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ENVIRONMENTAL PLANNING

Avant Homes
Moorthorpe Way
Sheffield

Preliminary Ecological Appraisal

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Moorthorpe Way
Sheffield

Preliminary Ecological Appraisal

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March 2019

DOCUMENT ISSUE RECORD

REVISION:	DATE OF ISSUE:	STATUS:	AUTHOR:	CHECKED:	APPROVED:
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Notice

EXECUTIVE SUMMARY

BWB Consulting (BWB) was instructed by Avant Homes to carry out a Preliminary Ecological Appraisal on Moorthorpe Way, Sheffield. The findings are summarised in the table below.

Ecological Receptor	Results & Discussion	Recommendations
General		An Ecological Impact Assessment (EcIA) should be produced, which ties together any further survey work carried out and includes a full appraisal of the impacts of the final masterplan. Opportunities for ecological enhancement, with the aim of achieving Biodiversity Net Gain, should be sought within the masterplan. This could include the incorporation of bat and bird boxes into the buildings, the use of native botanical species, creation of a variety of habitat types within the landscape design and the specific recommendations provided below.
Designated Sites	The Site lies within the risk zone of a number of Sites of Special Scientific Interest (SSSIs) and residential developments of 50 units or more, outside of existing settlements/urban areas, are listed as a risk category, for which further information will be required by the LPA. The Site also lies immediately adjacent to Owlthorpe Local Wildlife Site (LWS), which is itself directly connected to Westfield Plantation LWS. These sites support a number of bat, bird, invertebrate and botanical species of local importance.	Consultation with the Local Planning Authority (LPA) is recommended to establish whether this development would fall under a risk category. If so, consideration of the main risks to the SSSI would be covered in the EcIA and any required mitigation would be agreed with the Client before inclusion in this document. Measures for protection of the LWS will also need to be considered. This could include the position of waste bins around the development Site and measures to ensure public access does not have a detrimental effect.
Habitats	The habitats within the Site were unmanaged and of generally poor species diversity, with large patches of bramble and bracken dominating. However, the adjacent LWS supports botanical species such as orchids, which may colonise the survey Site.	A botanical survey is recommended between May and September to confirm whether any rarer botanical species are present. These may require translocation or reseeding post-development.
Amphibians	Although habitats within the Site were considered suitable for amphibians, the presence of flowing water and a road, would isolate the Site from colonisation by great crested newts (GCN) and their presence is considered unlikely. Common amphibians, which will more readily colonise garden ponds, may be present.	All site workers should be made aware of the potential for common amphibians to be present and any such animals found on Site should be moved carefully and by hand to a place of safety within habitats outside of the development footprint.

Ecological Receptor	Results & Discussion	Recommendations
Badgers	Although there was no evidence of badger during the survey, this species is likely to be active in the surrounding habitats and may dig new setts on the Site at any time.	A badger survey should be conducted within three months of the onset of site clearance works. Any badger setts found may need to be closed under a licence from Natural England and ecological supervision of the clearance of dense vegetation may need to be undertaken to ensure there are no hidden setts. General good working practices in relation to mammals should be followed at all times during construction.
Bats	There were no opportunities for roosting bats within the Site. The habitats on Site offered some potential for foraging and commuting bats and in particular, it could represent a key habitat linkage between roosting opportunities to the south and foraging to the north, east and west.	A bat activity transect should be conducted in spring, summer and autumn, coupled with static monitoring for five nights in each season. This will provide information on any key flight lines across the site and guide any mitigation required. The lighting scheme should follow best practice guidelines in relation to bats.
Birds	A number of nationally and locally rare bird species are known to use the habitats immediately surrounding the Site and the habitats on Site offered nesting and foraging opportunities for a range of species.	A breeding bird survey should be carried out, which comprises one visit per month across April, May and June. This will identify key species that use the Site and guide habitat creation and the provision of nesting opportunities for inclusion in the final masterplan.
Invertebrates	Although a number of locally important invertebrate species are present in habitats surrounding the Site, these habitats will remain unaffected and considerable habitat suitable for these species will continue to exist.	The landscaping for the Site offers a good opportunity to develop habitats suitable for a range of invertebrate species and the use of native flowering species, as well as a mixture of the types of vegetation should be encouraged.
Reptiles	The habitats on Site were considered suitable for reptiles and any Site clearance has the potential to harm these species if they are present.	A reptile survey should be carried out to confirm the presence or likely absence of these species. This should be undertaken in April and May or September.
Other species	Hedgehogs may utilise the Site for foraging and commuting.	Habitats and commuting routes for hedgehogs should be incorporated into the final masterplan. If this animal is found during works, it should be moved carefully and by hand to habitats off-site.

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1.0 INTRODUCTION

Instruction

1.1 BWB Consulting Ltd (BWB) was instructed by Avant Homes (the Client) to carry out a Preliminary Ecological Appraisal on land off Moorthorpe Way (the Site). This report has been produced to provide further information in relation to a planning application for residential development at the site.

Site Setting

1.2 The Site is located off Moorthorpe Rise to the south-west of Owlthorpe in Sheffield: Central Grid Reference SK 4156 8261. The location of the Site is shown in Error! Reference source not found..

