

Rampion 2 Wind Farm
Category 6:
Environmental Statement

Volume 4, Appendix 22.10: Invertebrate survey report



### **Document revisions**

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# **Contents**

1.	Introducti	on	3
1.1	Backgroun	nd .	3
1.2	Survey site	e selection	3
1.3	Structure of	of this Appendix	3
2.	Methods		5
2.2	Sweep net	ting	5
2.3	Spot samp	ling	5
2.4	Grubbing		5
2.5	Pitfall traps	3	5
2.6	Survey det	ails	5
3.	Results		7
3.1	_	mp Hill and New Down LWS	7
	Results an		12
		Imp Hill and New Down LWS discussion	17 17
3.2	Sullington	5	19
	Results an		23
4.	Summary		31
4.1	Warningca	mp Hill and New Down LWS Assessment Summary	31
4.2	Sullington	Hill LWS Assessment Summary	31
5.	Glossary	of terms and abbreviations	33
6.	Reference	es	35
	List of Tal	oles	
	Table 3-1	Summary of species breakdown recorded at Warningcamp Hill and New Down LWS	7
	Table 3-2	Species of importance recorded at Warningcamp Hill and New Dow	
	Table 3-3	LWS during invertebrate surveys Site resource-usage table (taken from Webb et al., 2017)	7 12
		Site SAT table (taken from Webb et al., 2017)	15



Table 3-5	Summary of species breakdown recorded at Sullington Hill LWS	19
Table 3-6	Species of importance recorded at Sullington Hill LWS during	
	invertebrate surveys	19
Table 3-7	Site resource-usage table (taken from Webb et al., 2017)	23
Table 3-8	Site SAT table (taken from Webb et al., 2017)	25

#### **List of Annexes**

Annex A	Red	Data	Book	<b>Definitions</b>
_	_	_	_	

Annex B Survey Results
Annex C Survey conditions



## 1. Introduction

## 1.1 Background

- This Appendix should be read in conjunction with **Chapter 22: Terrestrial ecology and nature conservation, Volume 2** of the ES (Document Reference
  6.2.22) which is provided in support of the delivery of an Environmental Impact
  Assessment (EIA) associated with the Rampion 2 Offshore Wind Farm, hereafter
  referred to as the 'Proposed Development' or 'Rampion 2'.
- This Appendix describes the survey method and summarises the results of an invertebrate survey undertaken in 2021. The survey focused on two Local Wildlife Sites (LWS) with the potential to be affected by Rampion 2. However, surveys were undertaken during the optioneering phase of the project before a final design freeze was reached. At the optioneering phase both LWS' were being considered for open-cut trenching. This Appendix has been prepared following an identified Design Choice. At this juncture, one of the two areas surveyed (Warningcamp Hill and New Down LWS) now falls outside of the proposed Development Consent Order (DCO) Order Limits. Sullington Hill LWS is within proposed DCO Order Limits, however it will now be crossed by a trenchless crossing. The results of the surveys from both LWS are presented **Section 3: Results** as useful contextual information.

## 1.2 Survey site selection

At the time of survey, spring 2021, the proposed cable route for the scheme was to pass through two local wildlife sites: Warningcamp Hill and New Down LWS and Sullington Hill LWS. These LWS both have the potential to host important populations of invertebrates and therefore both were subject to invertebrate surveys. Surveys were undertaken by a professional entomologist.

## 1.3 Structure of this Appendix

- 1.3.1 This Appendix is structured as follows:
  - Section 2: Methods;
  - Section 3: Results;
  - Section 4: Summary;
  - Section 5: Glossary of terms and abbreviations;
  - Section 6: References;
  - Annex A: Red Data Book Definitions;
  - Annex B: Survey Results; and
  - Annex C: Survey conditions.





## 2. Methods

2.1.1 The methods used for the assessment are those recommended in the Natural England guidance document *Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation* (Drake *et al.*, 2007). In some instances, a bespoke method has been created for the site assessment but still retains the overall approach to assessing features and habitats for conservation assessment. The bespoke methods relate to the extent of the free-ranging sampling. This prioritized features that showed obvious interest, such as the tufa seepages and short sward and scrub fringe features.

## 2.2 Sweep netting

This method provides the main proportion of the survey element and is the most efficient method for cataloguing a site's invertebrate resource. Sweep netting involves the use of a long-handled sweep net being swept over vegetation such as stands of grasses or flowers, or along scrub fringes in order to gather invertebrate material.

## 2.3 Spot sampling

Spot sampling is employed to collect large, conspicuous invertebrates such as bees and wasps from flowering plants, and to supplement the sweep samples. Spot sampling is often the most effective method for recording species from high-fidelity niches.

## 2.4 Grubbing

Fallen deadwood, piles of rotting timber (for deadwood beetles), and short turf (for surface-running beetles) are fingertip-searched for any hiding or crawling invertebrates, principally beetles.

## 2.5 Pitfall traps

A series of pitfall traps were set out within the grassland for the duration of the survey.

## 2.6 Survey details

The survey areas were visited on five occasions: 26 May 2021; 24 June 2021; 14 July 2021; 11 August 2021 and 16 September 2021. Further survey details including weather conditions are show in **Annex C**.





## 3. Results

## 3.1 Warningcamp Hill and New Down LWS

- 3.1.1 A total of 265 species from the target groups were recorded during the surveys.
- A total of 23 species recorded have a national status, though it is recognized by many of the national recording schemes that a number of these no longer warrant their current status and that they may need revising. This total does not include research-only moths.
- 3.1.3 **Table 3-1** shows the summary breakdown of species recorded at Warningcamp Hill and New Down LWS.
- 3.1.4 The full list of species recorded for the site is provided in **Annex B**.

Table 3-1 Summary of species breakdown recorded at Warningcamp Hill and New Down LWS

Total no. of species recorded	•	
265	23	8.7

<sup>\*</sup>Species do not warrant nationally significant status.

Table 3-2 sets out the species of importance recorded at Warningcamp Hill and New Down LWS during the invertebrate surveys.

Table 3-2 Species of importance recorded at Warningcamp Hill and New Down LWS during invertebrate surveys

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Amara montivaga	A ground beetle	Nationally Scarce	Associated with short turf and bare ground.	
Andrena fulvago	a mining bee	Notable a*	Associated with sparsely vegetated flowery grassland and brownfields with abundant yellow composites,	Breeding confirmed on site in a southerly aspect exposure.



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
			specifically hawkbits ( <i>Leontodon</i> spp.).	
Andrena minutuloides	A mining bee	Notable a*	Nests in bare or patchy bare ground. Feeds from a range of flowers such as yellow composites. Now more common than its status suggests and possibly no longer warrants a nationally significant status.	
Andrena similis	A mining bee	Notable b	Nests in bare or patchy bare ground. Feeds from a range of flowers and prefers established grassland swards for foraging.	
Asilus crabroniformis	Hornet robberfly	NERC Act Section 41	Its larvae are predators on dung beetle larvae.	_
Atylotus rusticus	A horsefly	Nationally Rare	A wetland species, not more common and thought to be spreading.	_



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Ceratina cyanea	Blue carpenter bee	Red Data Book 3*	Nests in broken dry stems and forages from a range of flowers. Prefers hot sites. Now more common than its status suggests.	_
Cheiloisa nigripes	A hoverfly	Nationally Scarce	A woodland/wood edge species associated with lady's mantle (Alchemilla spp.).	
Cistogaster globosa	A parasitic fly	Red Data Book 1*	A parasite on bishop's-mitre shield bug. Expanded its range significantly and now no longer deserves a nationally significant status.	
Coenonympha pamphilus	Small heath butterfly	NERC Act Section 41	Fine-leaved grasses including <i>Agrostis</i> (bents).	Widespread and extensive across the site in open grassland areas.
Dorycera graminum	Phoenix fly	Provisionally Nationally Scarce; provisionally Near Threatened; NERC Act Section 41	Associated with grasslands. Now much more common than its status suggests and is likely to be downgraded in future reviews.	



