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STRATA STERLING BARNSLEY WEST

BARNSLEY WEST

INVERTEBRATE APPRAISAL

OCTOBER 2023

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DATE ISSUED:	**OCTOBER 2023**
JOB NUMBER:	**LD10361**
REPORT NUMBER:	**APPENDIX 7.7**
VERSION:	**V1.0**
STATUS:	**Final**

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INVERTEBRATE APPRAISAL

OCTOBER 2023

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APPENDICES

DRAWINGS	**TITLE**	**SCALE**
GM12939.001	UK Habitat Plan	1:5,000@A3
GM12939.002	Site Location Plan	1:15,000@A3

EXECTUTIVE SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Strata Sterling Barnsley West to undertake an Invertebrate Appraisal (IA) in support of joint commercial and residential development project (project) at Barnsley West. The project is located west of Barnsley, approximate central Ordnance Survey Grid Reference SE 31778 07075.

The purpose is to appraise the nature conservation value of the site for invertebrates and provide recommendations for future survey (if required) and any necessary measures for mitigation and enhancement in respect of the proposals for development. The emphasis of the survey was to assess the habitats present and their potential to host assemblages and/or species of significant conservation interest. Species were noted wherever encountered and some limited sampling, using a sweep-net, was undertaken. The majority of species recorded in this way were common and widespread. The results of the assessment were supplemented by information obtained from a desk study and from previous survey reports (PEA, 2023).

Areas that were identified as having invertebrate interest included the unimproved neutral grassland located on the western side of Craven Wood, as well as Craven and Hermit Woods. The hedgerows, mostly comprising hawthorn, were thought to support much invertebrate biomass, especially where margins were wide, and were considered to be of value to foraging bats and birds.

The site was assessed as having invertebrate interest of not more than local significance. It is recommended that the unimproved neutral grassland and two woodland areas identified to have some value for invertebrates should be retained and enhanced within the design of any proposal of development for the site. Furthermore, some consideration should be given to retaining as many as possible of the overgrown hedgerows (and their trees) for their value in providing invertebrate biomass for other groups of species such as birds and bats.

This report is valid for 18 months from the date the habitat survey was undertaken.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Strata Sterling Barnsley West to undertake an Invertebrate Appraisal (IA) in support of joint commercial and residential development project (project) at Barnsley West. The project is located west of Barnsley, approximate central Ordnance Survey Grid Reference SE 31778 07075.

1.1.2 The purpose of this survey was to assess the potential of the habitats present to support invertebrate species/assemblages considered to be of local, regional or national significance and make recommendations for additional survey work (if required) and mitigation as appropriate.

1.1.3 The updated proposed development comprises a mixed-use development to provide up to 1,560 new homes and up to 43 hectares of employment land for Use Class E/B2/B8. In addition, the proposals will provide:

- Part of the Link Road between M1, Junction 37 and the A635, Barugh Green Road (The section from Higham Lane to Barugh Green Road)
- A new primary school
- Small local shops and community facilities
- Strategic areas of greenspace and wildlife corridors

1.1.4 Remodelling of the site (via a 'cut and fill') will be required at the outset, to enable the formation of development platforms.

1.2 Scope of Report

1.2.1 As stated, the purpose of this IA is to identify the site's potential to support invertebrate assemblages or individual species of nature conservation value. In order to achieve these two objectives, the agreed scope stated that the work would include the following:

- Interpretation of data received from Barnsley Biological Records Centre (data requests operated by Sheffield BRC) (BBRC) to consider any notable invertebrate records occurring within 1 km of the red line boundary;
- Undertake a single visit to the site to gather information on its potential invertebrate interest;

- Record invertebrates present on the site, with a focus on those habitats identified of particular value;
- Produce a summary report outlining the findings of the site visit and to provide an evaluation of the invertebrate interest of the site.

1.3 Site Context

1.3.1 The site is located predominantly on agricultural land around Hermit House Farm between the outer Barnsley suburbs Higham, Barugh and Gawber to the north-west of the centre of Barnsley. A part of the southern boundary of the site lies adjacent to the M1 motorway and a part of the northern boundary runs along the A635 adjacent to a commercial and business park and residential areas. The site is dissected into two unequal parts by Hermit Lane running south-west from Gawber to Higham. Fields to the north of Hermit Lane are mainly used for the growing of silage/hay and those to the south are used for horse/pony and sheep grazing with the three southernmost fields used for intensive arable cropping. The red-line boundary of the site is shown in LD10361 001 Phase 1 Habitat Plan.

1.3.2 The fields on the north side are large and mostly separated by overgrown un-managed hedgerows that comprise mainly hawthorn. Hedgerows separating fields within the south side of Hermit Lane are similarly overgrown but many are structurally 'leggy'. To maintain their function as a barrier these, in most instances, have been reinforced with fencing. A few hedgerows contain mature trees, but these are mainly confined to those on the south side of Hermitage Lane. Field margins tend to be narrow in most fields, but some margins support tall ruderals and coarse grasses to form some ecotone. All of the fields on the north side of Hermit Lane comprise largely improved swards and those on the south side are also mostly improved, although most are short grazed by ponies, horses and sheep.

1.3.3 There are two areas of narrow woodland running alongside small watercourses located within the red-line boundary. These run into the site from woodland situated along the eastern boundary, the one on the north side of Hermit Lane is known as Craven Wood and the one to the south is known as Hermit Wood. These are predominantly broad-leaved, and both include mature specimens of oak (Quercus sp.) and sycamore (Acer pseudoplatanus) and there are also a notable number of ancient woodland plant indicators present. There is some dead wood resource present in these woodlands, standing and horizontal but mostly limited to that formed by younger broad-leaved specimens.

1.3.4 There are some un-cultivated enclosures adjacent to the red-line boundary north of Hermit Lane, one of which extends along the north-west margin of Craven Wood and comprises unimproved flower-rich neutral grassland.

2 METHODOLOGY

2.1 Desk Study

2.1.1 Existing invertebrate records for the site and a search area of up to 2kms from the red-line boundary was requested from Barnsley Biological Records Centre (data requests operated by Sheffield BRC) (BBRC) by Wardell Armstrong LLP. The MAGIC mapping facility of Natural England was also accessed to search for any statutory designated sites located within 2kms of the site that might have additional information on the occurrence of notable invertebrates.