Figure 1: Location Plan

Aims

1.3 The primary purpose of this appraisal is to provide a baseline of all ecological considerations relating to any future development proposals. This will include the identification of any potential ecological constraints and opportunities.

Scope of Works

1.4 The ecological appraisal was informed by a desk-based study and a site survey. The approach to this ecological appraisal follows best practice published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) and the British Standards Institution (BSI, 2013). Further details are provided later in this report.

Legislation and Planning Policy

1.5 The following legislation relates to species and habitats that could potentially occur in association with the Site:

- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Protection of Badgers Act 1992;
- Wild Mammals (Protection) Act 1996; and
- The Hedgerow Regulations 1997.

1.6 Further information on the legislation relevant to this Site is provided in **Appendix 1**.

1.7 Consideration has also been given in this report to relevant National and Local Planning Policy as summarised below.

1.8 The National Planning Policy Framework (NPPF) guides Local Planning Authorities (LPAs) when developing their planning policies and considering planning applications affecting protected habitats, sites and species.

1.9 In respect of the natural environment, the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and

other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."

1.10 Through the NPPF and Section 40 of the NERC Act, LPAs have a duty to consider habitats and species listed as being of principal importance for nature conservation in England on Section 41 (S41) of the Act when considering a planning application. In addition, the biodiversity duty of local planning authorities also covers species and habitats listed in local biodiversity action plans.

1.11 Additionally, the current adopted Sheffield Local Plan (comprising the Sheffield Core Strategy (2009) and 'saved' policies from the Sheffield Unitary Development Plan (1998) provides the following policies with respect to open spaces and the natural environment:

GE11: Nature Conservation and Development

The natural environment will be protected and enhanced. The design, siting and landscaping of development should respect and promote nature conservation and include measures to reduce any potentially harmful effects of development on natural features of value.

GE13: Areas of Natural History Interest and Local Nature Sites

Development which would damage Areas of Natural History Interest will normally not be permitted. Development affecting Local Nature Sites should, wherever possible, be sited and designed so as to protect and enhance the most important features of natural history interest.

Where development would decrease the nature conservation value of an Area of Natural History or Local Nature Site, that decrease must be kept to a minimum and compensated for by creation or enhancement of wildlife habitats elsewhere within the site or local area.

GE15: Trees and Woodland

Trees and woodland will be encouraged and protected by:

a) *Planting, managing and establishing trees and woodland, particularly in the South Yorkshire Forest; and*

b) *Requiring developers to retain mature trees, copses and hedgerows, wherever possible, and replace any trees which are lost; and*

c) *Not permitting development which would damage existing mature and ancient woodlands.*

2. METHODS

Desktop Study

2.1 Sheffield Biological Records Centre (SBRC) and Derbyshire Wildlife Trust (DWT) were contacted to request records of any locally designated sites and/or protected species from the Site and land within a 2km radius. Records more than ten years old have been largely disregarded.

2.2 In addition, the data sources listed below were also searched to gather additional ecological data of relevance to the project, including the identification of non-designated ecologically sensitive habitats such as vegetation corridors, woodlands, watercourses and standing water.

- Multi-Agency Geographic Information for the Countryside (MAGIC);
- Ordnance Survey 1:25,000 mapping; and
- Aerial imagery (Google – imagery dated 2016).

Extended Phase 1 Habitat Survey

2.3 A site survey was undertaken on 14th February 2019 by Sarah Stone MSc BSc (Hons) MCIEEM. Sarah has extensive experience in survey and site assessment for protected species and is appropriately qualified for the surveys based on the CIEEM competencies for species surveys (CIEEM, 2017).

2.4 The visit was completed using Phase 1 habitat survey techniques as defined in the standard methodology (JNCC, 2010).

2.5 The aim of the visit was to gather sufficient baseline information on the habitats within the Site in order to allow an interpretation of the ecological value of the land.

2.6 In addition, the methodology was extended to include a search for incidental evidence of protected/notable fauna and an assessment of the Site's potential to support protected/notable fauna. Specific consideration was given to the following species:

- Birds;
- Bats;
- Amphibians, including great crested newts (GCN) *Triturus cristatus*;
- Reptiles;
- Badgers *Meles meles*; and
- Priority Species, such as hedgehog *Erinaceus europaeus*.

2.7 Standard methodologies were used where applicable.

2.8 Habitats adjacent to the Site were viewed, where possible, from the Site boundaries in order to assess their potential to support protected species that could be utilising the survey Site.

Survey Comments

2.9 A Preliminary Ecological Appraisal is not usually sufficient for submission with a planning application. The survey methodology highlights habitats and features with potential for protected/notable species but is not designed to provide a comprehensive presence/absence survey. The results of any species-specific surveys recommended as a result of this appraisal should be combined with the results of this appraisal in order to give a full understanding of potential ecological impacts resulting from the development.

2.10 The survey was carried out in February, which is outside of the typical plant-growing season and at a time when many faunal species are less active. However, a survey at this time of year is sufficient for an experienced surveyor to categorise the habitats and assess the potential for protected species to be present, in line with the aims of the Preliminary Ecological Appraisal.

