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Merthyr Tydfil County Borough Council

GOAT MILL ROAD ENTERPRISE PARK - RIBA STAGE 2

Invertebrates Survey Report



70121691-WSP-74-XX-RP-L-0005
SEPTEMBER 2025

PUBLIC

Merthyr Tydfil County Borough Council

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Invertebrates Survey Report

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Contents

CONTENTS

EXECUTIVE SUMMARY 1

1 INTRODUCTION 1

1.1 BACKGROUND 1

1.2 SITE DESCRIPTION 1

2 METHODOLOGY 2

2.1 OVERVIEW 2

2.2 DESK STUDY 2

2.3 HABITAT ASSESSMENT AND FIELD SURVEY 2

2.4 DATA ANALYSIS 3

2.5 SURVEY CONSTRAINTS 3

3 RESULTS 4

3.1 DESKTOP STUDY RESULTS 4

3.2 HABITAT ASSESSMENT 5

3.3 FIELD SURVEY 6

4 DISCUSSION AND CONCLUSIONS 9

5 RECOMMENDATIONS AND ENHANCEMENTS 11

5.2 SEMI-IMPROVED NEUTRAL GRASSLAND AND MARSHY GRASSLAND 11

5.3 OPEN MOSAIC HABITAT ON PREVIOUSLY DEVELOPED LAND/BARE GROUND 11

5.4 POLLUTION PREVENTION MEASURES 12

5.5 RESEEDING/PLANTING OF GRASSLAND 12

5.6 LONG AND TUSSOCKY GRASSLAND 12

5.7 TREE PLANTING 12

5.8 CREATION OF ADDITIONAL WATER BODIES 13

5.9 CREATION OF BEE BANK 13

5.10 CREATION OF GREEN ROOFS FOR INVERTEBRATES 13

5.11 BRASH PILES 13

6 REFERENCES 14

TABLES

Table 3-1 – Invertebrate sampling locations habitat descriptions 5

Table 3-2 – Total number of species per order recorded within the Site. 7

Table 3-3 – Protected/Priority species recorded within the Site. 8

FIGURES

Figure 1-1: Site (red polygon) and invertebrate sampling locations (numbered white circles). Adapted from Google Earth (Google Earth, 2025). Not to scale. 1

APPENDICES

APPENDIX A

SUMMARY OF ECOLOGICAL DESK STUDY DATA

APPENDIX B

SURVEY CONDITIONS

APPENDIX C

INVERTEBRATES RECORDED ON SITE

APPENDIX D

PHOTOGRAPHS

EXECUTIVE SUMMARY

Goat Mill Road, the site of the proposed development, is in a parcel of land north of the A4102 Goat Mill Road, Pen-y-Darren, Merthyr Tydfil.

The Site lies within a Buglife B-line. A total of 76 records for 30 protected and priority invertebrates and 39 records for 16 species of Local Concern were returned from South East Wales Biodiversity Records Centre (SEWBReC) data searches for a 2km radius from the Site.

Habitats on Site included marshy grassland, semi-improved neutral grassland, bare ground, and scrub. In combination these formed Open Mosaic Habitat (OMH). The boundaries of plantation woodland comprised mostly broadleaved species with some coniferous species.

A total of 191 terrestrial invertebrate species were recorded within the Site. Most were identified to species level (180), nine were identified to genus and two were identified to family group. Fifteen were Priority species i.e., species considered to be rare or scarce, localised, on Section 7 (S7) of the Environment (Wales) Act 2016 listed species, of Local Concern and/or of Local Interest (LI).

Data search results, as well as the findings of a previous and the current invertebrate surveys indicate that no legally protected invertebrate species were likely to be present. Five S7 Priority listed species were recorded. Under the Environment (Wales) Act 2016 Public bodies have an obligation to have regard for these species when carrying out their functions.

The Open Mosaic Habitat (OMH) of the Site is assessed as being of Local to County importance for invertebrates.

