

School Street, Thurnscoe Phase 3 Ecological Appraisal

Keepmoat Homes Ltd.

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Executive Summary

Ecus Ltd. was commissioned by Keepmoat Homes Ltd. to undertake an Ecological Appraisal of an area of land adjacent to School Street, Thurnscoe in Doncaster, hereafter referred to as 'the Site'.

The Site is dominated by a large arable field. The southern boundary of the Site comprises an area of derelict land, which once supported a number of residential houses, which has become overgrown with scrub and rough grassland.

Site habitats are considered to be of importance to nature conservation at the Site level only.

Proposals for the Site include the construction of 311 residential dwellings, associated residential gardens, driveways and infrastructure; with the creation of 'Public Open Spaces' (POS) to the centre and south.

The Site lies within Dearne Valley Green Heart Nature Improvement Area but is dominated by low value arable habitats. The loss of habitats on site is not considered to significantly impact upon the connectivity or value of the wider value of the Nature Improvement Area and key corridors along the main site boundaries will be retained and strengthened.

As badgers have some potential to move across the Site from time to time, best practice measures should be implemented to safeguard individual animals, including covering all deep excavations overnight.

One tree (T1, Figure 1) on Site was considered to have potential to support roosting bats. A full assessment is made in Sections 3.4 and 4.4 of this report. Current proposals show all trees to be removed. If retention of this tree cannot be accommodated, an aerial inspection or nocturnal survey will be required prior to works affecting the tree commencing.

High levels of bird activity, with a number of potential active nests, were identified during previous surveys of the Site. As such, there is potential for active birds' nests to be destroyed during site clearance if undertaken during the breeding season. As a precautionary measure, it is recommended that site clearance works are undertaken outside of the bird breeding season i.e. between September to February (inclusive). If it is not possible to schedule vegetation clearance works for these months, breeding bird checks should be undertaken by a suitably qualified ecologist no more than 48 hours prior to vegetation removal commencing.

A single brown hare was identified on Site during the survey. Therefore, it is recommended that best practice measures are implemented to safeguard individual animals, including precautionary working methods as detailed within Section 4.4.

Japanese rose, an invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 was recorded on site. Precautionary measures should be adopted to prevent the inadvertent spread of this species during Site clearance.

No other ecological constraints have been identified during the ecological assessment. Ecological enhancement recommendations appropriate to the Site have been included within the report.

1. Introduction

1.1 Background

- 1.1.1 Ecus Ltd. was commissioned in November 2017 by Keepmoat Homes Ltd. to undertake an ecological appraisal of land adjacent to School Street, Thurnscoe (Central National Grid Reference: SE 45837 06271), hereafter called 'the Site', prior to submission of a planning application for the development of the Site.
- 1.1.2 The Site comprises a large arable field bordered by an area of derelict land which once supported a number of residential houses and has since become overgrown, with scrub and rough grassland as the dominant habitats.
- 1.1.3 The proposed development includes the construction of 311 residential dwellings, with associated soft landscaping and infrastructure.
- 1.1.4 The purpose of survey was to carry out an extended Phase 1 habitat survey and to review the potential for the site to contain, or be used by, species protected under both UK and European nature conservation legislation, namely the Wildlife & Countryside Act 1981 (as amended) and the Habitat & Species Regulations 2017. 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 the survey work and subsequent assessment. Methodologies employed are described including site surveys and evaluation and the need for any further survey work and/or mitigation measures are included, where appropriate.

2. Methodology

2.1 Data Consultation

- 2.1.1 Data consultation was undertaken by Ecus Ltd. in July 2017 with Barnsley Biological Records Centre (BBRC) and Doncaster Local Records Centre (DLRC) to determine whether there were any existing biological records or locally designated sites of nature conservation interest, within 1 km of the survey area. As no evidence was found to suggest that badgers are present on site, or on adjacent sites previously surveyed, a separate consultation with the local badger group is not considered to be necessary.
- 2.1.2 The Natural England Multi-Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.gov.uk>) was consulted for information on statutory designated sites of nature conservation interest, as well as great crested newt (*Triturus cristatus*) and bat European Protected Species (EPS) mitigation licences within 1 km of the Site in November 2017.
- 2.1.3 Information returned from BBRC, DLRC and MAGIC is incorporated within this report in the relevant sections.

2.2 Extended Phase 1 Habitat Survey

- 2.2.1 The Site was surveyed on 28th November 2017 using extended Phase 1 habitat survey methodology (JNCC, 2010) by consultant ecologist Laura Hobbs, MCIEEM. The habitats and vegetation types present were recorded on to a field map. 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.
- 2.2.2 The abundance of plant species recorded was classified according to the subjective DAFOR rating. The standardised terms are as follows:
- D – Dominant;
 - A – Abundant;
 - F – Frequent;
 - O – Occasional, and
 - R – Rare.
- 2.2.3 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. Species recorded are included within the report as appropriate. Information is presented in Figure 1, using Target Notes (TN) to identify particular features of interest, where appropriate.
- 2.2.4 Habitats present that are listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 or the local Biodiversity Action Plan (LBAP) for Barnsley were noted.
- 2.2.5 The value and sensitivity of ecological features present on Site were determined based on the guidance given in 'Guidelines on Ecological Impact

Assessment' (CIEEM, 2016). Individual ecological receptors (habitats and species that could be affected by the development) for the scheme 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

- 2.2.6 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, 2003). 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."
- 2.2.7 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.
- 2.2.8 For hedgerows comprising 30 m or less, the entire length is surveyed. For hedgerow lengths between 30 – 100 m, the central 30 m is surveyed and the central 30 m surveyed within each 100 m length of hedgerow thereafter. For each surveyed section the number of woody species present is recorded. In addition, details that enable the hedgerow to be assessed against criteria in Sub-paragraph 4 of the Regulations are recorded, including presence of a bank or wall, a 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.
- 2.2.9 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 leafed lime, small leafed 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;
 - 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.