2.11 Areas of the Site were overgrown with dense scrub and were inaccessible to the surveyor. However, the surveyor was able to assess the potential for protected species to be present within the inaccessible areas and it was not therefore considered to be a constraint to the survey.

2.12 In line with standard guidance, the results and recommendations within this report are valid for up to two years from the date of survey, assuming there are no significant changes to the survey Site or its immediate surroundings. Updated survey work may be required to support any future planning applications outside of this time period.

3. RESULTS

Statutory Designated Sites

3.1 There are no statutory designated sites within 2km of the proposed development Site. However, it does fall within the Risk Zone for a number of SSSIs. Residential developments of 50 or more houses outside of existing settlement/urban areas are highlighted as a risk category, for which the Local Planning Authority will be expected to consult with Natural England over the likelihood of impacts.

Non-statutory Designated Sites

3.2 Owlthorpe Local Wildlife Site (LWS) is located immediately to the north and west of the proposed development site. This connects directly to Westfield Plantation LWS, approximately 550m east.

3.3 Owlthorpe LWS is listed as containing semi-natural woodland, bracken, other tall herbs, improved grassland, scrub and ancient/species-rich hedgerows. The citation lists a number of botanical species of local importance found within the LWS, as well as a considerable assemblage of invertebrates, nationally and locally important bird species and bat species.

3.4 Westfield Plantation LWS is also listed for the presence of nationally important bird species and ancient woodland indicator species (although the woodland is not listed as ancient woodland).

Habitats and Botanical Species

Overview

3.5 The Extended Phase 1 Habitat Survey Results Map with Target Notes (TNs) is provided in **Appendix 2** with accompanying habitat descriptions below. Relevant photographs are shown in **Appendix 3**. Botanical species nomenclature follows Stace (2019).

3.6 The Site comprised a mosaic of habitats, with rank grassland, patches of dense scrub, dense bracken and broadleaved trees.

3.7 It was well used for recreation, with numerous dog walkers seen during the survey.

3.8 The northern Site boundary was comprised of a fence, with a woodland bank sloping steeply down to Ochres Dyke (see Photograph 1); the eastern boundary of the Site was comprised of a tarmac footpath, with similar habitats beyond; the southern boundary of the Site comprised Moorthorpe Rise, a residential road; and the western boundary was relatively indistinguishable, with dense scrub and trees having overtaken an old hedge line.

Poor semi-improved grassland and tall herb

3.9 The majority of the site comprised rank grassland, dominated by cock's foot *Dactylis glomerata*. Tall herb species were frequent throughout the grassland, including species such as dock *Rumex* sp., mugwort *Artemisia vulgaris*, hogweed *Heracleum sphondylium* and creeping thistle *Cirsium arvense* (see Photograph 2).

3.10 The grassland showed no sign of recent management, with a sward height over 30cm in places and dense tussocks forming.

3.11 The ground beneath the grass was frequently covered with moss species, suggesting this area remains damp.

Amenity grassland

3.12 A narrow strip of well-mown amenity grassland was present on the road verge of Moorthorpe Rise, falling within the Site's south-eastern boundary (see Photograph 3). This comprised common grassland species, such as perennial rye grass *Lolium perenne*, dandelion *Taraxacum officnale*, yarrow *Achillea millefolium* and occasional cock's-foot.

Scrub

3.13 Scrub was present across the site, both scattered across the grassland and as dense, impenetrable patches. This was primarily bramble *Rubus fruticosus* (see Photograph 4) but also included hawthorn *Crataegus monogyna*, dog rose *Rosa canina*, dogwood *Cornus* sp. and blackthorn *Prunus spinosa*.

Bracken

3.14 A dense area of bracken *Pteridium aquilinum* was present to the immediate south of the Medical Centre (see Photograph 5). This species was also, occasionally, scattered across the Site.

Trees

3.15 Scattered trees were present across the majority of the Site. These were primarily semi-mature specimens, less than 10m in height. A variety of species were present, with willow *Salix* sp. occurring most frequently (see Photograph 6). Other species included oak *Quercus* sp., silver birch *Betula pendula*, ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*.

Defunct hedgerow

3.16 The south-western Site boundary appeared to comprise an overgrown hedgerow (see Photograph 7), which was becoming overtaken with bramble scrub. Species such as hawthorn and holly *Ilex aquifolium* were visible, but these had grown leggy and no longer retained functionality as a hedgerow. Short sections were more typical of a

hedgerow form, but it was not considered that these would fall under the description of the Hedgerow Regulations 1997.

Protected/Notable Species

Amphibians

3.17 There were no ponds or other waterbodies on the Site to provide potential breeding habitat for amphibians.

3.18 The closest pond, visible on aerial photographs or other online mapping resources, appeared to be associated with Ochres Dyke and was located approximately 300m south-west of the Site.

3.19 The tussocky nature of the grassland, as well as the presence of scrub and trees within the Site, would likely provide a good potential foraging resource for amphibian species.

