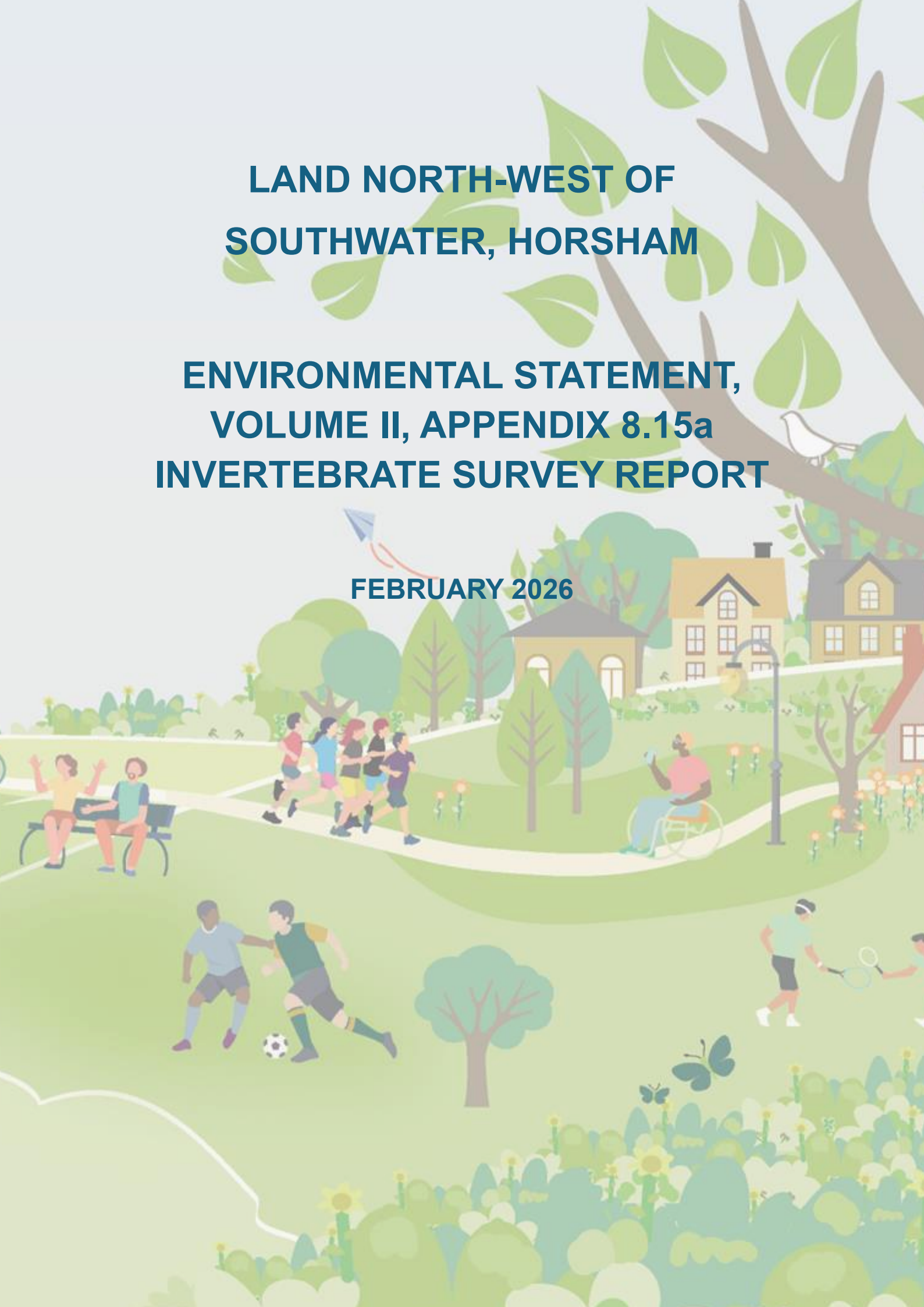
LAND NORTH-WEST OF SOUTHWATER, HORSHAM

ENVIRONMENTAL STATEMENT, VOLUME II, APPENDIX 8.15a INVERTEBRATE SURVEY REPORT

FEBRUARY 2026



ECOSA
Ecological Survey & Assessment
A Trinity Consultants Company

LAND NORTH WEST OF SOUTHWATER, NEAR HORSHAM, WEST SUSSEX

INVERTEBRATE SURVEY

Final Document

July 2022

Preliminary Ecological Appraisals • Protected Species Surveys and Licensing • NVC • EcIA • HRA • Management Plans
Habitats • Badger • Bats • Hazel Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species

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ECOSA Quality Assurance Record

This report has been produced in accordance with the CIEEM Guidelines for Ecological Report Writing 2017 (CIEEM, 2017). The survey work has been undertaken in line with references within CIEEM's Source of Survey Guidance (CIEEM, 2017).

