Land off South View, Darfield

Ecological Impact Assessment

3rd February 2025

Prepared by:

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Purpose and Description	Originated	Checked	Reviewed	Date
For Planning	R Bell MCIEEM	G Slack MCIEEM	R Bell MCIEEM	03/02/2025

Site Name South View	**Site Address** Darfield, Barnsley S73 9LW
Local Authority Barnsley Metropolitan Borough Council	**Grid Reference** SE 41160 04303
Surveyors Robert Bell MCIEEM & Peter Middleton MCIEEM	**Dates of Survey** 16/07/2020 & 16/08/2023
Soilscape Freely draining slightly acid loamy soils	**Designation of Site** None
UK Habitat Classification habitats on Site Habitats: g3c6 – *Lolium-Cynosurus* neutral grassland, g4 – modified grassland, u1b5 – buildings, u1b6 – other developed land, h2a – other native hedgerow Secondary codes: 10 – scattered scrub, 32 – scattered trees, 33 – line of trees, 81 – ruderal or ephemeral, 102 – sheep grazed, 103 – horse grazed	
Protected/Notable Species, Constraints on Site Nesting birds, hedgehog, various bat species	
HPIs and SPIs under NERC Act 2006 Hedgerow, birds (house sparrow, linnet, swift), various bat species	

Contents

1. Summary

1.1.1 This Ecological Impact Assessment (EcIA) of Land Off South View, Darfield was commissioned by James Roberts of JR Planning on behalf of the client, Jason Hughes, on 5th July 2023.

1.1.2 The survey was commissioned to inform a planning application for a residential development comprising 33 units.

1.1.3 No impacts upon designated sites are anticipated because of the nature and scale of the development and distance from the designated site.

1.1.4 All habitats and species present were considered to be of no greater than Site level importance.

1.1.5 The likely unmitigated impacts of the development were considered to comprise:

- The net loss of 3.62 grassland and 0.3 individual tree Habitat Units, partially offset by an increase of 0.56 heathland and scrub and 0.61 urban Habitat Units, together with a 0.31 Hedgerow Units.
- Damage to the root systems of existing hedgerow plants and trees as a result of construction works.
- A small loss of foraging habitat for hedgehogs, bats, birds, and invertebrates.
- The loss of bird nesting habitat and the potential removal of active birds' nests.
- Increased lighting affecting nocturnal species such as hedgehogs, bats, nocturnal invertebrates and some birds.
- Biosecurity risks as a result of bringing in plants, seeds and soil for landscaping.

1.1.6 The following mitigation, compensation and enhancements are details:

- Implementation of root protection zones for retained trees and shrubs.
- Implementation of the Landscape Masterplan and development and implementation of a Landscape Management Plan. Plants to be sourced from UK nurseries and imported soil to meet appropriate British Standards. Peat free compost to be used.
- The removal of vegetation and demolition of buildings outside the nesting bird season (March-August), or following a check for active nests to be undertaken by an ecologist.
- The inclusion of hedgehog holes, bat boxes and swift bricks within each new dwelling on the development.
- The use of bat safe roofing membranes.
- Lighting restrictions to protect nocturnal species.

1.1.7 The proposed development is expected to result in a loss of 2.76 Habitat Units (a 56.64 % net loss), with a projected gain of 0.32 Hedgerow Units (a 47.14 % net gain).

1.1.8 The results of this survey and report are considered to be valid for a period of 24 months. After this time Middleton Bell Ecology should be contacted to determine the need for update survey

2. Introduction

2.1.1 This Ecological Impact Assessment (EcIA) of Land Off South View, Darfield was commissioned by James Roberts of JR Planning on behalf of the client, Jason Hughes, on 5th July 2023.

2.1.2 The survey was commissioned to inform a planning application for a residential development comprising 33 units. The proposed Outline Landscape Masterplan is shown in Appendix 1. Outline planning permission was granted in 2020 (Application Reference Number: 2020/1284) for an application to construct 20 dwellings on the larger western section of the site. The new application includes the field to the northeast and comprises a changed layout and increased number of proposed dwellings.

2.1.3 A previous Preliminary Ecological Appraisal covering the majority of the site was undertaken in 2020 (MBE, 2020), with the findings of the original survey considered when writing this report.

2.1.4 The purpose of this report is to present the findings of a UK Habitat Classification survey together with determining the potential for, or presence of, protected and notable species. An appended map of the site shows the habitats present. Where impacts can be confidently determined, recommendations in relation to avoiding, mitigating and compensating for these impacts are included in this report, together with biodiversity enhancement recommendations. Proposed scheme impacts have also been calculated using The Statutory Biodiversity Metric (Defra, 2023).

2.1.5 Key legislation relating to designated sites, protected species, and habitats is detailed in Appendix 2. The implications of legislation are detailed in the body of the report where applicable.

3. Site Description

3.1.1 The application site is located in a largely residential area off South View in the village of Darfield, approximately 6.5 km east-southeast of Barnsley town centre. The site consists of approximately 1 ha of land located on a north-south orientated slope in the valley of the River Dove. The land comprised predominantly *Lolium-Cynosurus* neutral grassland/pasture and was composed of a large rectangular western field (Field 1, Appendix 3), including a separate compound with a small belt of grassland to the north (Field 2) and a connected northeastern field (Field 3). Aside from areas of pasture, a central compound (located south of Field 2) comprised mainly modified grassland, together with some dilapidated buildings, a small former orchard and various abandoned vehicles. In the eastern corner of the site was a second small compound comprising several storage buildings and other developed land. A native hedgerow was present on the site's western boundary, with a second smaller hedgerow in the centre of the site. A treeline was present on the eastern boundary of the central compound. Further scattered individual trees were present on the northern boundary/embankment of the western field and on the edge and within the central compound. Areas of scattered scrub and scattered bracken were also present in the western field.

3.1.2 With the exception of pasture fields adjacent to the western boundary, residential development and associated roads surround the site. Beyond the residential area,

located c. 300 m south of Snape Hill Road is the River Dove and the connected River Dearne floodplain including the Broomhill Flash and Wombwell Ings wetlands. The site had good connectivity to undeveloped land to the west, however housing was located on the opposite side of South View to the north, with housing to the south and Snape Hill Road, with additional housing to the east.

3.1.3 The site falls within National Character Area (NCA) 38: The Nottinghamshire, Derbyshire and Yorkshire Coalfield. This NCA comprises a generally low-lying area, with hills and escarpments above wide valleys, the landscape embraces major industrial towns and cities as well as villages and countryside. Over half of the NCA is currently designated as greenbelt land; this maintains some distinction between settlements and represents areas that are often under pressure for development and changes in land use. The landscape is dotted with many pockets and patches of habitat where species find refuge. This is often on land that was once worked for minerals or occupied by major industry.

3.1.4 The naturally occurring soils in the area comprise freely draining slightly acid loamy soils.

Figure 1. The site location, as indicated by red line

4. Methodology

4.1 Data Consultation

4.1.1 Barnsley Biological Records Centre (BBRC) were contacted in 2024 to request the following information for locations within a 1.5 km radius of the site:

- Protected and notable species records.
- The boundaries of non-statutory designated sites of nature conservation interest.

4.1.2 A search of the Multi-Agency Geographical Information for the Countryside website was undertaken to determine the following:

- The boundaries of statutory designated sites of nature conservation interest.
- The locations of historic European Protected Species (EPS) licences granted by Natural England.
- The presence of great crested newt *Triturus cristatus* records included in either the Class Survey Licence Returns or 2017-2019 Pond Surveys datasets.

4.2 Field Survey

4.2.1 The site was surveyed on 16th August 2023 using the UK Habitat Classification survey methodology (UKHab Ltd., 2023) by Robert Bell (MCIEEM). A preceding survey covering the majority of the site was undertaken by Peter Middleton (MCIEEM) on 16th July 2020, who surveyed the site using the extended Phase 1 habitat survey methodology (JNCC, 2010).

4.2.2 Robert Bell is a competent botanist with more than 16 years' experience of undertaking botanical surveys including appraisals of Local Wildlife Sites (LWSs) in Barnsley. Peter Middleton is a competent botanist who was a major contributor to the South Yorkshire Plant Atlas (Wilmore *et. al*., 2011). He has more than 20 years' experience of undertaking botanical surveys including appraisals of Local Wildlife Sites (LWSs) in Barnsley, Doncaster and East Yorkshire, as well as National Vegetation Classification (NVC) survey in the Yorkshire Dales National Park.

4.2.3 The surveyors methodically covered the site, searching for notable, rare or scarce plant species and evidence of protected species including bats and species of nature conservation importance (including a search of suitable features for signs of bats). Features of interest are presented on the UK Habitat Classification plan, using Secondary Codes and Target Notes.

4.2.4 Aerial photographs (Google Earth, Bing Mapping, and ESRI imagery) and Ordnance Survey mapping were studied to consider the wider context and to look for ecological features that would not be evident on the ground during the walkover survey. This is particularly useful for identifying wildlife corridors and ponds.

4.2.5 Habitats of Principal Importance (HPIs) and Species of Principal Importance (SPIs) included on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 were recorded. Any priority species and habitats included on the Local Biodiversity Action Plan (LBAP) were also noted if present.

4.3 Method of Assessment

4.3.1 In line with CIEEM guidelines (CIEEM, 2017) the survey results were used to identify any ecological constraints to the proposed development, any further surveys, and any mitigation measures likely to be required. Opportunities for ecological enhancement measures were also included where possible.

4.3.2 The value and sensitivity of ecological features present on site were determined based on the guidance provided within 'Guidelines on Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2018). Individual ecological receptors (habitats and species that could be affected by the development) were assigned a geographic level of importance for nature conservation. The highest level is international, decreasing through national, regional, county, local and lastly site importance.

4.4 Biodiversity Calculation

4.4.1 The Statutory Biodiversity Metric (Defra, 2023) was used to calculate the ecological impact of this scheme. This metric uses habitat as a proxy for wider biodiversity with different habitat types scored according to their relative biodiversity value. This value is then adjusted depending on the condition and location of the habitat, to calculate 'biodiversity units'. The Statutory Biodiversity Metric incorporates similar but separate calculations for habitats that require a different method of measurement such as hedgerows, lines of trees, rivers, streams and street trees. Calculations are undertaken in a purpose designed spreadsheet, which provides the main output of the process.

4.5 Survey Limitations

4.5.1 No limitations to an effective UK Habitat Classification survey were encountered.

5. Ecological Baseline

5.1 Data Consultation

5.1.1 The locations of statutory and non-statutory designated sites are shown in Appendix 3. Designated sites present within 1.5 km of the site are detailed in Table 1.