3.20 The closest records of the specially protected great crested newt are located over 1.5km away from the Site.

3.21 The majority of records for other amphibians are from the Shire Brook Valley Nature Reserve, which is located over 1km north of the Site.

Badgers

3.22 No confirmed evidence of badgers was found on-site such as hairs, latrines or footprints.

3.23 A number of trails ran through the grassland, which may have been attributable to mammals. However, these trails were considered more likely to be as a result of public use of the Site and in particular dog walking, as they typically ran towards the footpaths or road network around the Site.

3.24 A large hole was noted in bracken towards the Site's southern boundary. Although this was of a size and shape consistent with use by a large mammal, there was a smell of fox *Vulpes vulpes* in the area and it was therefore considered more likely to be used for laying-up during the day by a fox.

3.25 The desk study data returned numerous records of badger from the surrounding area. records of this species for within the same 1km grid square as the survey Site were returned, although due to the persecution faced by this species in the UK, their locations will remain confidential.

Bats

3.26 There were no buildings on Site to provide a potential roosting habitat for this species. Furthermore, the majority of trees present were semi-mature, less then 10m in height and lacked the types of features required by roosting bats (such as rot holes, woodpecker holes, deadwood, broken limbs and other similar features).

3.27 The habitat on the Site was considered likely to provide opportunities for foraging and commuting bats, due to the scrub and trees, which would support a good assemblage of invertebrate prey items.

3.28 Furthermore, the woodland surrounding Ochres Dyke to the north of the Site and the LWS to the west of the Site, as well as Westfield Plantation to the east, are all known to be well-used by bat species. Records for at least four different species were returned from within a 2km radius.

Birds

3.29 Blackbird *Turdus merula*, great tit *Parus major*, robin *Erithacus rubecula*, woodpigeon *Columba palumbus* and magpie *Pica pica* were recorded on-site, all of which are listed as 'Green' on the latest birds of conservation list which is the lowest category of concern.

3.30 The Site offered opportunities for foraging and breeding throughout, due to the abundance of scrub and trees. Old nesting material was visible within the vegetation at numerous points across the Site and both robin and great tit were recorded singing, suggesting these species will breed on the Site.

3.31 The adjacent Owlthorpe LWS has records of song thrush *Turdus philomelos*, blackcap *Sylvia atricapilla* and chiffchaff *Phylloscopus collybita*. Song thrush are listed as Red on the latest Birds of Conservation Concern list (2015). Westfield Plantation, directly connected to Owlthorpe LWS, also has records of Red and Amber Listed species: bullfinch *Pyrrhula pyrrhula*, linnet *Carduelis cannabina* and skylark *Alauda arvensis*.

Invertebrates

3.32 The mosaic of habitats present on the Site offered some potential for use by invertebrates, primarily due to its proximity to areas known to be well used by invertebrate species.

3.33 The adjacent Owlthorpe LWS is reported to have considerable invertebrate interest, associated with the grasslands, including Local Red Data Book Species slender ground hopper *Tetrix subulate*, as well as a number of other locally rare species such as Adonis ladybird *Hippodamia variegate* and the hoverfly *Didea fasciata*. A number of butterfly species listed on the Local Biodiversity Action Plan have also been recorded at Owlthorpe LWS, including small copper *Lycaena phlaeas*, gatekeeper *Pyronia tithonus* and small tortoiseshell *Aglais urticae*. Other Local BAP species recorded include dragonflies and southern hawker *Aeshna cyanea*.

Reptiles

3.34 The habitats on the Site were considered suitable to support common reptile species. Primarily the areas of lower growing vegetation on the edges of dense scrub would provide a good combination of habitat suitable for basking and protection from predators.

3.35 The desk study data showed records of grass snake within 2km of the Site, associated with the Shire Brook Valley, over 1km from the Site.

Other Species

3.36 The Site provided opportunities for hedgehogs but was considered unlikely to support any other protected species.

4. EVALUATION

Designated Sites

4.1 No direct impacts to statutory designated sites are anticipated, due to the distance (over 2km) of the proposed development from any such site.

4.2 If the development is classified as "Residential developments of 50 or more houses outside of existing settlement/urban areas", this would fall within one of the risk categories for a number of SSSIs in the wider vicinity. Impacts could include increased recreational pressure on these SSSIs and/or impacts from air pollution and road traffic.

4.3 The development lies immediately adjacent to Owlthorpe LWS. Local planning policy states that any development potentially impacting upon Local Nature Sites should be designed so as to minimise impacts and maintain (or increase) the nature conservation value. Impacts to the LWS could include an increase in disturbance from additional local residents, a reduction in the overall habitat availability for the species associated with the LWS (primarily birds, bats and invertebrates) and loss of connectivity with other suitable habitats.

Habitats

4.4 The habitats on the Site were relatively common within the immediate surroundings and suffering from a lack of management. Common botanical species had begun to dominate and the habitats were considered unlikely to be locally important for their intrinsic value.

4.5 However, rarer species, such as orchids, are known to be present on land immediately adjacent. These species would not be visible at the time of this preliminary survey, although it is possible that they are also present on the survey Site.