Description:	Invertebrate Survey
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Checked and Reviewed by:	Simon Colenutt

LAND NORTH WEST OF SOUTHWATER, NEAR HORSHAM, WEST SUSSEX

INVERTEBRATE SURVEY

Table of Contents

1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been contracted by Hankinson Duckett Associates to carry out terrestrial invertebrate surveys at land north west of Southwater, near Horsham during the summer of 2021 and spring of 2022.

1.2 The Site

The site is located to the west of Southwater, Horsham, West Sussex, centred on National Grid Reference (NGR) TQ 15398 27298. To the north lies the A24, to the east lies the town of Southwater, to the south is Bonfire Hill, and to the west the site is bounded by Two Mile Ash Road.

The site largely consists of improved pasture and arable land bounded by a network of mature hedgerows and scattered trees. Towards the centre of the site is located Courtland Wood, immediately north east of this is located Smith's Copse on the western site boundary, and to the south extends Two Mile Ash Gill, these areas of mixed woodland are designated as Ancient and Semi-Natural Woodland.

1.3 Aims and Scope of Report

The information within this report is based on a field survey carried out in July and September 2021 and May 2022. The objectives of the appraisal are:

- To provide baseline information on the invertebrate communities present at the site and to identify any notable or rare species present;
- To identify the likely ecological constraints associated with the proposals;
- To identify any mitigation measures likely to be required, following the 'Mitigation Hierarchy'[1];
- To identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and
- To identify the opportunities offered by the proposals to deliver ecological enhancement

1.4 Site Proposals

Development proposals for the site include:

[1] In accordance with CIEEM Ecological Impact Assessment guidance (CIEEM, 2018) a sequential process is adopted to address impacts on features of ecological interest, with 'Avoidance' prioritised at the top of the hierarchy and Compensation/Enhancement' at the bottom. This is often referred to as the 'mitigation hierarchy'.

"*Outline application with all matters reserved for a mixed use strategic development to include demolition of existing buildings and erection of up to 1,500 dwellings, up to 15,750 sqm (GIA) of flexible employment space (Use Classes E/B2/B8), up to 2,900 sqm (GIA) flexible community facilities (Use Classes E/F1/F2); education facilities; sports facilities; 5 gypsy and traveller pitches; public open space; landscaping and related infrastructure*."

2.0 METHODS

2.1 Introduction

This section details the methods, and any associated limitations, used during the invertebrate survey work carried out by ECOSA at land north west of Southwater.

2.2 Invertebrate Survey

2.2.1 Survey Methods

Phase 2 invertebrate surveys undertaken at land near Southwater consisted of two day-time surveys in 2021 with a further day-time survey in the spring of 2022.

The day-time surveys were undertaken by Adam Wright and Simon Colenutt of ECOSA on 14th July and 3rd September 2021, and 27th May 2022. Survey methods involved visual searching of nectaring sites and basking areas, the use of a sweep net and pooter to capture individual species, sweeping vegetation, beating foliage and grubbing. This range of techniques allowed the sampling of a range of species with different habits from the groups selected for survey.

Specimens of some of the more critical/difficult groups were taken in a pooter and identified under the microscope with the aid of specialist keys.

2.2.2 Survey Details

The weather conditions during the Phase 2 invertebrate surveys are detailed in **Table 1** below.

Table 1: Weather Conditions for the Phase 2 Invertebrate Surveys

Survey Date	Survey Type	Weather Conditions
14th July 2021	Day-time	20°C, sunny with a moderate breeze
3rd September 2021	Day-time	19°C, sunny spells with a light breeze
27th May 2022	Day-time	19°C, sunny spells with a moderate breeze

2.2.3 Limitations

There were no significant limitations to the surveys carried out, however, it must be considered that three visits totalling around 18 hours on site over the entire spring and summer period represents a snapshot of invertebrate activity and therefore the list of species recorded is only a small proportion of the total invertebrate fauna at the site.

While an effort has been made to record the specific locations of the rarer species noted the identification of some species was only confirmed following their examination under a microscope. These specimens were often captured during generalised sweep netting and then collected using a pooter. These pooters consisted of an aggregated collection of samples from the site and therefore the specific locations of certain species cannot be verified. Hence, **Map 1** does not provide locations for all of the scarce species recorded on site.

Due to the methods used during the survey it was difficult to develop standardisation to allow any quantitative assessment of the abundance of invertebrates at the site. This is because the sampling carried out was based on random sweeping and sampling over non-standardised times. Similarly, many of the scarcer species recorded are either difficult to identify without taking a specimen or are cryptic and only recorded when sweeping and hence cannot be reliably counted. However, for the scarcer species an indication of the numbers recorded during the surveys have been provided within the individual species accounts.

3.0 RESULTS

3.1 Introduction

This section details the results of the invertebrate surveys undertaken on the land north west of Southwater.

3.2 Habitat Assessment

The site comprises a series of fields of grassland and arable farmland, separated by hedgerows. Within the hedgerows hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* were dominant, with bramble *Rubus fruticosus* aggregate also present. An area of deciduous woodland was present in the south of the site, however, this was densely shaded with a poor ground flora.