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Erynnis tages	Dingy skipper butterfly	NERC Act Section 41	Bare ground and short turf with bird's-foot trefoil.	Widespread across the site along the tracks.
Hylaeus cornutus	A yellow- faced bee	Notable a*	Nests in broken dry plant stems. Feeds from a range of flowers. Now more common than its status suggests and no longer warrants a nationally significant status.	
Lasioglossum malachurum	A mining bee	Notable b*	Nests in bare or patchy bare ground. Feeds from a range of flowers such as yellow composites. Now more common than its status suggests and possibly no longer warrants a nationally significant status.	
Megalonotus chiragra	A ground bug	Notable b	Associated with short turf and bare ground.	-
Megalonotus sabulicola	A ground bug	Notable b	Associated with short turf and bare ground.	_
Mordellistena parvula	A tumbling flower beetle	Nationally Scarce	Associated with short turf and bare ground.	_



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Myopa pellicuda	A thick- headed fly	Red Data Book 3	Parasite on spring flying mining bees.	-
Nomada fucata	A nomad bee	Notable a*	A range of open habitats where its host lives.	-
Nomada lathburiana	A cuckoo bee	Red Data Book 3*	A solitary bee parasite, now very common and no longer warrants a nationally significant status.	
Pyrgus malvae	Grizzled skipper butterfly	NERC Act Section 41	Bare ground and short turf with prostrate growing Roseacae including wild strawberry (Fragaria vesca) and creeping cinquefoil (Potentilla reptans).	No more than five individuals observed during their peak season (end of May).
Sphecodes spinulosus	A cuckoo bee	Red Data Book 2*	A parasite on the mining bee Lasioglossum xanthopus. Now more common than its status suggests.	_
Trachyphloeus alternans	A weevil	Notable b	Associated with short turf and bare ground.	_

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded. The most up-to-date information and species reviews are used in the assessment, largely derived from Pantheon (Webb *et al.*, 2017).



#### Results analysis

- Table 3-3 and Table 3-4 have been generated using the Pantheon software package. Pantheon is an analytical tool developed by Natural England and the Centre for Ecology & Hydrology (CEH) to assist invertebrate nature conservation in England. Site data in the form of species lists can be imported into Pantheon, which then analyses the species within the lists, assigning them to habitats and resources. Pantheon also consigns the most up-to-date national status to the species where it is available.
- Pantheon is also capable of other outputs such as Specific Assemblage Types (SATs) (see **Table 3-4**).
- A SAT is characterized by stenotopic species (those that can withstand only a narrow range of environmental conditions). SATs are therefore more tightly defined than "habitats" or "resources" and sit within a parent habitat or Broad Assemblage Type (BAT). More than one SAT can sit within a parent BAT.
- 3.1.9 Example:

BAT: **F**2 – grassland and scrub matrix

SAT: **F**211 – herb-rich dense sward

F212 – dense scrub

- 3.1.10 The information obtained from Pantheon can then be used to assign quality to sites and their features, assist in management decisions, and facilitate requirement for further surveys, where required and appropriate.
- Pantheon was first made publicly accessible in April 2018 and is the primary analytical tool used by entomologists in site evaluation. It is also the tool recognized and preferred by Natural England. For more information on this new resource, see <a href="http://www.brc.ac.uk/pantheon/">http://www.brc.ac.uk/pantheon/</a> [Accessed 26 July 2023].
- Not all species of importance are expressed in the following tables, as they do not form part of the Pantheon analysis and/or their specific requirements are not yet fully understood.

Table 3-3 Site resource-usage table (taken from Webb *et al.*, 2017)

Broad biotope	Habitat	No. of species	No. of species with conservation status (excluding researchonly moths)	Species with conservation status (excluding researchonly moths)
Open habitats	Tall sward & scrub	124	6	Erynnis tages (S41; Vulnerable); Asilus crabroniformis (S41); Myopa pellucida (RDB3); Cheilosia nigripes (NS); Dorycera



Broad biotope	Habitat	No. of species	No. of species with conservation status (excluding researchonly moths)	Species with conservation status (excluding researchonly moths)
				graminum (pS41*); Ceratina cyanea (RDB3*)
Open habitats	Short sward & bare ground	69	12	Coenonympha pamphilus (Near Threatened, S41); Amara montivaga (NS): Trachyphoeus alternans (Nb); Megalonotus sabulicola (Nb); Andrena fulvago (Na*); Andrena minutuloides (Na*); Andrena similis (Nb); Nomada fucata (Na*); Nomada lathburiana (RDB3*); Lasioglossum malachurum (Nb); Sphecodes spinulosus (RDB2*); Pyrgus malvae (S41)
Tree- associated	Decaying wood	20	1	Hylaeus cornutus (Na*)
Tree- associated	Shaded woodland floor	15	1	Cheilosia nigripes (NS)
Wetland	Acid & sedge peats	14	1	Atylotus rusticus (NR*)
Wetland	Marshland	6	-	-
Tree- associated	Arboreal	6	-	_
Wetland	Running water	3	_	_
Coastal	Saltmarsh	1	_	-
Coastal	Brackish pools & ditches	1	_	_

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded.





Table 3-4 Site SAT table (taken from Webb et al., 2017)

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
Open habitats	Rich flower resource	F002	42	8	Andrena fulvago (Na*); Andrena minutuloides (Na*); Andrena similis (Nb); Ceratina cyanea (RDB3*); Nomada fucata (Na*); Nomada lathburiana (RDB3*); Hylaeus cornutus (Na*); Lasioglossum malachurum (Nb*)	Favourable
Tree- associated	Bark & sapwood decay	A212	17	1	Hylaeus cornutus (Na*)	Unfavourable (17 of 19 species)
Open habitats	Scrub edge	F001	9	2	Cheilosia nigripes (NS); Hylaeus cornutus (Na*)	Unfavourable (9 of 11 species)
Open habitats	Open short sward	F112	6	1	Coenonympha pamphilus (S41)	Unfavourable (6 of 13 species)
Open habitats	Bare sand & chalk	F111	5	2	Amara montivaga (NS); Trachyphloeus alternans (Nb)	Unfavourable (5 of 19 species)



Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
Open habitats	Scrub-heath & moorland	F003	2	_	_	Unfavourable (2 of 9 species)
Wetland	Reed-fen & pools	W314	1	1	Atylotus rusticus (NR*)	Unfavourable (1 of 11 species)
Tree- associated	Heartwood decay	A211	1	_	_	Unfavourable (1 of 6 species)

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded.