Table 1. Designated sites

Designation	Name	Interest	Distance and direction to site
Site of Special Scientific Interest (SSSI)	Dearne Valley Wetlands	Dearne Valley Wetlands comprises a number of discrete sites which together support nationally important assemblages of breeding birds of lowland damp grassland, lowland open water and their margins and scrub, plus nationally important numbers of some individual species of breeding water birds.	312 m south

5.1.2 The site is included in the Dearne Valley Nature Improvement Area which covers a single extensive area taking in parts of Barnsley, Doncaster and Rotherham. Nature Improvement Areas are large, discrete areas where a local partnership has a shared vision for their natural environment. Due to the site's presence within the Dearne Valley Nature Improvement Area the site was considered to be located within an area 'formally identified in local strategy' when undertaking calculations using The Statutory Biodiversity Metric.

5.1.3 No ancient woodland was present within 1.5 km of the site.

5.2 Habitats

5.2.1 The arrangement of site habitats is shown on the UK Habitat plan in Appendix 3, whilst a full list of plant species recorded is provided in Appendix 4.

5.2.2 Site habitats are not considered to be of greater than site level importance to nature conservation.

5.2.3 A detailed description of the site and adjacent habitats and the site's potential to support protected and notable species is provided below.

g3c6 – *Lolium-Cynosurus* neutral grassland

5.2.4 The area of g3c6 – *Lolium-Cynosurus* neutral grassland was split into three blocks labelled Fields 1, 2 & 3 in Appendix 4.

Field 1

5.2.5 Field 1 comprised an area of horse grazed pasture present on sloping ground with a an embankment at the northern edge. At the time of survey the sward was uneven in height with numerous signs of nutrient enrichment and evidence of prolonged grazing by horses. Grass species present included abundant perennial rye grass *Lolium perenne* together with frequently occurring Yorkshire fog *Holcus lanatus* and creeping bent *Agrostis stolonifera*. Occasionally occurring grasses included false oat grass

Arrhenatherum elatius, wall barely *Hordeum murinum*, cocksfoot *Dactylis glomerata* and rough meadow grass *Poa trivialis*. Herb species included frequently occurring autumn hawkbit *Scorzoneroides autumnalis*, nettle *Urtica dioica* and creeping thistle *Cirsium arvense* with occasionally occurring species comprising white clover *Trifolium repens*, common chickweed *Stellaria media*, ragwort *Jacobaea vulgaris*, meadow buttercup *Ranunculus acris*, yarrow *Achillea millefolium*, cow parsley *Anthriscus sylvestris*, broad-leaved dock *Rumex obtusifolius*, and wormwood *Artemisia absinthium*. Bracken *Pteridium aquilinum* was locally frequent within this area of grassland. The condition of this area of grassland appeared to have declined since the 2020 survey visit, with the sheep's sorrel *Rumex acetosella*, a species indicative of less nutrient enriched often acid soils, recorded as abundant in 2020 but only rarely occurring in 2023. No fine leaved grasses typical of acid grassland were present and there were areas showing nutrient enrichment of the soil where species such as nettle and broad leaved dock were locally abundant. The recorded species richness in this area averaged 6 species/m^2.

5.2.6 The grassland in Field 1 was considered to be in poor condition (Defra, 2023). This area of grassland was not considered to comprise a good representation of the habitat type due to excess of herb species indicative of suboptimal condition. In addition the cover of bare ground exceeded 5 %, cover of species indicative of sub-optimal condition exceeded 5 % (nettles actually comprised c.20 % cover) and there was less than 10 species/m^2. The sward height was however varied and bracken cover was less than 20 %.

Field 2

5.2.7 Field 2 comprised a steep embankment to the north of the central compound. The species composition in this area was very similar to that in Field 1, however, the area was sheep grazed at the time of survey. This area had a higher proportion of sheep sorrel than Field 1 with additional species recorded from this area comprising spear thistle *Cirsium vulgare* and red dead nettle *Lamium purpureum*. The recorded species richness in this area averaged 6 species/m^2.

5.2.8 The grassland in Field 2 was considered to be in poor condition (Defra, 2023). This area of grassland was not considered to comprise a good representation of the habitat type due to excess of herb species indicative of suboptimal condition. In addition cover of species indicative of sub-optimal condition exceeded 5 % and there was less than 10 species/m^2. The sward height was however varied, bracken cover was less than 20 % and bare ground was between 1-5 %.

Field 3

5.2.9 Field 3 was a small field in the northeast corner of the site which comprised fairly level ground. This area was not included in the 2020 survey. This area was grazed by sheep at the time of survey. Grass species recorded from this area comprised frequent Yorkshire fog, creeping bent and wall barelY, together with occasional perennial rye grass and soft brome *Bromus hordeaceus*. Herb species present included frequently occurring nettle and white clover, together with occasional broad-leaved plantain *Plantago major*, autumn hawkbit and creeping thistle. The recorded species richness in this area averaged 5.7 species/m^2.

5.2.10 The grassland in Field 3 was considered to be in poor condition (Defra, 2023). This area of grassland was not considered to comprise a good representation of the habitat type due to excess of herb species indicative of suboptimal condition. In addition, bare

ground comprised less than 1 % cover, cover of species indicative of sub-optimal condition exceeded 5 % and there was less than 10 species/m^2. The sward height was however varied and bracken cover was less than 20 %.

Verge to south of Field 1 and central compound

5.2.11 A narrow banked verge to the driveway of a dwelling outside the site in its southwest corner supported a similar species composition to Field 1. This grassland was also considered to be in poor condition (Defra, 2023). This area of grassland was not considered to comprise a good representation of the habitat type due to excess of herb species indicative of suboptimal condition. In addition, the cover of bare ground exceeded 5 %, cover of species indicative of sub-optimal condition exceeded 5 % (nettles actually comprised c.20 % cover) and there was less than 10 species/m^2. The sward height was however varied and bracken cover was less than 20 %.

Plate 1. Looking west across Field 1

Plate 2. Looking east across Field 1

Plate 3. Area of nutrient enrichment in Field 1, evidenced by nettle abundance

Plate 4. Field 2

Plate 5. Looking east across Field 3

Plate 6. Mature scrub on embankment in northeast corner of Field 1, with scattered bracken to left of scrub

12 – scattered bracken

5.2.12 A small area of bracken was present adjacent to the mature hawthorn scrub in the northeast corner of Field 1 (Appendix 4; Plate 6).

32 – scattered trees

5.2.13 Scattered mature hawthorn *Crataegus monogyna* scrub with some elder *Sambucus nigra* were present at TN1 (Appendix 4; Plate 6) in the northeast corner of Field 1. For the purposes of The Statutory Biodiversity Metric these shrubs were included as eight small individual trees due to their having a diameter at breast height of more than 7.5 cm (but less than 30 cm).

5.2.14 Additional scattered trees on the site included a small silver birch at the northeast corner of Field 2, one small field maple at the northern end of H1. Within the compound in the centre of the site were two small apple *Malus domestica* and one small pear *Pyrus communis* (see TN2, Appendix 4), together with one small pedunculate oak

Quercus robur. One medium sized goat willow *Salix caprea* was located on the northern boundary of the central compound.

5.2.15 Trees were assessed against the Condition Assessment Criteria detailed in The Statutory Biodiversity Metric (Defra, 2023), with the results of these assessments detailed in Appendix 6. The tree numbering system referred to in Appendix 6 has been taken from the Tree Constraints Plan for the site, which is reproduced in Appendix 7. The findings of the Arboricultural Report and Impact Assessment (AWA, 2024) for the site were considered when assessing tree condition.

g4 – modified grassland

5.2.16 Modified grassland comprised the main area of habitat within the central compound. This area was grazed by goats included approximately 50 % cover of nettles, with grass species present including frequent wall barley and creeping bent, together with occasional cocksfoot and perennial rye grass. Frequently occurring herb species included ragwort and dandelion, with occasional species including ribwort plantain, broad leaved dock, yarrow and white clover.

5.2.17 The modified grassland was considered to be in poor condition (Defra, 2023). This area of grassland comprised less than 6 species per m^2, with evidence of physical damage across more than 5 % of the area and bare ground less than 1 % of the area. This area of grassland did however have a varied sward height, less than 20 % scrub cover, less than 20 % bracken cover and an absence of non-native plant species.

Plate 7. Modified grassland within central compound

Plate 8. Looking south within central compound, with a line of trees on left of image and hedge on right of image

u1b5 – buildings

5.2.18 Buildings were located in three areas of the site. Within the northwest corner of Field 1 a derelict simple timber-framed single storey building was present with corrugated metal sheeting on the roof and in places on the walls (Plate 1). The remaining complexes of buildings were within the central compound and also in the southeast corner of Field 3.

5.2.19 In the northwest corner of the central compound was an L-shaped complex of single-storey pre-fabricated buildings constructed to a range of simple designs, all with flat sheet covered roofs (Plate 9).

5.2.20 In the southeast corner of Field 3 a small compound included a single-storey brick-built building with a flat roof and a trailer unit from a lorry (Plate 10).

Plate 9. Buildings in the central compound

Plate 10. Compound in southwest corner of Field 3

u1b6 – developed land

5.2.21 Small areas of hardstanding were associated with buildings in the central compound and the southeast corner of Field 3.

h2a – other native hedgerow

5.2.22 There were two lengths of native hedgerow on site, both of which were species poor.

5.2.23 The hedgerow along the western boundary (H1, Appendix 4) was approximately 4.5 m high and 3.5 m wide and contained frequent hawthorn and cherry plum *Prunus cerasifera,* together with occasional blackthorn *Prunus spinosa*, horse chestnut *Aesculus hippocastanum*, and rarely occurring hybrid willow *Salix* spp. and lilac *Syringa vulgaris*.

5.2.24 Hedge 1 was considered to be in good condition when assessed against The Statutory Biodiversity Metric criteria (Defra, 2023). This hedgerow passed all criteria with the exception of C2 (nutrient enriched perennial vegetation) and D1 (invasive and neophyte species).

5.2.25 The hedge (H2) dividing the western field from the central compound was approximately 3 m tall by 1.5 m wide. This hedge was dominated by hawthorn together with occasional elder, bramble and fig *Ficus carica*.

5.2.26 Hedge 2 was considered to be in moderate condition when assessed against The Statutory Biodiversity Metric criteria (Defra, 2023). This hedgerow passed all criteria with the exception of B1 (gap – hedge base), C2 (nutrient enriched perennial vegetation) and D1 (invasive and neophyte species).

5.2.27 Neither of the two hedgerows classified as important under the ecological criteria of

the Hedgerow Regulations (1997) as they contained a maximum of three native woody species within a sample 30 m length.

Plate 11. Hedge 1

Plate 12. Hedge 2, on right of image

33 – line of trees

5.2.28 A line of trees was present on the eastern boundary of the central compound (Appendix 4). This tree line comprised four semi-mature Corsican pine *Pinus nigra* and two cherry *Prunus* spp. (see Plate 8).