2.1.2 The ecological desk study was carried out by a competent Ecologist who is a Qualifying member of CIEEM and has completed numerous desk studies over the past year.

2.2 Field Survey

2.2.1 The principal surveyor and author of this report is Jim Flanagan ACIEEM BA (Hons). He is an ecologist with a particular area of expertise in entomology and especially insects within the order Hemiptera. He is a recognised expert of terrestrial bugs and is one of the two organisers of the Terrestrial Heteroptera (bug) Recording Scheme for Britain and Ireland. He also has some capability in the identification of other taxonomic groups such as within the Auchenorrhyncha (plant and leafhoppers), the Diptera (true flies) and the Coleoptera (beetles). For other taxonomic groups, he is able to draw on the expertise of other entomologists as required.

2.2.2 The surveyor undertook a walk over of the site to document and determine the extent and distribution of the various habitats present and sample within them (and where particular potential for interest was identified) on 23rd and 30th June 2023.

2.2.3 No sampling was undertaken other than identifying species by direct observation during walkover.

2.2.4 Weather conditions on the 23rd June were mostly overcast, no rain, with an average temperature of about 21°C, wind speed 2-3 (light to moderate winds) and from south/south-west direction. The weather on the 30th June was overcast, no rain, wind speed 3-4 (moderate wind) from south-west direction.

2.3 Assessment

2.3.1 For invertebrate surveys involving repeated visits that enable the generation of large species lists (100+) the classification of invertebrate assemblages in samples can be obtained by using the Pantheon database tool that has been developed by Natural

England and the Centre of Ecology and Hydrology. Pantheon's system of analysis identifies species assemblages on the basis of broad biotopes, habitat and structural habitats. The information generated can be used to determine site quality by revealing whether the species list is indicative of good quality habitat. It can also inform on species ecology and assist in management decisions by revealing the key ecological resources.

2.3.2 The assessment has been carried out on the basis of a combination of limited sampling from one visit, surveyor experience and on information obtained on vegetation composition and structure, topography and management (or lack of) and the effects of surrounding land-use.

2.4 Nomenclature

2.4.1 Vascular plant names follow '*New Flora of the British Isles'* (Stace 2019) with vernacular names as provided in the Botanical Society of the British Isles website (BSBI, 2013)[1]. All other flora and fauna names following the National Biodiversity Network (NBN) Atlas (NBN Atlas Partnership, 2021). The common and scientific name of species/taxa is provided (if available) when first mentioned in the text, with only the vernacular name referred to thereafter.

2.5 Limitations / Deviations

2.5.1 The site visit and appraisal were undertaken in June and July 2023 respectively.

2.5.2 Many invertebrates have a specific and sometimes narrow window when they are active and reliably identifiable to species-level (normally as adults). Thus, for late summer and autumn species, a site visit earlier in the year will not record their presence, even if they are occupying the site. For example, most bush crickets and grasshoppers (Orthoptera) are best surveyed later in the season (from July/August onwards) when they mature into adults. For the purposes of this report, survey timing is not considered to be a significant constraint as broad assumptions and conclusions can be made based on habitats present, site context and third party data (where available) in addition to those species recorded.

2.5.3 No major constraints were met with as regards access. Windy weather conditions on 23rd June made for less than ideal conditions for observing/noting invertebrates unless in sheltered situations.

[1] http://rbg-web2.rbge.org.uk/BSBI/intro.php

2.6 Quality Assurance & Environmental Management

2.6.1 The surveys and assessments have been overseen by and the report checked and verified by a full member of CIEEM, who is bound by its code of professional conduct. All surveys and assessments have been undertaken with reference to the recommendations given in British Standard BS 42020, and as stated within specialist guidance, as appropriate and referenced separately.

3 RESULTS AND EVALUATION

3.1 Statutory and Non-Statutory Designated Sites

3.1.1 The nearest statutory designated site to the red-line boundary of the site is Dearne Valley Local Nature Reserve (LNR) c.1.8kms to the east. No information was available on the reasons for designation, but the author is familiar with this LNR having visited on previous occasions. The LNR contains formal parkland with several points affording public access. There is also informal open space comprising rough grasslands, scrub and woodland as well as wetlands and open standing water along the River Dearne which runs through this designation. The LNR supports a wide range of common and widespread invertebrate species with some of Local status.

3.1.2 The Hugset Wood LWS some 0.74km to the west and is noted for supporting populations of white-letter hairstreak *Satyrium walbum*.

3.2 Description of Vegetation Communities

3.2.1 Within the red line boundary, north of Hermit Lane are fields of improved/poor semi-improved grassland, most of which are cut for hay/silage. These are separated by overgrown and some managed species-poor hedgerows, the latter mostly lining hermit Lane. Mature/semi-mature trees are largely absent in these hedgerows.

3.2.2 South of Hermit Lane are fields of largely improved grassland grazed by horses, ponies and sheep. A large silage field is situated along the eastern boundary. There are also three fields along the southern boundary with the M1 carriageway used for intensive arable production. Most of the fields are separated by overgrown un-managed, often leggy, species-poor hedgerows. Most are intact but a few of these contain narrow water-filled ditches (with flow) but (as is the case with all of those north of Hermit Lane) the majority have only shallow mostly dry ditches. Very few of the hedgerows contain mature trees.

3.2.3 There are two broad-leaved woodlands that contain small watercourses and which support a good range of ancient woodland indicator plants. There are also two waterbodies within the red-line boundary both located south of Hermit Lane. Uncultivated land with tall ruderal vegetation and unimproved neutral grassland occur on land on the north side of Hermit Lane.

Hay/silage fields and field margins

3.2.4 At the time of the visits most of the fields north of Hermit Lane were used for growing grass/silage. Some appeared to have been recently cut and most of the others, containing tall swards, looked ready for cutting (Plate 1). Some fields were dominated by a sward of perennial rye-grass *(Lolium perenne*) and others were a mix of this with timothy (*Phleum pratense*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus*) and smooth meadow-grass (*Poa pratensis*). In some fields black-grass (*Alopecurus myosuroides*) was noted to be locally frequent. Very few fields contained any significant amounts of cover from herbs, some creeping buttercup (*Ranunculus repens*) and scattered mayweed (*Matricaria* sp.) were recorded in some fields. One cut field contained locally frequent Chenopods, docks (*Rumex* sp.), common chickweed (*Stellaria media*), creeping thistle (*Cirsium arvense*) and groundsel (S*enecio vulgaris*). These fields contained essentially improved grasslands.