#### Warningcamp Hill and New Down LWS discussion

#### **Habitats**

- The survey area at Warningcamp Hill and New Down LWS is represented by a range of habitats broadly covering three broad biotopes: "open habitats", "tree-associated", and "wetland". The "coastal" biotope is also represented, though only by a single vagrant species.
- It is the open terrestrial biotope that dominates the site in terms of species associations and physical extent of each habitat. This is supported by the other biotopes, in particular the tree-associated biotope, which form the overall mosaic of the site, but not withstanding the importance of the wetland biotope that serves to increase the invertebrate biodiversity.
- The habitats that are the most prominent across all areas of the compartment are the tall sward and scrub with a total of 124 species of association recorded. The resource is dominated by beetles, true bugs such as shieldbugs and grassbugs, and also flies. These are complemented by bees, wasps, and butterflies. Six species are noted by Pantheon as being of particular value to the habitat.
- The second most speciose habitat on the site is the short sward and bare-ground habitat, with 69 species of association. This habitat is piecemeal across the site, being found in discrete patches. Despite the overall limited area of habitat, the resource is significant and includes 12 species with a nationally significant status, although four are more common than their current status suggests. The suite of scarce species includes solitary bees and surface-running beetles.
- The tree-associated element of the site is relatively poorly developed, being contained at the edges of the site. However, it has influence on the invertebrates that utilize the site. As there is a deadwood element on the site, 20 species of association are recorded, including one of a nationally significant status. However, *Hylaeus cornutus* (a yellow-faced bee) no longer deserves any status.
- Although the site does not contain any significant waterbody, there is a wetland element to the site and, as such, a representative suite of invertebrates. There are 20 species recorded that are noted as being associated with wetland features, such as running water and marshes. There is one species of association from this biotope, and this species (the horsefly *Atylotus rusticus*) is thought to be a vagrant to the site, being well known for dispersing a long distance from their breeding sites.

## Specific assemblage tables

- There is one assemblage highlighted by the analysis as being in "favourable condition": the rich flower resource (F002). This is an extensive and wide-ranging resource that encompasses all flowering plants at the site. The dominant flora are trefoils, especially common bird's-foot trefoil but also yellow composites, and other Asteraceae such as knapweed (*Centaurea* spp.) and thistles (*Cirsium* spp.).
- Despite the Warningcamp Hill and New Down LWS being a predominantly open grassland site, owing to its proximity to woodland and also the presence of



deadwood on the site, there is a strong suite of bark and sapwood decay species (A212). A total of 17 species were recorded, and although this does not reach favourable status (threshold being 19 species), it is therefore of very high quality and status for the site.

- The scrub fringe (F001) is also well represented, owing to the extensive interface between the grassland and woodland. Nine species were recorded (threshold = 11), and this is thought to be of significance to the site. It also includes the hoverfly *Cheilosia nigripes*, a Nationally Scarce species of calcareous grassland and scrub interfaces.
- Although Warningcamp Hill and New Down LWS is a calcareous grassland, the associated assemblages, including the open short sward SAT (F112) and bare sand and chalk SAT (F111), are not significantly represented in the analysis, with only six and five species of association recorded respectively. These are difficult SATs to reach favourable status and at this site, both SATs are of limited extent and not in an optimal state; consequently, their resources are also small.

#### **Species**

- The survey of Warningcamp Hill and New Down LWS recorded 265 species, with 23 species identified by Pantheon as being of value; however a number of species are more common than their status suggests, in time this number will be revised downwards as further status reviews are completed.
- The lists contain a range of species, reflective of the habitats present on the site. The dominant species on the lists are those associated with rich flower resources and complex interfaces with scrub and woodland, and also those associated with tall flowery grasslands.
- The site also includes a range of species synonymous with deadwood, in particular, species that have a requirement of deadwood to nest in (solitary bees and wasps) but also require plentiful swards flowers to forage from or hunt along.
- The species lists include a number of localized and scarce species, and most are scarce, as they have exacting requirements from a site, for example, requiring plentiful flowers near bare ground or deadwood (solitary bees and wasps), or continuous inputs of dung and associated resources of dung beetle larvae (the hornet robberfly). Most of the scarce species therefore require sites that are complex and have a range of different features on them or adjacent to them. It is this complexity that helps drive the diversity of the site and increase the opportunities to the scarce and demanding species.
- There is also a suite of butterfly species that are dependent upon open short, and sparse swards are present on the site. The dingy skipper, grizzled skipper, and small heath are all NERC Act Section 41 species and in decline, with the dingy skipper having declined by 61 percent (Butterfly Conservation, 2021a), grizzled skipper by 55 percent (Butterfly Conservation, 2021b), and small heath by 57 percent (Butterfly Conservation, 2021c) since the 1970s.
- More broadly, as the site has an extensive flowery component, there is a corresponding rich pollinator resource. This resource is reliant on the extensive and diverse flowering plant component, ranging from spring blossom to late



flowering grassland species such as knapweeds (*Centaurea* spp.) and yarrow (*Achillea millefolium*). A total of 25 rich flower resource species are noted during these surveys that are intrinsically linked to particular flowers or abundant flowering resources.

## 3.2 Sullington Hill LWS

- A total of 168 species from the target groups were recorded during the surveys.
- A total of 18 species recorded have a national status, though it is recognized by many of the national recording schemes that a number of these no longer warrant their current status and that they may need revising (those with an \*). This total does not include research-only moths.
- 3.2.3 The full list of species recorded for the site is provided in **Annex B**.
- 3.2.4 **Table 3-5** shows the summary breakdown of species recorded at Sullington Hill LWS

Table 3-5 Summary of species breakdown recorded at Sullington Hill LWS

Total no. of species recorded	Total no. of species of importance*	Species of importance (%)
168	18	10.17

<sup>\*</sup>Species do not warrant nationally significant status.

Table 3-6 sets out the species of importance recorded at Sullington Hill LWS during the invertebrate surveys.

Table 3-6 Species of importance recorded at Sullington Hill LWS during invertebrate surveys

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Adscita statices	Forrester moth	NERC Act Section 41	Associated with calcareous grasslands with common sorrel (Rumex acetosa).	_
Amara montivaga	A ground beetle	Nationally Scarce	Associated with short turf and bare ground.	_
Andrena minutuloides	A mining bee	Notable a*	Nests in bare or patchy bare ground. Feeds	-



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
			from a range of flowers such as yellow composites. Now more common than its status suggests and possibly no longer warrants a nationally significant status.	
Andrena roseae	White bryony mining bee	Red Data Book 3	Associated with open habitats with white bryony ( <i>Bryonia alba</i> ). The species is increasing in range, and its status is likely to be downgraded in the upcoming bees, wasps, and ants review.	Breeding is confirmed on site amongst bare-ground exposures.
Blaesoxipha plumicornis	A fly	provisionally Nationally Scarce: provisionally Near Threatened*	Parasitizes grasshoppers. Expanding its distribution and frequency, and therefore likely to be downgraded in future reviews.	_
Cassida prasina	A tortoise beetle	Nationally Scarce	Associated with yarrow ( <i>Achillea millefolium</i> ).	_
Cistogaster globosa	A parasitic fly	Red Data Book 1*	A parasite on bishop's-mitre shield bug. Expanded its range significantly and now no longer deserves a nationally significant status.	



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
Coenonympha pamphilus	Small heath butterfly	NERC Act Section 41	Fine-leaved grasses including <i>Agrostis</i> (bents).	Widespread and extensive across the site in open grassland areas.
Cryptocephalus bilineatus	A leaf beetle	Nationally Scarce	Associated with kidney vetch (Anthyllis vulnerarira).	-
Erynnis tages	Dingy skipper butterfly	NERC Act Section 41	Bare ground and short turf with bird's-foot trefoil (Lotus corniculatus).	Widespread across the site along the tracks.
Euheptaulacus villosus	A dung beetle	Nationally Scarce	Associated with short swards and bare ground.	-
Hesperia comma	Silver- spotted skipper	Nationally Scarce; Near Threatened	Short sward calcareous grassland with sheep's fescue (Festuca ovina), optimally over bare or patchy bare ground.	Two individuals observed, including an egg-laying female.
Hylaeus dilatatus	A yellow- faced bee	Red Data Book 3*	Nests in broken dry plant stems. Feeds from a range of flowers. Now more common than its status suggests and no longer warrants a nationally significant status.	_
Lasioglossum malachurum	A mining bee	Notable b*	Nests in bare or patchy bare ground. Feeds from a range of flowers such as	-



Scientific name	Vernacular name	National/local status	Habitat preferences and species notes	Site notes
			yellow composites. Now more common than its status suggests and possibly no longer warrants a nationally significant status.	
Lasioglossum pauxillum	A mining bee	Notable a*	Nests in bare or patchy bare ground. Feeds from a range of flowers such as yellow composites. Now more common than its status suggests and possibly no longer warrants a nationally significant status.	
Neiocarus faber	A weevil	Notable b*; Notable b	Associated with short turf and bare ground.	_
Nomada lathburiana	A cuckoo bee	Red Data Book 3*	A solitary bee parasite, now very common and no longer warrants a nationally significant status.	_
Pyrgus malvae	Grizzled skipper butterfly	NERC Act Section 41	Bare ground and short turf with prostrate growing Roseacae including wild strawberry (Fragaria vesca) and creeping cinquefoil (Potentilla reptans).	More than five individuals observed during their peak season (end of May).

