



Land off Brunswick Street, Thurnscoe - Preliminary Ecological Appraisal

Keepmoat Homes Ltd

Report prepared by:

**Ecus Ltd.
Brook Holt
3 Blackburn Road
Sheffield
S61 2DW
0114 266 9292**

March 2019

Ecus Ltd

Report to: Keepmoat Homes Ltd
Suite 2/3 Ground Floor
1175 Thorpe Park
Century Way
Leeds
LS15 8ZB

Report Title: Land off Brunswick Street – Preliminary Ecological Appraisal

Revision: V2

Issue Date: March 2019

Report Ref: 12763

Originated By:



Sarah Rochelle
Consultant Ecologist

Date: 25th March 2019

Reviewed &
Approved By:



Faye Davies
Regional Manager:
Yorkshire and East
Midlands

Date: 26th March 2019

Prepared by:
Ecus Ltd.
Brook Holt
3 Blackburn Road
Sheffield
S61 2DW
0114 266 9292

The report and the Site assessments carried out by Ecus on behalf of the client in accordance with the agreed terms of contract and/or written agreement form the agreed Services. The Services were performed by Ecus with the skill and care ordinarily exercised by a reasonable Environmental Consultant at the time the Services were performed. Further, and in particular, the Services were performed by Ecus taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between Ecus and the client.

Other than that expressly contained in the paragraph above, Ecus provides no other representation or warranty whether express or implied, in relation to the services.

This report is produced exclusively for the purposes of the client. Ecus is not aware of any interest of or reliance by any party other than the client in or on the services. Unless expressly provided in writing, Ecus does not authorise, consent or condone any party other than the client relying upon the services provided. Any reliance on the services or any part of the services by any party other than the client is made wholly at that party's own and sole risk and Ecus disclaims any liability to such parties.

This report is based on Site conditions, regulatory or other legal provisions, technology or economic conditions at the time of the Service provision. These conditions can change with time and reliance on the findings of the Services under changing conditions should be reviewed.

Ecus accepts no responsibility for the accuracy of third party data used in this report.

Contents

SUMMARY	4
1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 SITE CONTEXT	1
2. METHODOLOGY.....	2
2.1 DATA CONSULTATION	2
2.2 EXTENDED PHASE 1 HABITAT SURVEY	2
2.3 PROTECTED AND KEY SPECIES	3
2.4 INVASIVE SPECIES	5
2.5 LIMITATIONS	5
3. FINDINGS AND EVALUATION	6
3.1 SITE DESCRIPTION	6
3.2 DESIGNATED SITES.....	6
3.3 HABITATS	9
3.4 SPECIES	10
3.5 INVASIVE SPECIES	14
4. ECOLOGICAL ASSESSMENT AND MITIGATION	15
4.1 PROPOSALS.....	15
4.2 DESIGNATED SITES.....	15
4.3 HABITATS	15
4.4 SPECIES.....	17
4.5 INVASIVE SPECIES	20
REFERENCES.....	21
FIGURE 1. SURVEY FINDINGS PLAN	22
FIGURE 2. BAT, BIRD AND HEDGEHOG PLAN	23
APPENDIX 1. TARGET NOTES	24
APPENDIX 2. HABITAT SPECIES LIST	25
APPENDIX 3. BIRD RECORDS RECEIVED FROM BBRC AND DLRC WITHIN 2KM OF SITE	26
APPENDIX 4. SITE PHOTOS	31

Summary

Ecus Ltd was commissioned by Keepmoat Homes Ltd in February 2019 to undertake a Preliminary Ecological Appraisal (PEA) of land off Brunswick Street, Thurnscoe, South Yorkshire. The land, hereafter referred to as the 'Site', is situated at central national grid reference SE 4646 0635. The Site extents were determined by the red line Site boundary as supplied on the Knapton and Knapton '*Location Plan*' (drawing number PL-01, 19-01-22 (date 28.01.19)).

The PEA was required in advance of the proposed construction of 40 residential dwellings and associated infrastructure (Knapton and Knapton '*Planning Layout Colour*', drawing number PL-03 19-03-06, (date 28.01.19)).

Currently the development will result in the loss of the majority of the habitats within the area of the red line boundary – which will equate to just under 1.20 hectares (ha) and includes semi-improved grassland, a defunct species poor hedgerow and dense scrub habitats, including scattered trees.

To compensate for the loss of Site habitats and to ensure a net gain in biodiversity in line with the *National Planning Policy Framework* (NPPF) 2019, the proposed development should incorporate areas of replacement vegetation containing native and/or wildlife friendly species.

Specifically, new grassland should comprise a native seed mix which will maximise species diversity. Other replacement vegetation planting should include shrubs and trees which will maximise flowering, pollen/nectar production and/or berries/fruit production to benefit invertebrates, birds and small mammals.

The hedgerow to be lost as part of the development should be replaced with a hedgerow the same proportions or greater, with at least 4 native and wildlife friendly species incorporated into its length.

The scattered trees to be lost should also be replaced like for like with native and wildlife friendly species. Further tree planting should also occur on Site to ensure a net gain in biodiversity.

Taking into account the absence of existing records of great crested newt (*Triturus cristatus*, GCN) and the absence of ponds in the Site or within 500m, it is considered that GCN are unlikely to be present on Site and are discounted as an ecological receptor. It is however, considered possible that common amphibians may be present on Site and if any are encountered during Site clearance works, they should be carefully collected by gloved hand and relocated away from the area of works.

No suitability for roosting bats was recorded on the Site. However, as an ecological enhancement to the Site, consideration should be given to installing four bat boxes, e.g. Schwegler 1FD or 1FR bat boxes/tubes on the new houses. Bat box locations with a southerly facing aspect and located at a minimum of 4 m height are optimal to maximise the chances of occupation. Boxes should be placed where bats have a clear flight path to them, i.e. be free of obstructions such as overhanging branches or ivy growth. See Figure 2 for the '*Bat, Bird and Hedgehog Plan*'.

Bat species in the UK are known to be deterred by artificial lighting. In order to avoid impacts associated with artificial light spill on, bat flight-lines or foraging habitat, a sensitive lighting plan should be developed.

It is considered that badgers (*Meles meles*) are not resident on Site but may, on rare occasions, access the Site to forage. As a precautionary measure, it is recommended that any excavations left overnight should be covered or have a suitable escape ramp, e.g. a long scaffold board, inserted to allow escape should a badger fall in.

Any removal of woody vegetation, trees and scrub etc., should be undertaken between September and February inclusive, i.e. outside of the bird breeding season. Where this is not possible, vegetation should be checked for nesting birds by an experienced Ecologist no more than two days prior to works commencing to confirm the absence of nests.

Four bird boxes, with either a 26 mm or 32 mm entrance hole, such as the Schwegler 1B or Avianex boxes, suitable for a range of common urban and garden dwelling species would be suitable for installing on the new houses or fencing. Alternatively four sparrow (*Passer domesticus*) terraces would also be suitable. See Figure 2 for the 'Bat, Bird and Hedgehog Plan'.

The Site has suitability to support foraging hedgehog (*Erinaceus europaeus*) in the grassland and along the hedgerow. As a precautionary measure, it is recommended that any excavations left overnight should be covered or have a suitable escape ramp, e.g. a long scaffold board, inserted to allow escape should a hedgehog fall in.

The creation and maturing of new garden habitats on Site, in addition to other boundary planting, will compensate the loss of grassland habitat currently on Site for this species. To allow for dispersal of hedgehogs and other small mammals between gardens, railings and hedgerows (which provide free passage for hedgehogs) will be utilised on garden and other boundaries as far as possible. Where close board fencing is to be installed small gaps beneath or between fences or natural gaps under or around fencing, where possible at fence junctions, will be incorporated. Where neither of these options is feasible, gaps measuring a minimum of 13 cm x 13 cm will be created to the base of panels/gravel boards to allow the movement of hedgehogs between gardens across the development. See Figure 2 for the 'Bat, Bird and Hedgehog Plan'.

Japanese knotweed (*Fallopia japonica*) is interspersed throughout the Site, and is to be subject to the management/control measures laid out in Ebsford Environmental report 'Proposal to manage Japanese Knotweed *Fallopia japonica* - Brunswick Street, Thurnscoe' (26.09.18). These measures are considered to be sufficient and, as such, no further recommendations are made in regard to Japanese knotweed at this time.