3.2.5 Field margins were varied in width bust mostly narrow (less than half a meter in width) and dominated by tall herbs and coarse grasses such as common couch (*Elymus repens*), false oat-grass (*Arrhenatherum elatius*) and cock's-foot (*Dactylis glomerata*). Mayweed, thistles (*Cirsium* sp.), poppy (*Papaver* sp.), cow parsley (*Anthriscus sylvestris*), broad-leaved dock (*Rumex obtusifolius*), common nettle (*Urtica dioica*) and rape (*Brassica napus*) were some of the most common herbs found. On the margins of other fields (without hedge) were mayweeds, pineapple weed (*Matricria matricariodes*), shepherd's-purse (*Capsella bursa-pastoris*), fat hen (*Chenopodium album*) and knot-grasses (*Polygonum* sp.).

3.2.6 One large silage field was located within the red-line boundary south of Hermit Lane and comprised a near monoculture of perennial ryegrass.

Plate 1: View (looking north of one of the silage/grass fields on the north side of Hermit Lane and ready for cutting.

Grazing fields

3.2.7 At the time of the visits all grazing was taking place in fields south of Hermit Lane. The majority of these consisted of short swards closely cropped and mostly formed of an improved mix of crested dog's-tail (*Cynosurus cristatus*), red fescue, Yorkshire fog and perennial rye-grass with white clover (*Trifolium repens*) prominent (Plate 2). Some fields were less frequently grazed and consisted of a taller sward of perennial rye-grass, Yorkshire fog and smooth meadow-grass along with many clumps of dock and common nettle. All the fields south of Hermit Lane contained were essentially improved grassland.

Plate 2: View (looking east) of one of the grazing fields consisting of improved grassland south of Hermit Lane, grazed both by sheep, horses and ponies.

Field boundaries north of hermit Lane

3.2.8 Field boundaries north of Hermit Lane are a mix of un-managed or irregularly managed species-poor hedgerows (Plate 3) and managed (mostly along Hermit Lane). The dominant species is hawthorn (*Crataegus monogyna*) and accompanied on occasion by elder (*Sambucus nigra*) and rose (*Rosa* sp.) A small number of boundaries were fences and at least one hedgerow was seen to be distinctly 'leggy' suggesting that some of these fields had been used for grazing on previous occasions. Few of the hedgerows show evidence of traditional management such as laying, and few contain mature or semi-mature trees apart from the odd young ash (*Fraxinus excelsior*). The base of the hedgerows contain largely impoverished plant communities due mainly to the effects of nutrient enrichment but in some hedgerows climbers such as honeysuckle (*Lonicera peric*ylmenum) and black bryony (*Dioscorea communis*) are locally frequent.

Plate 3: View (north) of one infrequently managed species-poor hawthorn-dominated hedgerow about 3.5-4.0m in height on land north of Hermit Lane with relatively narrow field margins.

Field boundaries south of Hermit Lane

3.2.9 Field boundaries south of Hermit Lane are a mix of managed and un-managed species-poor hedgerows, mostly intact and mostly dominated by hawthorn, along with post and wire fences. Some field boundaries were seen to comprise newly planted hedgerows and these were contained within a double fence to protect them from being grazed. One hedgerow located at the southern end of the site was perhaps one that could be considered a relatively species-rich hedgerow in terms of woody species as well as another that runs along the south side of Hermit Lane that joins the eastern red-line boundary. The former hedge contains mostly overgrown hawthorn (with evidence of previous laying) as well as two mature ash and two mature oaks (Plate 4). The latter is managed by cutting the edge of the hedgerow alongside the road but has become very tall and contains several semi-mature and mature ash and oak trees, as well as field maple (*Acer campestre*), hawthorn, hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and poplar (Populus sp.). The hedgerow on the opposite side is similarly diverse but mature trees are oak and blackthorn (*Prunus spinosa*) is frequent. There are some ancient woodland indicator plants at the base of these hedgerows but in

most instances the base of other hedgerows on the south side of Hermit Lane are impoverished due mainly to the effects of long-term grazing and trampling.

Plate 4: View of species-rich hedgerow at the southern end of the site (red-line boundary on the extreme left marked by a broad-leaved planted woodland belt above the M1 motorway) containing four semi-mature/mature ash and oak trees.

Broad-leaved woodland and mature trees

3.2.10 On the north side of Hermit Lane is Craven Wood. This is a more or less a narrow linear woodland habitat on either side of a small stream. It contains a canopy of mature oak, ash and sycamore with some mature alder (Alnus glutinosa). The understory features hawthorn and hazel as well as young/sapling sycamore and some hornbeam (*Carpinus betulus*). The extent of deadwood habitats is localized to scattered horizontal limbs and main branches and a limited amount of standing wood mostly of small stature (Plate 5). There is a wide variety of herbs in the field layer, including ancient woodland indicators such as wood melick (*Melica uniflora*), wild garlic (*Allium ursinum*) and bluebell (*Hyacinthoides scripta*), as well as extensive patches of bramble (*Rubus fruticosus* agg.). The upper southern end of the wood contains locally abundant ivy (*Hedera helix*) but foxglove (*Digitalis purpurea*) and wood sage (*Teucrium scorodonia*) are also present.

Plate 5: View of the south-west end of Craven Wood showing the stream that runs through the wood in seasonal low flow and some fallen timber providing deadwood habitats within the woodland.

3.2.11 On the south side of Hermit Lane is Hermit Wood. This is connected to Craven Wood by woodland habitat that is just outside of the red-line boundary of the site. It is similar to Craven Wood comprising mostly of mature (and semi-mature) oak and ash trees, along with some sycamores but has a varied understory consisting of Wych elm (Ulmus glabra), sycamore, elder, hazel and holly. The field layer supports patches of dog's mercury (*Mercurialis pernnis*), bluebell and wild garlic as well as some wood melick. There is also much litter and brash as well as some deadwood formed of fallen timber, branches and some small limbs (Plate 6). In some places there is standing wood formed of young semi-mature oak trees. Some of the woodland slopes were bare or poorly vegetated and there was some evidence of fly-tipping and informal recreation in certain areas.