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded.



The most up-to-date information and species reviews are used in the assessment, largely derived from Pantheon (Webb *et al.*, 2017).

## **Results analysis**

- Table 3-7 and Table 3-8 have been generated using Sullington Hill LWS results and the Pantheon software package.
- 3.2.7 It is noted that not all species of importance are expressed in the tables, as they do not form part of the Pantheon analysis and/or their specific requirements are not yet fully understood.

Table 3-7 Site resource-usage table (taken from Webb *et al.*, 2017)

Broad biotope	Habitat	No. of species	No. of species with conservation status (excluding research-only moths)	Species with conservation status (excluding researchonly moths)
Open habitats	Tall sward & scrub	83	4	Blaesoxipha plumicornis (pNS: pNT) Erynnis tages (S41; Vulnerable); Hylaeus dilatatus (RDB3*); Adscita statices (S41)
Open habitats	Short sward & bare ground	47	14	Euheptaulacus villosus (NS); Amara montivaga (NS); Cassida prasina (NS); Cryptocephalus bilineatus (NS); Neliocarus faber (Nb*:Nb); Andrena minutuloides (Na*); Andrena rosae (RDB2*); Nomada lathburiana (RDB3*); Hylaeus dilatatus (RDB3*); Lasioglossum pauxillum (Na*); Hesperia comma (NS:NT); Pyrgus malvae (S41); Coenonympha pamphilus (Near Threatened, S41)
Tree- associated	Shaded woodland floor	6	-	_
Wetland	Acid & sedge peats	6	_	_



Broad biotope	Habitat	No. of species	No. of species with conservation status (excluding researchonly moths)	Species with conservation status (excluding researchonly moths)
Tree- associated	Decaying wood	5	_	_
Wetland	Marshland	4	_	_
Tree- associated	Arboreal	4	_	_
Wetland	Running water	1	_	_

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded.



Table 3-8 Site SAT table (taken from Webb et al., 2017)

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
Open habitats	Rich flower resource	F002	27	6	Andrena minutuloides (na*); Andrena rosae (RDB2*); Nomada lathburiana (RDB3*); Hylaeus dilatatus (RDB3*); Lasioglossum pauxillum (Na*); Lasioglossum malachurum (Nb)	Favourable
Open habitats	Open short sward	F112	10	5	Coenonympha pamphilus (Near Threatened; S41); Cassida prasina (NS); Cryptocephalus bilineatus (NS); Neliocarus faber (Nb*; Nb); Hesperia comma (NS; NT)	Unfavourable (10 of 13 species)
Open habitats	Scrub edge	F001	7	-	_	Unfavourable (7 of 11 species)
Tree- associated	Ba:Drk & sapwood decay	A212	5	_	_	Unfavourable (5 of 19 species)



Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
Open habitats	Bare sand & chalk	F111	3	2	Euhepaulacus villosus (NS); Amara montivaga (NS)	Unfavourable (3 of 19 species)

<sup>\*</sup>Accepted as being more common than this status suggests; likely to be downgraded.



#### Habitats

- Sullington Hill LWS is represented by a range of habitats broadly covering three broad biotopes: "open habitats", "tree-associated", and "wetland". However, it is the open terrestrial biotope that dominates the site in terms of species associations and physical extent of each habitat. This is supported by the other biotopes, in particular the tree-associated biotope, which form the overall mosaic of the site, but not withstanding the importance of the wetland biotope that serves to increase the invertebrate biodiversity despite there not being any obvious waterbodies on the site.
- The habitats that are the most prominent across all areas of the compartment are the tall sward and scrub with a total of 83 species of association recorded. The resource is dominated by beetles, true bugs such as shieldbugs and grassbugs, and also flies. These are complemented by bees, wasps, and butterflies. Four species are noted by Pantheon as being of particular value to the habitat.
- The second most speciose habitat on the site is the short sward and bare ground habitat, with 47 species of association. This habitat is extensive across much of the site, owing to the very short swards, produced by grazing cattle. As there are extensive short swards, there is also a suite of high-fidelity species associated with this feature. A total of 14 species are noted from this habitat that have nationally significant status, although a number are now no longer genuinely scarce.
- The tree-associated element of the site is relatively poorly developed with a few species associated with this habitat type. This is to be expected, as there is little woodland presence on the site other than dense scrub and poorly developed scrub fringe.
- The site includes a suite of wetland species, despite there not being any obvious water features on the site. They are therefore not intrinsic to the site but do add to the overall site value, since many wetland flies move out from the breeding wetland areas in order to find suitable nectar foraging, such as what this site offers.

#### Specific assemblage tables

- There is one assemblage highlighted by the analysis as being in "favourable condition": the rich flower resource (F002). This is an extensive and wide-ranging resource that encompasses all flowering plants at the site. The dominant flora are trefoils, especially common bird's-foot trefoil but also common rock rose (Helianthemum nummularium), yellow composites, and Asteraceae such as knapweeds (Centaurea spp.). Bramble (Rubus fruticosus) also forms a strong component of the flowering resources at the site.
- Although the open short sward SAT (F112) does not reach a favourable condition, it does hold 10 species of close association (threshold = 13) and is thought to be in good condition and of high value to the site. It includes a wide range of bees and wasps, and also beetles such as the leaf beetle *Cryptocephalus bilineatus*, a localized warmth-loving species dependent upon open and patchy short swards on calcareous soils.



- The bare sand and chalk SAT (F111) is not well represented in the analysis, with only three species of association recorded. This is a particularly difficult SAT to reach favourable status, and at this site there is little open bare ground, with the exception of a track edge and small area of disturbed ground.
- There are other SATs noted in the analysis, namely the bark and sapwood decay SAT (A212) and scrub edge (F001), but as they are not significant components of the site, they are poorly expressed within the SAT tables, being represented by five and seven species respectively, with neither SAT possessing species of conservation importance.

#### **Species**

- The survey of Sullington Hill LWS recorded 168 species and 18 species identified by Pantheon as being of value; a number of species are more common now than their status suggests, so in time this number will be revised downwards as further status reviews are completed.
- 3.2.18 The total number of recorded species is low. This is thought to be due to the very short swards for much of the late spring and early summer impeding surveys, and the lack of flowers on the site resulting in little activity from invertebrates.
- Despite the short list of species, the lists do contain a range of species, reflective of the habitats present on the site. The analysis also highlights the short turf species as being of greatest value.
- The species lists also includes a proportionally strong inventory of localized and scarce species, especially butterflies and beetles.
- This inventory of scarce species includes a suite of butterfly species that are dependent upon open short and sparse swards. The dingy skipper, grizzled skipper, and silver-spotted skippers are the butterflies of greatest value to the site, complemented by the small heath. All of the preceding species are listed on the NERC Act as Section 41 species, and all but the silver-spotted skipper are in decline, with the dingy skipper having declined by 61 percent (Butterfly Conservation, 2021a), grizzled skipper by 55 percent (Butterfly Conservation, 2021b), and small heath by 57 percent (Butterfly Conservation, 2021c) since the 1970s.
- The dominant feature at the site is the short swards. This habitat includes a strong list of high-fidelity species including the ground beetle *Amara montivaga* (Nationally Scarce), a surface-running ground beetle of calcareous grasslands.
- The site also includes a population of the white bryony mining bee (*Andrena rosae*). This species was once a considerable scarcity, though through recent range expansions, it is now not thought to be of Red Data Book 2 status. It is still, however, an interesting and valuable species to the site.