1. Introduction

1.1 Background

- 1.1.1 Ecus Ltd was commissioned by Keepmoat Homes Ltd in February 2019 to undertake a Preliminary Ecological Appraisal (PEA) of land off Brunswick Street, Thurnscoe, South Yorkshire.
- 1.1.2 The land, hereafter referred to as the 'Site', is situated at central national grid reference SE 4646 0635. The Site extents were determined by the red line Site boundary as supplied on the Knapton and Knapton '*Location Plan*' (drawing number PL-01 19-01-22 (date 28.01.19)).
- 1.1.3 The PEA was required in advance of the proposed construction of 40 residential dwellings and associated infrastructure (Knapton and Knapton '*Planning Layout Colour*', drawing number PL-03 19-03-06, (date 28.01.19)).
- 1.1.4 The purpose of this PEA was to review the potential for the Site to contain habitats or species protected or considered to be of primary importance under UK legislation, namely the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 and the Natural Environment and Rural Communities (NERC) Act 2006. Any impacts upon these habitats or species likely to result from the proposed development were then assessed.
- 1.1.5 This report details the findings of a desk study, extended Phase 1 habitat survey and subsequent appraisal. Methodologies employed are described, including Site surveys and evaluation, and the need for any further survey work and/or mitigation measures or proposed enhancements are included where appropriate.

1.2 Site Context

- 1.2.1 The Site comprises approximately 1.18 hectares (ha) to the north and the south sides of Brunswick Street. The Site is bounded on all sides by semi-detached and terraced residential properties.
- 1.2.2 The Site is situated on the north eastern edge of the village of Thurnscoe. The village extends to the south and south west of the Site and comprises residential dwellings, associated infrastructure and areas of recreational greenspace in the form of parks and gardens.
- 1.2.3 In the wider area Thurnscoe Reservoir is located approximately 500 m to the south of the Site, and Phoenix Park, a public area of grassland and woodland, is located approximately 1 km south. Land to the north, east and west of Thurnscoe is almost entirely farmland with small pockets of woodland occasionally present. The main A635 road and the village of Goldthorpe is present to the south.

2. Methodology

2.1 Data Consultation

- 2.1.1 As part of the PEA process, a data consultation was undertaken by Ecus Ltd in February 2019 with both Barnsley Biological Records Centre (BBRC) and Doncaster Local Records Centre (DLRC) to determine the presence of any existing biological records or locally non-statutory designated sites of nature conservation interest within 2 km of the Site.
- 2.1.2 Natural England's The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was consulted in February 2019 for information on statutory designated sites of nature conservation interest and details of any European Protected Species (EPS) licences within 2 km of the Site.
- 2.1.3 Information obtained from BBRC, DLRC and MAGIC is included within the report where appropriate.

2.2 Extended Phase 1 Habitat Survey

- 2.2.1 The Site was surveyed on 15th February 2019 using the extended Phase 1 habitat survey methodology (JNCC, 2010) by Consultant Ecologist Sarah Rochelle GradCIEEM.
- 2.2.2 This survey method aims to characterise habitats and communities present and is not intended to provide a complete list of all plants occurring across the Site.
- 2.2.3 Plant species recorded were classified according to the subjective method of DAFOR abundance ratings. The standardised terms are as follows:
- D Dominant
 - A Abundant
 - F Frequent
 - O Occasional
 - R Rare
- 2.2.4 Notable, rare or scarce plant species were highlighted if present. Evidence of protected species or species of nature conservation importance was recorded where present at the time of survey. Habitats and species present were recorded on to a field map and are included within the report as appropriate.
- 2.2.5 Habitats present that are listed within Section 41 of the NERC Act 2006 and/or the Local Biodiversity Action Plan (LBAP) for Barnsley were noted.
- 2.2.6 The value and sensitivity of ecological features present on Site were determined based on the guidance given in '*Guidelines on Ecological Impact Assessment*' (CIEEM, 2018). Individual ecological receptors (habitats and species that could be affected by the development) were assigned levels of importance for nature conservation. The highest level is international, then decreasing in order of importance through national, regional, county, local, and lastly site level.

Hedgerow Assessment

- 2.2.7 A hedgerow is defined as “...any boundary line of trees or shrubs over 20 m long and less than 5 m wide, and where any gaps between the trees and shrub species are less than 20 m wide” (Bickmore, 2002). Any bank, wall, ditch or tree within 2 m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2 m of the centre of the hedgerow.
- 2.2.8 The hedgerows on Site were assessed under the landscape and wildlife criteria listed in Schedule 1 Part II of the Hedgerow Regulations 1997, using the standard methodology in the Regulations, which is detailed below.
- 2.2.9 For hedgerows of 30 m in length or less, the entire hedgerow is surveyed. Hedgerows greater than 30 m in length are split in to 100 m sections and the central 30 m of each 100 m section is surveyed. The number of woody species present is recorded within each length, along with the presence of any of the features listed in Sub-paragraph 4 of the Regulations, namely presence of a bank, wall, or ditch, less than 10% gaps, at least one standard tree per 50 m, at least three woodland plant species, at least four points achieved from connections to other hedgerows, woods or ponds, and/or a parallel hedge within 15 m.
- 2.2.10 A hedge is considered important under the Regulations if:
- It has an average of seven or more woody species in the surveyed section(s);
 - It has an average of six woody species in the surveyed section(s) and three or more features from Sub-paragraph 4;
 - It has six woody species and one of the following rare trees – black poplar, large-leaved lime, small-leaved lime, wild service tree;
 - It has an average of five woody species on average in the survey section(s) and has four or more features from Sub-paragraph 4; or,
 - It has four woody species on average in surveyed section(s), is adjacent to a footpath, bridleway or byway open to all traffic (BOAT) and has two or more features from Sub-paragraph 4.
- 2.2.11 A hedgerow also qualifies as a habitat of principal importance under Section 41 of the NERC Act 2006 if it comprises greater than 80% of one or more native species.

2.3 Protected and Key Species

- 2.3.1 Any evidence of protected species or groups encountered during the survey was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. For full details of legislation relating to all habitats and species discussed within this report visit <http://www.legislation.gov.uk>.

Amphibians

- 2.3.2 A desk based search for ponds within 500 m of the Site, which are not separated from the Site by a significant barrier to amphibian dispersal, were searched for using 1:10,000 Ordnance Survey (OS) mapping and aerial imaging. Where waterbodies were identified and accessible they were assessed to determine their likely suitability for great crested newt (*Triturus cristatus* GCN) using the Habitat Suitability Index (HSI) (Oldham et al. 2000).
- 2.3.3 The suitability of a given waterbody to support GCN is influenced by the existence of particular features (e.g. fish presence, heavy shading) and/or the absence of others (e.g. suitable terrestrial habitat within 500 m). The HSI provides a numerical value (ranging from 0 to 1) that indicates the suitability of a waterbody for GCN. The higher the HSI score, the more suitable (or closer to optimum habitat conditions) the waterbody may be considered for this species. However, it should be noted that the HSI score is no substitute for the judgement of an experienced surveyor.
- 2.3.4 Habitats within the Site were assessed for their suitability to support amphibians during their terrestrial and aquatic life stages.

Badger

- 2.3.5 Signs of badger activity were searched for within the Site and for up to 30 m from the Site boundary (where accessible) as part of the extended Phase 1 habitat survey.
- 2.3.6 The badger survey followed standard methodology detailed in 'Surveying Badgers' (Harris et al., 1989). This included searching for badger setts, along with survey of linear features and boundaries for signs of badger activity including dung pits (latrines), foraging marks, feeding signs, hair and pathways.

Bats

- 2.3.7 As part of the extended Phase 1 habitat survey, structures or trees encountered within the Site were inspected and assessed for their suitability to support roosting bats. The inspection was carried out in accordance with current best practice guidelines (Collins, 2016).
- 2.3.8 An individual structure/tree may support several features of potential interest to roosting bats. It is not always possible to confirm usage of a feature by bats as often the animals may not be present frequently. Consequently it is customary when undertaking such a survey to assign each feature to a defined category of roosting potential as follows: Negligible, Low, Moderate, High, Confirmed Roost (Collins, 2016).
- 2.3.9 The Site was also assessed for its suitability for foraging and commuting bats.

Birds

- 2.3.10 While on Site the opportunity was taken to record any species of birds or evidence of nesting encountered and habitats on Site were assessed for their value to nesting and foraging birds. A full breeding bird survey was not undertaken.

Reptiles

- 2.3.11 The habitats present on Site were assessed for their suitability to support reptiles, with reference to their connectivity with other areas of suitable habitat in the surrounding area.