5.2.29 This line of trees was considered to be in poor condition when assessed against The Statutory Biodiversity Metric criteria (Defra, 2023). The line of trees failed Criteria A (at least 70 % native species), C (veteran features or ecological niches) and D (undisturbed naturally vegetated strip).

5.3 Species and Species Groups

Amphibians

5.3.1 No great crested newt *Triturus cristatus* records were provided by BBRC for locations within a 1.5 km radius of the site. No historic great crested newt EPS licences, or presence records included on either the Class Survey Licence Returns or 2017-2019 Pond Surveys datasets were located within a 6 km radius of the site.

5.3.2 Three amphibian records were provided by BBRC for locations within a radius of 1.5 km of the site centroid. Records included two common toad *Bufo bufo* and one smooth newt *Lissotriton vulgaris* record. The closest record to site comprised a common toad record collected in 1989 from a location 500 m from the site centroid.

5.3.3 The pond search revealed there were three ponds within a 500 m radius of the site, all of which were south (nearest 340 m) of Snape Hill Road and a large housing estate. The busy road and the built environment are considered a major barrier to great crested newt movement and therefore great crested newt are not considered a receptor to the proposed scheme.

5.3.4 Given the apparent absence of suitable local breeding sites, it was considered that populations of amphibians present in the local area were likely to weak, if present at all. Consequently the site was unlikely to experience much use by common amphibian species.

Badger

5.3.5 Three badger *Meles meles* records were provided by BBRC for locations within a 1.5 km radius of the site centroid, although no sett records were received. No signs of badgers were recorded on site; however, it was considered that the site may be used as a wider foraging habitat by this species, if present in the local area.

Bats

5.3.6 Seventy-one bat records of at least four species were provided by BBRC. Positively identified species in the records comprised common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and Daubenton's bat *Myotis daubentonii*. The nearest records (common and soprano pipistrelle) related to bats in flight and were recorded in 2016 from a location c.420 m south of the site.

5.3.7 No historic EPS mitigation licences have been obtained for locations within 2 km of the application site.

5.3.8 There were no trees either on, or adjacent to the site that displayed features with potential to accommodate roosting bats. Buildings on site (Plates 1, 9 & 10) were all simple single-storey and single-skin structures. No signs of bat presence were recorded from any of the surveyed structures. Given their construction, site buildings were considered to offer no more than a negligible level of bat roost suitability.

5.3.9 With the exception of hedgerows, the eastern treeline and individual trees, the site comprised no more than suboptimal foraging habitat for local bat populations. Furthermore the site does not form a connective linkage between areas of higher quality bat foraging habitat.

Birds

5.3.10 No bird records were received for the site itself. Of the records provided by BBRC, the most relevant records related to house sparrow *Passer domesticus* and starling *Sturnus vulgaris*, both of which were recorded in 2006 from the same 1 km Ordnance Survey Grid Reference (SE 4104) as the site. Both house sparrow and starling are red listed species within the Birds of Conservation Concern (Stanbury, 2021).

5.3.11 Eight species of bird were recorded on the site or flying overhead during the field surveys. These species comprised blackbird *Turdus merula*, goldfinch *Carduelis carduelis*, common swift *Apus apus*, house sparrow *Passer domesticus*, linnet *Carduelis cannabina*, robin *Erithacus rubecula*, sparrowhawk *Accipiter nisus* and wood pigeon *Columba palumbus*. Of bird species recorded from the site house sparrow, linnet and swift are red listed, with wood pigeon and sparrowhawk amber listed.

5.3.12 Site buildings, hedgerow plants and trees have potential for use by nesting birds. Open grassland habitats offer limited suitability for use by ground nesting birds which would potentially be overlooked by predators making use of adjacent trees and hedgerows.

5.3.13 Site habitats were considered to have potential for foraging use by a wide range of common and widespread bird species. It was however considered that the site lacked much suitability for use by uncommon habitat specialists.

Hedgehog

5.3.14 Six hedgehog *Erinaceus europaeus* records were provided by BBRC for locations within a 1.5 km radius of the site. No records were received for the site itself. The closest record to site was collected in 2016 from a location 310 m south of the site. The site was therefore considered to be at least likely to comprise part of a wider foraging habitat used by this species.

Invasive species

5.3.15 No species listed on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended) were recorded from the site itself, either historically (through BBRC records) or during the field survey.

5.3.16 The nearest historic record of a species included on Schedule 9 comprised a record of Japanese knotweed *Reynoutria japonica*, collected in 2008 from a location 340 m southwest of the site.

Invertebrates

5.3.17 Given the ubiquitous habitats on site, rarely occurring and/or notable species of invertebrates were not considered likely to be present as the ground flora appeared to be somewhat species poor.

Plants

5.3.18 Given the lack of notable or rare species recorded during the field survey, the habitats on site and the soils' somewhat nutrient enriched state (in most part), it was considered unlikely to support rare or notable species of flowering plants.

Reptiles

5.3.19 Eleven reptile records were provided by BBRC for locations within 1.5 km of the site. No reptile records were received for the site itself, with the closest record comprising a 1994 grass snake *Natrix helvetica* record, collected from a location 1.1 km southeast of the site. In addition to grass snake, adder *Vipera berus* were also recorded, although on the basis of knowledge of the local distribution of adder, it was considered likely that records attributed to this species comprised mis-identifications of grass snake.

5.3.20 Grass snake will move widely across habitats within their range, however, their preferred foraging areas typically comprise undisturbed sites close to waterbodies and watercourses. Consequently, given the distance from nearby watercourses and pond, it was considered unlikely that this species would use the site. The site was not considered to display suitability for use by adder.

5.4 Ecological Importance Summary

5.4.1 Table 2 summarises the ecological value of each habitat and the populations of each species group and species identified as present, or potentially present within the site.

Table 2. Ecological importance of each habitat, species or species group on site and adjacent

Habitat, Species or Species Group	Ecological value
g3c6 – Lolium-Cynosurus neutral grassland	Site
g4 – modified grassland	Site
u1b5 - buildings	Site
u1b6 – developed land	Site
h2a – other native hedgerow	Site
12 – scattered bracken	Site
32 – scattered trees	Site
33 – line of trees	Site
Amphibians	Site (great crested newt expected to be absent)
Badger	Site (if present)
Bats	Site
Birds	Site
Hedgehog	Site
Invasive species	Site
Invertebrates	Site
Plants	Site
Reptiles	Unlikely receptor to scheme

5.5 Biodiversity Calculation

5.5.1 The existing site's value as calculated The Statutory Biodiversity Metric is 4.88 Habitat Units plus 0.67 Hedgerow Units (Appendix 8).

6. Assessment

6.1 Proposals

6.1.1 The assessment of impacts is based on the layout shown in Appendix 1.

6.1.2 The proposed development will result in the loss of all existing habitats on site with the exception of the western hedgerow (H1).

6.1.3 Landscaping proposals are detailed in Appendix 1. A strip of native mixed scrub, other neutral grassland planting and scattered tree planting is to be established along the northern boundary of the western portion of the site. A small area of wildflower lawn and some scrub planting is also to be established in the southeast corner of the western portion of the site. Four sections of new mixed native hedge are to be established outside of private gardens.

6.2 Biodiversity Calculations

6.2.1 The Headline Results output of The Statutory Biodiversity Metric are presented in Appendix 8, based on the proposed site habitats shown in Appendix 9. The metric shows a loss of -2.76 Habitat Units (a 56.54 % net loss) with a projected gain of 0.32 Hedgerow Units (a 47.14 % net gain).

6.2.2 A net loss in Habitat Units cannot be avoided for the proposed scheme. As a result, it is proposed to purchase Habitat Units appropriate to deliver a 10 % net gain from a third party landbank.

6.3 Assessment of Impacts

6.3.1 No impacts upon designated sites are anticipated because of the nature and scale of the development, distance from the designated site and due to the site being surrounded on almost all sides by residential development and/or roads.

6.3.2 Site habitats are considered to be of importance to nature conservation at the site level only. The site is not considered to be of importance at greater than the site level to any faunal species group.

6.3.3 The likely unmitigated impacts of the development were considered to comprise:

- The net loss of 3.62 grassland and 0.3 individual tree Habitat Units, partially offset by an increase of 0.56 heathland and scrub and 0.61 urban Habitat Units, together with a 0.31 Hedgerow Units.
- Damage to the root systems of existing hedgerow plants and trees as a result of construction works.
- A small loss of foraging habitat for hedgehogs, bats, birds, and invertebrates.
- The loss of bird nesting habitat and the potential removal of active birds' nests.
- Increased lighting affecting nocturnal species such as hedgehogs, bats, nocturnal invertebrates and some birds.
- Biosecurity risks as a result of bringing in plants, seeds and soil for landscaping.

6.3.4 Mitigation and enhancement measures have been proposed for the site.

6.4 Mitigation and Enhancement Measures

Root protection

6.4.1 British Standard 5837 (2012): Trees in relation to design, demolition and construction, should be followed. Root Protection Zones (RPZ's) for the retained hedgerow, the retained tree and offsite trees located within 5 m of the site boundary should be calculated and implemented to prevent harm to root systems.

Site clearance

6.4.2 Nesting birds were expected to make some use of site vegetation and buildings and consequently it is strongly recommended that site clearance avoids the nesting bird season. If some vegetation clearance is required during the main nesting bird season (March – August) then this should be preceded within 48 hours by a nesting bird check to be undertaken by an ecologist. As stated in Appendix 2 active bird's nests are legally protected.

Wildlife friendly landscaping and addressing biosecurity risks

6.4.3 Site landscaping should be established as detailed in the Outline Landscape Masterplan. A Landscape Management Plan should be written detailing the management regime for all retained and newly created habitat on the site located outside domestic curtilages.

6.4.4 All plants and seed should be bought from UK nurseries that adhere to national standards regarding plant health, with UK grown material used in preference wherever available. All imported material must conform with industry standards BS 8601 (Subsoil), BS 3882 Topsoil). Topsoil to be general purpose, 10 mm screened and locally sourced (unless otherwise stated). Only peat free compost should be used in landscaping.

Bat and bird boxes

6.4.5 Each new dwelling should have one integrated bat brick and one integrated swift brick, as required under Barnsley Council's Biodiversity and Geodiversity Supplementary Planning Document (BC, 2024). It is recommended that a bat box design such as the PRO UK Build-in WoodStone Bat Box is used, with a suitable design of swift box comprising the AfS S-Brick. Studies have shown that swift boxes are used by the full range of nesting birds that utilise buildings; consequently, these boxes will also provide potential nesting space for house sparrow and starlings *Sturnus vulgaris*. The proposed locations of new bat and swift boxes are shown in Appendix 10.

6.4.6 We recommend the use of bat safe roofing felt as standard. Standard breathable roofing felts are not safe for use in bat roosts. Further information on this issue is included in Appendix 11.