2.3 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 Ponds within 500 m of the Site, which are not separated by a major barrier to amphibian dispersal, were searched for using an Ordnance Survey (OS) map.
- 2.3.3 No ponds were identified within 500 m of the Site; as such, great crested newts are not considered receptors for the proposed development and are not discussed further in this report.

Badger

- 2.3.4 Signs of badger (*Meles meles*) activity were searched for within the survey area as part of the extended Phase 1 survey. Survey followed standard methodology detailed in Surveying Badgers (Harris et al., 1989). This included survey for badger setts, along with survey of linear features and boundaries for signs of badger activity including dung pits, foraging marks, feeding signs and pathways.

Bats

- 2.3.5 The trees on Site were assessed for their potential to support roosting bats as part of the extended Phase 1 habitat survey.
- 2.3.6 An individual tree may have several features of potential interest to roosting bats associated with it. It is not always possible to confirm usage of a feature by bats as often the animals may be present on one day and no evidence of occupation may be found on the next. Consequently it is customary when undertaking such surveys to assign each feature to a defined category of roosting potential as follows: Negligible, Low, Moderate, High, Confirmed (Collins, 2016).
- 2.3.7 The survey area was also assessed for its suitability for foraging and commuting bats using professional judgement.

Birds

- 2.3.8 Detailed bird surveys were not undertaken as part of this assessment, however whilst on site the opportunity was taken to record all species of birds encountered and habitats on Site were assessed for their potential value to nesting and foraging birds.

Reptiles

- 2.3.9 The habitats present on Site were assessed for their suitability to support basking, foraging and hibernating reptiles, with reference to their connectivity with other suitable habitat in the surrounding area.

Riparian Mammals and White-clawed Crayfish

- 2.3.10 A desk based search for watercourses on Site, and within 30 m of the Site, which are not separated from the Site by a major barrier to dispersal, was undertaken using an Ordnance Survey (OS) map.
- 2.3.11 A ditch is present following the southern boundary and part of the eastern and western boundaries of the arable field on Site. This was assessed for its potential to support otter (*Lutra lutra*), water vole (*Arvicola amphibius*) and white-clawed crayfish (*Austropotamobius pallipes*).

Other Key and Notable Species

- 2.3.12 The opportunity was taken whilst on site to assess habitats for the potential to support other protected species, search for signs of nationally or locally scarce or notable species, or any species protected under national or international nature conservation law.

2.4 Invasive Species

- 2.4.1 During the extended Phase 1 habitat survey, any evidence of invasive species, as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), was recorded where seen.

2.5 Survey Limitations

- 2.5.1 Phase 1 habitat surveys are intended to provide a rapid assessment of habitats present within a Site and are not intended to replace detailed vegetation or protected species surveys where deemed necessary. The walkover was undertaken in November; and whilst outside the optimal season for botanical survey, the general character of the habitats could be ascertained. It is therefore considered that a representative assessment of Site habitats and a robust evaluation of their importance to nature conservation has been made.

3. Findings and Evaluation

3.1 Site Description

- 3.1.1 The Site covers approximately 11 ha of land dominated by a large arable field. To the south lies a small area of derelict land which once comprised residential homes which is now dominated by scrub and rough grassland.
- 3.1.2 The Site is located north of an area of residential housing, to the north of the village of Thurnscoe, Doncaster. To the north lies extensive arable farmland, with a railway line forming the eastern boundary, residential housing associated with Thurnscoe lies to the immediate west and south. The habitats within the surrounding landscape are those associated with residential gardens, occasional amenity greenspace and open farmland with hedgerows.

3.2 Designated Sites

- 3.2.1 No statutory sites of importance to nature conservation were identified within 1 km of the survey area using MAGIC.
- 3.2.2 No locally designated sites were identified by BBRC or DLRC.
- 3.2.3 The Site is located within Dearne Valley Green Heart Nature Improvement Area.

3.3 Habitats

Arable

- 3.3.1 The dominant habitat on Site is a large arable field, sown with broadleaved winter crop, most likely sugar beet (*Beta* sp.). Narrow field margins (≤ 1 m) are present surrounding three boundaries of the field (south, east and west), dominated by grassland species such as cock's-foot (*Dactylis glomerata*), tufted hair grass (*Deschampsia cespitosa*), pennywort (*Centella asiatica*), dead nettle (*Lamium* sp.) and cleavers (*Galium aparine*).
- 3.3.2 Arable fields are not listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 or as a local BAP habitat. However, arable field margins are considered to be Habitats of Principal Importance under Section 41 of the NERC Act, with margins defined as strips '*usually sited on the outer 2-12m margin of the arable field*', and include:
- Cultivated, low input margins
 - Margins sown to provide seed for wild bird
 - Margins sown with wild flowers
 - Margins sown providing permanent, grass strips

The margins identified along the eastern and western boundaries of the field are not consistent with any of these descriptions with poor structure and low species diversity. The southern boundary of the field comprises a larger margin associated with the ditch (see 3.3.21 – 3.3.24), although this is dominated by scrub species and not typical of an arable field margin. The field margins identified on Site are of insufficient size, quality and value to be

considered a Habitat of Principal Importance as described by Section 41 of NERC Act.