The main habitat features considered likely to support scarce invertebrates present include:

- ***Hedgerows***
  These formed some of the most productive areas within the site, having an abundance of blackthorn, but also hawthorn and bramble.

- ***Field margins***
  These contained a variety of plants, with some areas being more rich floristically than others. The better areas contained hogweed *Heracleum sphondyllium*, clover *Trifolium* species, spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, scented mayweed *Matricaria recutita*, meadow vetchling *Lathyrus pratensis*, tufted vetch *Vicia cracca*, perennial sow-thistle *Sonchus arvensis* and small amounts of black knapweed *Centaurea nigra*. The richest areas were situated in the western central area of the site.

- ***Woodland***
  The main area of woodland is Courtland Wood and to the south Two Mile Ash Gill, these areas of mixed woodland are designated as Ancient and Semi-Natural Woodland. This woodland appears to have been unmanaged in recent times, resulting in heavily shaded woodland with a very limited ground flora. There are no major rides or glades to provide basking or nectaring areas within the wood.

- **Ditches**

There were a number of ditches, mainly towards the south of the site which supported an abundance of hemlock water-dropwort *Oenanthe crocata* which was flowing during the May 2022 survey.

3.3 Survey Results

During the Phase 2 invertebrate survey work a number of scarce species were recorded, these are considered in more detail, below. Where possible, the location at which these species were found are shown on **Map 1**. A list of all invertebrate species recorded during the 2021 and 2022 surveys is provided in **Appendix 1**. Details of the status category definitions (including abbreviations) and criteria is provided in **Appendix 2**.

3.3.1 Lepidoptera

Small heath *Coenonympha pamphilus* **UK BAP (Research only)**

Small numbers of adults were recorded flying on 3rd September 2021. Larvae of this butterfly feed on fine grasses such as annual meadow grass *Poa annua*. The small heath is primarily associated with open grassland sites. The small heath is widespread in Britain, but due to a considerable recent national decline has been added to the national BAP listings for monitoring purposes. The small heath remains a relatively common butterfly in west Sussex.

Brown hairstreak *Thecla betulae* Vulnerable (RDB 2) **UK BAP priority species**

A single female was recorded basking on a bramble leaf in the north of the site on 3rd September 2021. Larvae of this elusive butterfly feed on blackthorn, which is the dominant species in many of the hedgerows on the site. The butterfly is seldom encountered as an adult, and the easiest way to confirm its presence is to look for the distinctive eggs on blackthorn in the winter. The brown hairstreak is most frequently recorded from the home counties, west Sussex, south-west England and south-west Wales. It has declined greatly in abundance and range since the mid 20th century, perhaps mainly due to the extensive loss of hedgerows, and the practice of flailing hedgerows to trim them. The latter can destroy or displace the eggs. There are a small number of other records for the brown hairstreak around the Horsham area.

3.3.2 Diptera

Tachinid fly *Gymnosoma rotundatum* **Rare RDB 3**

A single specimen of *Gymnosoma rotundatum* was recorded on 27th May 2022, from a hogweed influorescence in the southern sector of the site. Belshaw (1993) cites only 14 British records, with most of these coming from Sussex and Surrey. Although

Gymnosoma rotundatum is confined to south-east England, the frequency of records has increased significantly in the last twenty years and it appears that this species has become more common than previously. It is considered likely that the current RDB3 status may require review. In Britain, larvae of *Gymnomosa rotundatum* are parasitic on the shieldbug *Palomena prasina*. This bug is a common and widespread species in southern and central England, which feeds on a wide variety of plants. Most records for *Gymnosoma rotundatum* are from dry sandy areas on downland or heathland. In recent years, *Gymnosoma rotundatum* has been recorded with some frequency in West Sussex, Hampshire and Surrey.

3.3.3 Hymenoptera

Solitary wasp *Mimumesa unicolor* **Nationally Scarce Na**

A single specimen of *Mimumesa unicolor* was taken during general sweeping on 14th July 2021. This species has a restricted distribution in the UK, with strongholds on the Isle of Wight and in Hampshire, West Sussex, Kent and South Essex. *Mimumesa unicolor* has been recorded from a number of differing habitats. On the Isle of Wight it is normally associated with *Phragmites* on slumping cliffs. In Kent it is also associated with *Phragmites* beds. However, there are also records of *Mimumesa unicolor* being found flying over sandy ground in open woodland. The nesting habits of this species remain unknown, although it may nest in sandy soils.