#### Survey limitations

3.2.24 Surveys were undertaken over a single season only. Whilst the results of the survey are not considered to be limited by prevailing weather conditions during the site visits, having only a single year's data to analyse could influence the recording



- of species that were abundant during 2021, or under-record species that were having a particularly poor year.
- At Sullington Hill LWS intensive grazing during spring, which was followed by cold weather for much of May, the calcareous sward did not grow or flower until after mid-June. This, therefore, effected the first two visits to the site, making sampling problematic owing to the reduced invertebrate activity and usage of the site.
- Despite this slow start to the survey, it is considered that sufficient data has been attained to fairly appraise the site and its features of potential value to invertebrates.





## 4. Summary

# 4.1 Warningcamp Hill and New Down LWS Assessment Summary

- 4.1.1 Warningcamp Hill and New Down LWS had a total of 265 species recorded, including 23 species of importance. This constitutes 8.7 percent of the total species recorded, which is regarded as a moderately significant percentage.
- The overall number of species recorded from the target groups is moderately high, particularly when factoring in the comparatively small survey area. There is no single part of the site that is of greater significance than the other. Owing to the comparatively small area and complex character across the whole site, it is suggested that all areas have value, and each area appears to be intrinsically linked to the other (i.e. scrub fringe next to grassland or deadwood adjacent to rich flower resources).
- 4.1.3 Owing to the complexity of the site, it includes a suite of specialized and localized species. Although there is no single species or species group of greatest value to the site, the strong populations of scarce and declining butterflies are of particular note, as they are demanding species requiring significant patchworks of habitat to persist in any number at a location. Coupled with these, there are other specialized and demanding groups such as the bees and wasps, both the groundnesting and also aerial (deadwood)-nesting assemblages that will require optimal and complex habitat mosaics in order to survive on the site alongside a Proposed Development.

## 4.2 Sullington Hill LWS Assessment Summary

- Sullington Hill LWS had a total of 168 species recorded, including 18 species of importance. This constitutes 10.7% of the total species recorded.
- This percentage is considered to be a significant proportion of the total species recorded, reflecting the value of short sard calcareous grasslands to scarce and high-fidelity species.
- As previously stated, the overall number of species recorded is comparatively low, particularly when factoring in the type of habitat and geographical locality. However, owing to intensive grazing during spring, followed by cold weather for much of May, the sward and subsequent flowering of the plants did not recover until mid-June. This therefore effected the first two visits to the site.
- The survey though did fairly appraise the habitat present and in particular recorded a strong suite of specialized and localized species, some of which, as an assemblage, may have county significance such as the suite of short-turf-dependent butterflies and beetles. To a lesser extent, the ground-nesting bee and wasp resource is also of some value.
- The site comprises a moderately rich invertebrate fauna that includes a number of localized and specialized species.



- The valuation of the site takes into consideration the range of species recorded, including the scarce species, the overall assemblages, and the importance of the habitats to the species. It also considers the context of the site and/or its species in relation to the local area and further afield.
- 4.2.7 From considering the above summary information and data collected from the surveys, it is suggested that any effect on the site's key features and species should be considered to be of at least County (medium) importance.
- Sullington Hill LWS is considered to be of County (medium) importance and not one of a lower status, owing to the site holding significant populations of NERC Act Section 41 species, species with a nationally significant status, and also species whose distribution is restricted to this site and possibly only a few others in the county. The site also holds a suite of species that are unlikely to be replicated across the wider countryside owing to the site's juxtaposition of flowery calcareous grassland with short turfs alongside disturbed open bare ground.



# 5. Glossary of terms and abbreviations

Table 5-1Glossary of terms and abbreviations

Term (acronym)	Definition
Baseline conditions	The environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
BAT	Broad Assemblage Type
СЕН	Centre for Ecology and Hydrology
Local Wildlife Site (LWS)	Local Wildlife Sites are non-statutory designations conferred by local planning authorities and given weight through local planning policy. These sites are selected through a selection of criteria (criteria are area dependent) aimed at identifying "substantive nature conservation value".
Proposed DCO Order Limits	The proposed DCO Order Limits combines the search areas for the offshore and onshore infrastructure associated with the Proposed Development. It is defined as the area within which the Proposed Development and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4: The Proposed Development, Volume 2 of the ES (Document Reference: 6.2.4).
RED	Rampion Extension Development Ltd (the Applicant)
Study Area	Area where potential impacts from the Proposed Development could occur, as defined for each aspect.





## 6. References

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# Annex A Red Data Book Definitions

#### Red Data Book category 1 (RDB 1) - Endangered

Species that are known or believed to occur as only a single population within one 10km square of the National Grid.

#### Red Data Book category 2 (RDB 2) – Vulnerable

Species declining throughout their range or in vulnerable habitats.

#### Red Data Book category 3 (RDB 3) - Rare

Species that are estimated to exist in only 15 or fewer post-1970 10km squares. This criterion may be relaxed where populations are likely to exist in over 15 10km squares but occupy small areas of especially vulnerable habitat.

#### Nationally Notable (Scarce) category A (NS A) – Notable A

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer 10km squares of the National Grid or, for less well-recorded groups, between eight and 20 vice counties.

#### Nationally Notable (Scarce) category B (NS B) - Notable B

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 31–100 10km squares of the National Grid or, for less well-recorded groups, between eight and 20 vice counties.

#### Nationally Notable (Scarce) (N) - Notable

Species that are estimated to occur within the range of 16–100 10km squares. The subdividing of this category into Notable A and Notable B has not been attempted for many species in this part of the review.

#### **IUCN** categories

#### EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range, have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

#### CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

#### **ENDANGERED (EN)**

A taxon is Endangered when the best available evidence indicates that it meets any of the



criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

#### **VULNERABLE (VU)**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

#### **NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

#### LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.

#### DATA DEFICIENT

A taxon is Data Deficient (DD) when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. DD is therefore not a category of threat.

#### **GB Rarity Status categories and criteria**

Broadly speaking, the Nationally Rare category is equivalent to the Red Data Book, namely: Endangered (RDB1), Vulnerable (RDB2), Rare (RDB3), Insufficiently Known (RDBK), and Extinct, which will not be used in this report.

The Nationally Scarce category is directly equivalent to the combined Nationally Notable A (Na) and Nationally Notable B (Nb) categories used in the assessment of various taxonomic groups, e.g. by Hyman and Parsons (1992) in assessing the status of beetles, but never used in a published format to assess these three families.

Nationally Rare Native species recorded from 15 or fewer hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording will not find them in more than 15 hectads. This category includes species that are probably extinct.

Nationally Scarce Native species that are not regarded as Nationally Rare AND have not been recorded from more than 100 hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording will not find them in more than 100 hectads.

England NERC S.41 Biodiversity Lists – England. England NERC S.41 Species 'of principal importance for the purpose of conserving biodiversity' covered under Section 41 (England) of the NERC Act (2006) therefore need to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. 2008 Natural Environment and Rural Communities Act 2006 – Species of Principal Importance in England (Section 41) and Wales (Section 42)



# Annex B Survey Results

## Warningcamp Hill and New Down LWS Results

Only species with a national status have been annotated. All others are common or local species.