- 3.3.3 The arable habitat on Site is species-poor, comprising an intensively managed mono species crop/sward which is found in abundance in the local area. Consequently this habitat is considered to be of negligible ecological value.

Neutral Semi-Improved Grassland

- 3.3.4 The southern area of the Site is dominated by a mosaic of semi-improved grassland and scrub. For the purpose of this report this habitat has been assessed as neutral semi-improved grassland with an occasional presence of scrub species.
- 3.3.5 This habitat is assessed as semi-improved based upon its species composition and previous land use as residential gardens, buildings, and farmland. It is likely that the grassland was previously managed as amenity grassland, which has become grown out and rank in nature.. The grassland is considered to be neutral due to the lack of indicative calcareous, acidic or other notable features. The sward is dominated by common native and occasionally ornamental and arable species.
- 3.3.6 The grassland is dominated by coarse grassland species including false oat grass (*Arrhenatherum elatius*), perennial rye grass (*Lolium perenne*), cock's-foot, Yorkshire fog (*Holcus lanatus*) and red fescue (*Festuca rubra*) with occasional smooth meadow grass (*Poa pratensis*) and annual meadow grass (*Poa annua*). Herbaceous species identified on Site included common ragwort (*Jacobaea vulgaris*), rosebay willowherb (*Chamerion angustifolium*), broadleaved dock (*Rumex obtusifolius*), dandelion (*Taraxacum officinale* agg.), tufted vetch (*Vicia cracca*) and mugwort (*Artemisia vulgaris*). Scrub species within this area include bramble (*Rubus fruticosus* agg.) and thistle species (*Cirsium* sp.), with occasional ash (*Fraxinus excelsior*) and willow (*Salix* sp.) saplings, buddleia (*Buddleja davidii*) and rose (*Rosa* sp.) present.
- 3.3.7 Occasional ornamental and arable species such as honeysuckle (*Lonicera nitida*), barley (*Hordeum vulgare*) and oilseed rape (*Brassica napus*) are also present.
- 3.3.8 Semi-improved grassland is not listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 or as a local BAP habitat. This habitat is relatively species-poor, comprising native species commonly occurring within the local area and nationally with no notable or indicative species identified. Consequently this habitat is considered to be of importance at the Site level only.

Scattered Trees

- 3.3.9 Scattered semi-mature trees are present predominantly within the southern area of the Site.
- 3.3.10 Trees are dominated by cherry (*Prunus* sp.) and leylandii (*Cupressus x leylandii*), with silver birch (*Betula pendula*), willow (*Salix* sp.), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), sycamore (*Acer pseudoplatanus*) and oak (*Quercus robur*) also present.

- 3.3.11 Trees are not included as a habitat of principal importance under Section 41 of the NERC Act 2006 or listed as a local BAP habitat. The trees comprise commonly occurring species found frequently both locally and throughout the UK and are all semi-mature in age. As such, the tree habitat on Site is not considered to be of importance to nature conservation at greater than the Site level.

Scrub

- 3.3.12 Areas of scrub are present within the southern area of the Site, alongside the banks of the ditch and bordering the arable field and public footpaths..
- 3.3.13 The scrub is dominated by bramble but also contains species such as common nettle (*Urtica dioica*), rosebay willowherb, thistle species, teasel (*Dipsacus fullonum*), cow parsley (*Anthriscus sylvestris*), mugwort, buttercup (*Ranunculus* sp.) and lady's mantle (*Alchemilla mollis*). Occasional ornamental species including *Mahonia* species are also present.
- 3.3.14 Scrub is not included as a habitat of principal importance under Section 41 of the NERC Act 2006 or listed as a local BAP habitat. The scrub is relatively species-poor comprising commonly occurring species found throughout the UK. The scrub habitat is limited in its extent and is not considered to be of importance to nature conservation at greater than the Site level.

Hedgerow

- 3.3.15 The western boundary of the Site forms a linear feature with adjacent residential housing; comprising a species poor hedgerow (H1, Figure 1) with adjacent rear gardens. The hedgerow management varies along its length and includes highly managed sections, areas with large gaps dominated by scrub, with other areas being overgrown and unmanaged.
- 3.3.16 The hedgerow is dominated by privet (*Ligustrum vulgare*) and hawthorn but also contains species such as elder, oak and cherry. The understory is dominated by nettle and bramble with occasional species such as cleavers.
- 3.3.17 A defunct hedgerow (H2, Figure 1) is present alongside the public footpath to the east of the Site. This is dominated by hawthorn with large gaps present.
- 3.3.18 H1 is comprised of more than 80 % native species and is considered to be a Habitat of Principal Importance in accordance with Section 41 of the NERC Act (2006). Native hedgerows are also listed as a local BAP habitat. Due to the short length of H2, it is not considered to be Habitat of Principal Importance or a local BAP habitat. The hedgerows on Site are not considered to be importance under the Wildlife and Landscape Criteria of the Hedgerow Regulations 1997.
- 3.3.19 H1 provides some connectivity to areas of woodland habitat and hedgerow networks to the north and west of the Site. It is considered to be of importance to nature conservation to the Site level only.
- 3.3.20 H2 provides very limited connective features across the Site and is also considered to be of importance to nature conservation at the Site level only.

Ditch

- 3.3.21 No major watercourses were identified on Site or within 30 m of it. A dry ditch

extends along the southern boundary, and part way along the eastern and western boundaries of the arable field.