Mining bee *Andrena labiata* **Nationally Scarce Na**

Specimens were recorded flying around small patches of germander speedwell in the northern sector of the site on 27th May 2022. *Andrena labiata* has a close and possibly obligate association with speedwells, particularly germander speedwell which is its main pollen source. Sandy soil is required for nesting, and many of the known sites for this species are heathland. Previously widely distributed across England and Wales, this species was considered to be in significant recent decline, with about 25 post 1970 sites remaining (Falk, 1991). However*, Andrena labiata* has increased in frequency in south-east England over the last 20 years and appears to be making a recovery. Minor disturbance such as light grazing and cutting to produce exposed areas is considered beneficial to the continued survival of this species.

Mining bee *Andrena labiata* **Nationally Scarce Na**

Small numbers of the mining bee *Lasioglossum malachurum* were recorded during general sweeping on 3rd September 2021. *Lasioglossum malachurum* is polylectic, collecting pollen from a wide variety of plants. It has been recorded from a variety of habitats where there is warm disturbed ground. Typical breeding sites are in bare clayey soil on coastal cliffs and landslips, but it also occurs inland in quarries, grassland

and heaths. *Lasioglossum malachurum* is primarily restricted to southern England. Previously a very local and scarce species, *Lasioglossum malachurum* has become far more frequent recently and is currently expanding its British range (Edwards & Broad, 2005). The status of *Lasioglossum malachurum* requires review and downgrading, since it is now common over much of southern England, including west Sussex.

Mining bee *Lasioglossum pauxillum* **Nationally Scarce Na**

This species was found during general sweeping on 3rd September 2021. Further specimens were recorded in the southern sector of the site on 27th May 2022. *Lasioglossum pauxillum* nests in sparsely vegetated light soils in warm, sunny conditions. It may be found in a variety of habitats including calcareous grassland, soft rock coastal cliffs and heathland. Previously, *Lasioglossum pauxillum* was a scarce species restricted to south-east England, but in the last decade it has increased in frequency and expanded its range northwards and westwards (Edwards and Broad, 2005). Its current Nationally Scarce Na status now requires downgrading. It is a frequent species in West Sussex.

Nomad bee *Nomada fucata* **Nationally Scarce Na.**

This bee was noted on 14th July 2021 visiting a hogweed inflourescence. *Nomada fucata* is a cleptoparasite of the mining bee *Andrena flavipes*, although this bee was not found during the current survey. The host is associated with bare or sparsely vegetated soils in a variety of habitats, where it collects pollen from a wide range of plant species. *Andrena flavipes* is widespread in southern England and south Wales, and appears to have expanded its range in recent decades (Edwards, R. & Telfer, 2002). *Nomada fucata* is now similarly widespread in southern England and south Wales. It is currently a frequently encountered species, although in the 1970s, it endured a period of great scarcity and has in the past been subject to considerable fluctuations in population size and distribution. If *Nomada fucata* continues to prosper at present levels nationally, its status will require review (Edwards, R. & Telfer, 2002). There are numerous recent records of *Nomada fucata* from west Sussex.

3.3.4 Coleoptera

Soldier beetle *Cantharis fusca* **Nationally Scarce (N).**

A specimen of this beetle was found in rank vegetation in the northern sector of the site on 27th May 2022. *Cantharis fusca* is normally associated with tall grassy vegetation on permanently damp soils. Adults and larvae are believed to be predatory on small insects. This species has undergone considerable recent decline in England and has been lost from many inland localities and is now much less widespread than it was historically. It is now largely confined to a few southern coastal counties and some sites

in Yorkshire. Strongholds for *Cantharis fusca* are north Somerset, south Hampshire, east Sussex, the Isle of Wight and Kent.

3.3.5 Arachnida

Wasp Spider *Argiope bruennichi* **Nationally Scarce Nb.**

A large female wasp spider *Argiope bruennichi* was recorded in the north of the site on 3rd September 2021. This species is a comparatively recent colonist from continental Europe, and was first recorded in England in the 1920's. Nationally, *Argiope bruennich*i is now encountered in rank grassland in southern and central England, and is widely recorded in west Sussex. It is increasing in frequency and its current Nationally Scarce status may require review.

3.3.6 Summary

A relatively small number of scarce and threatened species were recorded during the surveys, with the most notable find being an adult female brown hairstreak butterfly. Many of the other scarce species recorded have increased since their status was last assessed and most require a downgrade in their status assessments.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 Introduction

This section presents the conclusions of the invertebrate surveys carried out in 2021 and 2022. It provides an assessment of the value of the site for invertebrates and a summary of the key characteristics of the site for invertebrates. A full list of the species recorded at the site is provided in **Appendix 1**. Images of species recorded are provided in **Appendix 2**.

4.2 Site Evaluation

The invertebrate surveys carried out during 2021 yielded a total of 102 species including one Red Data Book and five Nationally Scarce species of insect. An additional 31 species were recorded in 2022, including one Red Data Book species and one further Nationally Scarce species. This is a rather small total indicating that the site is only of local entomological importance.

The finding of the Vulnerable (RDB 2) and BAP priority species brown hairstreak was a significant find. Larvae of this species feed on blackthorn, which is abundant in many of the hedgerows within the site. There are several other records for the brown hairstreak in West Sussex, which is considered to be one of the strongholds for this species nationally.