Amphibians

4.6 The presence of the specially protected GCN on the Site is considered unlikely. Although the habitats offer some suitability for this species during its terrestrial phase, the lack of breeding habitat, the lack of existing records and the presence of Ochres Dyke to the north, east and south and Moor Valley Road to the west isolates the Site from potential colonisations by this species.

4.7 The presence of garden ponds cannot be ruled out, which may, more readily, be colonised by common amphibian species such as common toad *Bufo bufo* and common frog *Rana temporaria*.

4.8 Common toad are listed as a Species of Principal Importance under Section 41 of the NERC Act (2006) and as such, should be protected during the works. Any common amphibians present in the surrounding habitats may use the on-site habitats and could therefore be harmed during the development.

Badgers

4.9 Although there was no evidence of badger on the Site during this survey, this species is considered likely to be active in the surrounding landscape and may use the Site for foraging and/or commuting. New setts may also be dug at any time and it is possible that disused setts were present on the Site amongst dense scrub, which could not be viewed at this time, but which may come back into use at a later date (this is typical of outlying setts).

4.10 Site clearance has the potential to harm badgers if they are using a sett on Site at the time and badgers also have the potential to become trapped in excavations or larger pipes if they are left open overnight.

Bats

4.11 No impacts to roosting bats are envisaged as a result of the development.

4.12 However, disruption to bat foraging routes is a possibility, due to loss of vegetation and increased light levels. Habitats to the north, east and west are known to be well used by bats and it is possible that any bats to the south of the Site may cross the Site to reach these key foraging areas.

Birds

4.13 Site clearance will result in the loss of habitat used by nesting and foraging birds.

4.14 It is possible that species of national importance may utilise the habitats on the Site and habitat loss for these species would be considered particularly detrimental.

Invertebrates

4.15 The invertebrate assemblage in the surrounding area comprises a number of locally rare species, which may use the survey Site. Although a rare assemblage of invertebrates is considered unlikely on the Site, due to a lack of more open areas commonly used by such species, individual species of local importance may be present.

4.16 Habitat clearance could result in the loss of some habitats used by these species, as well as disruption to habitat connectivity. However, the LWS will not be directly affected and habitat for these species will remain in the immediate area. There will also be opportunities for habitat creation suitable for invertebrate species.

Reptiles

4.17 If reptiles were found to be using the Site, it is likely that Site clearance would result in direct harm to these species, as well as the loss of habitat.

Other species

4.18 As hedgehogs may use the survey Site for commuting and foraging, site clearance has the potential to result in direct harm to this species.

4.19 The residential development would also reduce habitat connectivity, which can be detrimental to local hedgehog populations.

5. RECOMMENDATIONS

General

5.1 In order to satisfy the LPA's requirements for a planning submission, it is recommended that the results of any further survey work recommended below are coupled with the results of this report and a full assessment of the potential impacts of the final scheme are undertaken. The resulting document will be an Ecological Impact Assessment (EcIA), which will be suitable for submission to the LPA.

5.2 The NPPF advises that all development should be seeking biodiversity net gain. Opportunities for ecological enhancement should therefore be maximised within the final masterplan. This could include bat and bird boxes, the use of native botanical species, creation of ecologically valuable habitats and linkages with surrounding habitats. Options will be discussed with the Client during the EcIA preparation and evidence provided within the EcIA to demonstrate net gain.

Designated Sites

5.3 In order to confirm the nature of the proposed development, it will be necessary to undertake further discussions with the planning consultant, LPA and Natural England. This will specifically focus on the impacts they are most concerned about with regards to the SSSI risk zones.

5.4 The Ecologist will suggest any potential mitigation measures that may be required for incorporation into the final masterplan. A discussion of the impacts, mitigation and residual impacts would then be included within the EcIA.

5.5 This will include mitigation measures that may be required to protect the adjacent LWS.

Habitats

5.6 It is recommended that a detailed botanical survey of the Site is undertaken between May and September, to establish whether any rarer species from the surrounding landscape have colonised the Site.

5.7 The results of this survey would be included within the EcIA. Options for mitigation, if rare or locally important species were found, could include translocation of individual plants, habitat creation and re-seeding. The preferred option would be discussed before completion of the EcIA.

Amphibians

5.8 The presence of the specially protected GCN on the Site is considered unlikely and no further survey work or specific mitigation would be required.

5.9 However, common amphibians could utilise the habitats on the Site and should be protected from harm during the development.

5.10 Any site workers should be made aware of the potential presence of these species, through the standard site briefing mechanisms, and should remain vigilant for them at all times. Any common amphibians found should be moved carefully by hand to a place off-site to the north or west, where suitable habitat exists.

Badgers

5.11 Due to the potential for badgers to dig new setts on the Site at any time, it is recommended that an additional survey for this species is undertaken within the three months prior to the onset of development.

5.12 Ideally, this would be undertaken between October and March, when vegetation is least likely to obscure any sett entrances. However, it can be undertaken at any time. If active setts are found, it will likely be necessary to apply for a sett closure licence from Natural England, with conditions imposed on the timing and methods. If the vegetation is considered too dense for the ecologist to confirm the presence or absence of active setts, it may be necessary for the ecologist to supervise a step-wise clearance of the densest areas of vegetation. The requirement for any such mitigation would be detailed in a brief report following the survey.