3.3.22 The ditch (D1, Figure 1) is an isolated ditch comprising steep banks and is heavily vegetated with scrub and coarse grasses, indicating it does not regularly hold water. No aquatic plant species were noted.

3.3.23 Ditch 1 is assessed as having negligible ecological value as aquatic habitat at the current time and is not considered to be of importance to nature conservation at greater than the Site level.

Hard Standing and Bare Ground

3.3.24 Other habitats present on Site comprise areas of hard standing which form public footpaths which extend through the south eastern area of the arable field. These man made habitats are of negligible ecological value and are not discussed further within the report.

3.3.25 Areas of bare ground (TN 2, Figure 1), are also present along the eastern boundary of the arable field, associated with a public bridle path and desire lines. These areas are predominantly bare of vegetation and this habitat is therefore assessed to be of negligible ecological value.

3.4 Species

Amphibians

3.4.1 Single records of common frog (*Rana temporaria*) and common toad (*Bufo bufo*) were identified 750 m to the south-east of the site. No records of amphibians were provided within 1 km of the survey area by DLRC.

3.4.2 Site habitats are considered to have some suitability to provide foraging habitat for common amphibians such as common frog (*Rana temporaria*) and common toad (*Bufo bufo*) should they be present within the area. However given the lack of known waterbodies within the area, Site habitats are not considered likely to be key to any particular species and are of importance to common amphibians at the Site level only.

Badger

3.4.3 No records of badger were returned.

3.4.4 No evidence of badgers, such as setts, latrines or snuffle holes, was recorded during the survey and a thorough search of the Site was undertaken. There is potential for foraging badgers to utilise the Site from time to time as part of a wider territory, however given the absence of field signs on Site and the availability of alternative more suitable habitat for sheltering and foraging badgers within the surrounding area, the habitats on Site are considered to be of importance to badger at the Site level only.

Bats

3.4.5 BBRC provided six records of bats within 1 km of the site. All records refer to common pipistrelle (*Pipistrellus pipistrellus*) roosts in the residential area to the south of the site. The closest roost 900 m to the south-east of the Site.

3.4.6 No records of bats were provided within 1 km of the survey area by DLRC.

- 3.4.7 No EPS licences pertaining to bats were identified within 1 km of the Site using MAGIC.
- 3.4.8 Along the northern boundary of the Site lies a mature sycamore tree (T1, Figure 1), this is covered in ivy (*Hedera helix*) and is of a size and age that may support potential roost features. This tree has therefore been assessed as offering low roosting potential for bats.
- 3.4.9 Habitats on Site will provide suitable features for foraging bats; in particular the hedgerow along the western boundary; the railway corridor along the eastern boundary and the line of scrub and trees along the southern area of the Site. The arable habitats are considered to be sub-optimal for bats and the wider area supports extensive habitat of equal or greater value to those occurring on site. Whilst the Site habitats have some value to foraging bats, this is considered to be limited to site boundaries and Site habitats are unlikely to be of significance to foraging bats outwith the site level. .

Birds

- 3.4.10 BBRC returned records of a number of bird species including sparrowhawk (*Accipiter nisus*), blackcap (*Sylvia atricapilla*), linnet (*Carduelis cannabina*), skylark (*Alauda arvensis*), siskin (*Carduelis spinus*), house martin (*Delichon urbica*), sedge warbler (*Acrocephalus schoenobaenus*), reed warbler (*Acrocephalus scirpaceus*), willow warbler (*Phylloscopus trochilus*) and yellowhammer (*Emberiza citrinella*).
- 3.4.11 DLRC provided records of hawfinch (*Coccothraustes coccothraustes*) within 1 km of the survey area.
- 3.4.12 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.
- 3.4.13 “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.
- 3.4.14 Bird species including goldfinch (*Carduelis carduelis*), pigeon (*Columbidae* sp.), magpie (*Pica pica*), house sparrow (*Passer domesticus*), wren (*Troglodytes troglodytes*), common gull (*Larus canus*) and great tit (*Parus major*) were recorded on Site during the survey. House sparrow is a red listed species, whereas common gulls are amber listed. All other birds identified on site during this survey are Green listed.
- 3.4.15 All areas of scrub, hedgerows and scattered trees will provide suitable features for various species of bird; with the arable field providing potential for farmland species such as skylark, yellowhammer and linnet. Although Site habitats are not considered critical to any one species in particular, farmland birds including swallow (*Hirundo rustica*) have previously been identified on

Site (Ecus, 9903 Thurnscoe Phase 2, July 2017). Given the limited extent of the scrub and trees on Site; and the frequent availability of arable farmland within the wider area; the Site is considered to be of importance to nesting and foraging birds at the Site level only.

Reptiles

3.4.16 No records of reptiles were provided within 1 km of the survey area by BBRC or DLRC.

3.4.17 The grassland and scrub on Site provide suitability for use by basking reptiles, including shelter opportunities within boundary scrub. Although the railway line adjacent to the eastern boundary provides extensive suitable habitat and connectivity to other areas, the dominance of residential housing and farmland on Site is likely to deter reptiles from being present. It is therefore considered highly unlikely that reptiles would be found on Site; however their presence cannot be completely ruled out, particularly along the eastern boundary.

Riparian Mammals and White Clawed Crayfish

3.4.18 No records of riparian mammals or white-clawed crayfish were provided within 1 km of the survey area by DLRC.

3.4.19 Ditch 1 which extends along the southern boundary and part of the eastern and western boundaries of the arable field, is dry and is therefore unsuitable to support water vole, otter or white-clawed crayfish. As such, these species are not considered receptors for the proposed development and are not discussed further in this report.