3.2.12 Both woodlands are documented as in existence before c1600 and fulfill criteria to be UK BAP Habitat and Section 41 NERC Act (2006) Habitats of Principal Importance (Lowland Mixed Woodland).

Plate 6: View of some partly fallen deadwood within the northern half of Hermit Wood.

Waterbodies and watercourses

3.2.13 Two waterbodies occur on the site and are located south of Hermit Lane. One, the smaller (Plate 7), is adjacent to a hedgerow within a partly rank grazing field and is largely overgrown with dense vegetation and no areas of standing water could be discerned and was suspected to be seasonally dry. The second waterbody was located near to the southern red-line boundary with Higham Common Road, where water appears to have accumulated in a shallow depression with little marginal vegetation at the corner of a grazing field and also considered likely to be seasonally dry (Plate 8).

Plate 7: View (looking north-west) of small rectangular waterbody adjacent to a hedge dominated by willowherb (*Epilobium* sp.) and some bulrush (*Typha latifolia*) with no standing open water visible from the margins.

Plate 8: View (looking north) of the shallow pools located in a corner of a grazing field on an area formerly used to store a large mound of animal dung.

3.2.14 The two woodlands mentioned above both contain small streams that join within woodland outside of the eastern red-line boundary (and which forms a contiguous

length of woodland situated on the west of Gawber), this then heading north through this woodland to run under a culvert on reaching Redbrook Road. The streams are mostly shallow over a gravelly/stony substrate with larger sized pebbles, stones and boulders (Plates 9 and 10). There are some occasional deeper pools along the margins and in most places are quite heavily shaded. Both are likely to support a typical freshwater assemblage of species, although the diversity of this would be dependent on water quality. The water appeared mostly clear in shallow areas and with moderate low flow for the time of year. Water-filled ditches alongside or within hedgerows are confined to land south of Hermit Lane and some support narrow widths of typical waterside vegetation.

Plate 9: View of a part of the stream that runs through Hermit Wood in low seasonal flow. The bed of the stream is a mix of fine sediment, gravel and small pebbles to medium sized cobbles. In many parts it is more steep-sided than this image shows.

Plate 10: View of a part of the stream running through Craven Wood, similarly shallow flowing over a varied substrate of fine sediments, gravel and pebbles with some larger-sized material.

Uncultivated land with tall ruderals and unimproved grassland

3.2.15 There is an area of uncultivated land along the eastern boundary on land north of Hermit Lane (Plate 11). This contains a mosaic of tall coarse grasses, tall herb, bramble patches and more open swards with Yorkshire fog tending to dominate in the sward and in other areas creeping buttercup locally abundant. Tall herbs include common nettle, docks, creeping thistle and teasel (*Dipsacus fullonum*).

3.2.16 A little further south-west towards the edge of Craven Wood there is an area of unimproved neutral grassland on a gentle slope down to the wood which in many places is flower-rich and diverse (Plate 12). This is a UK BAP Habitat and Section 41 NERC Act (2006) Priority Habitat. Meadow vetchling (*Lathyrus pratensis*), common knapweed (*Centaurea nigra*), common bird's-foot trefoil (*Lotus corniculatus*), red clover (*Trifolium pratense*), yarrow *(Achillea millefolium*), tufted vetch (*Vicia cracca*), selfheal (*Prunella vulgaris*) and creeping cinquefoil (*Potentilla reptans*) are all frequent in many areas and of more restricted distribution is ox-eye daisy (*Leucanthemum*

vulgaris). The sward is mostly formed of a mix of cock's-foot, red fescue, common bent (*Agrostis capillaris*), crested dog's-tail and Yorkshire fog. The area is a magnet for foraging bees and other insects and is judged to be the habitat that is of most value to invertebrates outside of the woodlands within the red-line boundary of the site.

Plate 11: View (looking south-east) of uncultivated/un-grazed enclosure containing a mix of tall coarse grassland, patches of more open lush, improved grassland and tall ruderals (along with some bramble patches). The farm buildings that can be seen in the upper left of this image mark the location of Redbrook Farm.

Plate 12: View (looking north-east) of the un-improved neutral grassland on sloping ground close to the eastern red-line boundary with locally frequent common knapweed and meadow vetchling.

3.3 Species

3.3.1 Protected and s.41 Priority invertebrate species are evaluated in order to identify potential adverse effects, based on the following criteria:

- Desk study records;
- Evidence found during the survey;
- Presence, extent, quality, and viability of supporting on-site habitat;
- Ecological connectivity to viable off-site habitats; and
- Perceived impacts of habitat loss/impact to individuals in relation to proposals.

3.4 Desk Study

3.4.1 A large number of species records for the site and surrounding 2km search area was provided (over 2,100) with over 250 of these for Higham and what is known as Higham Common, either for an area close to the western boundary of the site or, less likely, within it. The records comprise mostly common species of butterflies and moths. Most of these are for gardens and locations off or on Higham Common Road and some of these appear to be derived from moth trapping.

3.4.2 Within the larger dataset there was a small number of records for dingy skipper (*Erynnis tages*) from widespread locations such as Low Barugh well to the north-west and Dodworth to the south-east.

3.5 Field Survey

3.5.1 A total of 18 species of invertebrate were recorded on the visits made on of 23rd and 30th June 2023. Although this low number of species provides barely an impression of the fauna likely to be present, the main purpose of the was to appraise the site's nature conservation value for invertebrates rather than provide an inventory and as such, the species recorded provides some supportive evidence of the quality of the site. A full list of species identified during the walkover are listed in Appendix 2.

3.6 Species/assemblage Assessment By Habitat Type

3.6.1 Appraisal of the invertebrate interest the site is based on an assessment of the habitats present, on a much lesser extent the few species that species were recorded, the surveyors own experience and, where possible, reference to other surveys completed elsewhere by competent entomologists. Intensive arable cultivation is assumed to hold no significant invertebrate interest on this site so is excluded from consideration.