Scientific name	Taxonomic group	National status
Acanthosoma haemorrhoidale	Hemiptera	
Aelia acuminata	Hemiptera	
Aglais io	Lepidoptera	
Agriotes acuminatus	Coleoptera	
Agriotes sputator	Coleoptera	
Agrypnus murinus	Coleoptera	
Amara convexior	Coleoptera	
Amara lunicollis	Coleoptera	
Amara montivaga	Coleoptera	Nationally Scarce
Amara similata	Coleoptera	
Amphimallon solstitiale	Coleoptera	
Andrena cineraria	Hymenoptera	
Andrena dorsata	Hymenoptera	
Andrena flavipes	Hymenoptera	
Andrena fulvago	Hymenoptera	Notable a*
Andrena labialis	Hymenoptera	
Andrena minutula	Hymenoptera	
Andrena minutuloides	Hymenoptera	Notable a*



Scientific name	Taxonomic group	National status
Andrena nitida	Hymenoptera	
Andrena similis	Hymenoptera	Notable b
Andrena wilkella	Hymenoptera	
Anobium fulvicorne	Coleoptera	
Anomoia purmunda	Diptera	
Anotylus sculpturatus	Coleoptera	
Anthocharis cardamines	Lepidoptera	
Aphodius sticticus	Coleoptera	
Aplomya confinis	Diptera	
Asilus crabroniformis	Diptera	Section 41 Priority Species
Athous haemorrhoidalis	Coleoptera	
Atylotus rusticus	Diptera	Nationally Rare*
Autographa gamma	Lepidoptera	
Bembecia ichneumoniformis	Lepidoptera	
Bibio leucopterus	Diptera	
Bithia spreta	Diptera	
Bombus (Thoracobombus) pascuorum	Hymenoptera	
Bombus hortorum	Hymenoptera	
Bombus hypnorum	Hymenoptera	
Bombus lapidarius	Hymenoptera	
Bombus pratorum	Hymenoptera	
Bombus terrestris	Hymenoptera	
Bombus vestalis	Hymenoptera	



Scientific name	Taxonomic group	National status
Bombylius major	Diptera	
Bruchidius varius	Coleoptera	
Bruchus rufimanus	Coleoptera	
Byrrhus pilula	Coleoptera	
Calliphora vicina	Diptera	
Cantharis nigricans	Coleoptera	
Cassida rubiginosa	Coleoptera	
Ceratina cyanea	Hymenoptera	Red Data Book 3*
Cetonia aurata	Coleoptera	
Chaetocnema hortensis	Coleoptera	
Chalcosyrphus nemorum	Diptera	
Cheilosia nigripes	Diptera	Nationally Scarce
Chelostoma campanularum	Hymenoptera	
Chloromyia formosa	Diptera	
Chorthippus albomarginatus	Orthoptera	
Chorthippus brunneus	Orthoptera	
Chorthippus parallelus	Orthoptera	
Chrysotoxum bicinctum	Diptera	
Chrysotoxum festivum	Diptera	
Cistogaster globosa	Diptera	Red Data Book 1*
Coccinella septempunctata	Coleoptera	
Coenonympha pamphilus	Lepidoptera	Near Threatened; Section 41 Priority Species



Scientific name	Taxonomic group	National status
Conocephalus fuscus	Orthoptera	
Coremacera marginata	Diptera	
Coreus marginatus	Hemiptera	
Curculio glandium	Coleoptera	
Dasytes aeratus	Coleoptera	
Deraeocoris (Deraeocoris) ruber	Hemiptera	
Dioctria rufipes	Diptera	
Dolichopus griseipennis	Diptera	
Dolycoris baccarum	Hemiptera	
Dorycera graminum	Diptera	Provisionally Nationally Scarce; provisionally Near Threatened; Section 41 Priority Species*
Drusilla canaliculata	Coleoptera	
Episyrphus balteatus	Diptera	
Eriothrix rufomaculata	Diptera	
Eristalis abusivus	Diptera	
Eristalis arbustorum	Diptera	
Eristalis intricarius	Diptera	
Eristalis nemorum	Diptera	
Eristalis pertinax	Diptera	
Eristalis tenax	Diptera	
Erynnis tages	Lepidoptera	Section 41 Priority Species; Vulnerable
Eumerus strigatus	Diptera	
Eupeodes corollae	Diptera	
Eurydema (Eurydema) oleracea	Hemiptera	



Scientific name	Taxonomic group	National status
Gonepteryx rhamni	Lepidoptera	
Grammoptera ruficornis	Coleoptera	
Haematopota pluvialis	Diptera	
Halictus tumulorum	Hymenoptera	
Halyzia sedecimguttata	Coleoptera	
Harmonia axyridis	Coleoptera	
Harpalus rubripes	Coleoptera	
Harpalus rufipes	Coleoptera	
Helophilus pendulus	Diptera	
Helophilus trivittatus	Diptera	
Herina lugubris	Diptera	
Himacerus (Aptus) mirmicoides	Hemiptera	
Hoplitis claviventris	Hymenoptera	
Hylaeus communis	Hymenoptera	
Hylaeus confusus	Hymenoptera	
Hylaeus cornutus	Hymenoptera	Notable a*
Lasioglossum albipes	Hymenoptera	
Lasioglossum fulvicorne	Hymenoptera	
Lasioglossum leucopus	Hymenoptera	
Lasioglossum malachurum	Hymenoptera	Notable b*
Lasioglossum morio	Hymenoptera	
Lasioglossum parvulum	Hymenoptera	



Scientific name Taxonomic	
	group National status
Lasioglossum Hymenopte villosulum	ra
Lasioglossum Hymenopte zonulum	ra
Lasius flavus Hymenopte	ra
Legnotus limbosus Hemiptera	
<b>Leptarthrus</b> Diptera <b>brevirostris</b>	
Leptogaster cylindrica Diptera	
Leptophyes Orthoptera punctatissima	
Leptopterna dolabrata Hemiptera	
Limnia unguicornis Diptera	
Longitarsus Coleoptera flavicornis	
Longitarsus succineus Coleoptera	
Lucilia caesar Diptera	
Machimus atricapillus Diptera	
Machimus atricapillus Diptera	
Machimus cingulatus Diptera	
Malachius Coleoptera bipustulatus	
Maniola jurtina Lepidoptera	a a constant of the constant o
Meconema Orthoptera thalassinum	
Megachile versicolor Hymenopte	ra
Megaloceroea Hemiptera recticornis	
Megalonotus chiragra Hemiptera	



Scientific name	Taxonomic group	National status
Megalonotus sabulicola	Hemiptera	Notable b
Melanargia galathea	Lepidoptera	
Melanostoma mellinum	Diptera	
Melanostoma scalare	Diptera	
Meligethes aeneus	Coleoptera	
Melinda gentilis	Diptera	
Meliscaeva auricollis	Diptera	
Melitta leporina	Hymenoptera	
Merodon equestris	Diptera	
Mesembrina meridiana	Diptera	
Metopia argyrocephala	Diptera	
Minettia longipennis	Diptera	
Miridius quadrivirgatus	Hemiptera	
Mordellistena parvula	Coleoptera	Nationally Scarce
Musca autumnalis	Diptera	
Myathropa florea	Diptera	
Myopa pellucida	Diptera	Red Data Book 3
Myrmus miriformis	Hemiptera	
Nedyus quadrimaculatus	Coleoptera	
Nemopoda nitidula	Diptera	
Nemotelus pantherinus	Diptera	
Neomyia viridescens	Diptera	