Hedgehogs

6.4.7 In order to ensure that hedgehogs continue to be able to freely access the site, 13 cm x 1 3 cm hedgehog holes should be cut at the base of new dwelling boundary fences. In order to show new homeowners, the purpose of new fence holes, signs should be affixed over the hole on both sides of the fence (i.e. Eco Hedgehog Hole Fence Plate). The proposed locations for hedgehog holes are shown in Appendix 10.

Lighting

6.4.8 The design of outside lighting should be carefully considered in line with guidance from the Institute of Lighting Professionals and the Bat Conservation Trust Guidance (IILP, 2023). Where external lighting is required, it must be downwards facing and have a horizontal cut off, i.e. with no upwards component. The lighting should be relatively low level and a warm colour tone (i.e. not cold white or blue). Lighting on the rear of the properties should be activated only by PIR sensors.

6.5 Conclusion and Residual Effects

6.5.1 In order to further reduce scheme impacts and to ensure the scheme maximises potential benefits to nature conservation, it is recommended that mitigation and enhancement measures detailed in Section 6.4 are adopted.

6.5.2 The proposals are expected to result in a net loss of 2.76 Habitat Units (a 56.54 % net loss) with a projected gain of 0.32 Hedgerow Units (a 47.14 % net gain). As a result, it is proposed to purchase Habitat Units appropriate to deliver a 10 % net gain from either the local planning authority (if possible) or from a third party landbank.

6.5.3 The results of this survey are considered to be valid for a period of 24 months. After this time Middleton Bell Ecology should be contacted to determine the need for update survey.

7. References

AWA (2024) Arboricultural Report & Impact Assessment to BS 5837:2012 at Land at Snape Hill Street, Darfield. AWA Tree Consultants.

BC (2024) Barnsley Local Plan – Biodiversity and Geodiversity Supplementary Planning Document. Available online at: https://www.barnsley.gov.uk/media/uqcn3wiv/biodiversity-and-geodiversity-spd-2024.pdf

CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

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

ILP (2023) Guidance Note 08/23 Bats and Artificial Lighting At Night. Bat Conservation Trust and Institute of Lighting Professionals.

Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit. Reprinted by JNCC, Peterborough.

Defra (2023) The Statutory Biodiversity Metric User Guide (draft). Defra.

MBE (2020) South View, Darfield – Preliminary Ecological Appraisal. Middleton Bell Ecology.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., & I Win (2021) *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain.* British Birds 114: 723-747. Available online at: www.britishbirds.co.uk/content/status-our-bird-populations

UKHab Ltd (2023) UK Habitat Classification Version 2.0 (at https://www.ukhab.org)

Appendix 1. Outline Landscape Masterplan

SOFTWORKS SPECIFICATION NOTES

The contractor is responsible to ensure that no products or practices are to be used that do not comply with relevant British Standards, Codes of Practice and Construction Regulations. Contractor to be fully satisfied with locations and off sets of services prior to excavations.

Site clearance generally: Where necessary remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil. Remove stones exceeding 75 mm. Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.

Retain and protect trees and vegetation in accordance with BS 5837 where necessary. Grub up any large roots and dispose of without undue disturbance of soil and adjacent areas. In order to comply with UK legislation in regard to the Wildlife and Countryside Act 1981 (as amended), any tree or vegetation removal and/or management must take place outside of the bird nesting season (March to September inclusive). Where this cannot be achieved, nesting bird checks must be undertaken by a suitably qualified ecologist within 24 hours of the works.

Works within the root protection area (RPA):There shall be no areas of storage, trafficking of machinery, cultivation, ripping or mechanical rotivation, or importing of top soil, within the root protection area (RPA) of the existing trees to be retained. Where paths and hard surfacing is proposed within the retained tree RPA's, a No Dig methodology is to be adopted. Underground reinforcement, such as Cell Web (or similar approved) to be utilised in these locations. No trenches shall be dug within the RPA of the existing trees. New hedging plants within the RPA of the existing trees shall be notch planted. All of the above must be in accordance with BS 5837.

SOIL
Site preparation: Where required all existing topsoil and subsoil shall be stripped and stored separately on site. Heaps must not exceed 3m in height and should be used within 12 months in accordance with BS 4425 (Code of practice for general landscape operations).

Soil Sampling - Existing topsoil and inert sub soils, shall be analysed in accordance with BS 3882 to determine available nutrients, texture, organic matter content and pH. Where require, existing soils are to be improved in accordance with BS 3882:2015
Cultivation - Flail existing ruderal vegetation to ground level and remove arisings prior to cultivation. All areas to receive final layers of topsoil are to be de-compacted prior to spreading. Earth works vehicles to be small scale and tracked (loose-tipping) to minimise compaction, however chosen method for decompaction will be site specific dependant on size and soil conditions. Additional care must be taken as to not damage soil structure. All objects and stones over 75mm brought to the surface during decompaction are to be removed from the prepared surface layer. If existing subsoil horizon is found to consist of heavy clay, all proposed seeded areas to be tine ripped to 200mm depth at 300mm centres to increase drainage. Areas to be seeded to be chain harrowed to a fine tilth and lightly rolled to provide firm seed bed. Remove all stones over 30mm dia in any direction.
Imported soil material: Import as necessary to make up any deficiency of topsoil and/or subsoil existing on site to complete the work and mitigate deficiencies. All imported material must conform with industry standards BS 8601 (Subsoil), BS 3882 Topsoil) and CLEA limits on heavy metals. Topsoil to be General purpose, 10mm screened and locally sourced (unless otherwise stated)

Soil build up: Existing topsoil and subsoil to be retained and reused on site within the landscape scheme where possible. Prior to spreading all topsoil to be screened to remove large stones and other deleterious materials, such as plant roots, leaves and clay. Topsoil to be loose-tipped and spread over de-compacted subsoil/receiving area. The total minimum rooting depth for planting, after settlement, should be: Grass 450mm; Planted areas 600mm; Trees 900mm. Topsoil depths for these areas should not normally exceed 300mm with the following minimum depths for each area: Grass 150mm; Planted areas 300mm; Trees 300mm. Meadow & wildflower seeding to be sown directly onto prepared subsoil.

Finished level of topsoil after settlement: Above adjoining paving or kerbs: 25 mm; Below dpc of adjoining buildings: Not less than 150 mm; Shrub areas: Higher than adjoining grass areas by 50 mm; Within root spread of existing trees: Unchanged; Adjoining soil areas: Marry in; Thickness of turf or mulch: Included.)

ADDITIVES
Compost to tree/shrub pits: To be as per BS PAS 100: well rotted sterilised spent mushroom compost max. pH 6.7 or Target Treestart compost. The contractor shall provide a Certificate of Analysis to show that the material being supplied complies with the above criteria. Incorporate spent mushroom compost or equivalent approved peat free compost into tree and planting pits at a rate of 3 parts topsoil to 1 part compost, thoroughly mixed together.

Fertiliser to ornamental shrub beds - Apply slow release fertiliser, Scotts 'Ennag' 4.19.10 NPK or equivalent approved at a rate of 50 gms/sq. metre over topsoil surface and fork into top 225mm spit.

PLANTING
Generally: Minimise trafficking of graded slopes. All plants to be preferably planted between Nov. - March. Nursery stock trees and shrubs to be in accordance with BS 3936 and BS 8545, to be supplied and planted in accordance with British Standards and the Horticultural Association's Plant Handling Guide. Container grown shrubs to be thoroughly watered before planting; trees and bare root shrubs watered after planting.

Times of year for planting: Deciduous Trees, hedge and shrubs: Late October to late March. Evergreen hedges and shrubs: September/ October or April/ May. Container grown plants: At any time if ground and weather conditions are favourable. Watering and weed control to be provided as necessary.

Shrub/Hedge planting pits: Timing: Excavate 1-2 days (maximum) before planting. Pit sizes: Wide enough to accommodate roots/toughs when fully spread and 75 mm deeper than root system. Pit bottom improvement Break up to a depth of 150 mm, incorporating 25g of slow-release fertiliser per planting pit. Where existing planting and roots are present plants are to be notch planted to minimise disruption/root damage. Backfilling material: Reuse excavated material. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.

Tree pit sizes: Standard trees excavate a tree pit 1.2m x 1.2m x 900mm. Break up sides and bottom of pits to a depth of 100mm to ensure free drainage.Tree pit treatment: Soil amelioarnt worked into pit bottoms. Pit sides to be scarified and backfilling material to be in accordance with topsoil and subsoil specification. Drainage Layer: Provide 200mm layer washed, clean gravel to base of pits to aid drainage (tree pit to be actively drained if poor draining soil or clay discovered by contractor).

Tree Accessories: Typically trees in soft landscape to be staked unless stated otherwise by the Landscape Architect. Underground guying is recommended for semi mature trees or trees within hard landscape and in public areas. Trees to be staked using 1m long x 75mm dia. round timber stakes (size of stakes to be adjusted to suit size of tree). Cross member to be installed 75mm x 25mm (larger trees will need large cross members). Locate proprietary Hessian ties on cross member to secure tree and prevent rubbing. Short stakes (<1.0m high) with biodegradable Hessian ties are recommended to encourage wind tolerance and prevent rubbing. Tree pit accessories by Green Tech or similar: Underground guying and perforated plastic irrigation/ ventilation pipe to landscape architects approval.

Root Barriers: To be used wherever the installed rootball will be within 2m of a building foundation or within proximity to underground utilities (distance at which root barrier is required is as per utility providers standards and should be confirmed prior to installation). Root barrier by Green Tech or similar to be installed vertically in accordance with supplier recommendations.

Protective fencing/guards: Newly planted areas or individual plants are to include rabbit/deer proof fencing. Either perimeter mesh fencing or individual biodegradable plastic free spiral guards/shelters/tubes are to be installed around all planting where required. Where areas are fenced, mesh to be 1m min above ground and buried 300mm below ground.

Mulching: Approved medium course chipped tree bark composted for at least 4 weeks. Particle size 25-75mm dia, max. 20% fines, pests and disease free and free of Methyl Bromide contamination. Clear any weeds, ensure soil is thoroughly moistened prior to applying mulch. All planting areas inc. trees, hedges and planting beds should receive an even 75mm depth of bark mulch, adjoining edge of mulch to be 15mm min. below adjacent hardstanding to avoid spillage. 50mm depth of mulch is only suitable for higher quality ornamental bark (<5% fines, 5-35mm size etc.). All bark should be FSC certified. Option to use biodegradable mulch mats to control moisture, soil temperature, erosion and weeds. All trees within grass are to have a 1.5m diameter mulch circle.

Seeding and making good existing grass areas: Steep embankments to be hydroseeded where required. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent amenity grassed areas sufficient to ensure full marrying in of levels where required. Evenly distribute seeds at an application rate of 35g/m² or as per supplier recommendations. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding until germination as necessary to keep the surface damp and soil most but not water logged.