Riparian Mammals and White-clawed Crayfish

- 2.3.12 A desk based search was undertaken using 1:10,000 OS mapping to identify any watercourses which occur on or within 30 m of the Site, and which are not separated from the Site by a major barrier.
- 2.3.13 Where accessible, any waterbodies identified were assessed for their suitability to support riparian mammals (e.g. water vole (*Arvicola amphibius*) or otter (*Lutra lutra*)) and white-clawed crayfish (*Austropotamobius pallipes*). Any sightings or incidental evidence of activity by these species was also recorded.

Other Protected and Notable Species

- 2.3.14 The opportunity was taken whilst on Site to assess habitats for their potential to support any other nationally, locally scarce or notable species, or species protected under national or international nature conservation law not highlighted above.

2.4 Invasive Species

- 2.4.1 During the Site survey any invasive plant or animal species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), were recorded where present.

2.5 Limitations

- 2.5.1 The extended Phase 1 habitat survey was undertaken in February which is outside of the optimal season (April to September inclusive) for botanical survey. However it is considered that sufficient information was obtained to characterise the habitats present without the need for further detailed habitat survey and that a robust evaluation of the importance of Site habitats to nature conservation has been made.

3. Findings and Evaluation

3.1 Site Description

- 3.1.1 The Site comprises approximately 1.18 ha of land to the north and the south of Brunswick Street. The Site is bound on all sides by semi-detached and terraced residential dwellings of a construction typical of the area.
- 3.1.2 The Site is situated within a housing estate on the edge of Thurnscoe. It comprises predominantly semi improved grassland and also contains a substation building to the north east. Other habitats inside the Site include dense scrub and scattered trees as well as a hedgerow on the south eastern boundary.

3.2 Designated Sites

- 3.2.1 No statutorily designated sites of importance to nature conservation were identified (MAGIC, 2019) within 2 km of the Site. Details of non-statutory sites are provided in Table 1 below.
- 3.2.2 No records of non-statutory sites were returned by BBRC though 12 Local Wildlife Sites (LWS) were returned by DLRC for locations within 2 km of the Site.

Table 1. Designated Sites within 2km of the Site

Designated Site	Description from Citation	Approximate Distance and Direction from Site
Non-Statutory		
Hickleton Golf Course LWS	A golf course formed over an extensive area of land consisting of original ridge and furrow, species-rich hedgerows and remnant parts of broadleaved woodland. Both the old meadow areas (now overplanted and 'rough' areas on the course) and the hedgerows still maintain a very mixed ground flora.	1 km south east.
Calf Croft LWS	Broad-leaved plantation woodland and hedgerows located adjacent to Hickleton Golf Course with abundant sycamore (<i>Acer pseudoplatanus</i>) and frequent ash (<i>Fraxinus excelsior</i>) in the canopy with moderate to good regeneration. There are also areas that are damper near the stream course and ruderal vegetation nearer the boundaries of the golf course.	1.1 km south east.

Designated Site	Description from Citation	Approximate Distance and Direction from Site
The Wilderness LWS	Broad-leaved plantation woodland with intact and defunct hedgerows. A woodland of moderate interest, showing affinities with a mosaic of W10 and W8 vegetation type. Dead fallen and standing timber is present on the site.	1.3 km south east.
Hickleton Spring LWS	Broad-leaved plantation woodland, mixed plantation woodland and defunct hedgerows are found on site. Generally supports deciduous species such as sycamore, beech (<i>Fagus sylvatica</i>) with Corsican (<i>Pinus nigra</i>) and Scots pine (<i>Pinus sylvestris</i>).	1.3 km south east.
First, Second and Third Plantations LWS	Three linear stands of semi-natural broad-leaved woodland, dominated by sycamore, ash and dog's mercury (<i>Mercurialis perennis</i>). Dunnock (<i>Prunella modularis</i>), bullfinch (<i>Pyrrhula pyrrhula</i>), goldcrest (<i>Regulus regulus</i>), song thrush (<i>Turdus philomelos</i>), white letter hairstreak (<i>Satyrus w-album</i>) and spindle (<i>Euonymus europaeus</i>) were also noted.	1.4 km south east.
Shrogs Plantation LWS	Broad-leaved plantation with defunct hedgerows. Small linear woodland that is located between the fairways of Hickleton Golf Course, it is predominantly sycamore, oak (<i>Quercus robur</i>), ash, wych elm (<i>Ulmus glabra</i>) and field maple (<i>Acer campestre</i>). The herb layer has abundant bramble (<i>Rubus fruticosus agg.</i>) and dog's mercury as well as bluebell (<i>Hyacinthoides non-scripta</i>). White letter hairstreak was noted. A small wooded enclave of moderately diverse floristic interest, which contains elements of and affinity with W10 and W8 woodland types.	1.5 km south-east.

Designated Site	Description from Citation	Approximate Distance and Direction from Site
Castle Hill, Hickleton LWS	An area of broad-leaved woodland dominated by sycamore. It borders the golf course and a housing estate. Grass snake (<i>Natrix helvetica helvetica</i>), willow tit (<i>Poecile montanus</i>) and greater spotted woodpecker (<i>Dendrocopos major</i>) have been previously recorded on site.	1.6 km south east.
Bilham Park and Summer House Plantation LWS	Broad-leaved plantation woodland with hedgerows. Supports an impressive proportion of veteran trees and a reasonable general floristic diversity. Typically supports sycamore and ash, hawthorn and dog's mercury.	1.7 km south east.
Bilham Park Fish Pond Plantation LWS	Mixed deciduous plantation woodland with artificially created ponds and linear water features. Ash is dominant within the canopy and elder (<i>Sambucus nigra</i>) is frequent within the shrub layer. Dog's mercury and bramble are the dominant herb layer species. The damper ground and open water habitats support species such as tufted hair grass (<i>Deschampsia cespitosa</i>), giant fescue (<i>Festuca gigantea</i>), broad-leaved pond weed (<i>Potamogeton natans</i>) and white water lily (<i>Nymphaea alba</i>).	1.8 km south east.
Hickleton Park LWS	A large site comprising of parkland, wood pasture, mixed deciduous woodland plantations and formal ornamental gardens with trees. A churchyard on site contains more neutral grassland species. Japanese knotweed has been noted on site.	1.8 km south east.
Frickley Park (including Whin Covert) LWS	Also a scheduled park and garden, it contains a scheduled ancient monument and broad-leaved plantation woodland, dense/continuous scrub and semi-improved grassland.	2 km north.

Designated Site	Description from Citation	Approximate Distance and Direction from Site
	Japanese knotweed is present on site.	
Mapple Yard Plantation LWS	A linear stand of semi-natural broad-leaved woodland, dominated by sycamore, ash and dog's mercury. Wet drains are present and a muddy pool. Swallow (<i>Hirundo rustica</i>), white letter hairstreak and spindle were also noted.	2 km south east.

3.2.3 Non-statutory designated sites are considered to be of importance to nature conservation at the local level.

3.3 Habitats

3.3.1 Habitats recorded on Site are annotated on Figure 1 with features of notable ecological value shown as Target Notes (TN) and listed in Appendix 1. Full species lists are provided at Appendix 2.

Semi-improved Grassland

3.3.2 Semi-improved grassland covers the majority of the Site and is divided into three fields, two to the north of Brunswick Street (F1 and F3) and one field to the south of Brunswick Street (F2) (See Figure 1)).

3.3.3 The majority of this habitat is unmown and supports a long, rank sward, though a section centrally located within F2 comprises a much shorter sward and shows evidence of regular disturbance by members of the public in the form of trampled grass pathways.

3.3.4 Species present within the grassland habitat include, abundant cocksfoot (*Dactylis glomerata*), abundant common knapweed (*Centaurea nigra*), occasional ribwort plantain (*Plantago lanceolata*) and common nettle (*Urtica dioica*).

3.3.5 Semi-improved grassland is not listed under Section 41 of the NERC Act 2006, nor on the LBAP. This habitat is common locally and nationally and, therefore, this habitat is considered to be of importance to nature conservation at the site level only.

Defunct Species Poor Hedgerow

3.3.6 A single section of defunct hedgerow was recorded on Site. The hedgerow borders the Site to south eastern edge (H1) and is approximately 50 m in length.

3.3.7 H1 consists of dominant bramble and elder, reaching around 2 – 3 m high in places with a width of approximately 1.5 m. It has several gaps of 1 m or more

throughout its length. It is approximately 50m long.