Other Species

3.4.20 BBRC returned one record of hedgehog within 1 km of the Site.

3.4.21 Habitats on the Site may support hedgehogs as part of a wider foraging territory and could provide an important local resource in the residential area. Habitats on Site may be of Site level importance to hedgehogs.

3.4.22 A brown hare was also identified on Site during this survey. Habitats on Site may support brown hares at the limit of their territory in an area of extensive habitat associated with farmland which extends to the north and west. The Site is therefore considered to be of importance to brown hare at the Site level only.

3.5 Invasive Species

3.5.1 Japanese Rose (*Rosa rugosa*) was identified to be present within areas of scrub to the south of the Site (TN3, Figure 1). Japanese rose is listed under Schedule 9 of the Wildlife and Countryside Act 1981 and is likely present due to former introductions to residential gardens on Site.

3.5.2 No other invasive species were recorded on Site at the time of the survey.

4. Ecological Assessment and Mitigation

4.1 Proposals

- 4.1.1 The proposed development shown on the supplied September 2016 Context Plan – Phases 2 & 3 (Drawing Ref: 2238_06) produced by Chris Gothard Architectural Ltd. includes the construction of 311 residential dwellings, with associated landscaping and infrastructure. Public Open Space is incorporated in the centre and southern boundary. The following assessment of ecological impacts is based on this layout.

4.2 Designated Sites

- 4.2.1 No statutory sites of importance to nature conservation have been identified and therefore no impacts to statutory sites are anticipated.
- 4.2.2 No locally designated sites were identified by DLRC within 1 km of the Site; therefore there is unlikely to be any impacts upon locally designated sites during proposed works.
- 4.2.3 The Site was identified to lie within Dearne Valley Green Heart Nature Improvement Area. however the Site is considered to generally be comprised of low value habitats, such as arable farmland; those habitats providing connectivity and green corridors have potential to be retained and strengthened by the development through the implementation of back to back gardens and areas of POS. It is therefore considered that loss of habitats on site will have no impact upon the overall value of this scheme.

4.3 Habitats

Arable

- 4.3.1 Total landtake of arable habitat on Site will be required to accommodate the proposed development. The loss of arable habitat, including field margins is considered to be of negligible ecological importance due to the highly managed nature, low species diversity and lack of consistent structure.
- 4.3.2 It is considered that large areas of POS have the potential to retain and enhance both the eastern and southern boundaries of the field, with opportunities to increase the structural diversity of habitats and overall ecological value of the Site.

Neutral Semi-Improved Grassland

- 4.3.3 Total landtake of grassland on Site will be required to accommodate the proposed development. Given that the grassland sward is species-poor and dominated by nationally and locally common species, landtake is considered to be of importance to nature conservation at the Site level only.
- 4.3.4 As site boundaries have been identified as the most valuable ecological features on site, the addition of rear facing gardens to the western boundary will maintain and strengthen this feature and maintain corridor function and connectivity to the wider hedgerow network. Consideration could also be given to the inclusion of hedgerow planting to the western boundary, or for the inclusion of trees to rear gardens to improve the habitat structure along this boundary.

- 4.3.5 The addition of POS area to the eastern boundary will enhance and strengthen the railway corridor and consideration could be given to applying a more relaxed mowing regime for retained areas of grassland on Site i.e. POS, to increase structural diversity and enhance the value of the Site for invertebrates, birds and small mammals.
- 4.3.6 It is recommended that an ecologically sensitive landscaping strategy is produced for the site to ensure it delivers maximum biodiversity value, hereby complying with the National Planning Policy Framework (NPPF). Where possible, native species should be favoured and species chosen should maximise flowering, pollen/nectar production and/or berries/fruit production to benefit invertebrates, birds and small mammals.
- 4.3.7 It is recommended that the landscape design ensures the continuation and integration of ecologically sensitive areas across Phase 2 and Phase 3 of proposed developments.

Scattered trees

- 4.3.8 Landtake of Site trees will be required to accommodate the development as proposed. However, consideration should be given to the retention of trees where possible for incorporation into the scheme. All retained trees should be protected by the implementation of Root Protection Zones (RPZs) in accordance with British Standard 5837 (2012).
- 4.3.9 It is recommended that the new tree planting is incorporated within the landscaping scheme for the proposed development comprising native trees, typical of the local area and of UK provenance. Flowering and fruiting species are encouraged to maximise value to wildlife. It is recommended that heavy standards are used to decrease the time taken for the trees to establish.

Scrub

- 4.3.10 Total landtake of scrub is likely to be required to accommodate the proposed development. Given the wide availability of this habitat in the surrounding area, landtake of scrub is considered to be of importance to nature conservation at the Site level only.
- 4.3.11 The loss of scrub on Site could be offset by the incorporation of structure planting within areas of POS. Groups of shrubs would provide habitat for birds and small mammals, and flowering and fruiting species are encouraged to maximise value to wildlife. Native species typical of the local area and of UK provenance should be included within the landscaping scheme.

Hedgerow

- 4.3.12 Proposed development plans currently show retention of hedgerow 1 (Figure 1). There is potential for the hedgerow to be damaged during construction and it should be protected by the implementation of Root Protection Zones (RPZs) in accordance with British Standard 5837 (2012).
- 4.3.13 There is potential for the hedgerow to be enhanced by the infilling of areas and planting of hedgerow margins and understory vegetation, along with suitable management practices. Should this not be possible, consideration could be given to planting new hedgerows as boundary treatments for gardens or areas of Public Open Space. This should be detailed in the

landscape strategy.