Uncultivated enclosures north of Hermit Lane

3.6.2 The vegetation in the largest part on level ground being a mix of tall ruderals, with coarse grasses along with some patches of bramble and more open part-flowery swards. It is likely that this habitat will support an assemblage of mobile and common and widespread species. In particular true flies among which would be species of various families of cranefly (Tipulidae and others), house flies & related species (Muscidae), flesh flies (Sarcophagidae), hoverflies (Syrphidae), frit flies (Chloorpidae) and St Mark's flies (Bibionidae). Also, there would be a selection of very common plantbugs (Miridae), along with flowerbugs (Anthocoridae) and predatory bugs such as damselbugs (Nabidae). Also featuring in such assemblages would be a range of hoppers, both Delphacid and Cicadellid species (the two main groups) as well as common moths including micro-moths in the Crambidae and grass-feeding butterflies such as meadow brown. Common spider species would also likely form a prominent component with crab spiders (Xysticidae) particularly frequent. Among the beetles, leaf and flea beetles (Chrysomelidae), soldier beetles (Cantharidae) and false blister beetles (*Oedemera* sp.) would be well represented.

Unimproved neutral grassland on sloping ground west of Craven Wood

3.6.3 This largely flower-rich habitat supports a range of plant species which make available a variety of sources of pollen and nectar which were noted during the 23rd June to attract many bees, bumblebees, wasps and flies. Also noted was bee parasites such as the Conopid fly *Sicus ferrugineus*. The range of bugs is likely to overall be higher in such areas as many are specific to certain plant species or families. Also prominent in such an assemblage will be a number of species of weevil (Curculionidae). Lepidoptera would also be a notable feature with narrow-bordered five-spot burnet moth (*Zygaena lonicerae*) and other day flying species too. Among the Diptera would also be a range of picture-wing flies (Tephritidae) with the thistle species *Urophora stylata* recorded foraging on ox-eye daisy.

Broad-leaved woodland

3.6.4 Both Craven Wood and Hermit Wood are similar with the latter perhaps having a more structurally and species diverse understory. Both are parts of a larger area of woodland on both sides of a stream and situated on the west side of the Barnsley suburb of Gawber. Both woods are ancient semi-natural and contain a high diversity of ancient semi-natural woodland plant indicators such as bluebell and yellow archangel. The streams provide the most potential for diverse woodland invertebrate assemblages with long-legged flies providing potential for many species occurring. Deadwood is not abundant but in certain places is certainly locally frequent both in terms of standing and horizontal resource. Major rot features on living trees were not obvious but many branches and twigs were noted to have potential to support some associated species where these showed evidence of rot, decay or damage. These features may support a modest assemblage of the more common species of saproxylics but of relatively low diversity.

Hedgerows

3.6.5 Overall the hedgerows are mostly overgrown and species-poor being mostly of hawthorn but their potential to support abundant invertebrate biomass is good and they form a useful foraging use for bats and birds, particularly in the spring flowering period when they offer copious nectar and pollen to many beetles, flies and bees. Hawthorn doesn't support a significantly diverse assemblage of invertebrates but structurally is able to support or attract an abundance of mobile invertebrates. A few hedgerows are more diverse in terms of woody species and some of these support mature or semi-mature trees that further diversify the assemblages of hedgerow habitats. Some rot/decay features (bracket fungi) were noted on the some of the mature ash and another hedgerow contained a fallen mature ash tree providing a significant amount of deadwood within the hedge. However, hedgerow trees are considered not to support a significant assemblage of saproxylics on this site. Climbing species such as honeysuckle and bramble will support additional species and occasional to locally frequent rose and elder play a role in providing nectar sources and a range of other micro-niches. The margins of most hedgerows were mostly narrow or even absent and accordingly support a lower biomass and diversity.

Waterbodies and watercourses/ditches

3.6.6 The nature of aquatic assemblages of the streams in the woodlands will be largely dependent on water quality and may be affected by nutrient enrichment from

surrounding land use such as the level of intensive cropping and livestock rearing. The aquatic assemblages may be restricted in this case to species that are tolerant of a moderate amount of enrichment of these streams which is likely given the nature of the surrounding land use. Terrestrial faunas/ assemblages are likely to be more diverse as referred to above in the broad-leaved woodland section. There are few ditches with streams along hedgerows, although there are some running along within the red-line boundary south of Hermit Lane. These will provide additional wet habitat niches from wet mud, wet vegetation and standing/flowing water to support a wider range of terrestrial (and possibly aquatic/semi-aquatic) invertebrate species including Chironomidae (non-biting midges), moth flies (Psychodidae) and caddisflies (Trichoptera).

3.6.7 The two ponds recorded during survey are contrasting wetland features. The shallow waterbody at the southern end of the site may be only seasonally wet but this will attract a wide range of terrestrial and aquatic species, mostly common and widespread species such as the shorebug *Saldula Saltatoria* which can be abundant along the muddy margins of such ponds and early colonisers of new ponds such as greater waterboatmen (*Notonecta* sp.). The second pond, being dominated by wetland vegetation including some bulrush, will likely provide more diversity of terrestrial rather than aquatic and semi-aquatic species. These are considered to be among assemblages largely comprising common and widespread species.

Silage/hay fields

3.6.8 These fields are largely limited in the range of plant species supported and one field was noted to a consist of a virtual monoculture of just one common species. The assemblages associated with these fields are anticipated to comprise common and widespread species.

Grazing fields

3.6.9 Most of the grazing fields are well grazed and are likely to support species that are adapted to this kind of grazing regime. Some craneflies and other soil inhabiting invertebrates are likely to form the main component.

3.6.10 There are a number of grazing animals, comprising horses, ponies and sheep on land south of hermit Lane, estimated in the region of 100 animals, provide a source of dung which may support an associated assemblage of invertebrates. However, if the dung is removed from fields as a common practice and if the animals are likely subject to the usual veterinary treatments (to deal with worms) these factors would greatly limit

the significance and abundance of the fauna present. It is considered that the dung community would comprise low numbers of common and widespread species of dung beetles (mostly *Aphodius* species), clown beetles (Histeridae) and flies etc. Also, most of the rare species and significant populations/assemblagesof dung beetles are to be found mostly in locations in the southern half of Britain.

3.7 Incidental observations

3.7.1 On 30th June one grazing field was seen with 25 resting lapwing (*Vanellus vanellus*) although none were seen feeding.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Recommendations

4.1.1 Based on the results of the field observation, desk study research, the nature and the extent of the habitats that are present as well as surrounding land use the site is considered to consist of invertebrate assemblages of no more than local significance.

