

**A report into the invertebrate conservation interest of the Cornhill regeneration project
site on Sunnyhills Road, Leek**

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Executive Summary

- This report was prepared as an assessment of the potential quality of the invertebrate habitat of Cornhill regeneration project, a brownfield site off Sunnyhills Road in Leek, ST13 5RJ (Central OS grid reference: SJ978552) and comprises an area of approximately 7.3ha. The proposals for the site include the demolition of existing buildings and redevelopment of the site. No detailed plans were provided for this. The purpose of this report was to identify habitat features of interest for invertebrates, identify the presence of any noteworthy species and to assess the need for further survey of the site's invertebrate fauna and habitat management options for the site.
- This was done by using an assessment of the habitat features and an invertebrate search using sweep netting, spot sampling and ground searching for collection. An assessment was also done for the aquatic invertebrates present within the water bodies by netting.
- There were moderate levels of bare earth, decaying timber, nectar sources, still air habitats, botanically poor wetland features, structural patchwork, ecoclines and connectivity.
- The field surveys found 104 species with no priority species. The majority of the species recorded through the invertebrate survey were open habitat and tree associated species with strong representation from tall sward and scrub and short sward and bare ground species and a mixture of nectivores, predators and herbivores.
- The pond and ditch along the southern boundary supported some freshwater invertebrates and the River Churnet is close by along the southern boundary, which is known to support good numbers of freshwater invertebrates. The pond and ditch had several areas of mud and shallow water creating botanically poor squidge habitat suitable for hoverflies and craneflies to breed in.
- No notable invertebrate species were found during the field surveys and there was an equal spread of nectivores, herbivores and predators within the sample. The habitats on site had some suitability for Dingy and grizzled skipper but lacked large amounts of bird's foot trefoil (their main larval food plant) and none were found during the field survey. The site is an example of the UKBAP habitat 'Open mosaic habitats on previously developed land' and potentially an important site for its invertebrate communities.
- Loss of pollinator opportunities to be made up by incorporating pollinator strips of wild flowers into the proposed development and incorporating deadwood piles to compensate for loss of deadwood from the rest of the site. These should be done along the site boundaries especially south-facing along the northern and eastern boundaries and include banks of short sward vegetation with birds foot trefoil and bare ground as well as longer sward grasses and native flowers. By incorporating the pollinator strips any possible developing suitability for dingy and grizzled skipper can be kept within the development. If dingy or grizzled skipper are encountered during development works then a suitably qualified ecologist to be contacted to arrange for suitable mitigation.
- Efforts made during construction to prevent run-off and silt from the works entering the water system leading to the River Churnet and affecting the invertebrate community. Use of a wooded corridor as a buffer zone along the southern boundary will aid this. Additional consideration will need to be made towards locating septic tanks away from the wooded corridor to reduce chances of contamination into the River Churnet.

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Chapter 1: Introduction

1.1. Aims

This report was prepared as an assessment of the potential quality of the invertebrate habitat of Cornhill regeneration project, a brownfield site off Sunnyhills Road in Leek, ST13 5RJ (Central OS grid reference: SJ978552) and comprises an area of approximately 7.3ha. The proposals for the site include the demolition of existing buildings and redevelopment of the site. No detailed plans were provided for this. The purpose of this report was to identify habitat features of interest for invertebrates, identify the presence of any noteworthy species and to assess the need for further survey of the site's invertebrate fauna and habitat management options for the site.

1.2. Site Description

The site consisted of hardstanding, ephemeral and short perennial, poor semi-improved grassland, bare ground, buildings, scrub and wooded boundaries (Figure 1).