4.3.14 H2 (Figure 1) will be lost during the proposed works, although this is considered to be of importance to nature conservation at Site level given its limited extent and value.

4.3.15 The planting of hedgerows has the potential to improve the overall biodiversity of the Site and would improve the quality of habitats for species such as birds, bats and invertebrates. In particular, the planting of hedgerows and other vegetation to create a green corridor connecting the western and eastern boundaries is likely to provide a benefit to species utilising these features.

Ditch

4.3.16 Proposed works are likely to require complete landtake of the dry ditch which extends along the southern boundary, and part of the western and eastern boundaries, of the arable field.

4.3.17 During infilling of the ditch, it is recommended that pollution prevention guidelines (CIRIA C532, 2001) are followed to avoid indirect impacts to the watercourses. This should include procedures implemented to prevent run-off entering the watercourses during works and contingency plans in place to deal with accidental spillages.

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 The terrestrial habitat on Site has some suitability to support common amphibians but alternative suitable terrestrial habitat is available within the surrounding area and landtake required to accommodate development at the Site is considered to be of importance to common amphibians at the Site level only.

4.4.3 In the event that common amphibians are encountered during Site clearance works, they should be carefully collected by gloved hand and relocated to an area of shelter away from the area of works.

Badger

4.4.4 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.

4.4.5 No badger setts were present on Site at the time of the survey and no field signs of badger were recorded across the Site. Whilst there is potential for foraging badgers to utilise the Site as part of a wider territory, given the availability of alternative suitable habitat for sheltering and foraging badgers within the local area, the habitats on Site are considered to be of importance to badger at the Site level only.

- 4.4.6 As badgers have some potential to move across the Site from time to time, taking a best practice approach, all deep excavations (> 1 m) should be covered overnight during demolition/construction works. Shallow excavations (< 1 m) should have a scaffold board or equivalent placed in them overnight to allow any badgers to exit, should they fall in, and all chemicals should be stored securely in accordance with best practice guidelines. No open pipework should be left overnight. As a precautionary measure it is recommended that consideration is given to a pre-construction badger check.

Bats

- 4.4.7 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended). 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).
- 4.4.8 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.
- 4.4.9 Barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteinii*), brown long-eared, greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*), noctule and soprano pipistrelle bats are included as priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 4.4.10 It is recommended that the sycamore tree (T1, Figure 1) which displays low roosting potential is retained if practicable. Should this not be possible, the tree should be sensitively felled in accordance with best practise.
- 4.4.11 The Site has been assessed as being of low value to foraging bats. The current development plans are unlikely to result in any significant impacts to commuting/foraging habitat and key corridors will be strengthened in the long term as gardens and POS areas mature.
- 4.4.12 It is recommended that a sensitive lighting scheme is developed for the site to minimise the impact upon foraging and commuting bats. The sensitive lighting plan should aim to preserve dark corridors and protect edge habitats from light spill through the use of low sodium bulbs, downward facing lighting, low level lighting and the use of PIR sensors etc. Lighting should avoid features such as hedgerows and trees and light spill should be avoided to areas of planting within the areas of POS. Directional or low level lighting could be considered in these areas. Further recommendations relating to bats and lighting are provided in Appendix 3.
- 4.4.13 Inclusion of roosting opportunities for bats should be considered to provide a biodiversity enhancement which would comply with the National Planning Policy Framework aim that "*opportunities to incorporate biodiversity in and around developments should be encouraged*" (NPPF, 2012). This would also compensate for the loss of T1, if the tree cannot be retained.
- 4.4.14 Bat tubes or boxes e.g. Schwegler 1FR bat tubes, could be installed within the fabric of buildings to offer discreet and secure, self contained units without

providing access into cavity walls. Alternatively, external boxes could be mounted securely on an external wall. Locations facing southerly aspects are optimal for bat boxes, and they should be placed at a minimum of 4 m high (or preferably at eaves level). Areas of bright lighting should be avoided.

Birds

- 4.4.15 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) against destruction of the nest during the bird nesting season, which falls between March and August, inclusive.
- 4.4.16 The scrub, hedgerows and trees on Site are likely to be used by nesting and foraging common bird species, with potential for skylark (a ground nesting bird) to nest within the arable habitat on Site. As the Phase 1 survey was undertaken outwith the breeding bird season, it is recommended that Breeding Bird Surveys are undertaken across the site to determine its value to nesting birds, particularly skylark. Surveys should be undertaken between March and June.
- 4.4.17 Should skylark be identified on site, a suitable mitigation and compensation strategy will be required to off-set the impacts of the development. If sufficient mitigation or compensation cannot be delivered within the confines of the proposed scheme, off-site compensation will be required.
- 4.4.18 Inclusion of a range of bird nesting provision on any new structures or retained mature trees would be considered a positive enhancement for nature conservation and would comply with the NPPF aims for biodiversity (2012). Suitable provision may include general bird boxes with 26 mm and 32 mm entrance holes suitable for a range of garden bird species and/or sparrow terraces for house sparrows. The bird boxes should be placed at a minimum height of 3 m in a number of locations facing different aspects to maximise the chances of occupation. However, full south aspects which receive full sun all day during the summer months present a risk of overheating and should therefore be avoided. Tree planting would also be beneficial to local bird species.