Cutting In: Where cutting planting beds into existing grassed areas, the surrounding grass shall be protected and made good as necessary. These areas to be made good by preparing and re-seeding area. Seed mixes: John Chambers Lawn/Meadow seed or similar approved.

Turf Preparation - Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist. Do not lift turf in frosty weather or if ground waterlogged. Arrange phased delivery timescales to avoid need for excessive stacking. Stacking height 1m (max). Do not use dried out or deteriorated turf. After cultivating, grading and fertilizing prepare seed bed to fine, firm tilth with good crumb structure (Depth: 25 mm). Rake to a true, even surface, friable and lightly firmed but not over compacted. Remove surface stones/earth clods. Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

Turf Implementation - Turf to be laid in Spring and summer within 18 hours of delivery; and Autumn and winter within 24 hours of delivery. Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry. Planks to be laid on previously laid turf. Do not walk on prepared bed or newly laid turf. Turf laid along contours with staggered, close butted joints. Do not stretch turf. At the edges, whole turfs to overlap line, trimmed to a true line. Remove high spots and fill hollows with fine soil to adjust levels Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers. Dress turf with Sharp sand at a rate of 2kg/m2 and brushed in to completely fill joints. Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below. Use hardy low maintenance amenity turf suitable for use in shade (To BS 3969).

Seed Preparation and Implementation for Wildflower Areas: No addition of nutrient to soil required. Method to suit soil type, proposed usage, location and weather conditions during and after sowing. A friable firm seed bed required, weed free, alleviation of compaction to a depth of 100-200mm, sowed on a firm and fine tilth. Seed bed preparation to be conducted in dry conditions, close to the time of sowing.Remove surface stones/earth clods. Marry in with adjacent levels where required. Evenly distribute seeds at the manufacturers recommended application rate. Establish good seed contact with the root zone to promote healthy, consistent growth. Lightly harrow or rake to cover seed. Thoroughly water completed seeding.

MAINTENANCE
1 year Defects Liability Period applies. All dead or failing plants to be replaced the following growing season. Maintain a weedfree bare earth area 600mm dia minimum around individual trees and shrubs. Herbicide shall only be used where necessary and if use is required it should be a non-residual translocated herbicide and spot applied/applied with spray guard. Application and use to be in accordance with EA guidance. Prior to spraying ensure all spirals are tight to ground level and leaves within spray range are fully enclosed. Arisings: Remove. Trim all edges. Weed control: Substantially free of broad leaved weeds. Method: Application of a suitable selective herbicide. Remove any stones 25 mm in any dimension brought to the surface. Watering: To ensure establishment.

NOTE: Works to be carried out in accordance with the most up to date and current British Standards referenced within this specification.

NOTES:

Trees & Services

- Where paths and hard surfacing is proposed within close proximity to trees all construction is to be in accordance with BS 5837: 2012
- Root barriers / root protection measures are to be incorporated where required in accordance with guidelines where existing and proposed trees and vegetation are within 2m of proposed building or trees are in close proximity to services (details to be agreed).
- Tree and shrub planting proposed within drainage easements to be approved by local water authority. Planting to incorporate root protection measures around services or planting pits to ensure the sewer system is resistant to tree root ingress in accordance with the current Code for Design.
- Contractor shall comply with NJUG publication, volume 4 'Guidelines For The Planning, Installation And Maintenance Of Utility Services In Proximity To Trees' together with BS 5837:2012 Trees in Relation to Construction. Where conflict arises refer to the British Standard.

PLANTING SCHEDULES:

Any substitutions of plant species and varieties to be approved by landscape architect prior to installation.
All planting to be undertaken as per the softworks specification

Trees:

FEATHERED TREES					
Total No. 21					
Total	Species	Height mm	Girth	Size	Spec.
2	Acer campestre (Ac)	250-300	8-10cm	F	Feathered
1	Acer campestre 'Streetwise' (AcS)	250-300	8-10cm	F	Feathered
4	Alnus glutinosa (Ag)	250-300	8-10cm	F	Feathered
3	Betula pendula (Bp)	250-300	8-10cm	F	Feathered
3	Quercus robur (Qr)	250-300	8-10cm	F	Feathered
2	Sorbus aria (Sa)	250-300	8-10cm	F	Feathered
4	Sorbus aucuparia (Sau)	250-300	8-10cm	F	Feathered
1	Sorbus aucuparia 'Jospeh Rock' (SJR)	250-300	8-10cm	F	Feathered
1	Tilia cordata 'Greenspire' (TcG)	250-300	8-10cm	F	Feathered

STANDARD TREES					
Total No. 13					
Total	Species	Height mm	Girth	Size	Spec.
2	Amelanchier alnifolia 'Obelisk' AaOb	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
5	Prunus cerasifera 'Crimson Point' (PcCP)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
3	Pyrus calleryana 'Chanticleer' (PycC	300-350cm	10-12cm	SS	RB, clear stem 175-200mm
3	Sorbus aucuparia 'Sheerwater Seedling' (SaSS)	300-350cm	10-12cm	SS	RB, clear stem 175-200mm

Schedule provides an indicative, but not exhaustive species list. All trees are to be supported and mulched in accordance with the specification. Protective fencing/guards to be provided where required in vulnerable areas. Root protection to be incorporate where required and in close proximity to services and buildings.

Mixed Native Planting:

NATIVE SCRUB MIX				
Total Area 610m²				
% of Mix	Species	Spec	Size in cm	Age
10	Cornus alba	BR	40-60cm	1+1
10	Corylus avellana	BR	40-60cm	1+0
35	Crataegus Monogyana	BR	40-60cm	1+1
5	Ligustrum Vulgare	BR	60-80cm	1u1
15	Prunus spinosa	BR	60-80cm	1u1
5	Rosa canina	BR	40-60cm	1+0
10	Ulex europaeus	Cell	25-30cm	1+1
10	Viburnum opulus	BR	40-60cm	2+0

To be planted as per specification in staggered rows, at 0.5m² centres. Planted in groups of 3, 5, 7 to ensure an even distribution of species throughout the specified area. Taller species to be planted in the centre or rear along the boundary, with smaller species to the edges or front. Biodegradable plastic free tubes and cane supports to be provided to each plant, where required. All areas of new native planting to be undersown with a woodland/shade tolerant seed mix

Ornamental Planting:

STRUCTURAL ORNAMENTAL PLANTING MIX				
Total Area 35m²				
Species	Spec.	Size in cm	Pot Size	Density
Choisya ternata 'Orange Blossom'	C	40-60	3L	4/m²
Cornus sanguinea 'midwinter fire'	C	60-80	3L	3/m²
Euonymus fortunei 'Emerald Gaiety'	C	30-40	3L	4/m²
Hebe 'Pagei'	C	20-30	3L	5/m²
Lonicera pileata	C	30-40	2L	5/m²
Pachysandra terminalis	C	15-20	3L	6/m²
Potentilla fruticosa 'Manchu'	C	30-40	3L	5/m²
Pittosporum tenuifolium 'Tom Thumb'	C	30-40	3L	4/m²
Spiraea japonica 'Goldfame'	C	30-40	3L	4/m²
Sarcococca hookeriana	C	30-40	3L	4/m²
Skimmia japonica 'Rubella'	C	30-40	3L	4/m²
Viburnum davidii	C	30-40	3L	3/m²

Schedule provides an indicative, but not exhaustive species list. All newly planted areas are to be mulched in accordance with the specification.

Hedges:

SINGLE SPECIES NATIVE HEDGE			
Total Length 227 linear m			
Species	Size (cm)	Spec	Notes
Carpinus betulus	60-90	5L, C	5 per linear m in a double staggered row

To be planted as per specification. Biodegradable plastic free tubes and cane supports to be provided to each plant, where required. All hedges to be mulched in accordance with specification.

MIXED SPECIES NATIVE HEDGE				
Total Length 72 linear m				
% of mix	Species	Size (cm)	Spec	Notes
10	Acer campestre	60-80	BR	5 per linear m in a double staggered row
5	Cornus sanguinea	40-60	BR	
10	Corylus avellana	60-80	BR	
40	Crataegus monogyna	60-80	BR	
10	Ilex aquifolium	40-60	3L	
10	Ligustrum vulgare	60-80	BR	
5	Prunus spinosa	60-80	BR	

To be planted as per specification. Biodegradable plastic free tubes and cane supports to be provided to each plant, where required. All hedges to be mulched in accordance with specification.

Meadow Seed Mixes:
Total Area =1017m²

MEADOW MIX
Habitat Aid Basic Native Wildflower Meadow Seed Mix. 80% Grass Seed 20% Wildflower
Sowing rate @ 4g/m²
Common Bent, Smaller Cat's-tail, Creeping Red Fescue,Crested dogstail, Smooth-stalked meadow grass Yarrow , Common Knapweed, Wild carrot, Hedge Bedstraw, Ladies Bedstraw, Oxeye Daisy , Birdsfoot Trefoil, Ribwort Plantain, Selfheal, Meadow Buttercup , Common Sorrel, Red Campion

AMENITY FLOWERING LAWN
Habitat Aid Flowering Lawn Mix. 20% native British wildflowers and 80% mixed slow-growing grasses
Sowing rate @ 5g/m²
Yarrow, Daisy, Ladies Bedstraw, Cats-ear, Smooth Hawkbit, Rough Hawkbit, Birdsfoot Trefoil, Ribwort Plantain, Cowslip, Selfheal, Bulbous Buttercup, Dandelion, Common Bent, Highland Bent, Chewings Fescue, Native Fescues, Crested dogstail

To be sown as per suppliers recommendations. Subject to a reduced mowing regime. To incorporate mown margin/edge where required. Areas of retained grassland to be made good where required utilising the suggested seed mixes.

Lawn Turf/Seed:
Total Area = 695m²

TURF
Premier lawn turf roll
Hard wearing turf to include rye grass
To be laid where require instant coverage/areas to be made good following construction. (Supplier as approved by landscape architect)

Total Area = 1976m²

AMENITY MIX
John Chambers Grass Seed Low Maintenance
Sowing rate @ 35g/m²
Amenity RPG, Strong Creeping Red Fescue, Chewings Fescue, Hard Fescue, Browntop Bent

ECOLOGICAL & BIODIVERSITY RECOMMENDATIONS:

Refer to Prelimiary Ecological Appraisal by Middleton Bell for further detail

MITIGATION

- Vegetation clearance should take place at a time when it will not affect nesting birds (outside March to August). If works are to be undertaken during this time, then they should be preceded by a nesting bird check to be undertaken by an ecologist.
- Boundary trees should be retained (especially the northwest corner). Taking a best practice approach to nature conservation issues, British Standard 5837 (2012): Trees in relation to design, demolition and construction, should be followed. Root Protection Zones (RPZ's) should be calculated and implemented to prevent harm to trees. This should also apply to any trees outwith the site, up to 5 m from the boundary.