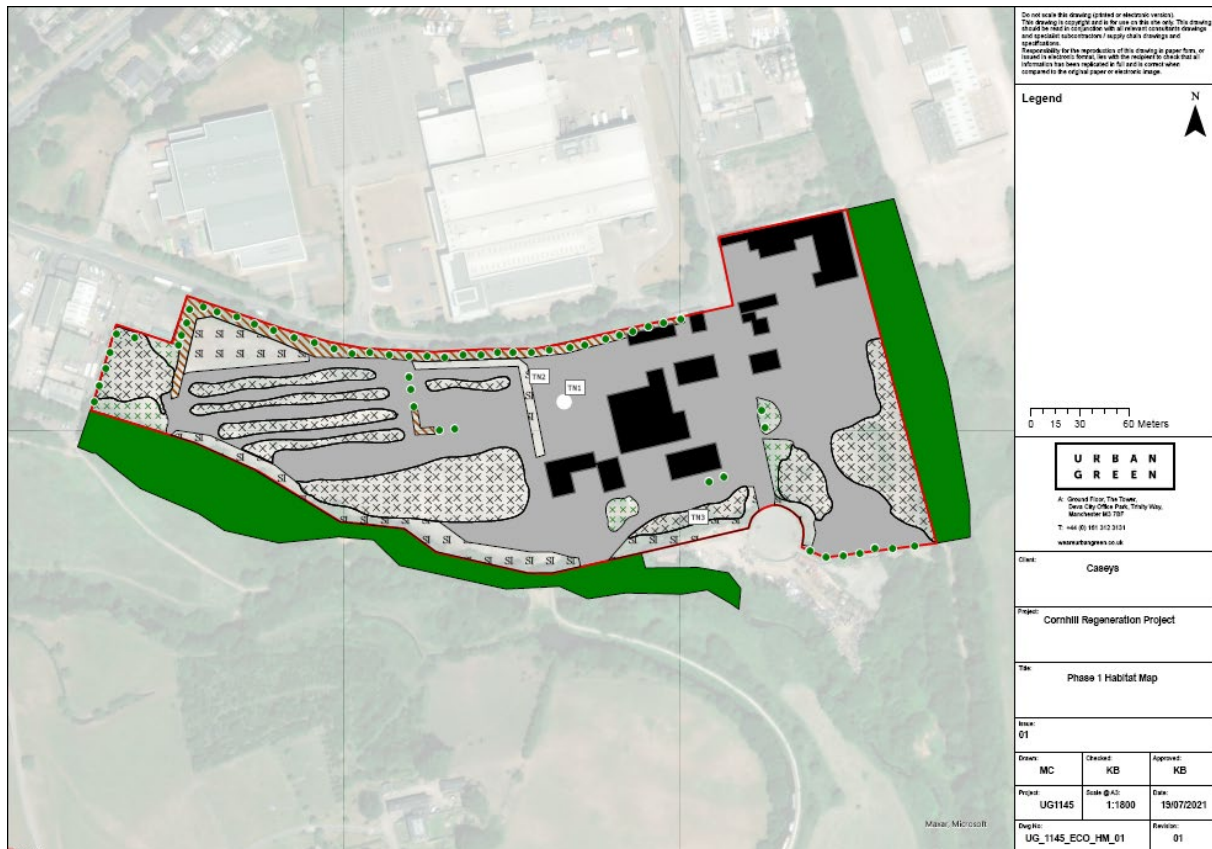


Figure 1: A phase 1 habitat map of the site.

Chapter 2: Methodology

2.1. Scope of Assessment

This report used an assessment of invertebrate habitat features and a field survey of invertebrates both carried out on the 7th June 2022.

2.2. Habitat Assessment

A habitat quality assessment was done using the protocols set out by John Dobson where nine key invertebrate habitat elements were semi-quantitatively assessed (Lee, 2017). These were decaying timber, rotational management, nectar sources, botanically-poor wetland features, structural patchwork, still air habitat, connectivity, ecoclines and bare earth (Lee, 2017) with other microhabitat features noted down. Each of these features was scored between zero and three using the guidance criteria (Lee, 2017) set out in Appendix 1.

2.3. Invertebrate Survey

Following the initial habitat assessment the invertebrate species assemblage was sampled using ground searching, spot sampling, sweep netting and timed netting of the pond for freshwater invertebrates as set out by Drake *et al.* (2007) as, given the habitats present, these were the most likely to collect a representative sample of the site (Standen, 2000; Lowe *et al.*, 2016; Swart *et al.*, 2017). The sampling was targeted towards the habitats identified from the initial habitat assessment, with samples collected from each different habitat (Figure 1).

Ground searching comprised a total of thirty minutes spent turning stones and dead wood and grubbing amongst grass roots and plant litter. The time was divided into six shorter periods of five minutes each during which a different part of the sample location was targeted for searching. A note was made of readily identifiable species and other specimens were collected for identification under the microscope.