5.13 As a matter of good practice, any trenches dug as part of construction work should be covered over at night, or left with a ramp or sloping end, to prevent mammals including badgers and hedgehogs from falling in and becoming trapped. Similarly, any pipes over 200mm in diameter should be capped off at night.

Bats

5.14 In order to confirm whether or not the Site forms a key foraging and/or commuting route for the local population of bats, some further survey work is recommended.

5.15 When compared to the surrounding habitats, the suitability of habitats on Site for bats would be classified as low. However, it could provide a key connection between potential roosting habitat to the south and optimal foraging habitat to the north. Therefore, in line with standard guidance (Bat Conservation Trust, 2016) one bat activity transect per season (spring – Apr/May, summer – Jun/Jul/Aug, autumn – Sept/Oct) should be carried out, coupled with static monitoring for five nights during each season.

5.16 The aim of the surveys would be to highlight whether there are any key routes used by bats across the Site and to advise on potential planting options to maintain these flight lines.

5.17 The results and mitigation options would be detailed in the EcIA.

5.18 Irrespective of the results of these surveys, as bats are known to forage in habitats surrounding the Site, a lighting design, following best practice guidelines outlined in Bats and Artificial Lighting in the UK (2018) should be produced.

Birds

5.19 In order to confirm whether or not the habitats on Site are used by important bird species, it will be necessary to conduct a breeding bird survey. This involves one survey visit per month between April and June, with all bird species and their activity recorded.

5.20 If key species are found, it will be possible to advise on appropriate planting and nesting provision within the final masterplan to compensate for the loss of this habitat.

5.21 Irrespective of the results of any further survey, all bird species receive legal protection during nesting, it is advised to complete any vegetation clearance and building works outside of the breeding bird season of March to August (inclusive). Vegetation clearance outside of this period should still be preceded by a nesting bird survey carried out by contractors, as some species can nest all year round. Any active nests would need to remain unaffected until all chicks had fledged.

Invertebrates

5.22 As the LWS will not be directly impacted by the proposals, impacts to the main habitats used by invertebrates are considered unlikely and further survey work is not required.

5.23 However, opportunities for habitat creation, suitable for a range of invertebrates, should be sought within the final masterplan. This could include areas of habitat mosaic and the use of native flowering species. The benefits of the final scheme for invertebrates will be discussed within the EcIA.

Reptiles

5.24 Due to the suitability of the habitats on Site for reptiles, it is recommended that a reptile survey is carried out to confirm their presence or absence. This involves the positioning of artificial refuges on the Site, which after a period of 'bedding-in' are checked for the presence of reptiles on seven subsequent occasions. Such surveys are ideally conducted in April/May or September, when conditions are warm and dry.

5.25 If reptiles were found, habitat creation within the development, particularly around the edges to provide links with surrounding habitats, would be incorporated into the masterplan. The results and chosen mitigation options would be detailed in the EcIA.

Other species

5.26 Measures outlined in paragraph 5.13 above will ensure hedgehogs cannot become trapped in excavations or pipes if they are crossing the Site during construction.

5.27 Connectivity of the habitats within the final layout should be considered, with the provision of 'hedgehog holes' in the base of fences (small holes around 13cm x 15cm) to allow this species to forage freely across suitable habitats.

5.28 In the unlikely event that hedgehogs are found during the construction work or site clearance, they should be moved carefully by hand to suitable habitats, such as the LWS to the west or north.

6.0 CONCLUSIONS

Ecological Receptor	Results & Discussion	Recommendations
General		An EcIA should be produced, which ties together any further survey work carried out and includes a full appraisal of the impacts of the final masterplan. Opportunities for ecological enhancement, with the aim of achieving Biodiversity Net Gain, should be sought within the masterplan. This could include the incorporation of bat and bird boxes into the buildings, the use of native botanical species, creation of a variety of habitat types within the landscape design and the specific recommendations provided below.
Designated Sites	The Site lies within the risk zone of a number of SSSIs and residential developments of 50 units or more, outside of existing settlements/urban areas, are listed as a risk category, for which further information will be required by the LPA. The Site also lies immediately adjacent to Owlthorpe LWS, which is itself directly connected to Westfield Plantation LWS. These sites support a number of bat, bird, invertebrate and botanical species of local importance.	Consultation with the LPA is recommended to establish whether this development would fall under a risk category. If so, consideration of the main risks to the SSSI would be covered in the EcIA and any required mitigation would be agreed with the Client before inclusion in this document. Measures for protection of the LWS will also need to be considered. This could include the position of waste bins around the development Site and measures to ensure public access does not have a detrimental effect.
Habitats	The habitats within the Site were unmanaged and of generally poor species diversity, with large patches of bramble and bracken dominating. However, the adjacent LWS supports botanical species such as orchids, which may colonise the survey Site.	A botanical survey is recommended between May and September to confirm whether any rarer botanical species are present. These may require translocation or reseeding post-development.
Amphibians	Although habitats within the Site were considered suitable for amphibians, the presence of flowing water and a road, would isolate the Site from colonisation by GCN and its presence is considered unlikely. Common amphibians, which will more readily colonise garden ponds, may be present.	All site workers should be made aware of the potential for common amphibians to be present and any such animals found on Site should be moved carefully and by hand to a place of safety within habitats outside of the development footprint.