- 3.3.8 The hedgerow does not contains a sufficient number of woody species to be considered ecologically important under the Hedgerow Regulations but, does comprise more than 80% native species and, therefore, is considered a habitat of principle importance. In addition, hedgerows are listed on the LBAP.
- 3.3.9 Hedgerow habitats are common locally and nationally, and the example on Site is of poor value due to its short length, low species diversity and lack of connections to the surrounding area. Therefore the hedgerow is considered to be of value to nature conservation at the Site level only.

Dense Scrub

- 3.3.10 Sections of dense scrub are present on the Site, mainly comprising of dominant bramble. This habitat is predominantly located on the Site boundary, but some small sections are also present across the centre of the Site. A further small section of willow (*Salix sp.*) is present in the F3 adjacent west of the substation (B1).
- 3.3.11 Dense scrub is not listed under Section 41 of the NERC Act 2006, nor on the LBAP. The scrub on Site is limited in extent and considered of importance to nature conservation at the Site level only.

Broad Leaved Scattered Trees

- 3.3.12 A small area supporting approximately four scattered alder (*Alnus glutinosa*) trees is situated in the north of F3. The alder are all relatively young. There is also a single elder tree located in the far north west corner of F1. The elder tree looks to be older than the alder but is small in size. All trees are in good health.
- 3.3.13 Scattered trees are not listed under Section 41 of the NERC Act 2006, nor on the LBAP and scattered trees on Site are relatively young, limited in extent, isolated and considered of importance to nature conservation at the Site level only.

3.4 Species

Amphibians

- 3.4.1 Eight records were returned by BBRC of amphibians, for locations within 2 km of Site. The records pertained to three records of common frog (*Rana temporaria*) and five records of common toad (*Bufo bufo*). Records were dated between 2008 and 2018 and were accurate to 100 m². The closest record to Site pertained to a common frog record approximately 700 m south of the Site.
- 3.4.2 DLRC returned a total of eight records of amphibians within 2 km of Site. The records pertained to four records of common frog, three records of common toad and one record of smooth newt (*Lissotriton vulgaris*). Records included tadpoles, spawn and individuals. Records were dated between 1992 and 2018 and were accurate to 100 m². No amphibian records pertained to the Site with the closest records of a single common frog, common toad and a smooth newt located approximately 1.2km south east of the Site from the golf course management plan surveys.

- 3.4.3 No EPS licenses pertaining to GCN were identified within 2 km of the Site (MAGIC, 2019) and no waterbodies were recorded within 500 m using OS and aerial mapping.
- 3.4.4 Taking into account the absence of existing records of GCN and the absence of ponds within 500 m, it is considered that GCN are unlikely to be present on Site and are discounted as an ecological receptor. This species is not discussed further within the report.
- 3.4.5 The terrestrial habitats on Site are considered to have some limited suitability as foraging habitat for common amphibian species. As this habitat is isolated by local roads and housing, and partially disturbed by members of the public, habitats on Site are not considered to be of importance to common amphibians at more than the site level.

Badger

- 3.4.6 No records of badger were provided by BBRC or DLRC for locations within 2 km of the Site and no records were identified within the public domain.
- 3.4.7 No setts were recorded on or within 30 m of the Site. While it is not considered likely that badgers are resident on Site, the farmland with hedgerows and small woodland to the north is highly suitable for badgers and, despite the lack of records, it is considered possible this species may on rare occasions access the Site from as part of a wider foraging range.

Bats

- 3.4.8 A total of 15 records were returned by BBRC in respect of bats for locations within 2km of the Site. Records included 12 records of roosts, comprising 10 of common pipistrelles (*Pipistrellus pipistrellus*), one bat of an unknown species (*Chiroptera* sp.) and one of a whiskered bat (*Myotis mystacinus*). The records are dated between 1992 and 1999. There are no records of roosting bats associated with the Site itself, with the closest records to Site pertaining to four common pipistrelle roosts and one *Chiroptera* roost approximately 1.4 km south west of the Site in 1993.
- 3.4.9 A total of four bat records were returned by DLRC for locations within 2 km of Site, of which, there were two records for roosts – one pertains to a roost of a common pipistrelle and the second of a brown long-eared (*Plecotus auritus*) roost containing 47 individuals. The records are dated 1978 and 2009 respectively and were recorded approximately 2 km to the south east of the Site.
- 3.4.10 The remaining five records supplied by BBRC and DLRC pertained to field records of bats in flight or grounded/injured bats. In addition to species previously listed, field records included noctule (*Nyctalus noctula*). The closest of these records to Site pertained to a grounded common pipistrelle bat approximately 1.7 km south in 2005.
- 3.4.11 No EPS licenses pertaining to bats were identified within 2 km of the Site (MAGIC, 2019).
- 3.4.12 The Site contains one building (B1), located in the north of F3. The building is a small, single-storey electricity substation of brick and concrete construction

with a flat lead flashing roof. The building has no windows, a door is present on the south elevation.

- 3.4.13 The brickwork is in good condition with no cracks or gaps. The roof is well sealed to the brickwork with no potential entry points or crevices for bats visible. As such, the building is considered to be of **negligible suitability** for roosting bats.
- 3.4.14 Grassland, isolated hedgerow, scrub and trees in the Site offer limited foraging and commuting habitat for bats. However, as the Site is located on the edge of Thurnscoe (where the village gives way to fields and farmland) it is possible that the Site is used by a small number of urban tolerant bats, such as pipistrelle species, as a commuting route to disperse between roosting sites in the village to higher quality foraging habitats in the wider landscape.
- 3.4.15 Given the availability of high value foraging habitat beyond the Site and the small size and poor quality of habitats in the Site, the Site is considered to be of importance to foraging and commuting bats at no more than the site level.

Birds

- 3.4.16 In 2015, a re-assessment of Birds of Conservation Concern (BoCC) was published by Eaton *et al.* (2015), which defined rare and threatened bird species on two lists (Red and Amber) describing the level of threat to each species of concern.
- 3.4.17 “Red” is the highest conservation priority, with species needing urgent action due to either a historical decline in breeding population, severe (>50%) decline in breeding or non-breeding population, or severe decline in breeding range over 50 years or more. “Amber” is the next most critical group, with species qualifying for this status as a result of either recovery from red list criterion, being classed as rare breeders in the UK, moderate (>25%) decline in breeding or non-breeding population or moderate decline in breeding range over 25 years or more. These categories are followed by “Green”, indicating that the species are relatively unthreatened.
- 3.4.18 BBRC and DLRC returned a total of 4,488 records comprising 167 bird species for locations within 2 km of the Site. A total of 34 Schedule 1 bird species and two Schedule 9 bird species, as listed within the Wildlife and Countryside Act 1981 (as amended), are included within the records. Including 38 Red and 61 Amber listed species. It was noted that the records range from 1943 and 2018 and are located between 10 km² and 10 m² from the Site. Records for Bird species within 2km of the Site are summarised in Appendix 2
- 3.4.19 The Site habitats, including dense scrub and scattered trees, including bordering residential gardens, offer foraging and breeding habitat for a variety of common bird species. However, the Site is considered unsuitable for breeding Schedule 1 species as all 34 species recorded within 2 km are either winter migrants, require water or have highly specific breeding and/or foraging requirements which are cannot be supported within the Site.
- 3.4.20 As habitats in the Site are relatively small and disturbed, and habitats similar to those in the Site can be found adjacent, within residential gardens and areas of recreational grassland to the south, the Site habitats are considered to be of

importance to birds at up to a site level only.

Reptiles

- 3.4.21 No records of reptiles were provided by BBRC for locations within 2 km of the Site and no records were identified within the public domain.
- 3.4.22 A total of five records were provided by DLRC of grass snake for locations within 2 km of the Site. The records relate to field survey observations dated between 1983 and 2012. The closest record to Site was recorded approximately 1.2 km south east of the Site in 2012.
- 3.4.23 The Site supports suitable foraging and sheltering for reptiles in the form of the semi-improved grassland and scrub. However the Site is relatively isolated from the wider area due to local roads.
- 3.4.24 Given the absence of possible corridors of movement between the location of reptile records and the Site and the absence of the mosaic of habitats commonly associated with reptile species, it is considered that habitats in the Site are, overall of low value for reptiles and these species are unlikely to occur in the Site.

Riparian Mammals and White-Clawed Crayfish

- 3.4.25 No records of riparian mammals or white-clawed crayfish were provided by BBRC or DLRC for locations within 2km of the Site and no records were identified within the public domain.
- 3.4.26 No watercourses are located within 30m of the Site.
- 3.4.27 Taking into account the absence of watercourses on or within 30 m of the Site and given that the Site itself has no habitat likely to support riparian mammals or crayfish, these species can be ruled out as constraints to this development and are not discussed further in this report.