4.1.2 Based on the appraisal above no further invertebrate survey is proposed.

4.2 Mitigation and Enhancement Opportunities

4.2.1 The main priority would be to ensure that there is no loss of any broad-leaved woodland in Craven Wood and Hermit Wood. Some work to remove any fly-tipping or other artificial debris should be undertaken and natural deadwood maintained in situ.

4.2.2 Where possible all hedgerows should be retained and enhanced, in particular those that are more diverse than the majority that are on the site. Where hedgerow is to be lost then it is recommended to replace such losses either on site or off-site within the wider area where existing relict and poorly managed hedgerows may be usefully gapped up or their diversity improved with the planting of additional species. Trees in hedgerows should also be retained where possible; where there are fallen specimens then this should be kept within the hedge or carefully relocated to nearby woodland habitat.

4.2.3 The unimproved neutral grassland to the west of Craven Wood is also a priority for retention and management. This could be extended further north which currently contains mostly species-poor habitat but not all of this should be converted as maintenance of tall ruderals and coarse grasslands would provide a mosaic habitat of benefit to invertebrates. Where possible the development design should make plans for the creation of areas of species and flower-rich grassland of benefit for invertebrates.

4.2.4 The ponds on the site south of Hermit Lane should be retained and enhanced if possible. In the case that these are lost then the design scheme of the development should aim for their replacement with two new ponds of a slightly larger size. Specifications for design and planting that benefits invertebrates can be provided when required. The few existing drainage ditches should be maintained wherever possible and enhanced with some planting of associated wet vegetation such as meadowsweet.

4.3 Report Validity

4.3.1 In general, this report remains valid for a period of 18 months following the date of the habitat survey.

4.3.2 If the Site boundary or layout is subsequently modified and any other habitats are identified to be lost or affected by the development, then further surveys for habitats and protected species may be required.

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APPENDICES

Appendix 1

Legislation and Policy Summary

Appendix 1 – Legislation and Policy Summary

Legislation for Habitats/Sites

Designated Site/Habitat	Status
Ramsar Sites	Ramsar Sites are wetlands of international importance designated following the Ramsar Convention. RAMSAR sites have the same level of protection as SACs and SPAs under the Wildlife and Countryside Act 1981 (as amended).
SPA (Special Protection Areas)	SPAs seek to protect the habitats of rare and vulnerable European and UK birds. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) protect such sites in the UK.
SAC (Special Areas for Conservation)	SACs are strictly protected areas which represent important and threatened habitats in Europe and the UK. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) protect such sites in the UK.
SSSI (Sites of Special Scientific Interest)	SSSIs protect 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 were renotified under the Wildlife and Countryside Act 1981 (as amended). Modified provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000.
NNR (National Nature Reserves)	NNRs are examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 or the Wildlife and Countryside Act 1981 (as amended). Legal protection of NNRs is provided under the Wildlife and Countryside Act 1981 (as amended).
Hedgerows	All hedgerows are protected by the Hedgerows Regulations 1997, under which it is an offence to remove or destroy certain hedgerows without planning consent or permission from the Local Planning Authority. These regulations do not apply to any hedgerow within the curtilage of, or marking the boundary of the curtilage of, a dwelling house.
LNR (Local Nature Reserves)	Designated by the National Parks and Access to the Countryside Act 1949, LNRs may be declared for nature conservation by local authorities after consultation with the relevant statutory nature conservation agency. Legal protection of LNRs is provided under the Wildlife and Countryside Act 1981 (as amended).

Legislation for Species

Species	Legal Status
Creeping Marshwort, Early Gentian, Fen Orchid, Floating-leaved Water Plantain, Killarney Fern, Lady's Slipper, Shore Dock, Slender Naiad, Yellow Marsh Saxifrage	Under the Conservation of Habitats and Species Regulations 2017 (as amended), it is illegal to deliberately pick, collect, uproot or destroy any such species.
Bats, Dormouse, Otter, Wild Cat, Great Crested Newt, Natterjack Toad, Sand Lizard, Smooth Snake, Large Blue Butterfly	These animals and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2017 (as amended), which makes it illegal to: • Deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs; • Deliberately disturb[2] such an animal; and • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licenses 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, namely: • 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. LPAs 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.
Bats, Dormouse, Great Crested Newt, Heath Fritillary, High Brown Fritillary, Large Blue, Marsh Fritillary, Natterjack Toad, Pine Martin, Otter, Red Squirrel, Sand Lizard, Smooth Snake, Swallowtail, Water Vole, Wildcat	These animals receive full protection under the Wildlife and Countryside Act 1981 (as amended), which makes it illegal (subject to certain exceptions) to: • Intentionally kill, injure or take any such animal; • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection; and

[2] Under the Conservation Regulations, disturbance of protected animals includes in particular any disturbance which is likely to: (i) impair their ability to survive, breed or reproduce, or to rear or nurture their young or to hibernate or migrate; (ii) significantly affect the local distribution or abundance of the species in question.

Species	Legal Status
	• Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Adder, Common Lizard, Grass Snake, Slow Worm, White-clawed Crayfish	These animals receive partial protection under the Wildlife and Countryside Act 1981 (as amended), which provide protection against intentional killing or injury of any such animal.
Nesting Birds	All wild birds (as defined by the act) are protected under the Wildlife and Countryside Act 1981 (as amended), 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.
Wildlife and Countryside Act 1981 (as amended) Schedule 1 listed Birds	Additional protection is provided to 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 bird listed on Schedule 1, or their dependent young while nesting.
Badgers	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger, or attempt to do so and to intentionally or recklessly interfere with a Badger sett. This includes: • damaging or destroying an active sett; • obstructing access to a sett; and • disturbing a Badger while it is occupying a sett. Licences can be granted to permit sett closure and/or disturbance between July and November inclusive (i.e. outside the sow pregnancy/birth period).
Wild Mammals	The Wild Mammals (Protection) Act 1996 provides legal protection to all wild mammals (as defined by the act) against the following actions: mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, drown, crush, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.
Wildlife and Countryside Act 1981 (as amended) Schedule 9 listed invasive animals (Part 1) and plants (part 2)	Certain species of plants and animals that do not naturally occur in Great Britain have become established in the wild and represent a threat to the natural fauna and flora. Section 14 of the Wildlife and Countryside Act 1981 (as amended) prohibits the release or allowed escape of animals listed in Schedule 9 to the Act and planting, or allowed growth, of any plant listed in Schedule 9 to the Act.