Spot sampling involved thirty minutes of using a net to collect large and active species (or simple observation of readily identifiable species). Collecting points included plants in flower and banks of bare earth where bees and flies were searching for their own nesting burrows or those of other species to parasitise.

Sweep netting involved ten minutes of rapidly sweeping a net from side to side through herbaceous vegetation and inspecting and emptying the net after every ten to twenty sweeps.

The ponds were sampled using a standard 1 mm mesh pond (hand) net.

As it was not feasible to create a complete species assemblage for the site efforts were concentrated upon the Coleoptera (beetles), Orthoptera (grasshoppers), Hemiptera (true bugs), aculeate Hymenoptera (bees, wasps and ants), Diptera (flies) and Araneae (spiders) as these taxa are considered most likely to provide a representation of the invertebrate fauna quality (Drake *et al.*, 2007) with other invertebrates recorded on an ad hoc basis. The survey was undertaken by the author (Phillip Playford BSc (Hons), MSc, MCIEEM), with species identified in the field where possible and any species that could not be identified collected for

identification later. Any cryptic species would have been confirmed with the relevant county recorders as referees.

The data collected and the desktop study data was then analysed using the Pantheon online tool to check for habitat preferences amongst the species assemblages and for the source of rarity statuses as used by Harvey (2017) and Lee (2017). As well as recognising assemblage type Pantheon also assesses the quality of the assemblages using an SQI (Species Quality Indices) score (Lee, 2017). This is based on each species recorded from the sample being given a Species Quality Score (SQS) based on their conservation status (higher the conservation status the higher the number) and then the sum of this is divided by the number of species and multiplied by 100 to give a three figure value without decimal places (Pantheon, 2021). Typically a minimum threshold of fifteen species is recommended when calculating a quality score for the assemblage (Pantheon, 2022) and this is the parameters being used for this report.

The survey was carried out between 09:00 and 12:00 on the 7th June 2022. Conditions were clear and sunny and temperatures around 17 degrees Celsius meeting the ideal conditions set out by Neumann *et al.* (2015). As only one field survey was carried out it has missed out on invertebrates, such as certain pollinator species whose flight period is earlier in the year (Shaw *et al.*, 2015).

Chapter 3: Results

3.1. Habitat

The site consisted of hardstanding, ephemeral and short perennial, poor semi-improved grassland, bare ground, buildings, scrub and wooded boundaries.

There were moderate levels of bare earth, decaying timber, nectar sources, still air habitats, botanically poor wetland features, structural patchwork, ecoclines and connectivity (Table 1).

Table 1: *The invertebrate habitat potential for the site (See Appendix 1 for scoring parameters).*

Habitat element	Score
Decaying timber	2
Rotational management	1
Nectar sources	2
Botanically-poor wetland features	2
Structural patchwork	2
Still air habitat	2
Connectivity	2
Ecoclines	2
Bare earth	2
Other	1

The majority of the site consisted of concrete hardstanding and buildings but there were significant areas of bare ground (Figure 2).



Figure 2: *Photographs of the main central part of the site illustrating the bare ground present.*

Also present were several areas of scrub creating additional nectar resources and still air resources (Figure 3).



Figure 3: *Photographs of the scrub habitat.*

There was a ditch and pond on the boundary of the site which had several areas of botanically poor “squidge” habitat (Figure 4).



Figure 4: *Photographs of the pond and ditch with botanically poor “squidge” habitat present.*

There were several areas where the scrub and trees transitioned into grassland and bare ground creating good structural patchwork and ecoclines (Figure 5).



Figure 5: *Photographs of the ecoclines and structural patchwork present on site.*

Present on site was lots of flowers such as ox eye daisies, dandelions, ragwort, brambles, green alkanet, buttercups, mugwort, common hogweed, clover, willows and yellow loosestrife (Figure 6).



Figure 6: *Photographs of the nectar resources present on site.*

Present on site was deadwood and debris piles providing additional microhabitats and food resources (Figure 7).



Figure 7: *Photographs of the nectar resources present on site.*

The site qualifies as the UKBAP habitat ‘Open mosaic habitats on previously developed land’ meeting all five of the criteria (Table 2) set out in the UKBAP (Biodiversity Reporting and Information Group, 2010).