Other Protected and Notable Species

Hedgehog

- 3.4.28 A total of three records of hedgehog were returned by BBRC. Two of these records are of road kill and the other a record of a sighting, recorded in a residential area between 2012 and 2018. The closest record was found approximately 1.1 km south west of the Site in a residential garden in 2012.
- 3.4.29 A total of three records of hedgehog were returned by DLRC. These pertain to historical records and from surveys conducted at the local golf course. Records are dated between 1992 and 2012 with the closest (2012) located approximately 1.2 km south east of the Site, at the golf course.
- 3.4.30 The Site provides good foraging habitat for hedgehog in the grassland and foraging and refuge opportunity beneath the hedgerow. The wider area also offers suitable habitat in the form of residential gardens with arable field margins and boundaries directly connected to the north of the Site. As a result the Site habitats are considered to be of importance to hedgehogs at a site level.

Brown Hare

- 3.4.31 No records of brown hare (*Lepus europaeus*) were provided by BBRC for locations within 2 km of the Site though four records were returned by DLRC. These pertained to records from surveys conducted in the LWSs and at the local golf course between 1999 and 2018. The closest record (2013) was located approximately 1.2 km east south east from the Site.
- 3.4.32 The Site has negligible suitability for brown hare. This species requires undisturbed grassland in which to shelter and while there is grassland present on Site, it is disturbed due to the Site's proximity to residential areas. As a result it is considered unlikely this species will utilise habitats on the Site and they are not discussed further in this report.

3.5 Invasive Species

- 3.5.1 A total of nine records were returned by BBRC for invasive plants within 2 km of the Site. These included seven Japanese knotweed, and one Canadian waterweed (*Elodea canadensis*) dated between 1996 and 2018. The closest record (2014), Japanese knotweed, was located approximately 300m north west of the Site.
- 3.5.2 A total of 13 records were returned by DLRC for invasive plants within 2km of the Site, of which pertained to seven Japanese knotweed, three cherry laurel, one Cotoneaster (*Cotoneaster* sp.) and two Canadian waterweed. Records were dated between 1975 and 2018. The closest record (1977) pertained to Japanese knotweed located approximately 500 m to the south west of the Site (approximate to 1 km²). All other records were recorded beyond 1.2 km of the Site.
- 3.5.3 Japanese knotweed was recorded at numerous locations on Site (TN1, Figure 1) and is mapped and discussed in detail in the Ebsford Environmental report 'Proposal to manage Japanese Knotweed *Fallopia japonica* - Brunswick Street, Thurnscoe' (26.09.18).

4. Ecological Assessment and Mitigation

4.1 Proposals

- 4.1.1 Current plans for the Site are for the proposed construction of 40 residential dwellings and associated infrastructure, as identified by the (Knapton and Knapton 'Planning Layout Colour', drawing number PL-03 19-03-06, (date 28.01.19)).
- 4.1.2 The following comprises an appraisal of likely ecological impacts based on the current site design. Recommendations for further survey, mitigation and/or enhancements have been included where necessary.

4.2 Designated Sites

- 4.2.1 All of the locally (non-statutory) designated LWSs are considered to be of a sufficient distance from the Site and with no direct habitat connectivity so as to avoid impacts. As such, no impacts from the proposed development are anticipated to LWSs.

4.3 Habitats

Semi-improved Grassland

- 4.3.1 Loss of all semi-improved grassland habitat on Site will be required to accommodate the development. This habitat is common in the wider area and where it occurs within the Site it is of low species diversity and low ecological value and not considered to be of importance to nature conservation beyond the Site level. As a result its removal can be mitigated by new habitat creation in the form of verges and gardens.
- 4.3.2 New grassland should comprise a native seed mix which maximises species diversity. The planting locations, schedule and management regime will be detailed within an ecologically sensitive Landscape Plan.

Defunct Species Poor Hedgerow

- 4.3.3 The hedgerow supports native species of flowering and berry bearing species. It also comprises more than 80% native species and, therefore, is considered to be a habitat of principle importance on the NERC Act (2006) as well as a LBAP habitat.
- 4.3.4 As hedgerows are common locally and nationally, and this hedgerow is of very limited value due to its short length, low species diversity, gaps and a lack of connections to the surrounding area. This hedgerow is therefore considered to be of value to nature conservation at the Site level only.
- 4.3.5 As a result the loss of this habitat is not expected to have a significant negative ecological impact, however at a Site level its loss may result in a small reduction in diversity and loss of potential habitat for foraging/nesting/refuging faunal and/or bird species.
- 4.3.6 As shown on the site layout, this hedgerow is to be lost to allow for the construction of houses and gardens. As a result this loss should be offset by the planting of a new hedgerow of at least equivalent length (50m) and height

(2–3m high and 1.5m wide) to ensure no loss of biodiversity on Site.

- 4.3.7 To ensure a gain in Site biodiversity the new hedgerow planting should comprise at least four native species, including those species which would maximise flowering, pollen/nectar production and/or berries/fruit production to benefit invertebrates, birds and small mammals should be outlined within an ecologically sensitive Landscape Plan.

Dense Scrub

- 4.3.8 Landtake of all dense scrub on Site is planned to accommodate the current development design. This habitat is relatively common in the wider area and where it occurs within the Site it is small in area, of low ecological value and not considered to be of importance to nature conservation beyond the site level.
- 4.3.9 Given the common species this habitat supports and their abundance at the local and national level, the loss of the scrub in the Site is unlikely to result in a significant negative ecological impact although, at a Site level, its loss may result in a small reduction in diversity and loss of potential habitat for foraging/nesting/refuting bird and/or faunal species.
- 4.3.10 Therefore to in order to mitigate for the loss of the scrub it is recommended that the redevelopment includes landscaping using native species of local provenance and/or of benefit to wildlife.
- 4.3.11 Replacement/additional vegetation in borders, gardens, verges and on boundaries, to comprise native species, including those species which would maximise flowering, pollen/nectar production and/or berries/fruit production to benefit invertebrates, birds and small mammals should be outlined within an ecologically sensitive Landscape Plan.
- 4.3.12 Where the Landscape Plan can provide habitat of larger area/greater diversity of species than are currently present on Site, this will comply with the National Planning Policy Framework (NPPF) aim that states '*opportunities to incorporate biodiversity in and around developments should be encouraged*' (NPPF, 2019).

Scattered Trees

- 4.3.13 This habitat is relatively common in the wider area and where it occurs within the Site it is of low ecological value. Therefore this habitat is not considered to be of importance to nature conservation beyond the Site level.
- 4.3.14 As a result the loss of this habitat is not expected to have a significant negative ecological impact, however at a Site level its loss may result in a small reduction in diversity and loss of potential habitat for foraging/nesting/refuting bird species
- 4.3.15 As shown on the site layout, the scattered trees are to be lost to allow for the construction of houses and gardens. As a result this loss should be offset by the planting of new trees and, to ensure a biodiversity gain, the number of new trees planted should exceed the number of trees lost.

- 4.3.16 New tree planting should comprise native species, including those species which would maximise flowering, pollen/nectar production and/or berries/fruit production to benefit invertebrates, birds and small mammals should be outlined within an ecologically sensitive Landscape Plan.

4.4 Species

Amphibians

- 4.4.1 Common amphibians are protected under the Wildlife and Countryside Act 1981 (as amended) against sale, barter or exchange of captive animals. Common toad is also listed as a priority species under Section 41 of the NERC Act 2006.
- 4.4.2 No ponds are present on Site or within 500 m. The terrestrial habitat on Site has limited suitability to support common amphibians and the lack of ponds in the locality further reduces the likelihood of amphibians dispersing onto the Site. Alternative suitable terrestrial habitat is abundant within the surrounding area and, therefore, the likelihood of encountering common amphibians on Site is considered to be low.
- 4.4.3 In the event that common amphibians are identified during Site clearance works, they should be carefully collected by gloved hand and relocated in a safe, vegetated area, away from the area of works.