ENHANCEMENT

- The development should include swift boxes in one third of units integral to the fabric of the building high on external walls. House sparrow terraces should also be included in one third of units, with bat boxes in the remainder of new dwellings. Bird boxes should not be installed on the south facing elevations. Bat boxes should be installed at wall top height on either south or west elevations.
- Dwelling boundaries and fences should not impede the free movement of hedgehogs throughout the site with holes cut at fence junctions.

Bulbs:

NATIVE BULBS MIX		
Species	Grade	Density
Anemone nemorosa	12/30	50/m²
Galanthus nivalis (g)	4/5	100/m²
Hyacinthoides non-scripta	6/7	20/m²
Narcissus pseudonarcissus	10/15	35/m²

UK cultivated stock to be used for native bulbs

LANDSCAPE KEY

SOFT LANDSCAPE
(Planting: refer to planting schedule & Specification for planting details)

- Existing Trees and vegetation to be retained an associated RPA. All trees to be protected to BS5837:2012. Refer to Arboricultural Report & Arboricultural Impact Assessment Plan by AWA for further detail.
- Existing trees and vegetation to be removed to facilitate development. Refer to Arboricultural Report & Arboricultural Impact Assessment by AWA for further detail.
- **Proposed Standard Trees** Girth 8-10cm Height 250-300cm
- **Proposed Feathered Trees** Girth 8-10cm Height 250-300cm
- Proposed single species native hedge to the frontage of properties. 227 linear m
- Proposed mixed species native hedge. 72 linear m
- Proposed native scrub mix. 610m²
- Proposed structural Ornamental planting. 35m²
- Proposed flowering lawn meadow seed mix.
- Proposed meadow seed mix 1017m² (Total area for all meadow seeding)
- Proposed front garden lawn to be turfed. 695m²
- Proposed rear garden lawn to be seeded. 1976m²
- Proposed bulb planting.
- Proposed mown paths.

HARD LANDSCAPE, BOUNDARIES & FEATURES
Refer to Site Layout by Mark Smith - Architectural Design for details.

- Proposed parking/driveways.
- Proposed high quality paving to rear garden patios. Refer to Site Layout by Mark Smith - Architectural Design for details.
- Proposed boundary fence: Secured 1.8m High timber perimeter fence.
- Proposed boundary fence: Secured 1.5m High timber fence to define the rear gardens.
- Proposed boundary fence: 1.2m High timber fence.
- Existing boundary fence.
- Proposed Post and wire mesh fence.
- Retaining wall.
- Proposed boundary fence: 1.2m High timber post and rail fence with wire stock netting.
- Red line planning application boundary.
- Proposed timber bench.

Project: Land At South View Darfield

Client: MR J Huges

Title: Outline Landscape Masterplan & Specification

Drawn:	Chk'd:	App'd
BP	LW	LW

Drawing Number: PWP 792 001

Revision: 02

Drawing Scale: 1:250@A0

Rev	Date	Detail	Made	Chk'd	App'd
02	28/11/24	FOR PLANNING - Minor tweaks and coordination amendments	BP	LW	LW
01	25/11/24	FOR PLANNING - updated to coordinate with layout amends	BP	LW	LW
00	30/04/24	DRAFT SENT FOR CLIENT COMMENT	BP	LW	LW

FOR PLANNING PURPOSES ONLY

Notes:

1. Not for construction all dimensions to be confirmed on site.
2. Based on Layout Drawing - 'Proposed dwellings' MS/77/23-02 C by Mark Smith - Architectural Design.
3. Refer to architects/engineers drawing for site levels, drainage, retaining walls, services and utilities .
4. Build ups/footings to engineers specification.
5. Location of services to be confirmed by contractor prior to installation of any planting.
6. All existing trees to be protected to BS 5837.

Scale 1:200
0 5 10 20

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PWP DESIGN

Appendix 2. Relevant Legislation and Policy

Wildlife legislation relating to statutory designated sites and species is summarised in Table A1 and A2 below. This legal information is intended for summary only, and the original legal documents should be consulted if a detailed understanding is required.

Table A1. Legislation relating to designated sites and habitats

Designated Site	Legal Status
Site of Special Scientific Interest (SSSI)	SSSIs are the national suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs have been re-notified under the Wildlife and Countryside Act 1981 (as amended). Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000. SSSIs are of at least national importance to nature conservation

Table A2. Legislation relating to species

Species	Legal Status
European protection	
European Protected Species (EPS) (including bats, Great Crested Newt (GCN), otter and hazel dormouse)	These animal species and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2017, which makes it illegal to: • Intentionally or deliberately capture, injure, or kill any such animal or to deliberately take or destroy their eggs. • Deliberately disturb such an animal. • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licences can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed: • The development is for reasons of overriding public interest. • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced. Under Regulation 9(5) of the Conservation Regulations, Planning Authorities have a legal duty to 'have regard to the requirements of the EC Habitats Directive in the exercise of their functions'. This means that they must consider the above 3 tests when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations. As a consequence, Planning Applications for such developments must demonstrate that the 3 tests will be passed. Natural England also allow sites to be registered on the Bat Low Impact Class Licence to permit activities that would otherwise be

Species	Legal Status
	unlawful under the Conservation Regulations where the 3 tests can be passed and the bat roosts to be impacted are of low conservation status.
National protection	
European Protected Species and other species including water vole and white clawed crayfish	These animals receive full protection under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any such animal. • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any such animal; and • Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Common amphibians and reptile species	These animals receive limited protection under The Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal to intentionally kill or injure any such animal.
Badger	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger or attempt to do so and also make it illegal to intentionally or recklessly interfere with a Badger sett. This includes damaging or destroying a sett, obstructing access to a sett and disturbing a Badger while it is occupying a sett. Licences can be granted by Natural England to permit sett closure and/or disturbance between July and November inclusive.
Schedule 1 birds	Special penalties relate to offences concerning birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In addition to the offences detailed above relating to all wild birds, it is illegal to intentionally or recklessly disturb any Schedule 1 bird or their dependent young while nesting.
All bird species	All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any wild bird. • Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.
Invasive species	The Wildlife and Countryside Act 1981 (as amended) contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 of the Act. In relation to Schedule 9 plants it is an offence to plant or otherwise cause these plant species to grow in the wild.

Species and Habitats of Principal Importance

Planning authorities have a duty under Section 40 of the NERC Act 2006 to have regard to priority species and habitats in exercising their functions including development control and planning. In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principal importance for conserving biodiversity in England under the UK Post-2010 Biodiversity Framework. This is known as the list of Habitats and Species of Principal Importance (HPI/SPI). The HPI/SPI list is used to guide planning authorities in implementing their duty under the NERC Act.

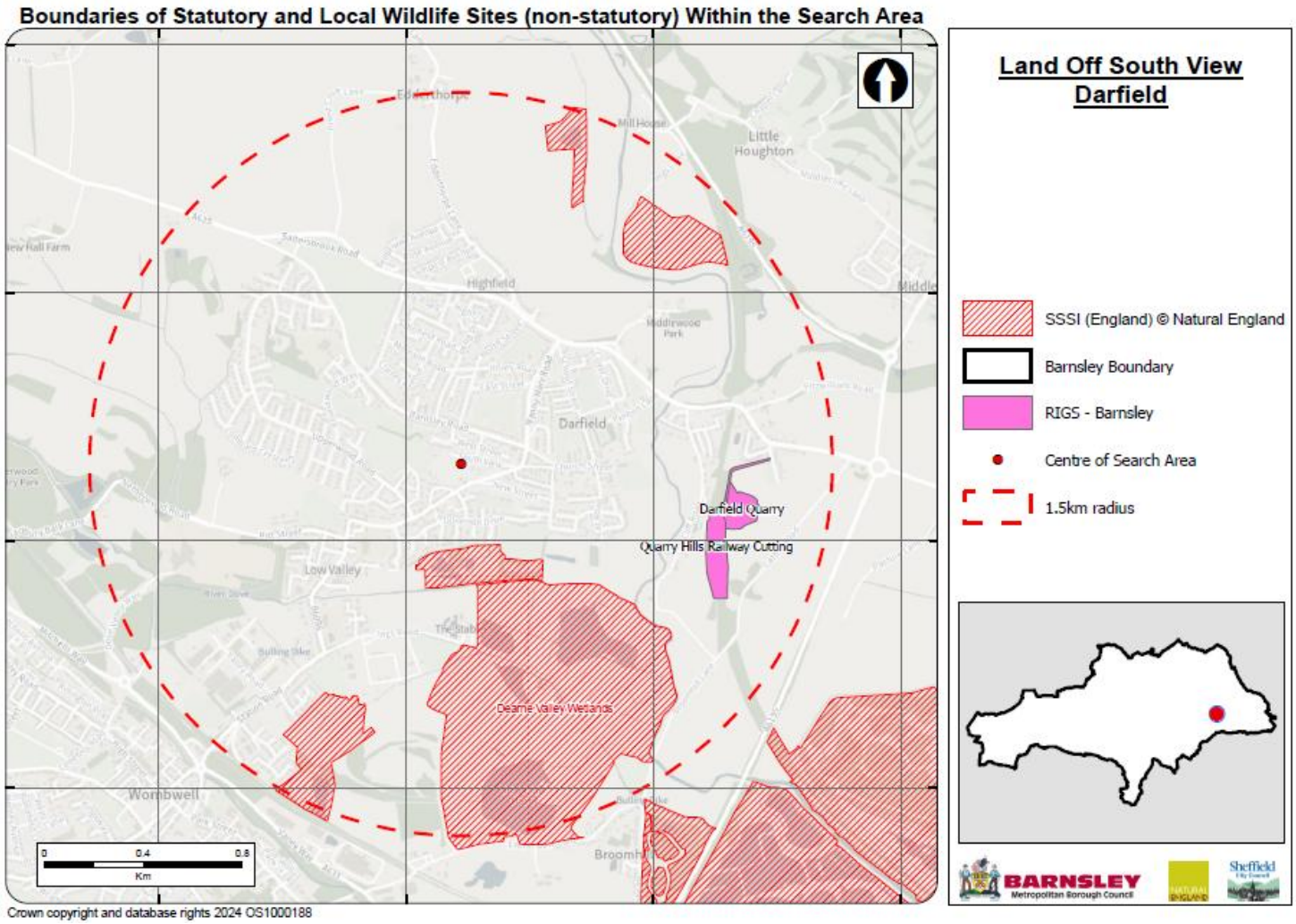
National Planning Policy Framework

The National Planning Policy Framework for England was revised in 2018. This document states that plans should 'promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity'. It also puts an emphasis on refusing development which would result in the 'loss or deterioration of irreplaceable habitats (such as ancient woodland)' unless there are 'wholly exceptional reasons and a suitable mitigation strategy exists'.