Other Key and Notable Species

Hedgehog

- 4.4.19 Hedgehog is included as a species of principal importance under Section 41 of the NERC Act 2006. 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.
- 4.4.20 Hedgehogs are highly mobile and inquisitive animals that have potential to move onto Site 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.
- 4.4.21 Should a hedgehog be discovered on Site at any time during the works, it should be moved carefully with gloved hands to a sheltered area away from the footprint of works e.g. beneath scrub.

- 4.4.22 The creation and maturing of new garden habitats and POS on Site will provide alternative suitable habitat to the grassland and scrub currently on Site. To allow for dispersal of small mammals between gardens, which are increasingly important to hedgehogs, consideration should be given to the incorporation of small gaps beneath or between garden fences across the development if close boarding fencing is to be used.
- 4.4.23 Natural gaps should be left under or around fencing where possible at fence junctions to rear gardens, or where this is not feasible, gaps measuring a minimum of 13 cm x 13 cm could be created to the base of panels/gravel boards to allow the movement of hedgehogs between gardens across the development. Further information and examples of such fencing gaps put into practice can be found in the following webpage: <http://www.hedgehogstreet.org/pages/link-your-garden.html>. Alternatively, railing and hedgerows provide free passage for hedgehogs.

Brown Hare

- 4.4.24 Brown hare is included as a species of principal importance under Section 41 of the NERC Act 2006. Whilst not afforded a high level of protection, brown hares have experienced significant declines in the UK population. Taking a best practice approach, avoiding harm to brown hares should be taken into consideration during works.
- 4.4.25 Brown hares are highly mobile animals that are often found in open agricultural habitats and therefore have the potential to move onto Site at any time. It is therefore recommended, following best practice guidance, that a precautionary approach is taken for brown hares.
- 4.4.26 This should include the clearance of the arable field, outside of the brown hare breeding season, which extends from February to September. Should clearance works be required within this period, an Ecological Clerk of Works (ECoW) should be employed to conduct a walkover survey of the Site and identify any forms present (small depressions in ground where hares shelter) which may contain leverets (young hares). Any forms identified will be left undisturbed until the hares have finished breeding.

4.5 Invasive Species

- 4.5.1 Japanese rose was identified to be present within areas of scrub found within the southern area of the Site. This plant is a non-native invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 which forms dense wide reaching thickets that can out-compete native species. Whilst the presence of these species does not constitute an offence in itself, planting or causing them to spread in the wild does. The removal of this species could be of benefit to nature conservation at a Site level.
- 4.5.2 As a precautionary measure and following best practice it is recommended that the Japanese rose on Site should be cleared, grubbed out and bagged, with care taken to ensure the entire root system is removed. The arisings should be transported to a licenced composting/green waste facility in a covered container to avoid inadvertent spread of plant material. The receiving waste facility should be made aware of the nature of the green material.

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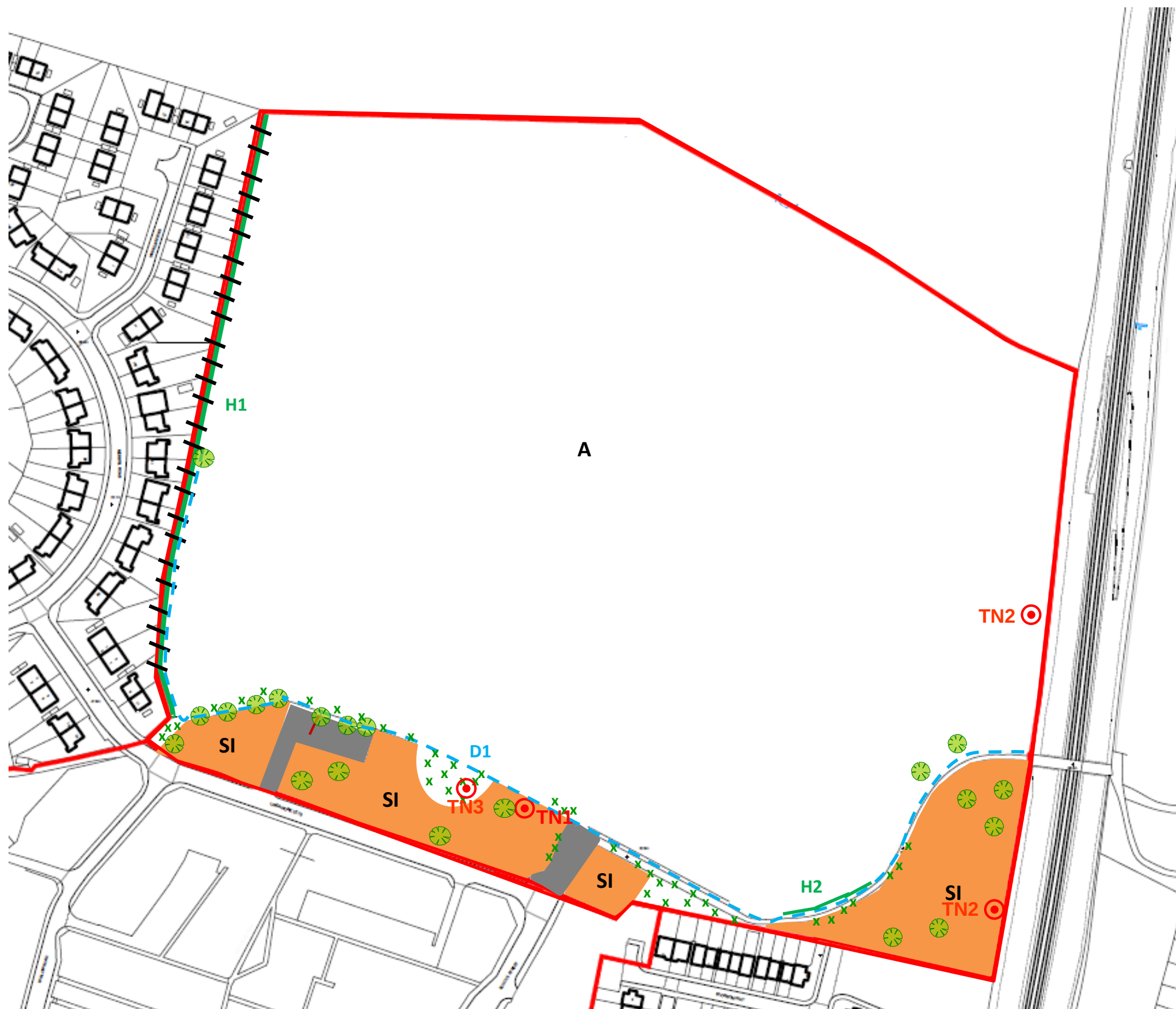
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Figure 1. Survey Findings