The Rare (RDB3) tachinid fly *Gymnosoma rotundatum* appears to be increasing in frequency, although it still occupies a limited range. Whilst it is currently unclear if its status should be downgraded, if this trend continues it will require review of its status. west Sussex is one of the strongholds for *Gymnosoma rotundatum.*

Amongst the Nationally Scarce species recorded, the mining bees *Lasioglossum malachurum* and *Lasioglossum pauxillum* and the wasp spider *Argiope bruennichi* have expanded considerably in range and frequency in recent decades and are now relatively common species. it is likely that these three species would be downgraded from their current Nationally Scarce statuses in any future review.

The exact requirements of the Nationally Scarce solitary wasp *Mimumesa unicolor* are unknown, with nests being rarely observed. It has a restricted distribution nationally, although other records for west Sussex are known.

The Nationally Scarce soldier beetle *Cantharis fusca* is primarily associated with damp grassland. There are a number of other records for this species in West Sussex.

The small heath butterfly is included in the UK BAP species listings for monitoring purposes. It remains a common species in much of Britain. The requirements of the small heath have been discussed in the results section of this report.

4.3 Recommendations

4.3.1 Additional Survey

The record of the Nationally Vulnerable and BAP priority species, brown hairstreak, found on 3rd September 2021, raises the question of whether this rarity is breeding on the site, particularly as the hedgerows contain considerable amounts of habitat which appears to be highly suitable for the requirements of this species. In advance of detailed design, it will be necessary to carry out winter searches for the eggs of this species to determine its distribution on site and to assess the impact of the proposals on the species to ensure any habitat used for breeding is retained or adequately mitigated. Egg searches for the species need to be carried out in November or December, when blackthorn has shed its leaves and the distinctive eggs are easier to locate. Without knowledge of the breeding distribution of the species on the site it is not possible to assess the impacts of any proposed hedgerow loss nor effects of construction of properties and infrastructure within proximity to the hedgerows.

4.3.2 Outline Management Recommendations

The hedgerows, and some of the field margins are considered to be the most important features of the site in terms of entomological interest. Loss of these features would be likely to prove detrimental to the invertebrate fauna of the site. Therefore, where possible hedgerows should be retained and buffered from the development. The buffer strips should be managed to enhance their floristic diversity and the hedgerows managed to improve their structure and floristic diversity.

Where possible trees on site should be retained, where trees are to be removed the larger branches should be cut into two metre lengths and stocked piled adjacent to woodland and hedgerows and in vary degrees of shade. Some in full shade but the majority in sunlit areas.

Grassland areas on site should be managed for its conservation interest. Such areas should be planted with native species such as common bird's-foot trefoil *Lotus corniculatus*, black knapweed *Centaurea nigra*, small scabious *Scabiosa columbari,* hogweed etc. Grassland should be managed so as to create a range of structures and grassland types.

Opportunities for management of Courtland Wood and Two Mile Ash Gill should be considered. Two Mile Ash Gill should probably be retained as non-intervention woodland but buffers between the gill woodland and the development should be buffered and allowed to develop to a scrubby transition between woodland and grassland. Opportunities for creating rides or clearings within Courtland Wood should be considered, for example, it might be possible to create a coppice clearing within the woodland to diversify the structure.

The existing ponds on site are largely dry and shaded, management of these could look at excavating these deeper so that they retain water for longer into the summer and clearance of trees away from the ponds.

Management for brown hairstreak would include additional planting of blackthorn and rotational management of hedgerows to maintain young growth of blackthorn branches, older blackthorn branches develop lichen growth which makes them unsuitable for brown hairstreak. However, without knowledge of abundance or distribution on site it is not possible to make robust recommendations for this species.

Map 1 Location of Rare and Scarce Species Recorded

LAND AT SOUTHWATER, NEAR HORSHAM, WEST SUSSEX

INVERTEBRATE SURVEY

Map 1 - Location of Rare and Scarce Species Recorded

Client:	Berkeley Homes (Southern) Ltd.
Date:	July 2022
Status:	Final

KEY

- Site Boundary
- 1 Brown hairstreak
- 2 Small heath, *Argiope bruennichi*
- 3 *Mimumesa unicolor*
- 4 *Nomada fucata*
- 5 *Cantharis fusca*
- 6 *Gymnosoma rotundatum*
- 7 *Andrena labiata*

Scale at A4: 1:16,000

0 160 320 640 Metres

N

Prepared by: EV	Date: 050722
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Appendix 1 Invertebrates Recorded During 2021 and 2022 Surveys