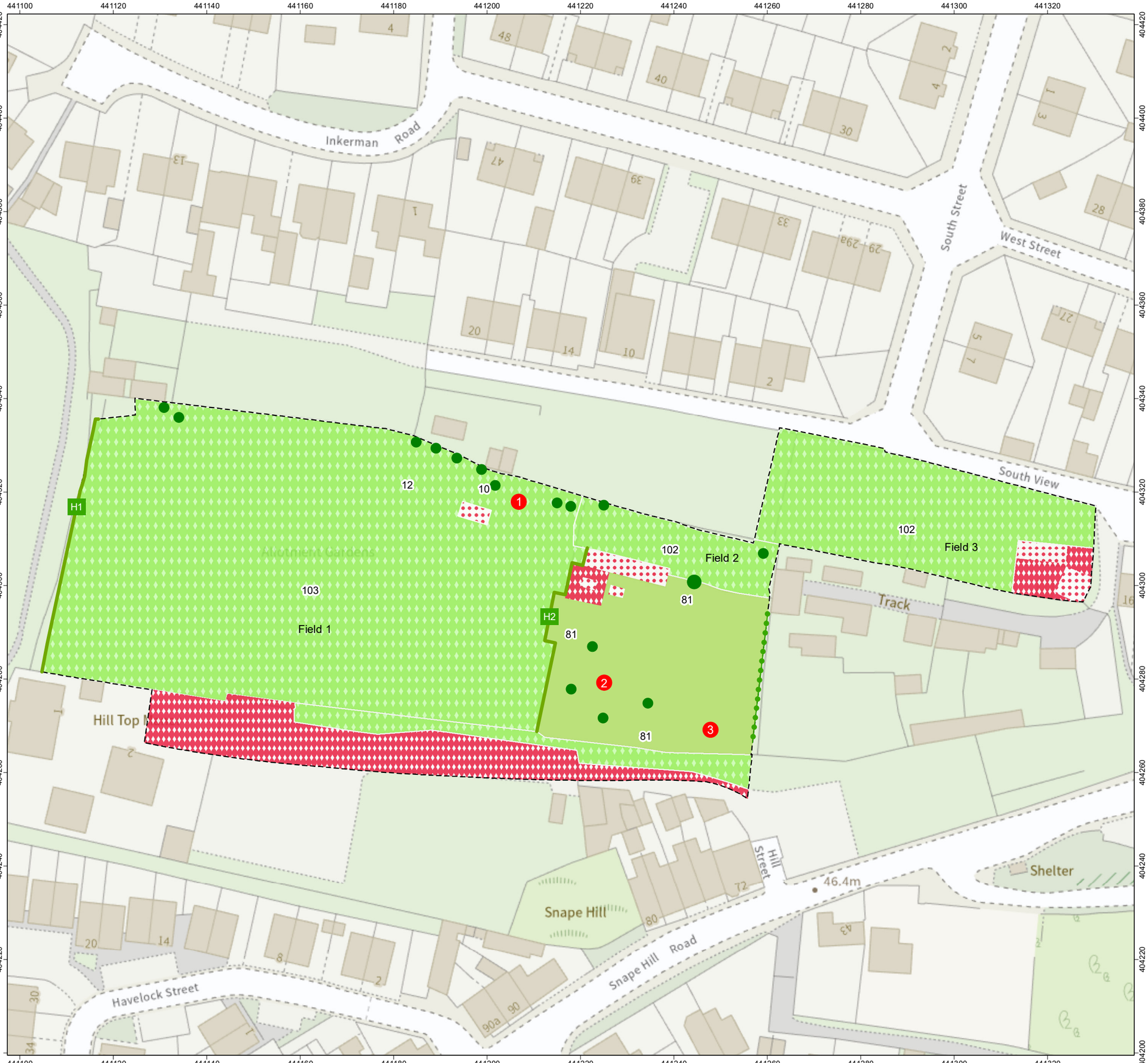
Local Biodiversity Action Plans

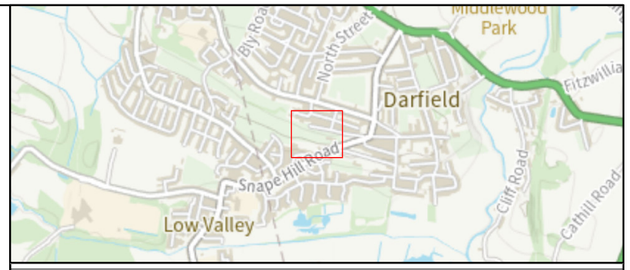
The HPI/SPI list included on Section 41 of the NERC Act 2006 is supported by a series of Local Biodiversity Action Plans (LBAPs), usually set up on a local authority local authority administrative boundary basis. Each LBAP identifies those habitats and species considered to be most important in that area (usually referred to as priority habitats and species). Commonly, an LBAP will identify a number of habitats and species for which "action plans" have been prepared.

Appendix 3. Designated Sites Map



Appendix 4. UK Habitat Classification Plan





Survey Information	
	Site boundary (11,378.2m^2)
UK Habitat Survey (Primary Habitats)	
	g3c6 - Lolium-Cynosurus neutral grassland (8,473.7m^2)
	g4 - Modified grassland (1,565.5m^2)
	u1b5 - Buildings (186.1m^2)
	u1b6 - Other developed land (1,152.9m^2)
	h2a - Other native hedgerow (103.7m)
	33 - Line of trees (27.8m)
	32 - Scattered tree, medum (1)
	32 - Scattered tree, small (15)
	Target note

Secondary codes:

10 - Scattered scrub
81 - Ruderal or ephemeral
102 - Sheep grazed
103 - Horse grazed

Target notes:

1 – Cluster of scattered mature hawthorn and elder shrub
2 – Former small orchard, now largely comprising dead trees due to goat browsing/bark stripping
3 – Modified grassland includes two abandoned cars, two caravans, two canoes and extensive scattered building materials, such as sections of corrugated tin

N

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Metres

PROJECT TITLE

LAND AT SOUTH VIEW, DARFIELD

DRAWING TITLE

Figure 1. UK Habitat Survey Plan

VER	DATE	REMARKS	Drawn	Checked
2.1	06/12/24	UKHab	MP	RB

DRAWING NUMBER:
MIDDLETONBELLECOLOGY/LandatSouthViewDarfield/UKHab

SCALE	1:800	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

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Appendix 5. Plant Species Recorded on Site

Common Name	Latin Name	g3c6 - Lolium-Cynosurus neutral grassland	g4 - modified grassland	h2a - other native hedgerow	32 - scattered trees	33 - line of trees
Perennial Rye-grass	*Lolium perenne*	A	O			
Common Nettle	*Urtica dioica*	F	A			
Creeping Bent	*Agrostis stolonifera*	F	F			
Autumn Hawkbit	*Scorzoneroides autumnalis*	F				
Creeping Thistle	*Cirsium arvense*	F				
Yorkshire-fog	*Holcus lanatus*	F				
Common Ragwort	*Jacobaea vulgaris*	O	F			
Wall Barley	*Hordeum murinum*	O	F			
Broad-leaved Dock	*Rumex obtusifolius*	O	O			
Cock's-foot	*Dactylis glomerata*	O	O			
White Clover	*Trifolium repens*	O	O			
Yarrow	*Achillea millefolium*	O	O			
Bracken	*Pteridium aquilinum*	O				
Cat's-ear	*Hypochaeris radicata*	O				
Common Chickweed	*Stellaria media*	O				
Cow Parsley	*Anthriscus sylvestris*	O				
False Oat-grass	*Arrhenatherum elatius*	O				
Meadow Buttercup	*Ranunculus acris*	O				
Rough Meadow-grass	*Poa trivialis*	O				
Wormwood	*Artemisia absinthium*	O				
Common Mallow	*Malva sylvestris*	R				
Red Dead-nettle	*Lamium purpureum*	R				

Common Name	Latin Name	g3c6 - Lolium-Cynosurus neutral grassland	g4 - modified grassland	h2a - other native hedgerow	32 - scattered trees	33 - line of trees
Sheep's Sorrel	*Rumex acetosella*	R				
Soft-brome	*Bromus hordeaceus*	R				
Spear Thistle	*Cirsium vulgare*	R				
Wild Teasel	*Dipsacus fullonum*	R				
Red Clover	*Trifolium pratense*	R				
Dandelion	*Taraxacum*		F			
Ribwort Plantain	*Plantago lanceolata*		O			
Hawthorn	*Crataegus monogyna*			F	F	
Cherry Plum	*Prunus cerasifera*			F		
Elder	*Sambucus nigra*			O	O	
Blackthorn	*Prunus spinosa*			O		
Bramble	*Rubusfruticosus*			O		
Field Maple	*Acer campestre*			O		
Fig	*Ficus carica*			O		
Horse-chestnut	*Aesculus hippocastanum*			O		
Lilac	*Syringa vulgaris*			O		
Willow	*Salix*			O		
Apple	*Malus*				O	
Goat Willow	*Salix caprea*				O	
Pear	*Pyrus communis*				O	
Pedunculate Oak	*Quercus robur*				O	
Silver Birch	*Betula pendula*				O	
Austrian Pine	*Pinus nigra*					F
Cherry	*Prunus*					F

Appendix 6. Individual Tree Condition Assessment Table

Tree number (Arboricultural Report)	T1	T2	G3	T4	T5	G6	T8	G14 (Part 1)	G14 (Part 2)
Number of component trees	1	1	1	1	1	5	1	3	1
Size	Small	Medium	Small	Small	Small	Small	Small	Small	Small
A - Tree is a native species	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
B - Tree canopy is predominantly continuous	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
C - The tree is mature	No	Yes	No	No	No	No	No	No	No
D - There is little or no evidence of an adverse impact on tree health by human activities	No	No	No	No	No	No	No	No	Yes
E - Natural ecological niches for vertebrates and invertebrates are present	Yes	No	No	No	No	No	Yes	No	No
F - More than 20 % of the tree canopy is oversailing vegetation beneath	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Condition	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Poor	Moderate
Notes	Pruning wounds and compaction damage	Bark damage	Compaction	Bark damage and exposed roots	Bark damage and exposed roots	Soil erosion and exposed roots	Pruning wounds, soil erosion, bark damage and compaction	Two apple and one pear. Damage from grazing	One pedunculate oak

Appendix 7. Tree Constraints Plan

AWA TREE CONSULTANTS

Appendix 5: Tree Constraints Plan

Land at: Snape Hill Street, Darfield, Barnsley
Ref: AWA6299

BRITISH STANDARD 5837:2012
RETENTION CATEGORIES
Definitions of these categories can be found in Appendix 2 of the report.