Table 2: *Criteria of open mosaic habitats on previously developed land (After JNCC, 2008).*

	Criterion
1	The area of open mosaic habitat is at least 0.25ha in size.
2	Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.
3	The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.
4	The site contains unvegetated, loose bare substrate and pools may be present.
5	The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above (criterion 3) plus bare substrate, within 0.25ha.

3.2. Invertebrates with national conservation statuses

The field surveys found 104 species with no priority species (Appendix 2).

3.3. Species Assemblages

The majority of the species recorded through the invertebrate survey were open habitat and tree associated BATs with strong representation from tall sward and scrub and short sward and bare ground SATs (Appendix 2).

The majority of the species collected were predators, nectivores and herbivores as adults, the life stage the bulk of the species collected were in (Figure 8). In terms of plant associations there was six species found within the field survey associated with members of the Asteraceae taxon and several species associated with various grass species (Pantheon, 2022).

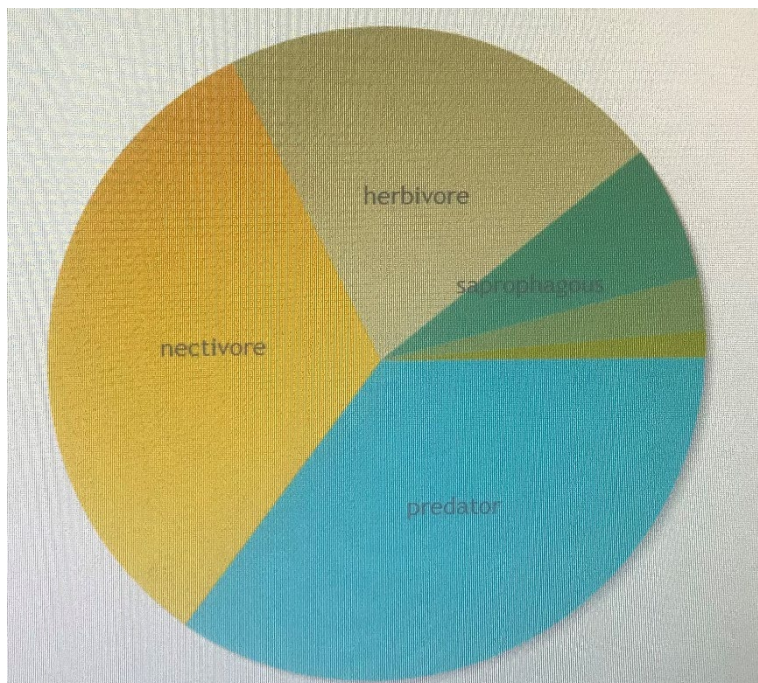


Figure 8: The adult feeding guilds of the species recorded on the field surveys (After Pantheon, 2022).

3.4. Pond dipping results

The pond and ditch along the southern boundary supported some freshwater invertebrates and the River Churnet is close by along the southern boundary, which is known to support good numbers of freshwater invertebrates (Table 3). The pond and ditch had several areas of mud and shallow water creating botanically poor squidge habitat suitable for hoverflies and crane flies to breed in.

Table 3: *Species found during sampling of the pond and ditch)*

Common name	Species
Beetles	<i>Agabus bipustulatus</i>
Water boatman	<i>Cymatia coleoptrata</i>
Freshwater shrimp	<i>Gammarus sp.</i>
Water slater	<i>Oniscus asellus</i>
Pond skater	<i>Gerris lacustris</i>
Ramshorn snail	<i>Planorbarius corneus</i>
Pond snail	<i>Lymnaea stagnalis</i>

Chapter 4: Discussion

4.1. Invertebrate Assemblages

No notable invertebrate species were found during the field surveys and there was an equal spread of nectivores, herbivores and predators within the sample. The habitats on site had some suitability for Dingy and grizzled skipper but lacked large amounts of bird's foot trefoil (their main larval food plant) and none were found during the field survey. The site is an example of the UKBAP habitat 'Open mosaic habitats on previously developed land' and potentially an important site for its invertebrate communities.

There was a dominance of tree associated and open habitat species, particularly tall sward and scrub and short sward and bare ground species in the sample, indicating these are the most important habitat biotypes for the current site invertebrate assemblages. Although there is some bias towards these assemblages through the use of sweep netting (Doxon *et al.*, 2011) as the predominant survey method this would seem a reasonably fair reflection of the site.