Order	Family	Scientific Name	English Name	Status	Date
ORTHOPTERA (Grasshoppers & Crickets)		*Chorthippus brunneus*	Field Grasshopper	Common Widespread	03/09/2021
		Chorthippus poarallelus	Meadow Grasshopper	Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Leptophyes punctatissima	Speckled Bush-cricket	Common Widespread	27/05/2022
		Meconema thalassinum	Oak Bush-cricket	Common Widespread	27/05/2022
		Metrioptera roeselii	Roesel's Bush-cricket	Common Widespread	14/07/2021 03/09/2021
		Omocestus viridulus	Common Green Grasshopper	Common Widespread	14/07/2021 03/09/2021
		Pholidoptera griseoaptera	Dark Bush-cricket	Common Widespread	14/07/2021 03/09/2021 27/05/2022
HEMIPTERA (True Bugs)	**Coreidae (Squash Bugs)**	*Coreus marginatus*	Squash Bug	Common Widespread	03/09/2021
	Pentatomidae (Shield Bugs)	*Dolycoris baccarum*	Sloe Bug	Common Widespread	03/09/2021
ODONATA (Dragonflies & Damselflies)	**Coenagrionidae (Damselflies)**	*Coenagrion puella*	Azure Damselfly	Common Widespread	14/07/2021, 27/05/2022
		Ischnura elegans	Blue-tailed Damselfly	Common Widespread	27/05/2022
	Aeshnidae (Hawkers)	*Aeshna cyanea*	Southern Hawker	Common Widespread	03/09/2021
		Aeshna mixta	Migrant Hawker	Common Widespread	03/09/2021

Order	Family	Scientific Name	English Name	Status	Date
	Libellulidae (Skimmers & Darters)	*Sympetrum striolatum*	Common Darter	Common Widespread	03/09/2021
LEPIDOPTERA (Butterflies & moths)		*Aglais urticae*	Small Tortoiseshell	Common Widespread	14/07/2021 27/05/2022
		Aphantopus hyperantus	Ringlet	Common Widespread	14/07/2021
		Colias croceus	Clouded Yellow	Common Widespread	27/05/2022
		Coenonympha pamphilus	Small Heath	**UK BAP (Research only)**	03/09/2021
		Inachis io	Peacock	Common Widespread	14/07/2021
		Maniola jurtina	Meadow Brown	Common Widespread	14/07/2021 03/09/2021
		Melanargia galathea	Marbled White	Common Widespread	14/07/2021
		Neozephyrus quercus	Glanville Fritillary	RDB 3 UK BAP	14/07/2021
		Ochlodes faunus	Large Skipper	Common Widespread	14/07/2021
		Pararge aegeria	Speckled Wood	Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Pieris brassicae	Large White	Common Widespread	14/07/2021 03/09/2021
		Pieris napi	Green-veined White	Common Widespread	03/09/2021
		Pieris rapae	Small White	Common Widespread	03/09/2021
		Polygonia c - album	Comma	Common Widespread	14/07/2021
		Thecla betulae	Brown Hairstreak	**Vulnerable RDB2 UK BAP**	03/09/2021

Order	Family	Scientific Name	English Name	Status	Date
		Thymelicus lineola	Essex Skipper	Common Widespread	14/07/2021
		Thymelicus sylvestris	Small Skipper	Common Widespread	14/07/2021
		Vanessa cardui	Painted lady	Common Widespread	27/05/2022
		Autographa gamma	Silver-y	Common Widespread	03/09/2021
		Camptogramma bilineata	Yellowshell	Common Widespread	03/09/2021
DIPTERA (True Flies)	**Tipulidae (Craneflies)**	*Nephrotoma quadrifaria*		Common Widespread	27/05/2022
	Stratiomyidae (Soldierflies)	*Chloromyia formosa*		Common, Widespread	14/07/2021 27/05/2022
		Chorisops tibialis		Common Widespread	14/07/2021
	Asilidae (Robberflies)	*Leptogaster cylindrica*		Common Widespread	14/07/2021
	Rhagionidae (Snipe Flies)	*Chrysopilus cristatus*		Common Widespread	27/05/2022
	Dolichopodidae (Long – headed flies)	*Poecilobothrus nobilitatus*		Common Widespread	14/07/2021
	Syrphidae (Hoverflies)	*Cheilosia albitarsis s.l.*		Common Widespread	27/05/2022
		Chrysotoxum bicinctum		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Chrysotoxum cautum		Common Widespread	14/07/2021
		Chrysotoxum festivum		Common Widespread	03/09/2021
		Epistrophe diaphana		Common Widespread	14/07/2021
		Epistrophe elegans		Common Widespread	27/05/2022

Order	Family	Scientific Name	English Name	Status	Date
		Epistrophe nitidicollis		Common Widespread	27/05/2022
		Episyrphus balteatus		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Eristalis arbustorum		Common, Widespread	14/07/2021 03/09/2021
		Eristalis interruptus		Common, Widespread	03/09/2021 27/05/2022
		Eristalis pertinax		Common Widespread	14/07/2021 27/05/2022
		Eristalis tenax		Common Widespread	14/07/2021 27/05/2022
		Eupeodes luniger		Common Widespread	14/07/2021 27/05/2022
		Ferdinandea cuprea		Common Widespread	03/09/2021
		Helophilus pendulus		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Helophilus trivittatus		Common Widespread	27/05/2022
		Melangyna umbellatarum		Common Widespread	27/05/2022
		Melanostoma mellinum		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Melanostoma scalare		Common Widespread	14/07/2021 03/09/2021