Recommendations and enhancement measures include:

- Avoidance/minimal clearance of grassland;
- Maintenance and improvement of connectivity within and beyond the Site;
- Planting/seeding of native, locally sourced herbaceous plants and trees representative of the area's natural diversity;
- Appropriate management of the grassland and bare ground areas e.g., cutting regime, restriction of dog-walking activities;
- Retention of open mosaic habitat/bare ground and tussocky grass;
- If required, off-site mitigation for habitat loss;
- Pollution prevention measures for marshy grassland, wet ditches and streams and,
- Creation of wildlife pond/s, bee banks, brash piles, and green roofs for invertebrates.

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP was commissioned by Merthyr Tydfil County Borough Council (MTCBC) to undertake an invertebrate survey for the proposed development of a business enterprise park on a parcel of land north of the A4102 Goat Mill Road, Pen-y-Darren, Merthyr Tydfil (the 'Site') (approximate Central Grid Reference (CGR) S0 061770 6853).

1.1.2 The survey was conducted to provide an assessment of the Site regarding invertebrate species, with an emphasis on its role in supporting protected and Priority species, as well as species of Local Concern. Invertebrate sampling took place within the Site, as indicated in Figure 1-1.

1.1.3 This report includes details of the survey methodologies and results and contains recommendations for mitigation, compensation and/or enhancement measures.

1.2 SITE DESCRIPTION

1.2.1. The Site is in Pen-y-Darren, east of Merthyr Tydfil. The A4060 is to the east of the Site and to the west and north the A4102 Goat Mill Road and an unclassified road, linking to residential and industrial areas. Land to the east of the A4060 comprises open moorland and former opencast mine workings and associated infrastructure.

1.2.2. The majority of the Site is frequently accessed by recreational walkers / dog walkers and at the time of survey did not appear to be under any active management.

1.2.3. The Site is shown in Figure 1-1.

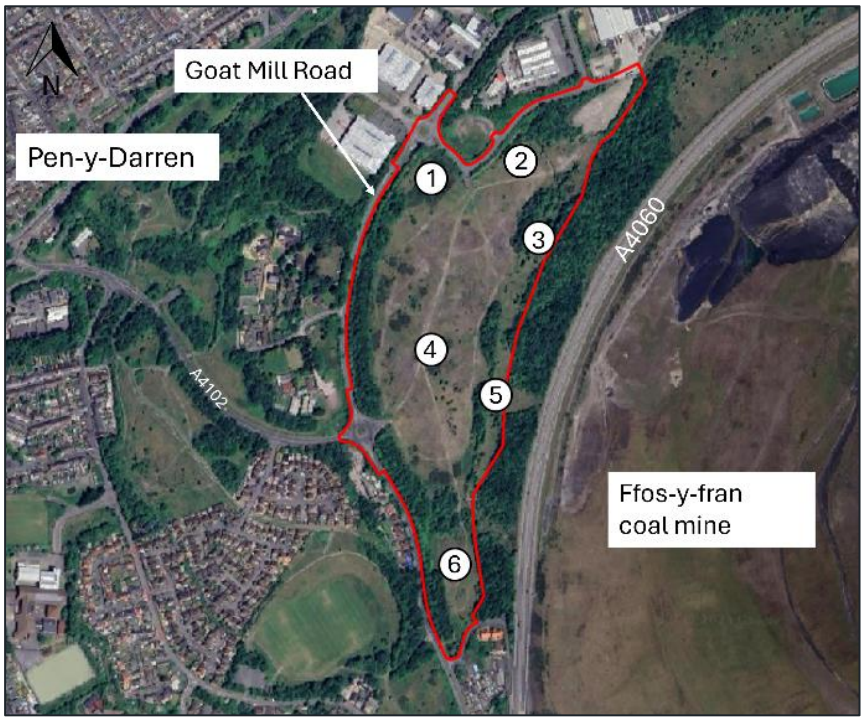


Figure 1-1: Site (red polygon) and invertebrate sampling locations (numbered white circles). Adapted from Google Earth (Google Earth, 2025). Not to scale.