The ditch and pond along the southern boundary had several areas of botanically poor squidge habitat suitable for hoverflies and craneflies to breed in. The invertebrates found were dominated by water slaters and other common freshwater invertebrates and the site is in close proximity to the River Churnet.

4.2. Habitat

The habitat assessment showed some invertebrate habitat features of interest including moderate levels of bare earth, decaying timber, nectar sources, still air habitats, botanically poor wetland features, structural patchwork, ecoclines and connectivity. The presence of bare earth is worth emphasising as it has not always been recognised as a key habitat feature (Meek *et al.*, 2002; Kijowska-Strugała *et al.*, 2017). With the mix of aspects, basking and foraging areas present this is a significant component of the microhabitat interest on the site.

4.3. Critical analysis of techniques used

The main limitation of this survey is that it was limited to one visit. The invertebrates found on the field samples did give a good representation of the invertebrate value on the site.

The use of timed sweep netting as the primary search method has also introduced some potential bias into the sampling towards tall sward and scrub species (Gardiner *et al.*, 2005) and towards the more active nectivores and predators (Holmquist *et al.*, 2013), which is reflected in the results despite the use of ground searching as well.

Chapter 5: Conclusion and Recommendations

No notable invertebrate species were found during the field surveys and there was an equal spread of nectivores, herbivores and predators within the sample. The habitats on site had some suitability for Dingy and grizzled skipper but lacked large amounts of bird's foot trefoil (their main larval food plant) and none were found during the field survey. The site is an example of the UKBAP habitat 'Open mosaic habitats on previously developed land' and potentially an important site for its invertebrate communities.

Loss of pollinator opportunities to be made up by incorporating pollinator strips of wild flowers into the proposed development and incorporating deadwood piles to compensate for loss of deadwood from the rest of the site. These should be done along the site boundaries especially south-facing along the northern and eastern boundaries and include banks of short sward vegetation with birds foot trefoil and bare ground as well as longer sward grasses and native flowers. By incorporating the pollinator strips any possible developing suitability for dingy and grizzled skipper can be kept within the development. If dingy or grizzled skipper are encountered during development works then a suitably qualified ecologist to be contacted to arrange for suitable mitigation.

Efforts made during construction to prevent run-off and silt from the works entering the water system leading to the River Churnet and affecting the invertebrate community. Use of a wooded corridor as a buffer zone along the southern boundary will aid this. Additional consideration will need to be made towards locating septic tanks away from the wooded corridor to reduce chances of contamination into the River Churnet.

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Appendices

Appendix 1: Summary of scoring criteria for habitat assessment (After Lee, 2017).

1. Scoring Criteria for Decaying Timber		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
Decaying Timber habitat insignificant or undetectable	Zero	0
Standing or fallen decaying timber observed or thought likely to provide (in terms of quality or quantity) a minor saproxylic resource (e.g. woodpiles of stacked sawn logs)	Minor	1
A number of living mature native or archaeophyte trees showing signs of decay; <i>or</i> A quantity of standing or fallen decaying timber observed or thought likely to provide (in terms of quality or quantity) a significant saproxylic resource	Moderate	2
A number of living large or post-mature native or archaeophyte trees with heart rot, rot holes, large decaying branches; and broken branches; <i>or</i> Veteran trees present within semi-natural habitat	Major	3
2. Scoring Criteria for Rotational Management		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
No or negligible evidence of Rotational Management	Zero	0
Clearly observable but relatively minor evidence of Rotational Management	Minor	1
Evidence that some degree of Rotational Management is in play, either by design or as an unintended consequence of other activities	Moderate	2
Evidence that Rotational Management is a key management strategy, and that it is performed in such a way that it is likely to promote invertebrate habitat quality	Major	3
3. Scoring Criteria for Spring- and Autumn Nectar-Sources		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
DAFOR Rare: or no significant Spring or Autumn nectar sources observed	Zero	0
DAFOR Occasional	Minor	1