Scientific name	Taxonomic group	National status
Nephrotoma flavescens	Diptera	
Nomada fabriciana	Hymenoptera	
Nomada flavoguttata	Hymenoptera	
Nomada fucata	Hymenoptera	Notable a*
Nomada goodeniana	Hymenoptera	
Nomada lathburiana	Hymenoptera	Red Data Book 3*
Nomada marshamella	Hymenoptera	
Nomada panzeri sensu lato	Hymenoptera	
Nomada sheppardana	Hymenoptera	
Nomada striata	Hymenoptera	
Nowickia ferox	Diptera	
Oedemera lurida	Coleoptera	
Oedemera nobilis	Coleoptera	
Olibrus liquidus	Coleoptera	
Onthophagus coenobita	Coleoptera	
Onthophagus joannae	Coleoptera	
Opomyza florum	Diptera	
Othius laeviusculus	Coleoptera	
Otiorhynchus ligneus	Coleoptera	
Oulema melanopus s.l.	Coleoptera	
Pachygaster atra	Diptera	
Pachygaster leachii	Diptera	
Palomena prasina	Hemiptera	
Panorpa communis	Mecoptera	



Scientific name	Taxonomic group	National status
Pararge aegeria	Lepidoptera	
Passaloecus corniger	Hymenoptera	
Pemphredon lethifer	Hymenoptera	
Pentatoma rufipes	Hemiptera	
Peritrechus lundii	Hemiptera	
Phania funesta	Diptera	
Phasia hemiptera	Diptera	
Phasia obesa	Diptera	
Phasia pusilla	Diptera	
Pherbellia cinerella	Diptera	
Philophylla caesio	Diptera	
Phyllobius pomaceus	Coleoptera	
Phyllobius roboretanus	Coleoptera	
Phyllopertha horticola	Coleoptera	
Physocephala rufipes	Diptera	
Pieris brassicae	Lepidoptera	
Pieris rapae	Lepidoptera	
Pipizella viduata	Diptera	
Plagiognathus (Plagiognathus) arbustorum	Hemiptera	
Platycheirus albimanus	Diptera	
Platydracus stercorarius	Coleoptera	
Platystoma seminationis	Diptera	



Scientific name	Taxonomic group	National status
Podops inuncta	Hemiptera	
Poecilobothrus nobilitatus	Diptera	
Pollenia amentaria	Diptera	
Pollenia rudis	Diptera	
Polygonia c-album	Lepidoptera	
Polyommatus icarus	Lepidoptera	
Propylea quattuordecimpunctat a	Coleoptera	
Protapion apricans	Coleoptera	
Pseudomalus auratus	Hymenoptera	
Pseudospinolia neglecta	Hymenoptera	
Pterostichus madidus	Coleoptera	
Pyrgus malvae	Lepidoptera	Section 41 Priority Species; Vulnerable
Pyrochroa serraticornis	Coleoptera	
Pyronia tithonus	Lepidoptera	
Quedius semiobscurus	Coleoptera	
Rhagonycha fulva	Coleoptera	
Rhingia campestris	Diptera	
Rhyzobius litura	Coleoptera	
Roeseliana roeselii	Orthoptera	
Rutpela maculata	Coleoptera	
Sarcophaga anaces	Diptera	
Sarcophaga filia	Diptera	



Scientific name	Taxonomic group	National status
Sarcophaga pumila	Diptera	
Sarcophaga variegata	Diptera	
Scaeva pyrastri	Diptera	
Sepsis fulgens	Diptera	
Sicus ferrugineus	Diptera	
Siphona geniculata	Diptera	
Sitona lineatus	Coleoptera	
Sphaeridium scarabaeoides	Coleoptera	
Sphaerophoria scripta	Diptera	
Sphecodes ephippius	Hymenoptera	
Sphecodes geoffrellus	Hymenoptera	
Sphecodes spinulosus	Hymenoptera	Red Data Book 2*
Sphenella marginata	Diptera	
Stenocorus meridianus	Coleoptera	
Stenus ossium	Coleoptera	
Stenus picipes	Coleoptera	
Stictopleurus punctatonervosus	Hemiptera	
Stratiomys singularior	Diptera	
Syntomus obscuroguttatus	Coleoptera	
Syritta pipiens	Diptera	
Tabanus bromius	Diptera	
Tachina fera	Diptera	
Tachyporus hypnorum	Coleoptera	



Scientific name	Taxonomic group	National status
Tephritis formosa	Diptera	
Tephritis hyoscyami	Diptera	
Tephritis neesii	Diptera	
Terellia serratulae	Diptera	
Tetrops praeustus	Coleoptera	
Thereva plebeja	Diptera	
Thymelicus sylvestris	Lepidoptera	
Tipula vernalis	Diptera	
Trachyphloeus alternans	Coleoptera	Notable b
Trichrysis cyanea	Hymenoptera	
Trypoxylon attenuatum	Hymenoptera	
Tyria jacobaeae	Lepidoptera	
Urophora stylata	Diptera	
Vanessa atalanta	Lepidoptera	
Vanessa cardui	Lepidoptera	
Vespa crabro	Hymenoptera	
Volucella inflata	Diptera	
Volucella pellucens	Diptera	
Volucella zonaria	Diptera	
Xanthogramma citrofasciatum	Diptera	
Xantholinus Iongiventris	Coleoptera	
Xylota segnis	Diptera	
Xyphosia miliaria	Diptera	



\*Widely accepted as being much more common than this status suggests; likely to be downgraded.

### **Sullington Hill LWS result**

Only species with a national status have been annotated. All others are common or local species.

Scientific name	Taxonomic group	National status		
Adscita statices	Lepidoptera	Section 41 Priority Species		
Aglais io	Lepidoptera			
Aglais urticae	Lepidoptera			
Agrypnus murinus	Coleoptera			
Aleochara bipustulata	Coleoptera			
Aleochara lanuginosa	Coleoptera			
Amara aenea	Coleoptera			
Amara montivaga	Coleoptera Nationally Scarce			
Amara plebeja	Coleoptera			
Anaceratagallia ribauti	Hemiptera			
Andrena dorsata	Hymenoptera			
Andrena flavipes	Hymenoptera			
Andrena haemorrhoa	Hymenoptera			
Andrena minutuloides	Hymenoptera	Notable a*		
Andrena nigroaenea	Hymenoptera			
Andrena rosae	Hymenoptera	Red Data Book 2		
Andrena wilkella	Hymenoptera			
Anomoia purmunda	Diptera			
Aphodius ater	Coleoptera			
Aphodius fossor	Coleoptera			
Aphodius pedellus	Coleoptera			



Scientific name	Taxonomic group	National status
Aphodius pusillus	Coleoptera	
Athous haemorrhoidalis	Coleoptera	
Autographa gamma	Lepidoptera	
Barypeithes pellucidus	Coleoptera	
Bibio marci	Diptera	
Bithia spreta	Diptera	
Blaesoxipha plumicornis	Diptera	Provisionally Nationally Scarce; provisionally Near Threatened*
Bombus lapidarius	Hymenoptera	
Bombus pascuorum	Hymenoptera	
Calathus fuscipes	Coleoptera	
Camarota curvipennis	Diptera	
Cantharis decipiens	Coleoptera	
Carabus violaceus	Coleoptera	
Cassida prasina	Coleoptera	Nationally Scarce
Catharosia pygmaea	Diptera	
Chaetocnema hortensis	Coleoptera	
Chloromyia formosa	Diptera	
Chorthippus brunneus	Orthoptera	
Chorthippus parallelus	Orthoptera	
Coccinella septempunctata	Coleoptera	
Coenonympha pamphilus	Lepidoptera	Near Threatened; Section 41 Priority Species
Cryptocephalus bilineatus	Coleoptera	Nationally Scarce