2 METHODOLOGY

2.1 OVERVIEW

2.1.1 This report has been prepared in accordance with best practice guidance as outlined in the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

2.2 DESK STUDY

2.2.1 SEWBReC data obtained for a 2km radius of the Site (SEWBReC, 2024) was filtered for invertebrate data. This included priority habitats and species listed under Section 7 (S7) of the Environment (Wales) Act 2016 of principal importance for the purpose of maintaining and enhancing biodiversity in Wales and invertebrate species of Local Concern. The results of the search are summarised in Appendix A.

2.2.2 The following information was reviewed to inform the desk study:

- FPCR Environment & Deign Ltd. Land Off Goat Mill Road, Merthyr Tydfil: Ecological Appraisal (Appendix H) (FPCR, 2021)
- Buglife Important Invertebrate Areas (IIAs) and B-lines (Buglife {Accessed August 2025})
- SEWBReC invertebrate data (SEWBReC, 2024)

2.2.3 Where third party data is referred to, for example from online searches and Biodiversity Record Centre data, WSP cannot be held responsible for the accuracy of the information.

2.3 HABITAT ASSESSMENT AND FIELD SURVEY

2.3.1. The field survey included two Site visits: 11 June 2025 conducted by Tara Okon (Consultant Ecologist) and Eliott Spiller (Senior Ecologist), and 14 August 2025 conducted by Tara Okon (Consultant Ecologist) and Trevor Fletcher (Senior Ecologist). The visit on 14 August 2025 incorporated a night-time moth trapping session to record nocturnal species that are not typically observed during daylight hours.

2.3.2. Surveys were carried out in appropriate weather conditions, avoiding cold weather, days with high winds, persistent heavy rain, or poor visibility, guarding against the possibility of under recording due to invertebrate activity being suppressed.

2.3.3. Dates, times, and weather conditions for each survey are provided in Appendix B.

2.3.4. Sampling locations (refer to Figure 1-1) were chosen to provide thorough coverage of the Site while representing a range of habitat types. The habitat descriptions were informed by the Phase 1 habitat survey included in the Goat Mill Road Preliminary Ecological Appraisal (PEA) (Redstart, 2024), the National Vegetation Classification (NVC) report for the Site (Redstart, 2025), and the field survey.

2.3.5. The Phase 1 habitat survey (Redstart, 2024) identified a variety of habitats capable of supporting a broad range of invertebrate species. For this report, survey efforts were primarily focused on key protected and Priority species, as well as species of Local Concern highlighted through SEWBReC data searches (SEWBReC, 2025) and an invertebrates report for Goat Mill Road (FPCR, 2021). Other species were not however excluded from consideration.

2.3.6. Direct observations were the primary method for recording, as many of the target species were diurnal and easily observed and recognised in the field. Other ad hoc sampling techniques employed included sweep-netting and hand-searching.

2.3.7. Two moth traps (15-watt actinic bulb set over collection box) were used for night-time moth trapping on 14 August 2025. All moths were released on Site at the end of the session.

2.3.8. Due to an abundance of willow *(Salix* spp.*)* particularly at the woodland edges of the Site species-specific pheromone lures were used to test for the presence of red-tipped clearwing *(Synanthedon formicaeformis)* and lunar hornet moth *(Sesia bembeciformis)*. An under-recorded Nationally Scarce species, red-tipped clearwing larvae are known to feed on various willow species. Although not uncommon, lunar hornet moth larvae also feed on willows and sallows.

2.3.9. Opportunistic observations made during other ecological surveys at the Site were noted and incorporated in the analysis.