Policy Summary

Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.

Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not offer the species any specific protection but help to highlight the species importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).

The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development. This presumption does not apply where development requiring Appropriate Assessment because of its potential impact on a habitats site is being planned or determined.

The NPPF states:

> *When determining planning applications, local planning authorities should apply the following principles:*
>
> - *If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
> - *Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
> - *Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[63] and a suitable compensation strategy exists; and*

- *Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*
- *The following should be given the same protection as habitats sites:*

  a) potential Special Protection Areas and possible Special Areas of Conservation;

  b) listed or proposed Ramsar sites; and

  c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

The NPPF requires the Planning Authority to have a responsibility to promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan. In addition, the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

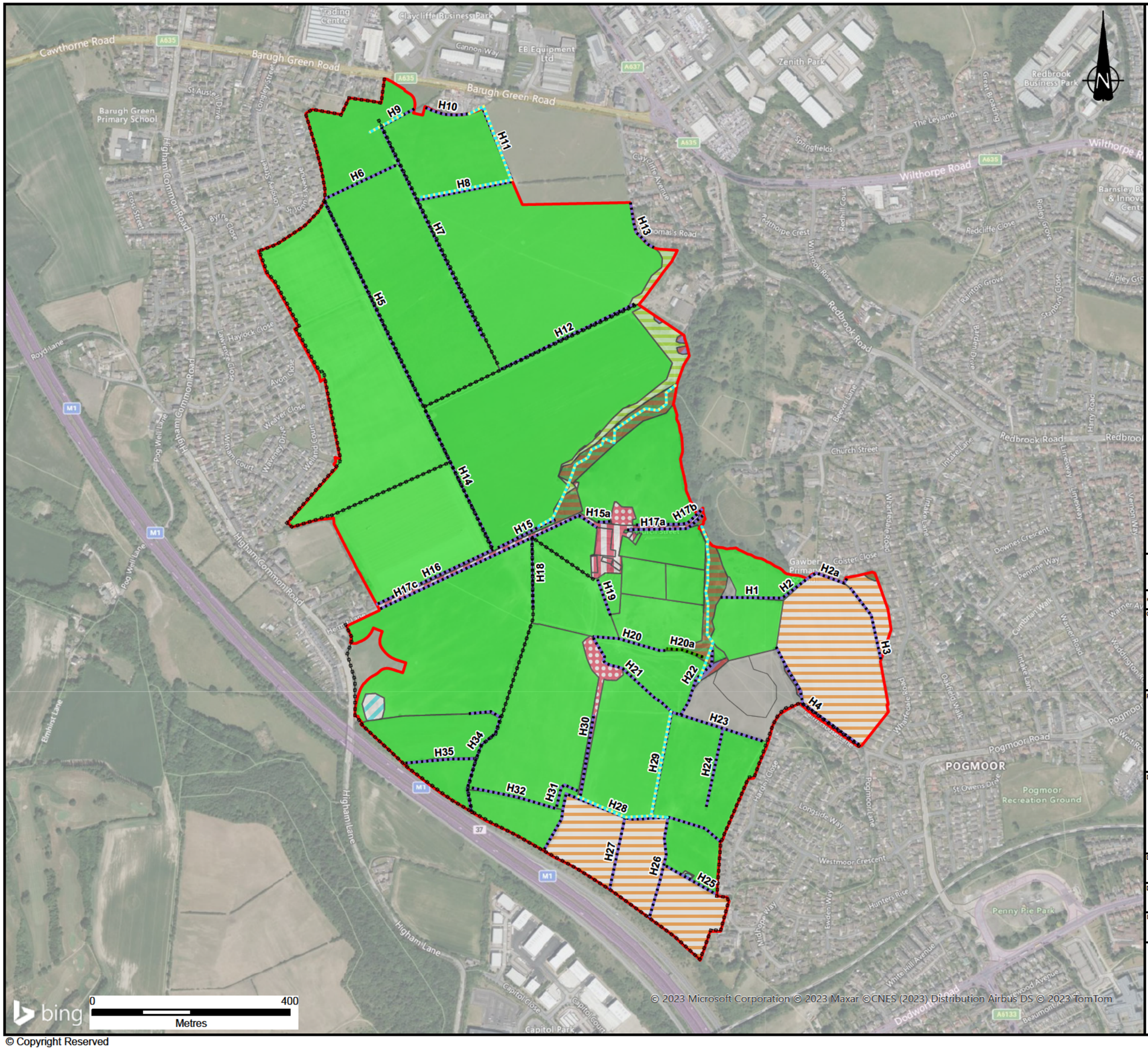
Appendix 2

Invertebrate checklist for land off Hermit Lane, Higham, Barnsley 23rd & 30th June 2023

Species	Family	Location	Comment/National Status
Andricus curvator	Cynipidae (gall wasps)	Galls on oak trees on land south of Hermit Lane	Common
Arthaldeus pascuellus	Cicadellidae (leafhoppers)	Adult female from alongside hedgerow H14	Common
Autographa gamma (silver-Y moth)	Noctuidae (Noctuid moths)	Adult in land north of Hermit Lane	Common
Bombus lapidarius (red-tailed bumblebee)	Apidae (bees)	Workers seen foraging in area of flower-rich neutral grassland north of Hermit Lane	Common
Bombus lucorum/terrestris	Apidae (bees)	Workers seen foraging in areas of flower-rich neutral grassland north of Hermit Lane	Common
Bombus pascuorum	Apidae (bees)	Workers sporadic across the site	Common
Closterotomus norwegicus	Miridae (plantbugs)	Adult and nymphs in flower-rich field margins & in unimproved grassland north of Hermit Lane	Common
Coccinella septempunctata (7-spot ladybird)	Coccinellidae (ladybirds)	Several adults in land north of Hermit Lane	Common
Maniola jurtina (meadow brown)	Nymphalidae (Nymphalid butterflies)	Adults in fields north of Hermit Lane (locally frequent)	Least Concern (IUCN)
Ochlodes sylvanus (large skipper)	Hesperiidae (skipper butterflies)	Adult on land north of Hermit Lane	Common
Pararge aegeria (speckled Wood)	Nymphalidae (butterflies)	Adult on edge of Craven Wood	Least Concern (IUCN)
Poecilobothrus nobilitatus	Dolichopodidae (long-legged flies)	Adults along stream in Craven Wood	Common
Plagiognathus arbustorum	Miridae (plantbugs)	Adults on tall ruderals in uncultivated enclosure north of Hermit Lane	Common
Plagiognathus chrysanthemi	Miridae (plantbugs)	Adults on tall ruderals in uncultivated enclosure north of Hermit Lane	Common
Sicus ferrugineus	Conopidae (parasitic flies)	Adult on ox-eye daisy in unimproved grassland north of Hermit Lane	Common
Syrphus ribesii	Syrphidae (hoverflies)	Adult on hedge margin vegetation in land south of Hermit Lane	Common