Bats

- 4.4.4 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Under regulation 41 bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate damage or destruction of a breeding Site or resting place (roost).
- 4.4.5 All UK bats are also included on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). However, their protection is limited to certain offences. Under the 1981 Act (as amended) it is an offence to intentionally or recklessly disturb bats while they are occupying a structure or place used for shelter or protection, or to obstruct access to any such place.
- 4.4.6 Barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteini*), brown long-eared, greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*), noctule and soprano pipistrelle (*Pipistrellus pygmaeus*) bats are included as priority species under Section 41 of the NERC Act 2006.
- 4.4.7 Common Pipistrelle, Soprano Pipistrelle, Noctule, Whiskered, Brown long eared, Daubenton's (*Myotis daubentonii*), Natterers (*Myotis nattereri*) Brandt's (*Myotis brandti*) and Leislars (*Nyctalus leisleri*) bats are also listed on the LBAP.
- 4.4.8 The substation (B1) is considered to have negligible suitability to support roosting bats. Furthermore, the current Site layout indicates that the substation is being retained. As a result no further survey or mitigation in respect of B1 is required.
- 4.4.9 The site is likely to be of low value for foraging/commuting bats given the lack

of habitat diversity.

4.4.10 Bat species in the UK are known to be deterred by artificial lighting. In order to avoid impacts associated with artificial light spill on, bat flight-lines or foraging habitat, mitigation measures should be implemented.

4.4.11 The lighting and layout of the proposed development should be designed where possible to avoid light-spill onto habitats both within and adjacent to it that may be used by the local bat population foraging or commuting. This would be achieved by ensuring that the design of lighting is based upon guidelines presented in the Bat Conservation Trust & Institute of Lighting Professionals Guidance Note 08/18 'Bats and Lighting in the UK - Bats and Built Environment Series' (2018). Therefore, the lighting scheme should include the following:

- The avoidance of direct lighting of existing trees, scrub, or proposed areas of habitat creation / landscape planting;
- Lighting levels would be as low as guidelines permit and only used where required for public safety;
- Sensitive site configuration for buildings, green space and public open space;
- Unnecessary light spill could be controlled through a combination of directional lighting, low lighting columns, hooded / shielded luminaires or strategic screening planting;
- All luminaires should lack UV elements and metal halide, fluorescent sources should not be used. LED luminaires should be used where possible with a warm white spectrum adopted (<2700Kelvin).

4.4.12 This will minimise light spill onto potential commuting / foraging routes and minimise potential disturbance caused through the lighting of corridors.

4.4.13 As an ecological enhancement to the Site, which would comply with the NPPF (2018), consideration could be given to installing at least four bat boxes, e.g. Schwegler 1FD or 1FR bat boxes/tubes on the new houses as annotated on Figure 2.

4.4.14 Bat box locations with a southerly facing aspect and located at a minimum of 4m height are optimal to maximise the chances of occupation. Boxes should be placed where bats have a clear flight path to them, i.e. be free of obstructions such as overhanging tree branches or ivy growth.

Badger

4.4.15 Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.

4.4.16 Although no evidence of resident badgers was recorded during the survey, the wider landscape is suitable for badgers and the Site has a degree of connectivity to areas of suitable habitat. As a result it is considered that

badgers have potential to access Site at any time to forage.

- 4.4.17 As a precautionary measure, it is recommended that any excavations left overnight should be covered or have a suitable escape ramp, e.g. a long scaffold board, inserted to allow escape should a badger fall in.

Birds

- 4.4.18 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) against destruction of the nest during the bird breeding season, which falls between March and August, inclusive.
- 4.4.19 Bittern (*Botaurus stellaris*), lapwing (*Vanellus vanellus*), little ringed plover (*Charadrius dubius*), grey partridge (*Perdix perdix*), tree sparrow (*Passer montanus*), skylark (*Alauda arvensis*), barn owl, kestrel (*Falco tinnunculus*) and twite (*Linaria flavirostris*) are listed on the LBAP. While some of these species were recorded within 2 km (as per the records supplied by BBRC and DLRC) none were recorded during the survey.
- 4.4.20 Given the abundance of alternative similar habitat for birds in the wider area loss of the habitats on Site are unlikely to be of importance to bird species, including those on the local LBAP beyond the Site level.
- 4.4.21 Despite this, the removal of any woody vegetation (e.g. scattered trees and hedgerow) and scrub, should be undertaken between September and February inclusive, i.e. outside of the bird breeding season. Where this is not possible, vegetation should be checked for nesting birds by an experienced Ecologist no more than two days prior to works commencing to confirm the absence of nests.
- 4.4.22 Nest boxes could be incorporated into the development, where practicable, to provide a positive enhancement for nature conservation and comply with the NPPF (2018).
- 4.4.23 Four bird boxes, with either a 26 mm or 32 mm entrance hole, such as the Schwegler 1B or Avianex boxes, suitable for a range of common urban and garden dwelling species would be suitable for installation on the houses or fencing. Alternatively four sparrow terraces would also be suitable. See Figure 2 for proposed bird box locations.

Hedgehog

- 4.4.24 Hedgehog is included as a species of principal importance under Section 41 of the NERC Act 2006 and is listed on the LBAP. Whilst not afforded a high level of protection, hedgehogs have experienced significant declines in the UK population. Taking a best practice approach, avoiding harm to hedgehogs should be taken into consideration during works.
- 4.4.25 The Site has suitability to support foraging hedgehog, in the grassland and along the hedgerow, and as hedgehogs are highly mobile and inquisitive animals they may move onto Site from suitable habitats in the wider area at any time. As a precautionary measure, it is recommended that any excavations left overnight should be covered or have a suitable escape ramp, e.g. a long scaffold board, inserted to allow escape should a hedgehog fall in.

- 4.4.26 The creation and maturing of new garden habitats on Site, in addition to other boundary planting, will compensate the loss of grassland habitat currently on Site for this species.
- 4.4.27 To allow for dispersal of hedgehogs and other small mammals between gardens, railings and hedgerows (which provide free passage for hedgehogs) will be utilised on garden and other boundaries as far as possible. Where close board fencing is to be installed small gaps beneath or between fences or natural gaps under or around fencing, where possible at fence junctions, will be incorporated.
- 4.4.28 Where neither of these options is feasible, gaps measuring a minimum of 13 cm x 13 cm will be created to the base of panels/gravel boards to allow the movement of hedgehogs between gardens across the development. See Figure 2.
- 4.4.29 Further information and examples of fencing gaps put into practice can be found at: <http://www.hedgehogstreet.org/pages/link-your-garden.html>.

4.5 Invasive Species

- 4.5.1 The Japanese knotweed located across the Site is to be subject to the management and control measures as laid out in Ebsford Environmental report '*Proposal to manage Japanese Knotweed Fallopia japonica - Brunswick Street, Thurnscoe*' (26.09.18).
- 4.5.2 These measures are considered to be sufficient for the control of this invasive plant species and, as such, no further recommendations are made in regard to Japanese knotweed at this time, though recommendations outlined by Ebsford Environmental should be followed in conjunction with other recommendations outlined within this report in regard to habitats and protected species.

References

Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater Coastal and Marine*'. CIEEM, Winchester.

Collins, J. (2016) '*Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn)'. The Bat Conservation Trust, London.

Ministry for Housing, Communities and Local Government (2019) '*National Planning Policy Framework*'. Ministry of Housing, Communities and Local Government, London.

Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) '*Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man*'. British Birds 108, 708– 746.

Harris, S., Cresswell, P. and Jefferies, D. (1989) '*Surveying Badgers*'. Mammal Society (Occasional Publication No 9).

Joint Nature Conservation Committee (JNCC) (2010) '*Handbook for Phase 1 habitat survey – A technique for environmental audit*'. JNCC, Peterborough.

Natural England (2010) '*List of habitats and species of principal importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006*'.