Order	Family	Scientific Name	English Name	Status	Date
		Merodon equestris		Common Widespread	27/05/2022
		Myathropa florea		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Neoascia podagrica		Common Widespread	03/09/2021
		Neoascia tenur		Common Widespread	14/07/2021
		Pipiza noctiluca		Common Widespread	03/09/2021
		Rhingia campestris		Common Widespread	03/09/2021 27/05/2022
		Riponnensia splendens		Common Widespread	03/09/2021
		Scaeva pyrastri		Common Widespread	14/07/2021
		Sphaerophoria scripta		Common Widespread	14/07/2021 27/05/2022
		Syritta pipiens		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Syrphus ribesii		Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Syrphus vitripennis		Common Widespread	14/07/2021 03/09/2021
		Volucella inflata		Local Widespread	14/07/2021
		Volucella inanis		Common Widespread	14/07/2021

Order	Family	Scientific Name	English Name	Status	Date
		Volucella pelluscens		Common Widespread	14/07/2021 27/05/2022
		Xanthogramma pedisequum		Common Widespread	27/05/2022
		Xylota segnis		Common Widespread	14/07/2021 03/09/2021
	Conopidae **(Thick – headed flies)**	*Sicus ferrugineus*		Common Widespread	14/07/2021 27/05/2022
	Sciomyzidae **(Snail – killing flies)**	*Coramacera marginata*		Common Widespread	14/07/2021
	Scathophagidae **(Dung flies)**	*Scathophaga stercoraria*		Common Widespread	03/09/2021
	Tachinidae **(Tachinid flies)**	*Eriothrix rufomaculatus*		Common Widespread	03/09/2021
		Gymnosoma rotundatum		**Rare (RDB 3)**	27/05/2022
		Phasia pusilla		Common Widespread	14/07/2021 03/09/2021
		Tachina fera		Common Widespread	03/09/2021 27/05/2022
		Tachina grossa		Common Widespread	14/07/2021
HYMENOPTERA **(Bees, Wasps, Ants and Relatives)**	**Vespidae** **(Social Wasps)**	*Vespula vulgaris*	Common Wasp	Common, Widespread	03/09/2021
	Crabronidae **(Digger Wasps)**	*Cerceris rybyensis*		Common Widespread	14/07/2021
		Crossocerus capitosus		Common Widespread	14/07/2021
		Ectemnius cephalotes		Common Widespread	14/07/2021

Order	Family	Scientific Name	English Name	Status	Date
		Mimumesa unicolor		**Nationally Scarce Na**	14/07/2021
		Passaloecus singularis		Common Widespread	14/07/2021
		Pemphredon lethifera		Common Widespread	27/05/2022
		Trypoxylon attenuatum		Common Widespread	27/05/2022
	Colletidae (Mining& Yellow faced bees)	*Hylaeus communis*		Common, Widespread	14/07/2021 03/09/2021
		Hylaeus confusus		Common Widespread	14/07/2021
	Andrenidae (Mining Bees)	*Andrena bicolor*		Common Widespread	27/05/2022
		Andrena chrysosceles		Common Widespread	27/05/2022
		Andrena dorsata		Common, Widespread	14/07/2021 27/05/2022
		Andrena flavipes		Common Widespread	27/05/2022
		Andrena haemorrhoa		Common Widesprread	27/05/2022
		Andrena labiata		**Nationally Scarce Na**	27/05/2022
		Andrena semilaevis		**Common Widespread**	27/05/2022
	Halictidae (Mining & Cuckoo Bees)	*Lasioglossum calceatum*		Common Widespread	03/09/2021
		Lasioglossum leucozonium		Common Widespread	03/09/2021 27/05/2022
		Lasioglossum malachurum		**Nationally Scarce Nb**	03/09/2021
		Lasioglossum minutissimum		Common Widespread	03/09/2021
		Lasioglossum pauxillum		**Nationally Scarce Na**	03/09/2021 27/095/2022