SCALE: 1:500 PAPER: A2

	CATEGORY A: HIGH VALUE RETENTION MOST DESIRABLE
	CATEGORY B: MODERATE VALUE RETENTION DESIRABLE
	CATEGORY C: LOWER VALUE COULD BE RETAINED
	CATEGORY U: UNSUITABLE FOR RETENTION
	RPA: ROOT PROTECTION AREA
	TREE STEM

Appendix 8. Biodiversity Metric Headline Results

South View Darfield

Headline Results

Return to results menu

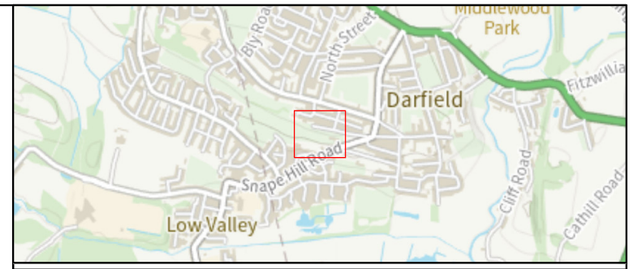
Scroll down for final results ⚠

On-site baseline	*Habitat units*	4.88
	Hedgerow units	0.67
	Watercourse units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	2.12
	Hedgerow units	0.99
	Watercourse units	0.00
On-site net change (units & percentage)	*Habitat units*	-2.76
	Hedgerow units	0.32
	Watercourse units	0.00
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Off-site net change (units & percentage)	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-2.76
	Hedgerow units	0.32
	Watercourse units	0.00
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00
	Hedgerow units	0.00
	Watercourse units	0.00

FINAL RESULTS

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-2.76
	Hedgerow units	0.32
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-56.54%
	Hedgerow units	47.14%
	Watercourse units	0.00%
Trading rules satisfied?		No - Check Trading Summaries ▲

Appendix 9. Proposed Habitat Plan For Metric



Survey Information	
	Site boundary (11,378.2m^2)
UK Habitat Survey (Primary Habitats)	
	g3c - Other neutral grassland (731.7m^2)
	g4 - Modified grassland (186.9m^2)
	h3h - Mixed scrub (722.2m^2)
	u1b - Developed land; sealed surface (6,987.7m^2)
	828 - Vegetated garden (2,749.7m^2)
	h2a - Other native hedgerow, retained (55.9m)
	h2a5 - Species-rich native hedgerow (66.8m)
	32 - Scattered tree, small newly planted (22)

N

0 5 10 20
Metres

PROJECT TITLE

LAND AT SOUTH VIEW, DARFIELD

DRAWING TITLE

Figure 2. Proposed Habitat Plan

VER	DATE	REMARKS	Drawn	Checked
2.1	10/12/24	Proposed	MP	RB

DRAWING NUMBER:

MIDDLETONBELLECOLOGY/LandatSouthView/Proposed

SCALE	1:800	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG

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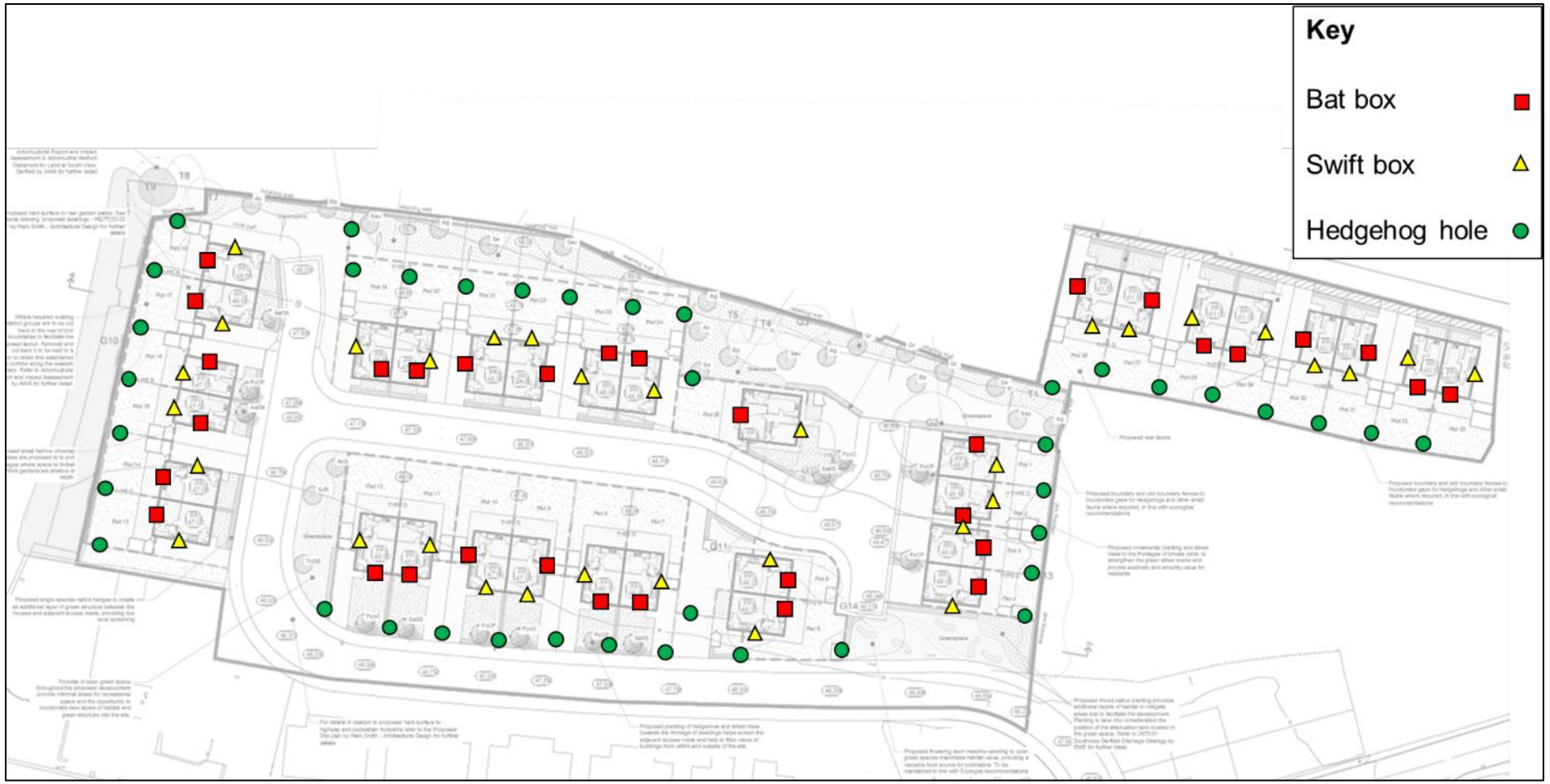
www.middletonbellecology.co.uk
T: 01226 286282

Appendix 10. Bat Box, Bird Box and Hedgehog Hole Plan



Appendix 11. Bats and Roofing Membranes

Standard roof membranes can cause the death of significant numbers of bats. Traditional bitumen coated roofing felt is recommended where roosting bats are expected to be present.

The problem

Standard non-bitumen coated membranes (including almost all breathable membranes) used below roof slates and tiles present a significant problem for bats. Over time, strands are pulled away from the surface of these materials as bats crawl over them. These fuzzy strands are very strong and can tangle and trap bats, sometimes causing the death of bats over multiple years[1].

One example we have encountered comprised a pipistrelle roost which formed in a building extension constructed in 2009. Over the course of just 13 years the roofing felt degraded to the extent that it trapped and killed more than 10 bats. Fortunately, the problem in this roost was identified and remedial work was undertaken to replace the roofing membrane in 2022.

Plate A9.1. Four dead pipistrelles tangled in breathable roofing membrane

Although a new roof might be considered to lack potential bat access points, that is often not the case. Roofs covered with stone slates almost always have gaps large enough to be accessed by bats, this is often also the case where imitation stone slates are used. On older buildings the uneven roof timbers and/or building design also often results in gaps on wall tops and between slates. Even on new builds it is often possible for bats to access potential roosts via features such as dry verge capping. Some bats can access a space no wider than a biro pen, therefore it is not surprising that they can find their way into most buildings.

Safe roofing membranes (and membranes behind cladding)

From a bat perspective, the best membrane option for areas where roosts are expected comprises traditional hessian-backed Type 1F bituminous felt. This product has been widely and safely used as a secondary weather barrier since approximately the 1950s/1960s. Wooden sarking has also been used for many decades and if appropriately treated, is safe for use in bat roosts. Wooden sarking also has the benefit of providing adding additional insulation

[1] Wearing S. Essah E., Gunnel K. & Bonser R. (2013) Double jeopardy: the potential for problems when bats interact with breathable roofing membranes in the United Kingdom. Architecture and Environment

and it is usually breathable.

At the time of writing (and to our knowledge) two products have passed the 'snagging propensity' test; consequently these products are approved by Natural England for use in bat roosts. This test attempts to replicate the wear and tear which results from bats crawling over the membrane. The approved products are: TLX BatSafe[2,3] and SIGA Majcoat 350. Although they have passed this test, it is unclear how these membranes will degrade in the medium-long term, particularly in larger bat roosts. Therefore we do not recommend that they are used for roosts with multiple bats, and particularly for large (maternity roosts). A third product, SIGA Majcoat 200 SOB Diffusion, passed the test for its upper surface only. This product should not be used in known bat roosts or locations where bat mitigation is to be installed. Although none of these products are considered to be as safe as traditional Type 1F bituminous felt, they may provide an option for roofs where future bat use cannot be ruled out, and a breathable solution is required.

Additional considerations

In recent years a fairly substantial proportion of the lofts we have surveyed which had existing breathable felt, were found to have been damaged by wasps (Plate A3.2). The wasps appear to have chewed holes in the felt and formed nests. This doesn't appear to be a problem associated with traditional bitumen coated roofing felt. Any holes within roofing felt are likely to significantly reduce its functionality as a secondary weather barrier. Where bats or birds come into contact with breathable roofing membranes, they can also damage it causing it to leak, they can also significantly reduce the breathability of the felt in that location.

Plate A9.2. Damage to a breathable roofing membrane adjacent to a wasp nest

Traditional bituminous Type 1F roofing felt is a non-breathable product and therefore ventilation is required. Sufficient ventilation can be usually be achieved, even in buildings with vaulted ceilings, however, some consideration during the design stage is required. Products to increase the ventilation within roofs where bituminous Type 1F felt has already been installed are also available.

[2] https://www.gov.uk/government/publications/bats-apply-for-a-mitigation-licence#full-publication-update-history:~:text=Use%20of%20safe%20roofing%20membranes

[3] TLX BatSafe requires all joints and cut edges to be taped in order to prevent the fraying of bare edges.