Figure 1. Survey Findings Plan

Legend

-  Site Boundary
-  SI Semi-Improved Grassland
-  Dense Scrub
-  Buildings
-  Defunct Hedgerow
-  Broad Leaved Scattered Trees
-  Target Note

0 10 20 40 Meters

Keepmoat Homes Ltd
Brunswick Street, Thurnscoe

Figure 1
Phase 1 Findings

Brook Holt 3 Blackburn Road Sheffield S61 2DW
T: 0114 2669292 www.ecusltd.co.uk

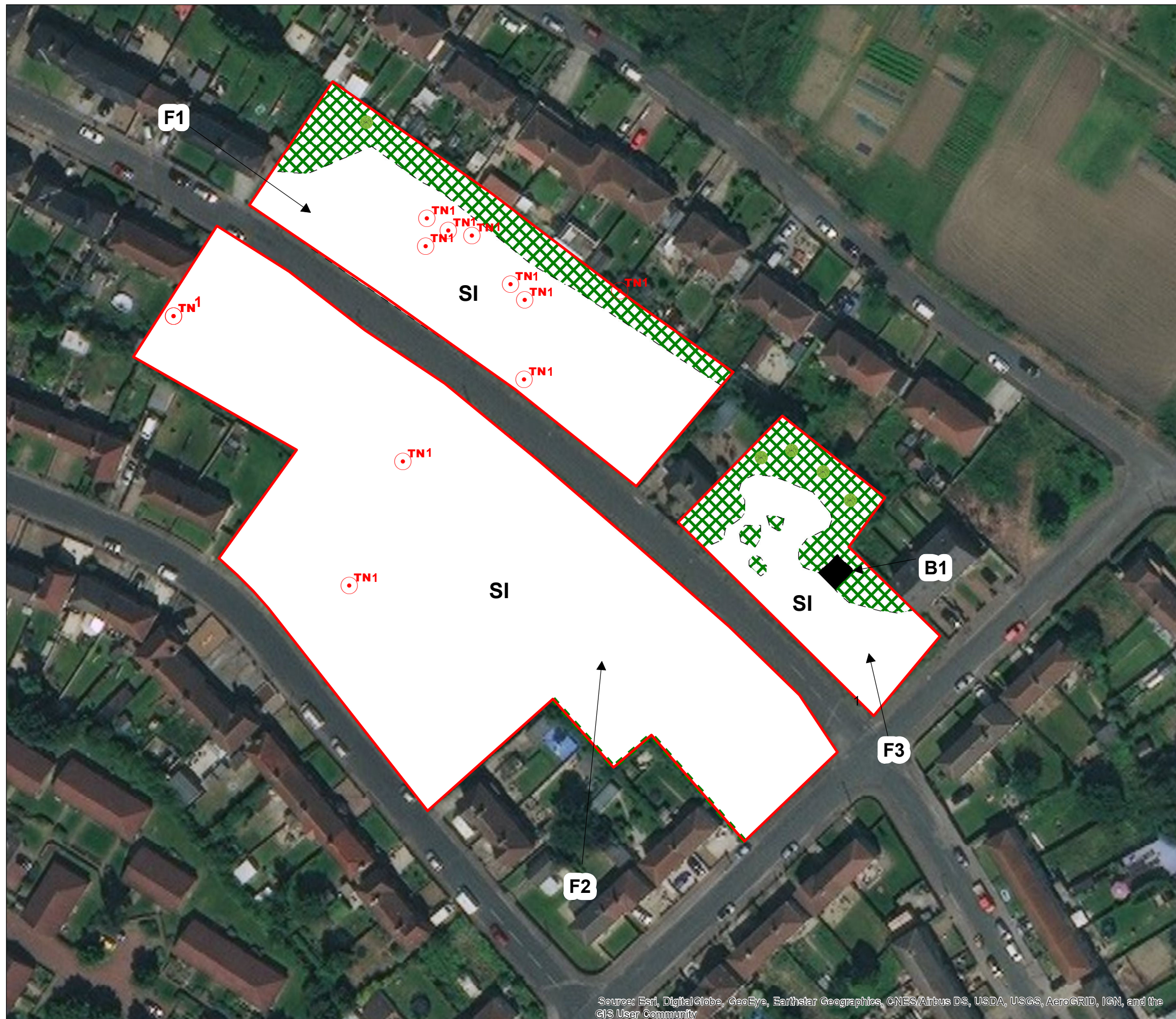


Figure 2. Bat, Bird and Hedgehog Plan



Schwegler 1FD Bat Box



Schwegler 1FR
bat tube



Schwegler 1B nest box
(26mm (L) and 32mm (R))



Legend

-  Indicative locations and aspect of integrated bat boxes e.g. Schwegler 1FD Bat Box of Schwegler1FR Bat Tubes (four boxes in total)
-  Indicative location and aspect of bird nest boxes e.g. Schwegler 1B nest box 26mm (two boxes in total).
-  Indicative location and aspect of bird nest boxes e.g. Schwegler 1B nest box 32mm (two boxes in total).
-  Indicative location of 13cm x 13cm hedgehog gap.

Bat boxes should be sited 3-5 metres from the ground preferably in quiet locations away from direct sources of light. The positions on the drawing have been identified for their aspect and closeness to available foraging habitat. Final positions should be adjusted based on the above advice.

Bird box locations. Bird boxes should be sited 3-5 metres from the ground preferably in quiet places away from potential sources of disturbance such as doorways, seating areas etc. South facing aspects should be avoided. Final positions should be adjusted based on the above advice.

Hedgehog highways reduce barriers to their movement, linking up habitats in urban areas. This plan aims to provide connectivity between gardens within the proposed scheme, enabling free movement of hedgehogs and other small mammals. In addition to gaps, railings, hedgerow and gates attached just above ground level all allow movement of hedgehogs.

Keepmoat Homes Ltd

Brunswick Street, Thurnscoe

Figure 2. Bat, Bird and Hedgehog Plan

Brook Holt 3 Blackburn Road Sheffield S61 2DW
T: 0114 2669292 www.ecusltd.co.uk

Appendix 1. Target Notes

TN1 - Japanese Knotweed

Appendix 2. Habitat Species List

Common name	Scientific name	DAFOR
Semi-improved Grassland		
Cocksfoot	<i>Dactylis glomerata</i>	A
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Common Knapweed	<i>Centaurea nigra</i>	A
False oat	<i>Arrhenatherum elatius</i>	F
Common nettle	<i>Urtica dioica</i>	O
Defunct Hedgerow		
Bramble	<i>Rubus fruticosus agg.</i>	D
Elder	<i>Sambucus nigra</i>	D
Dense Scrub		
Bramble	<i>Rubus fruticosus agg.</i>	D
Willow sp.	<i>Salix sp.</i>	F
Scattered Trees		
Alder	<i>Alnus glutinosa</i>	D
Elder	<i>Centaurea nigra</i>	D

Appendix 3. Bird Records received from BBRC and DLRC within 2km of Site

Common name	Latin name	BoCC status
Black Redstart	<i>Phoenicurus ochruros</i>	Schedule 1, Red
Black-Tailed Godwit	<i>Limosa limosa</i>	Schedule 1, Red
Fieldfare	<i>Turdus pilaris</i>	Schedule 1, Red
Merlin	<i>Falco columbarius</i>	Schedule 1, Red
Red-Backed Shrike	<i>Lanius collurio</i>	Schedule 1, Red
Redwing	<i>Turdus iliacus</i>	Schedule 1, Red
Ruff	<i>Philomachus pugnax</i>	Schedule 1, Red
Avocet	<i>Recurvirostra avosetta</i>	Schedule 1, Amber
Bewick's Swan	<i>Cygnus columbianus</i>	Schedule 1, Amber
Bittern	<i>Botaurus stellaris</i>	Schedule 1, Amber
Black-necked Grebe	<i>Podiceps nigricollis</i>	Schedule 1, Amber
Garganey	<i>Anas querquedula</i>	Schedule 1, Amber
Goldeneye	<i>Bucephala clangula</i>	Schedule 1, Amber
Green Sandpiper	<i>Tringa ochropus</i>	Schedule 1, Amber
Greenshank	<i>Tringa nebularia</i>	Schedule 1, Amber
Greylag Goose	<i>Anser anser</i>	Schedule 1, Amber
Kingfisher	<i>Alcedo atthis</i>	Schedule 1, Amber
Marsh Harrier	<i>Circus aeruginosus</i>	Schedule 1, Amber
Mediterranean Gull	<i>Larus melanocephalus</i>	Schedule 1, Amber
Osprey	<i>Pandion haliaetus</i>	Schedule 1, Amber
Pintail	<i>Anas acuta</i>	Schedule 1, Amber
Purple Sandpiper	<i>Calidris maritima</i>	Schedule 1, Amber
Quail	<i>Coturnix coturnix</i>	Schedule 1, Amber
Spoonbill	<i>Platalea leucorodea</i>	Schedule 1, Amber
Whooper Swan	<i>Cygnus cygnus</i>	Schedule 1, Amber
Wood Sandpiper	<i>Tringa glareola</i>	Schedule 1, Amber
Barn Owl	<i>Tyto alba</i>	Schedule 1, Green
Black Tern	<i>Chlidonias niger</i>	Schedule 1, Green
Brambling	<i>Fringilla montifringilla</i>	Schedule 1, Green
Firecrest	<i>Regulus ignicapillus</i>	Schedule 1, Green
Hobby	<i>Falco subbuteo</i>	Schedule 1, Green
Little Ringed Plover	<i>Charadrius dubius</i>	Schedule 1, Green
Peregrine falcon	<i>Falco peregrinus</i>	Schedule 1, Green
Red Kite	<i>Milvus milvus</i>	Schedule 1, Green
Corn Bunting	<i>Emberiza calandra</i>	Red
Cuckoo	<i>Cuculus canorus</i>	Red
Curlew	<i>Numenius arquata</i>	Red
Grasshopper Warbler	<i>Locustella naevia</i>	Red
Grey Partridge	<i>Perdix perdix</i>	Red
Grey Wagtail	<i>Motacilla cinerea</i>	Red
Hawfinch	<i>Coccothraustes coccothraustes</i>	Red
Herring Gull	<i>Larus argentatus</i>	Red