Ecological Receptor	Results & Discussion	Recommendations
Badgers	Although there was no evidence of badger during the survey, this species is likely to be active in the surrounding habitats and may dig new setts on the Site at any time.	A badger survey should be conducted within three months of the onset of site clearance works. Any badger setts found may need to be closed under a licence from Natural England and ecological supervision of the clearance of dense vegetation may need to be undertaken to ensure there are no hidden setts. General good working practices in relation to mammals should be followed at all times during construction.
Bats	There were no opportunities for roosting bats within the Site. The habitats on Site offered some potential for foraging and commuting bats and in particular, it could represent a key habitat linkage between roosting opportunities to the south and foraging to the north, east and west.	A bat activity transect should be conducted in spring, summer and autumn, coupled with static monitoring for five nights in each season. This will provide information on any key flight lines across the site and guide any mitigation required. The lighting scheme should follow best practice guidelines in relation to bats.
Birds	A number of nationally and locally rare bird species are known to use the habitats immediately surrounding the Site and the habitats on Site offered nesting and foraging opportunities for a range of species.	A breeding bird survey should be carried out, which comprises one visit per month across April, May and June. This will identify key species that use the Site and guide habitat creation and the provision of nesting opportunities for inclusion in the final masterplan.
Invertebrates	Although a number of locally important invertebrate species are present in habitats surrounding the Site, these habitats will remain unaffected and considerable habitat suitable for these species will continue to exist.	The landscaping for the Site offers a good opportunity to develop habitats suitable for a range of invertebrate species and the use of native flowering species, as well as a mixture of the types of vegetation should be encouraged.
Reptiles	The habitats on Site were considered suitable for reptiles and any Site clearance has the potential to harm these species if they are present.	A reptile survey should be carried out to confirm the presence or likely absence of these species. This should be undertaken in April and May or September.
Other species	Hedgehogs may utilise the Site for foraging and commuting.	Habitats and commuting routes for hedgehogs should be incorporated into the final masterplan. If this animal is found during works, it should be moved carefully and by hand to habitats off-site.

7.0 REFERENCES

7.1 Bat Conservation Trust (2018) Bats and Artificial Lighting in the UK – Guidance Note 08/18

7.2 British Standards Institution (2013) BS42020:2013 Biodiversity – code of practice for planning and development. BSI Standards Ltd, London

7.3 Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Ecological Report Writing. CIEEM, Winchester.

7.4 Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Preliminary Ecological Appraisal. CIEEM, Winchester

7.5 Collins J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust, London.

7.6 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.

7.7 Joint Nature Conservation Committee (2010) Handbook for Phase 1 Habitat Survey: a technique for environmental audit. JNCC, Peterborough.

7.8 Ministry of Housing, Communities and Local Government (July 2018) National Planning Policy Framework. ISBN: 978-1-4098-5302-2

7.9 Multi-Agency Geographic Information for the Countryside Website.

http://www.magic.gov.uk/

7.10 Stace, C.S. (2019) New Flora of the British Isles, 4th edition. University Press, Cambridge

APPENDICES

APPENDIX 1: Relevant Legislation

European Protected Species

All British bat species, great crested newt, hazel dormice and otters are fully protected through The Conservation of Habitats and Species Regulations 2017 (as amended) as a European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Under the legislation, it is an offence to deliberately capture, injure or kill these species. It is an offence to damage or destroy a breeding site or resting place of these species; or obstruct access to any structure or place which it uses for that purpose.

It is also an offence to deliberately disturb these species. Disturbance of animals includes in particular any disturbance which is likely (a) to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or (b) to affect significantly the local distribution or abundance of the species to which they belong.

The 'appropriate authority' (Natural England in England) has powers to issue licences for various purposes including - (a) scientific or educational purposes… and (b) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. The appropriate authority shall not grant a licence under this regulation unless they are satisfied - (a) that there is no satisfactory alternative, and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. It is an offence for any person authorised by virtue of a licence to which this paragraph applies to contravene or fail to comply with any condition which the licence requires him to comply with.

Nesting birds

All wild birds in the UK are protected under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Badgers

The Protection of Badgers Act 1992 was introduced in recognition of the additional threats that badgers face from illegal badger digging and baiting. Under the Act, it is an offence inter alia to:

- Wilfully kill, injure or take a badger, or to attempt to do so;
- Cruelly ill-treat a badger; or
- Intentionally or recklessly interfere with a badger sett by:

- damaging a sett or any part of one;
- destroying a sett;
- obstructing access to or any entrance of a sett;
- causing a dog to enter a sett; or
- disturbing a badger when it is occupying a sett.