Order	Family	Scientific Name	English Name	Status	Date
		Lasioglossum zonulum		Common Widespread	03/09/2021
	Anthophoridae (Flower & Nomad bees)	*Nomada flava*		Common Widespread	27/05/2022
		Nomada fucata		**Nationally Scarce Na**	14/07/2021
	Apidae (Social & Cuckoo Bees)	*Apis mellifera*	Honey-bee	Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Bombus lapidarius	Red-tailed Bumblebee	Common Widespread	14/07/2021 03/09/2021
		Bombus lucorum	White-tailed Bumblebee	Common, Widespread	14/07/2021 27/05/2022
		Bombus pascuorum	Common Carder Bee	Common, Widespread	14/07/2021 03/09/2021 27/05/2022
		Bombus pratorum	Early Bumblebee	Common Widespread	27/05/2022
		Bombus terrestris	Buff-tailed Bumblebee	Common Widespread	14/07/2021
		Bombus lucorum/terrestris worker	A white-tailed bumblebee	Common, Widespread	14/07/2021 03/09/2021
COLEOPTERA (Beetles)	**Cantharidae (Soldier Beetles)**	*Cantharis fusca*		**Nationally Scarce N**	27/05/2022
		Cantharis lateralis		Common Widespread	27/05/2022
		Rhagonycha fulva		Common, Widespread	14/07/2021
	Cerambycidae (Longhorn Beetles)	*Clytus arietis*	Wasp Beetle	Common Widespread	27.05/2022
		Leptura livida		Common Widespread	14/07/2021 27/05/2022

Order	Family	Scientific Name	English Name	Status	Date
		Rutpela maculata		Common Widespread	14/07/2021
	Coccinelidae (Ladybirds)	*Adalia 10 - punctata*	10-spot Ladybird	Common, Widespread	14/07/2021
		Coccinella 7 - punctata	7-spot Ladybird	Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Harmonia axyridis	Harlequin Ladybird	Common Widespread	14/07/2021 03/09/2021 27/05/2022
		Propylea 14 - punctata	14-spot Ladybird	Common Widespread	14/07/2021 27/05/2022
		Psyllobora 22 - punctata	22-spot Ladybird	Common, Widespread	03/09/2021
	Elateridae (Click Beetles)	*Athous haemorrhoidalis*		Common Widespread	27/05/2022
	Malachiidae (Pollen Beetles)	*Malachius bipustulatus*		Common Widespread	27/05/2022
	Oedemeridae Oedemerid Beetles)	*Oedemera nobilis*		Common Widespread	14/07/2021 27/05/2022
	Pyrochroidae (Cardinal Beetles)	*Pyrochroa serraticornis*	Red-headed Cardinal	Common, Widespread	27/05/2022
ARACHNIDA (Spiders and allies)	**Argiopidae (Orb-web spiders**	*Argiope bruennichi*		**Nationally Scarce Nb**	03/09/2021

Appendix 2 Invertebrate Status Category Definitions and Criteria

RDB 1 - Endangered

Taxa in danger of extinction and whose survival is unlikely if causal factors continue operating.

- Species which are known or believed to occur as only a single population within one 10 kilometre square of the National Grid.
- Species which only occur in habitats known to be particularly vulnerable.
- Species which have shown a rapid or continuous decline over the last twenty years and are now estimated to exist in five or fewer 10 kilometre squares.
- Species which are possibly extinct but have been recorded in the 20th century and if rediscovered would need protection.

RDB 2 - Vulnerable

Taxa believed likely to move into the endangered category in the near future if the causal factors continue operating.

- Species declining throughout their range.
- Species in vulnerable habitats.

RDB 3 - Rare

Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk.

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

Nationally Scarce (Na)

Taxa which do not fall within the RDB categories but which are none - the - less uncommon in Great Britain and thought to occur in 30 or fewer 10 kilometre squares of the National Grid.

Nationally Scarce (Nb)

Taxa which do not fall within the RDB categories but which are none - the - less uncommon and thought to occur in between 31 and 100 10 kilometre squares of the national Grid.

Nationally Scarce (N)

Species which are estimated to occur within the range of 16 to 100 10 kilometre squares.

Local

These species may have a restricted geographical range in the UK, for example a requirement for warmth (southern species - usually denoted by species that occur wholly or mainly South of the Severn - Wash line), or cooler environments (northern species occurring wholly or mainly North of the Severn - Wash line) or upland species occurring only in more montane regions in the UK e.g. Dartmoor, Scottish Highlands or Snowdonia. However, within these geographic ranges such species may occur in some abundance in a variety of habitats. Alternatively, some local species have a wide geographical national distribution but occur only in a specific habitat type due to foraging or nesting requirements. For example, some species breed only in sand, or collect pollen and/or nectar only from plants occurring on chalk grassland or their larval development is dependant upon fen conditions or water seepages. Nonetheless, local species may be abundant within areas supporting their specific requirements, differentiating them from Nationally Scarce or threatened species which often have a combination of very exacting geographical and microhabitat requirements.

Common and Widespread

This denotes species that occur over a wide geographical area in the UK, and which have fairly undemanding requirements in terms of habitat type for larval development. Examples include species which develop in decaying vegetation, feed on aphids, live in stems of scrubby plants with no specific host requirement, feed on a variety of grasses or develop in any type of water body (even puddles). Alternatively, they may be mass migrants from continental Europe - some hoverflies e.g. *Episyrphus balteatus* or some common *Eupeodes* species arrive in millions each year and have no exacting habitat requirements.

Appendix 3 References

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