DAFOR Frequent	Moderate	2
DAFOR Dominant or Abundant	Major	3
4. Scoring Criteria for Botanically Poor Wetland Features		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
Botanically-poor wetland habitat insignificant, or not meeting the given criteria	Zero	0
Botanically-poor wetland habitat present as a significant but minor component	Minor	1
A moderate amount of stable or semi-stable botanically-poor wetland habitat	Moderate	2
Significant area of stable/semi-stable botanically-poor wetland habitat present	Major	3
5. Scoring Criteria for Structural Patchwork		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
Structural patchwork component insignificant or absent	Zero	0
A true structural patchwork present, but comprising <20% of the parcel	Minor	1
A small-medium scale patchwork of structurally diverse habitats occurring as a significant element (20-50%) of the survey parcel) alongside more uniform elements	Moderate	2
More than 50% of the survey parcel comprising a small-medium scale patchwork of structurally diverse habitats	Major	3
6. Scoring Criteria for Still Air Habitats		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
No readily apparent structural conformations likely to lead to significant formation of still air habitat (<i>Featureless and exposed survey parcels</i>)	Zero	0
Structural conformations present which are considered likely to give rise to the formation of still air habitat(s) usable by invertebrates, but not compliant with the prescribed criteria for 2 or 3 (<i>Applies to most survey parcels</i>).	Minor	1
Structural conformations present which comply with at least one of the prescribed criteria, recorded in the absence of significant observed invertebrate activity believed likely to be associated with the habitat element	Moderate	2

Structural conformations present which comply with at least one of the prescribed criteria, along with significant observed invertebrate activity believed likely to be associated with the habitat element. <i>(NB: this is only observable 'on the right day' so expect it to be an uncommon observation under most circumstances)</i>	Major	3
7. Scoring Criteria for Connectivity		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
Ecologically isolated parcel without significant connectivity to similar and/or complementary semi-natural habitat with an area similar to or greater than the survey parcel	Zero	0
Ecologically semi-isolated parcel with minor but apparently genuine connectivity to an area of similar and/or complementary semi-natural habitat with an area similar to or greater than the survey parcel	Minor	1
Parcel directly connected with-, or closely adjacent (no substantial ecological barriers) to an area of similar and/or complementary semi-natural habitat less than three-times the area of the survey parcel in question; or Parcel connected indirectly (by reason of distance or moderate ecological barriers) to an area of similar and/or complementary semi-natural habitat at least three-times the area of the survey parcel in question	Moderate	2
Parcel directly connected with-, or closely adjacent (no substantial ecological barriers) to areas including similar and/or complementary semi-natural habitat at least three-times the area of the survey parcel in question	Major	3
8. Scoring Criteria for Ecoclines		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
No significant ecoclines present in the parcel	Zero	0
Ecocline(s) present but either small, significantly fragmented or of questionable quality	Minor	1
Ecocline(s) clearly present as a moderate-significant component. Good-quality (as assessed in the local context) semi-natural habitat either absent or a minor component. If ecocline(s) extensive then moderately fragmented or lacking clear gradation	Moderate	2
Ecocline(s) clearly present as a significant component, or if less extensive occurring as a clear gradation between habitats, at least one	Major	3

of which is a good-quality (as assessed in the local context) semi-natural habitat		
9. Scoring Criteria for Bare Earth		
Habitat could not be reliably assessed (e.g. due to lack of access)	Unknown	k
Bare Earth component insignificant or does not meet qualifying criteria	Zero	0
Minor qualifying bare earth component present	Minor	1
A moderate amount of qualifying bare earth component is present. This may include relatively small areas which are observed- or thought likely to be in usage	Moderate	2
Habitat is present which is observed- or thought likely to support a diverse assemblage of Bare Earth invertebrates. This habitat may be localised (in which case a Target Note can be added, in addition to scoring) or dispersed	Major	3

Appendix 2: Species records from the field survey with national conservation status, feeding guild and their habitat preferences after the data was put into Pantheon (2022). All biological records are assigned to the grid reference SJ978552.