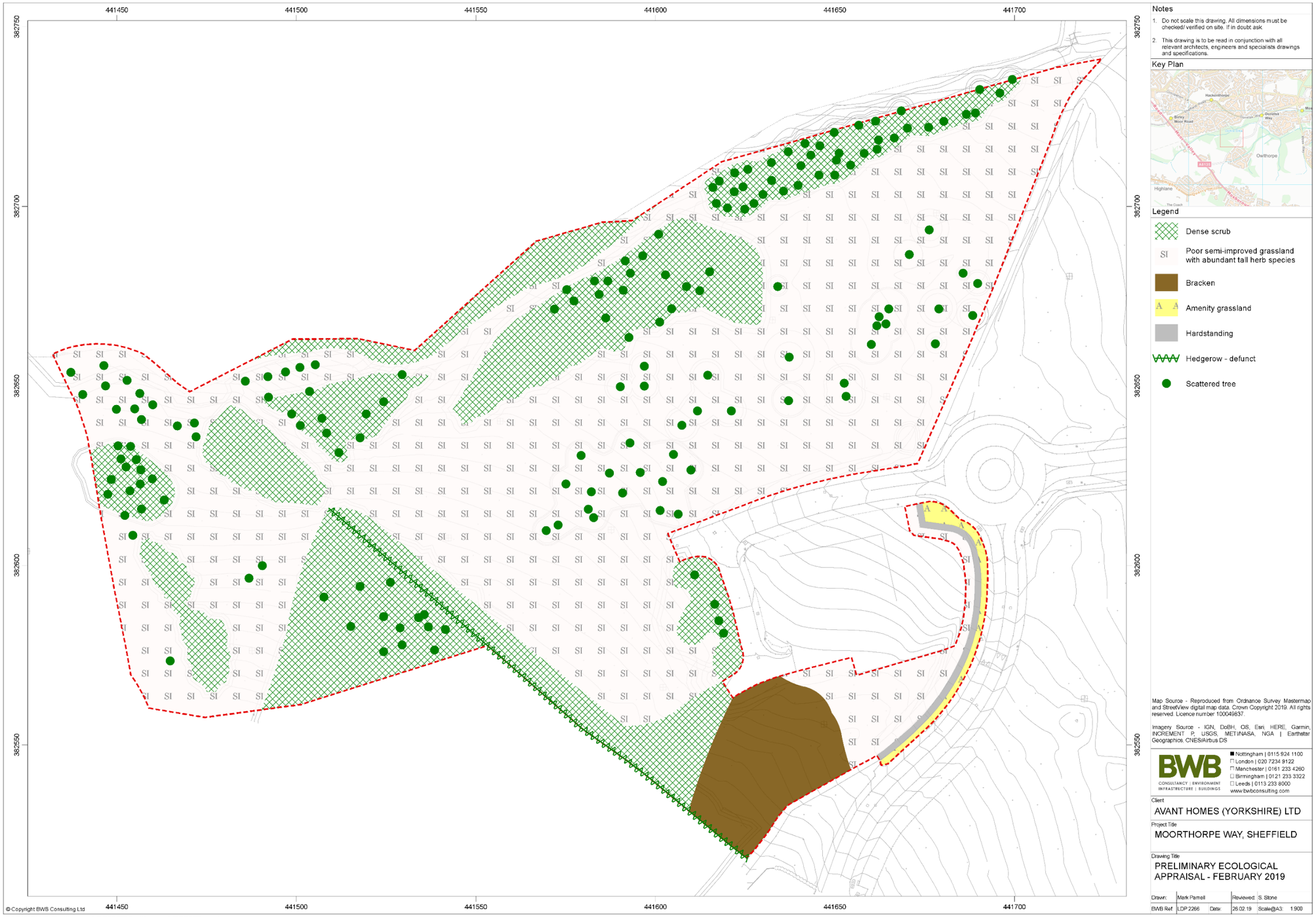
Reptiles

Four species of reptile, the adder *Vipera berus*, grass snake *Natrix natrix*, slow worm *Anguis fragilis* and common lizard *Lacerta vivipara* are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) as well as being listed on the UK Post-2010 Biodiversity Framework (formerly UK BAP).

In net effect, it is an offence to deliberately capture, injure or kill common lizard, adder, grass snake or slow worms.

Two reptiles, the sand lizard *Lacerta agilis* and the smooth snake *Coronella austrica*, are European Protected Species under The Conservation of Habitats and Species Regulations 2010 (as amended). They are also listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are protected by Parts 4(b), 4(c) and 5 of Section 9 of that Act.

APPENDIX 2: Extended Phase 1 Habitat Map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Notes
1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
Key Plan
Legend
Dense scrub
Poor semi-improved grassland with abundant tall herb species
Bracken
Amenity grassland
Hardstanding
Hedgerow - defunct
Scattered tree
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Drawn: Mark Parnell
Reviewed: S. Stone
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Date: 26.02.19
Scale@A3: 1:900
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APPENDIX 3: Site Photographs

1: Northern Site boundary: Ochres Dyke with ancient woodland	
2: Rank grassland with tall herb species	
3: Amenity Grassland	

4: Dense bramble scrub adjacent to grassland	
5: Dense bracken	
6: Willow trees – typical of those across the Site	

7: Defunct hedgerow with dense bramble scrub	

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