Legend

-  Site Boundary
-  Hedgerow
-  Dry Ditch
-  Fence
-  Wall
-  Arable
-  Semi-Improved Grassland
-  Scattered Scrub
-  Tree (indicative)
-  Target Note



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School Street, Thurnscoe, Phase 3
Ecological Appraisal

Figure 1
Survey Findings

Brook Holt 3 Blackburn Road Sheffield S61 2DW
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Appendix 1. Site Photographs

1.



2.



3.



4.



5.



6.



Legend

1. Arable field
2. Southern area of Site comprised of rough grassland and scrub.
3. Hedgerow and fencing to east of arable field
4. Public footpath and dry ditch along the eastern boundary of arable field.
5. Narrow field margins and track along eastern boundary of Site
6. Wall and scattered scrub on hard standing to the south of site

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Appendix 1
Site Photographs

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Appendix 2. Species Lists

Table A2.1: Species List for Habitats on Site.

Semi-Improved Grassland		
Common Name	Scientific Name	DAFOR
Cock's-Foot	<i>Dactylis glomerata</i>	D
Dandelion	<i>Taraxacum officinale</i>	O
Vetch	<i>Vicia sativa</i>	R
Fescue	<i>Festuca</i>	A
Long Leaf Plantain	<i>Plantaginaceae</i>	F
Nettle	<i>Urtica dioica</i>	A
Spear Thistle	<i>Cirsium vulgare</i>	F
Ragwort	<i>Senecio jacobaea</i>	O
Willow herb	<i>Epilobium hirsutum</i>	R
Chickweed	<i>Stellaria media</i>	O
Meadow Grass	<i>Poa</i>	F
Burdock	<i>Arctium</i>	F
Cleavers	<i>Galium aparine</i>	F
Common Couch	<i>Elymus repens</i>	O
Tufted Hair Grass	<i>Deschampsia cespitosa</i>	O
Barley	<i>Hordeum</i>	R
Perennial Rye	<i>Lolium</i>	A
False Oat	<i>Arrhenatherum</i>	F
White Clover	<i>Trifolium repens</i>	F
Scattered Scrub		
Common Name	Scientific Name	DAFOR
Bramble	<i>Rubus fruticosus</i>	D
Rose	<i>Rosaceae</i>	O
Nettle	<i>Urtica dioica</i>	A
Cherry	<i>Prunus</i>	F
Scattered Trees		
Common Name	Scientific Name	DAFOR
Cherry	<i>Prunus</i>	D
Silver Birch	<i>Betula pendula</i>	F
Leylandii	<i>Cupressus</i>	A
Hawthorn	<i>Crataegus monogyna</i>	D
Sycamore	<i>Acer pseudoplatanus</i>	R
Hedgerow		
Common Name	Scientific Name	DAFOR
Privet	<i>Ligustrum vulgare</i>	D
Bramble	<i>Rubus fruticosus</i>	A
Oak	<i>Quercus</i>	O
Hawthorn	<i>Crataegus monogyna</i>	D
Elder	<i>Aegopodium podagraria</i>	O
Laurel	<i>Cistus laurifolius</i>	O

Appendix 3. Bats and Lighting

Bats and Lighting

Bats and lighting

Artificial lighting is known to affect bat roosting and foraging behaviour with lighting shown to result in a range of impacts including roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs *et al.*, 2003), increased activity of some bat species and decreased activity by others (Stone *et al.*, 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux. In contrast slow flying bats, including myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone *et al.*, 2012). Current recommendations for all bat species specifies that no bat roost should be directly illuminated (BCT 2014).

Mitigation and lighting design

Bat friendly lighting plans should firstly look to avoid lighting where possible and minimise lighting impacts by adopting the following measures:

- **Lighting curfews or use of PIR sensors.** Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of the overall time.
- **Consider no lighting solutions where possible.** Options such as white lining, good signage and LED cat's eyes, should be considered as preferable, especially within Zones 1 and 2. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.
- **Use only high pressure sodium or warm white LED lamps where possible.** High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).
- **Minimise the spread of light.** Light spread should be kept at or near horizontal in order to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.
- **Consider the height of lighting column.** Whilst downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide uplighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce uplighting. Column height should be carefully considered to balance task and mitigation measures.
- **Avoid reflective surfaces below lights.** The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently

surface materials around lighting require consideration.

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