Species	Order	Conservation status	Larval feeding guild	Adult feeding guild	Broad biotope	Habitat
<i>Gammarus sp.</i>	Amphipoda					
<i>Araneus diadematus</i>	Araneae		predator	predator		
<i>Araniella cucurbitina sensu stricto</i>	Araneae					
<i>Zygiella x-notata</i>	Araneae		predator	predator		
<i>Linyphiidae</i>	Araneae					
<i>Pardosa amentata</i>	Araneae		predator	predator	wetland	acid & sedge peats
<i>Pardosa palustris</i>	Araneae		predator	predator	open habitats	short sward & bare ground
<i>Pardosa pullata</i>	Araneae		predator	predator	open habitats	tall sward & scrub
<i>Trochosa ruricola</i>	Araneae		predator	predator		
<i>Trochosa terricola</i>	Araneae		predator	predator		
<i>Philodromus dispar</i>	Araneae		predator	predator	tree-associated	arboreal
<i>Pisaura mirabilis</i>	Araneae		predator	predator	open habitats	tall sward & scrub
<i>Metellina segmentata</i>	Araneae		predator	predator		
<i>Tetragnatha extensa</i>	Araneae		predator	predator	wetland	acid & sedge peats
<i>Enoplognatha ovata sensu stricto</i>	Araneae					
<i>Xysticus cristatus</i>	Araneae		predator	predator		
<i>Rhagonycha fulva</i>	Coleoptera		predator	predator	open habitats	tall sward & scrub
<i>Badister bullatus</i>	Coleoptera		predator	predator	open habitats	tall sward & scrub
<i>Carabus violaceus</i>	Coleoptera		predator	predator	open habitats	tall sward & scrub
<i>Cychrus caraboides</i>	Coleoptera		predator	predator	open habitats	tall sward & scrub
<i>Pterostichus madidus</i>	Coleoptera		predator	predator	open habitats	tall sward & scrub
<i>Gastrophysa viridula</i>	Coleoptera		herbivore	herbivore	open habitats	tall sward & scrub
<i>Coccinella septempunctata</i>	Coleoptera					
<i>Harmonia axyridis</i>	Coleoptera					
<i>Propylea quattuordecimpunctata</i>	Coleoptera					
<i>Psyllobora vigintiduopunctata</i>	Coleoptera		saprophagous	saprophagous	open habitats	tall sward & scrub
<i>Agabus bipustulatus</i>	Coleoptera		predator	predator	wetland	marshland
<i>Malachius bipustulatus</i>	Coleoptera		predator		tree-associated	decaying wood

<i>Oedemera nobilis</i>	Coleoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Forficula auricularia</i>	Dermaptera					
<i>Lucilia sericata</i>	Diptera		saprophagous	saprophagous		
<i>Chrysopilus asiliformis</i>	Diptera		saprophagous	saprophagous	tree-associated	shaded woodland floor
<i>Rhagio scolopaceus</i>	Diptera			saprophagous	open habitats	tall sward & scrub
<i>Beris chalybata</i>	Diptera				tree-associated	shaded woodland floor
<i>Chloromyia formosa</i>	Diptera		saprophagous	phytosaprophagous	open habitats	tall sward & scrub
<i>Episyrphus balteatus</i>	Diptera		predator	nectivore	open habitats	tall sward & scrub
<i>Eristalis pertinax</i>	Diptera		saprophagous	nectivore	wetland	acid & sedge peats
<i>Eristalis tenax</i>	Diptera		saprophagous	nectivore	wetland	rich flower resource
<i>Helophilus pendulus</i>	Diptera		saprophagous	nectivore	wetland	acid & sedge peats
<i>Platycheirus albimanus</i>	Diptera		predator	nectivore		
<i>Nephrotoma flavescens</i>	Diptera		herbivore	does not feed	open habitats	tall sward & scrub
<i>Tipula vernalis</i>	Diptera		herbivore	does not feed	open habitats	tall sward & scrub
<i>Entomobrya albocincta</i>	Entomobryomorpha					
<i>Entomobrya nivalis</i>	Entomobryomorpha					
<i>Orchesella cincta</i>	Entomobryomorpha					
<i>Pogonognathellus longicornis</i>	Entomobryomorpha					
<i>Geophilus flavus</i>	Geophilomorpha		predator	predator	open habitats	tall sward & scrub
<i>Acanthosoma haemorrhoidale</i>	Hemiptera		herbivore	herbivore	tree-associated	arboreal
<i>Aphrophora alni</i>	Hemiptera					
<i>Philaenus spumarius</i>	Hemiptera					
<i>Cicadella viridis</i>	Hemiptera		herbivore	herbivore	wetland	
<i>Cymatia coleoptrata</i>	Hemiptera		saprophagous	saprophagous	wetland	marshland
<i>Gerris (Gerris) lacustris</i>	Hemiptera		predator	predator	wetland	marshland
<i>Heterotoma planicornis</i>	Hemiptera		herbivore	herbivore	open habitats	tall sward & scrub
<i>Miris striatus</i>	Hemiptera			predator	tree-associated	arboreal
<i>Palomena prasina</i>	Hemiptera		herbivore	herbivore	open habitats	tall sward & scrub
<i>Lymnaea stagnalis</i>	Hygrophila		herbivore	herbivore	wetland	marshland
<i>Planorbarius corneus</i>	Hygrophila		herbivore	herbivore	wetland	marshland

