide some habitat continuity these areas are sown with EL1 – flowering lawn mixture, also available from Emorsgate Seeds (<http://wildseed.co.uk/mixtures/view/56>) This seed mix produces a turf which contains slow growing grasses with a selection of wild flowers that respond well to regular short mowing. Herbaceous species include lady's bedstraw, rough hawkbit, oxeye daisy, bird's-foot-trefoil, cowslip, self-heal, meadow buttercup, common sorrel and red clover. Grasses include common bent, crested dog's-tail, slender-creeping red fescue and smaller cat's-tail.
- 6.10 Tree and shrub species should be native and of local provenance. Species should include silver birch, downy birch *Betula pubescens* and rowan and if space allows larger trees such as English oak or sessile oak *Quercus petraea*. Native shrubs should typically include hazel, hawthorn and holly.
- 6.11 Due to the highly mobile nature of badger and readiness of which they can establish setts it is recommended that precautionary measures be undertaken prior to commencements of works to ensure that badgers are not harmed (thus maintaining legal compliance).
- The site and an area of 30m around the site will be reassessed for the possible presence of badger setts immediately prior to commencement of construction.
 - Prior to construction a method statement will be produced to safeguard any foraging badgers are not harmed injured or trapped in excavations during the site clearance and construction phase of the development.

⁶ Kevin J. Walker, Paul A. Stevens, David P. Stevens, J. Owen Mountford, Sarah J. Manchester, Richard F. Pywell (2004). The restoration and re-creation of species-rich lowland grassland on land formerly managed for intensive agriculture in the UK. Biological Conservation 119 (2004) 1–18.

APPENDIX 1: PHOTOGRAPHS



Photograph 1 Tall ruderal vegetation (T1)



Photograph 2 Semi-improved grassland (T2).



Photograph 3 Hedgerow (T3)



Photograph 4 Scattered trees (T4).



Photograph 5 Dense bracken (T5).



Photograph 6 Dense scrub (T6).



Photograph 7 Path between hedge with trees and bracken (T7).



Photograph 8 Semi-improved grassland (T8).



Photograph 9 Farmhouse (T9).



Photograph 10 Lowland mixed deciduous woodland (T10).



Photograph 11 Improved grassland grazed by horses (T11).



Photograph 12 Extensive stand of Japanese knotweed (T12) between the scattered and dense scrub (T18).



Photograph 13 Species poor semi-natural Arrhenatherum grassland to the east of the site (T13).



Photograph 14 ESP vegetation on stable foundations (T14).



Photograph 15 ESP vegetation to the north of the farmhouse (T15).



Photograph 16 Hedgerow to the north of the site (T16).



Photograph 17 Tall ruderal vegetation (T17).



Photograph 18 Plantation woodland (T19) and ESP within former school site (T20).