House Sparrow	<i>Passer domesticus</i>	Red
Kittiwake	<i>Rissa tridactyla</i>	Red
Lapwing	<i>Vanellus vanellus</i>	Red
Lesser Redpoll	<i>Carduelis cabaret</i>	Red
Linnet	<i>Carduelis cannabina</i>	Red
Mistle Thrush	<i>Turdus viscivorus</i>	Red
Pied Flycatcher	<i>Ficedula hypoleuca</i>	Red
Pochard	<i>Aythya ferina</i>	Red
Ring Ouzel	<i>Turdus torquatus</i>	Red
Ringed Plover	<i>Charadrius hiaticula</i>	Red
Skylark	<i>Alauda arvensis</i>	Red
Song Thrush	<i>Turdus philomelos</i>	Red
Spotted Flycatcher	<i>Muscicapa striata</i>	Red
Starling	<i>Sturnus vulgaris</i>	Red
Tree Sparrow	<i>Passer montanus</i>	Red
Turtle Dove	<i>Streptopelia turtur</i>	Red
Whinchat	<i>Saxicola rubetra</i>	Red
White-fronted Goose	<i>Anser albifrons</i>	Red
Willow Tit	<i>Poecile montanus</i>	Red
Wood Warbler	<i>Phylloscopus sibilatrix</i>	Red
Woodcock	<i>Scolopax rusticola</i>	Red
Yellow Wagtail	<i>Motacilla flava</i>	Red
Yellowhammer	<i>Emberiza citrinella</i>	Red
Barnacle Goose	<i>Branta leucopsis</i>	Amber
Bar-tailed Godwit	<i>Limosa lapponica</i>	Amber
Bean Goose	<i>Anser fabalis</i>	Amber
Black-Headed Gull	<i>Chroicocephalus ridibundus</i>	Amber
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber
Common Gull	<i>Larus canus</i>	Amber
Common Redstart	<i>Phoenicurus phoenicurus</i>	Amber
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber
Common Tern	<i>Sterna hirundo</i>	Amber
Curlew Sandpiper	<i>Calidris ferruginea</i>	Amber
Dunlin	<i>Calidris alpina</i>	Amber
Dunnock	<i>Prunella modularis</i>	Amber
Gadwall	<i>Anas strepera</i>	Amber
Gannet	<i>Morus bassanus</i>	Amber
Great Black-Backed Gull	<i>Larus marinus</i>	Amber
Grey Plover	<i>Pluvialis squatarola</i>	Amber
House Martin	<i>Delichon urbica</i>	Amber
Kestrel	<i>Falco tinnunculus</i>	Amber
Knot	<i>Calidris canutus</i>	Amber
Lesser Black-Backed Gull	<i>Larus fuscus subsp. graellsii</i>	Amber
Mallard	<i>Anas platyrhynchos</i>	Amber

Meadow Pipit	<i>Anthus pratensis</i>	Amber
Mealy Redpoll	<i>Carduelis flammea</i>	Amber
Mute Swan	<i>Cygnus olor</i>	Amber
Oystercatcher	<i>Haematopus ostralegus</i>	Amber
Pink-Footed Goose	<i>Anser brachyrhynchus</i>	Amber
Redshank	<i>Tringa totanus</i>	Amber
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber
Sanderling	<i>Calidris alba</i>	Amber
Shelduck	<i>Tadorna tadorna</i>	Amber
Short-Eared Owl	<i>Asio flammeus</i>	Amber
Shoveler	<i>Anas clypeata</i>	Amber
Smew	<i>Mergus albellus</i>	Amber
Snipe	<i>Gallinago gallinago</i>	Amber
Spotted Redshank	<i>Tringa erythropus</i>	Amber
Stock Dove	<i>Columba oenas</i>	Amber
Swift	<i>Apus apus</i>	Amber
Tawny Owl	<i>Strix aluco</i>	Amber
Teal	<i>Anas crecca</i>	Amber
Turnstone	<i>Arenaria interpres</i>	Amber
Wigeon	<i>Anas penelope</i>	Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber
Blackbird	<i>Turdus merula</i>	Green
Blackcap	<i>Sylvia atricapilla</i>	Green
Blue Tit	<i>Cyanistes caeruleus</i>	Green
Buzzard	<i>Buteo buteo</i>	Green
Carrion Crow	<i>Corvus corone</i>	Green
Chaffinch	<i>Fringilla coelebs</i>	Green
Chiffchaff	<i>Phylloscopus collybita</i>	Green
Coal Tit	<i>Parus ater</i>	Green
Collared Dove	<i>Streptopelia decaocto</i>	Green
Coot	<i>Fulica atra</i>	Green
Cormorant	<i>Phalacrocorax carbo</i>	Green
Feral Pigeon	<i>Columba livia feral</i>	Green
Garden Warbler	<i>Sylvia borin</i>	Green
Goldcrest	<i>Regulus regulus</i>	Green
Golden Plover	<i>Pluvialis apricaria</i>	Green
Goldfinch	<i>Carduelis carduelis</i>	Green
Goosander	<i>Mergus merganser</i>	Green
Great Crested Grebe	<i>Podiceps cristatus</i>	Green
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green
Great Tit	<i>Parus major</i>	Green
Green Woodpecker	<i>Picus viridis</i>	Green
Greenfinch	<i>Carduelis chloris</i>	Green

Grey Heron	<i>Ardea cinerea</i>	Green
Jack Snipe	<i>Lymnocyrtus minimus</i>	Green
Jackdaw	<i>Corvus monedula</i>	Green
Jay	<i>Garrulus glandarius</i>	Green
Lesser Whitethroat	<i>Sylvia curruca</i>	Green
Little Egret	<i>Egretta garzetta</i>	Green
Little Grebe	<i>Tachybaptus ruficollis</i>	Green
Long-Eared Owl	<i>Asio otus</i>	Green
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green
Magpie	<i>Pica pica</i>	Green
Moorhen	<i>Gallinula chloropus</i>	Green
Nuthatch	<i>Sitta europaea</i>	Green
Pheasant	<i>Phasianus colchicus</i>	Green
Pied Wagtail	<i>Motacilla alba</i>	Green
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Green
Robin	<i>Erithacus rubecula</i>	Green
Rock Dove	<i>Columba livia</i>	Green
Rook	<i>Corvus frugilegus</i>	Green
Sand Martin	<i>Riparia riparia</i>	Green
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Green
Siskin	<i>Carduelis spinus</i>	Green
Sparrowhawk	<i>Accipiter nisus</i>	Green
Stonechat	<i>Saxicola torquata</i>	Green
Swallow	<i>Hirundo rustica</i>	Green
Treecreeper	<i>Certhia familiaris</i>	Green
Tufted Duck	<i>Aythya fuligula</i>	Green
Water Rail	<i>Rallus aquaticus</i>	Green
Waxwing	<i>Bombycilla garrulus</i>	Green
Wheatear	<i>Oenanthe oenanthe</i>	Green
Whitethroat	<i>Sylvia communis</i>	Green
Wood pigeon	<i>Columba palumbus</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Green
Black Swan	<i>Cygnus atratus</i>	No Status
Little Owl	<i>Athene noctua</i>	No Status
Red Legged Partridge	<i>Alectoris rufa</i>	No Status
Canada Goose	<i>Branta canadensis</i>	Schedule 9
Ruddy Duck	<i>Oxyura jamaicensis</i>	Schedule 9

Appendix 4. Site Photos



Legend

1. View of the defunct hedgerow, facing north west.
2. View of field 2, facing south.
3. Japanese knotweed (*Fallopia japonica*)
4. View of the scrub in the north eastern corner. Facing north east.
5. View showing building 1.



NPs Barnsley Limited Land Off St Michaels Ave
Preliminary Ecological Appraisal

Appendix 4. Site Photos

Brook Holt 3 Blackburn Road Sheffield S61 2DW
T: 0114 2669292 www.ecusltd.co.uk