<i>Apis mellifera</i>	Hymenoptera	NE (Global)			open habitats	
<i>Bombus lapidarius</i>	Hymenoptera		nectivore	nectivore	open habitats	tall sward & scrub
<i>Bombus lucorum</i>	Hymenoptera	DD	nectivore	nectivore	open habitats	tall sward & scrub
<i>Lasius niger</i>	Hymenoptera				open habitats	short sward & bare ground
<i>Myrmica rubra</i>	Hymenoptera		predator	predator	open habitats	tall sward & scrub
<i>Lasioglossum calceatum</i>	Hymenoptera		nectivore	nectivore	open habitats	short sward & bare ground
<i>Barylypa propugnator</i>	Hymenoptera					
<i>Diphyus quadripunctorius</i>	Hymenoptera					
<i>Vespula vulgaris</i>	Hymenoptera		predator	nectivore	open habitats	tall sward & scrub
<i>Oniscus asellus</i>	Isopoda					
<i>Philoscia muscorum</i>	Isopoda					
<i>Porcellio scaber</i>	Isopoda					
<i>Tachypodoiulus niger</i>	Julida					
<i>Tyria jacobaeae</i>	Lepidoptera	LC (Global);Section 41 Priority Species - research only	herbivore	nectivore	open habitats	tall sward & scrub
<i>Thymelicus lineola</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Thymelicus sylvestris</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Celastrina argiolus</i>	Lepidoptera		herbivore	nectivore	tree-associated	arboreal
<i>Lycaena phlaeas</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Polyommatus icarus</i>	Lepidoptera		herbivore	nectivore	open habitats	short sward & bare ground
<i>Stigmella aurella</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Stigmella betulicola</i>	Lepidoptera		herbivore		tree-associated	arboreal
<i>Aglais urticae</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Aphantopus hyperantus</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Maniola jurtina</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Pararge aegeria</i>	Lepidoptera		herbivore	nectivore	open habitats	tall sward & scrub
<i>Vanessa cardui</i>	Lepidoptera		herbivore	nectivore		
<i>Pieris napi</i>	Lepidoptera		herbivore	nectivore	open habitats	

<i>Pieris rapae</i>	Lepidoptera		herbivore	nectivore	open habitats	
<i>Lithobius (Lithobius) variegatus</i>	Lithobiomorpha		predator	predator	tree-associated	shaded woodland floor
<i>Chrysoperla carnea sensu stricto</i>	Neuroptera					
<i>Enallagma cyathigerum</i>	Odonata		predator	predator	wetland	marshland
<i>Leiobunum rotundum</i>	Opiliones		predator	predator	tree-associated	arboreal
<i>Oligolophus tridens</i>	Opiliones		predator	predator	tree-associated	shaded woodland floor
<i>Chorthippus brunneus</i>	Orthoptera		herbivore	herbivore	open habitats	tall sward & scrub
<i>Tetrix undulata</i>	Orthoptera		herbivore	herbivore	open habitats	tall sward & scrub
<i>Polydesmus angustus</i>	Polydesmida					
<i>Deroceras (Deroceras) reticulatum</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Arion (Arion) ater</i>	Pulmonata	DD	herbivore	herbivore	open habitats	tall sward & scrub
<i>Arion (Arion) flagellus</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Arion (Mesarion) subfuscus</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Cepaea (Cepaea) hortensis</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Cepaea (Cepaea) nemoralis</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Cornu aspersum</i>	Pulmonata		herbivore	herbivore	open habitats	tall sward & scrub
<i>Sminthurides aquaticus</i>	Symphyleona					
<i>Tetranychus urticae</i>	Trombidiformes					
<i>Bombus (Thoracobombus) pascuorum</i>						