Scientific name	Taxonomic group	National status	
Dioctria baumhaueri	Diptera		
Dolichopus griseipennis	Diptera		
Dolichopus ungulatus	Diptera		
Dolycoris baccarum	Hemiptera		
Drusilla canaliculata	Coleoptera		
Ectemnius continuus	Hymenoptera		
Ectemnius lituratus	Hymenoptera		
Empis tessellata	Diptera		
Episyrphus balteatus	Diptera		
Epuraea aestiva	Coleoptera		
Eriothrix rufomaculata	Diptera		
Eristalis arbustorum	Diptera		
Eristalis pertinax	Diptera		
Erynnis tages	Lepidoptera	Section 41 Priority Species; Vulnerable	
Euheptaulacus villosus	Coleoptera	Nationally Scarce	
Eupeodes latifasciatus	Diptera		
Galeruca tanaceti	Coleoptera		
Geomyza tripunctata	Diptera		
Glomeris marginata	Glomerida		
Gonepteryx rhamni	Lepidoptera		
Gonocerus acuteangulatus	Hemiptera		
Grammoptera ruficornis	Coleoptera		
Halictus tumulorum	Hymenoptera		



Scientific name	Taxonomic group	National status
Helophilus pendulus	Diptera	
Helophilus trivittatus	Diptera	
Herina lugubris	Diptera	
Herina nigrina	Diptera	
Hesperia comma	Lepidoptera	Legal Protection; Nationally Scarce; Near Threatened
Hoplitis claviventris	Hymenoptera	
Hylaeus dilatatus	Hymenoptera	Red Data Book 3*
Hylaeus hyalinatus	Hymenoptera	
Hypera plantaginis	Coleoptera	
Kalama tricornis	Hemiptera	
Lasiocampa quercus	Lepidoptera	
Lasioglossum albipes	Hymenoptera	
Lasioglossum calceatum	Hymenoptera	
Lasioglossum leucopus	Hymenoptera	
Lasioglossum malachurum	Hymenoptera	Notable b*
Lasioglossum morio	Hymenoptera	
Lasioglossum pauxillum	Hymenoptera	Notable a*
Lasioglossum villosulum	Hymenoptera	
Lasius flavus	Hymenoptera	
Leptarthrus brevirostris	Diptera	
Linnaemya picta	Diptera	
Lycaena phlaeas	Lepidoptera	



Scientific name	Taxonomic group	National status		
Lydina aenea	Diptera			
Machimus atricapillus	Diptera			
Machimus cingulatus	Diptera			
Maniola jurtina	Lepidoptera			
Mecinus pyraster	Coleoptera			
Melanargia galathea	Lepidoptera			
Melanostoma mellinum	Diptera			
Melanostoma scalare	Diptera			
Meligethes aeneus	Coleoptera			
Melitta haemorrhoidalis	Hymenoptera			
Melitta leporina	Hymenoptera			
Microchrysa cyaneiventris	Diptera			
Minettia longipennis	Diptera			
Musca autumnalis	Diptera			
Neliocarus faber	Coleoptera	Notable b*; Notable b		
Neomyia viridescens	Diptera			
Nephrotoma appendiculata	Diptera			
Nephrotoma flavescens	Diptera			
Nomada flava	Hymenoptera			
Nomada flavoguttata	Hymenoptera			
Nomada goodeniana	Hymenoptera			
Nomada lathburiana	Hymenoptera Red Data Book 3*			
Nomada marshamella	Hymenoptera			



Scientific name	Taxonomic group	National status
Nowickia ferox	Diptera	
Nyctia halterata	Diptera	
Ocypus aeneocephalus	Coleoptera	
Onthophagus joannae	Coleoptera	
Onthophagus similis	Coleoptera	
Opomyza germinationis	Diptera	
Oulema melanopus	Coleoptera	
Pachygaster atra	Diptera	
Pemphredon inornata	Hymenoptera	
Phania funesta	Diptera	
Phasia obesa	Diptera	
Pherbellia cinerella	Diptera	
Philonthus carbonarius	Coleoptera	
Philophylla caesio	Diptera	
Pholidoptera griseoaptera	Orthoptera	
Phyllobius pyri	Coleoptera	
Phyllobius virideaeris	Coleoptera	
Phytocoris (Ktenocoris) varipes	Hemiptera	
Pieris napi	Lepidoptera	
Podops inuncta	Hemiptera	
Pollenia rudis	Diptera	
Polyommatus icarus	Lepidoptera	



Scientific name	Taxonomic group	National status
Propylea quattuordecimpunctat a	Coleoptera	
Pterostichus madidus	Coleoptera	
Pyrgus malvae	Lepidoptera	Section 41 Priority Species; Vulnerable
Pyronia tithonus	Lepidoptera	
Rhagonycha fulva	Coleoptera	
Rhinoncus leucostigma	Coleoptera	
Rhinophora lepida	Diptera	
Roeseliana roeselii	Orthoptera	
Sarcophaga anaces	Diptera	
Sarcophaga carnaria	Diptera	
Sarcophaga depressifrons	Diptera	
Sarcophaga incisilobata	Diptera	
Sarcophaga pumila	Diptera	
Scaeva selenitica	Diptera	
Sepsis cynipsea	Diptera	
Siphona geniculata	Diptera	
Sitona lineatus	Coleoptera	
Speyeria aglaja	Lepidoptera	
Sphaeroderma rubidum	Coleoptera	
Sphaerophoria scripta	Diptera	
Sphecodes geoffrellus	Hymenoptera	
Stenobothrus lineatus	Orthoptera	



Scientific name	Taxonomic group	National status			
Syntomus foveatus	Coleoptera				
Syritta pipiens	Diptera				
Tabanus bromius	Diptera				
Tachyporus hypnorum	Coleoptera				
Tephritis hyoscyami	Diptera				
Thecophora atra	Diptera				
Thereva plebeja	Diptera				
Trypoxylon attenuatum	Hymenoptera				
Urophora quadrifasciata	Diptera				
Vanessa atalanta	Lepidoptera				
Vanessa cardui	Lepidoptera				
Vespula germanica	Hymenoptera				
Xantholinus linearis	Coleoptera				

<sup>\*</sup>Widely accepted as being much more common than this status suggests; likely to be downgraded.



# Annex C Survey conditions

Table C-1 – Sullington Hill LWS dates of survey visits and weather conditions

Visit no.	Date	Temperature (°C)		Rain	Cloud	Ground moisture	Wind strength
		Min	Max		(Oktas)		
1	26/05/2021	20.0	20.0	None	5/8	Dry	Moderate
2	24/06/2021	20.0	22.0	None	1/8	Dry	Calm
3	14/07/2021	25.0	26.0	None	0/8	Dry	Calm
4	11/08/2021	22.0	22.0	None	0/8	Dry	Calm
5	16/09/2021	18.0	21.0	None	2/8	Dry	Calm

Rain: None, light, occasional shower, rain. Wind strength: Calm - <3mph, Light- 4-12mph, Moderate -13-24mph, Strong - 25-31mph, Very strong - 32+ mph.

Table C-2 – Warningcamp Hill and New Down LWS dates of survey visits and weather conditions

Visit no.	Date	Temperature (°C)		cover		Ground moisture	Wind strength
		Min	Max	(Oktas)			
1	26/05/2021	18.0	20.0	None	5/8	Dry	Moderate
2	24/06/2021	19.0	20.0	None	1/8	Dry	Calm
3	14/07/2021	22.0	24.0	None	0/8	Dry	Calm
4	11/08/2021	17.0	21.0	None	0/8	Dry	Calm
5	16/09/2021	18.0	21.0	None	2/8	Dry	Calm

Rain: None, light, occasional shower, rain. Wind strength: Calm - <3mph, Light- 4-12mph, Moderate -13-24mph, Strong - 25-31mph, Very strong - 32+ mph