Species	Family	Location	Comment/National Status
Urophora stylata	Tephritidae (picture-wing flies)	Adult on ox-eye daisy on north side of Wood	Common
Zygaena lonicerae (narrow-bordered five spot burnet)	Zygaenidae (burnet moths	Adult on knapweed in unimproved grassland north of Hermit Lane	Common

DRAWINGS



KEY

- Site Boundary
- c1c - cereal crops
- g3c - other neutral grassland
- g4 - modified grassland
- h3 - dense scrub
- r1 - standing open water and canals
- s - sparsely vegetated land
- u1b - developed land, sealed surface
- u1c - artificial unvegetated unsealed surface
- w1f - lowland mixed deciduous woodland
- h2a - hedgerow (priority habitat)
- r1e - canal or ditch
- w1g6 - line of trees
- Fence

Notes:

Boundaries are indicative.

Aerial imagery shown for context purposes only.

REV SION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

STRATA STERLING BARNSLEY WEST LTD

PROJECT

BARNSLEY WEST

DRAWING TITLE

UKHAB HABITAT PLAN

DRG No.		REV
LD10361/002		A
DRG SIZE	SCALE	DATE
A3	1:7,500	12/10/2023
DRAWN BY	CHECKED BY	APPROVED BY
SRW	AD	TP

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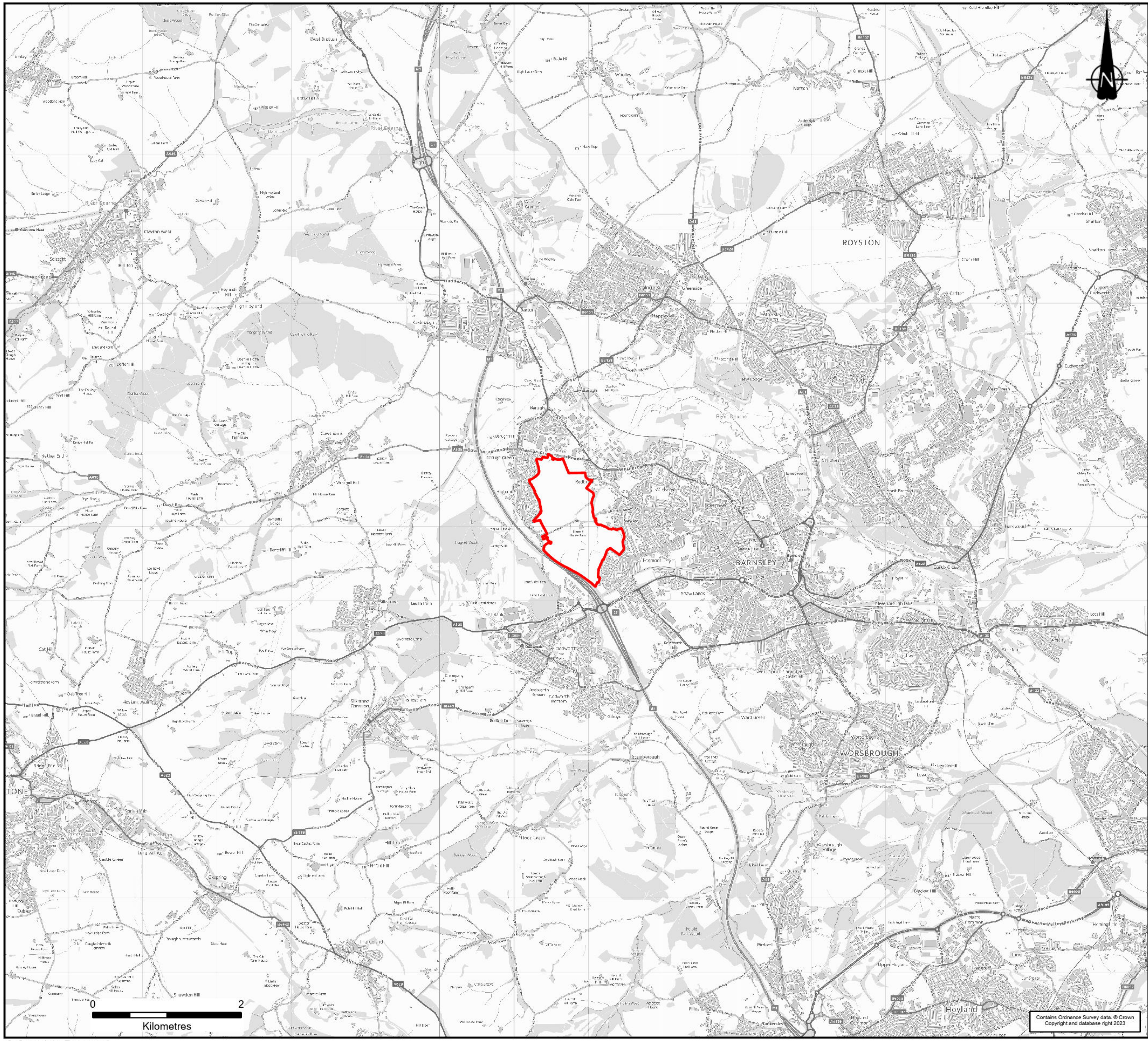

KEY

Site Boundary

Notes:

Boundaries are indicative.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D

CLIENT

STRATA STERLING BARNSLEY WEST LTD

PROJECT

BARNSLEY WEST

DRAWING TITLE

SITE LOCATION PLAN

DRG No. LD10361/004		REV A
DRG SIZE A3	SCALE 1:50,000	DATE 11/10/2023
DRAWN BY SRW	CHECKED BY AD	APPROVED BY TP

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