2.3.10. The rarity and abundance of well-studied invertebrates is based on the number of 10km squares they have been recorded in. Red Data Book species are our rarest species and are found in less than 16 10km squares in the UK. Nationally Scarce (NS) species are known to occur in 100 or fewer 10km squares, which is sometimes split into Notable A (Na) and Notable B(Nb) (Na species occur within 16 - 30 10km squares and Nb species between 31 – 100 10km squares). Another category exists for species recorded between 100 – 300 10km squares, these being considered as 'Local' at a national level. These generally have either geographically restricted distributions or have specific habitat requirements.

2.4 DATA ANALYSIS

2.4.1. The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance on Ecological Impact Assessment (CIEEM, 2018) evaluates nature conservation value within a defined geographical context. Geographical categories recommended as a reference framework, listed in descending order of importance, include International and European, National, Regional, County, District, and Local levels. This structure may be tailored to address specific circumstances, such as assessments conducted within alternative local areas (e.g., borough, parish, or site). The overall evaluation of the Site for invertebrates was undertaken in relation to this framework.

2.5 SURVEY CONSTRAINTS

2.5.1. No voucher specimens were collected, and no microscopic work was undertaken. Identification was determined using a combination of x10 hand lens, a magnifying glass, and good quality photographs. Some invertebrates could not be identified to species level. In cases where uncertainty regarding the precise identification of a particular specimen arose, a cautious approach was taken, and specimens were classified to genus level and rarely, to family. It was however considered that enough species were identified to provide an overall assessment of the Site for invertebrates.

2.5.2. Periodic episodes of light rain with occasional heavy showers occurred during the first three hours of the second site visit on 14 August 2025. This was not considered to impact the overall results of the survey as it provided an opportunity to search for species preferring damp/wet conditions such as slug and snail species during this time.

2.5.3. Any ecological survey can only identify what was present on site at the time it was conducted, and habitat use by species can change over time. The length of time survey data remains valid will depend on a case-by-case basis, but it is generally considered that if development or proposed works do not commence within two years of the date of the survey in this report, an update may be required (CIEEM, 2019).

3 RESULTS

3.1 DESKTOP STUDY RESULTS

PREVIOUS REPORT RESULTS

3.1.1. A previous invertebrate survey for Goat Mill Road (FPCR, 2021) identified five key species with a formal threat and/or rarity status. Species comprised Nationally Scarce species ground bug *(Megalonotus dilatatus)* and tortoise beetle *(Cassida prasina);* Nationally Scarce Category A species weevil *(Polydrusus formosus);* and Category B species weevil *(Protapion filirostre)* and six-belted clearwing *(Bembecia ichneumoniformis).*

3.1.2. Species listed under Section 7 (S7) of the Environment (Wales) Act 2016 comprised dingy skipper *(Erynnis tages)* and small heath *(Coenonympha pamphilus)* butterflies; and cinnabar moth *(Tyria jacobaeae).*

IMPORTANT INVERTEBRATE AREAS AND B-LINES.

3.1.3. Important Invertebrate Areas (IIAs) are 'places that are home to nationally or internationally significant invertebrate populations and their habitats.' (Buglife {Accessed August 2025})The Site was not within an IIA. The closest IIAs were over 2km west-northwest and west-southwest respectively.

3.1.4. B-Lines are a series of 'insect pathways' running through countryside and towns, along which a series of wildflower-rich habitat stepping-stones are being restored and created. They link existing wildlife areas together, creating a network, like a railway, which will weave across the British landscape. (Buglife {Accessed August 2025}. The Site is within a B-line.

PRIORITY SPECIES

3.1.5. Appendix A lists Priority species included in the Environment (Wales) Act 2016 and rare and/or nationally scarce invertebrates including Red Data Book species, Nationally Scarce (Notable A (Na) and Notable B (Nb)). Species of Local Conservation Concern included Local Biodiversity Action Plan (LBAP) species and Locally Important Species (as identified by local specialists) in the SEWBReC recording area (LI (SEWBReC)).

3.1.6. A summary of the records is as follows:

Priority invertebrate species

3.1.7. A total of 76 records for 30 protected and priority invertebrates were returned from the 2km SEWBReC data searches. Records comprised four butterfly species; one S7 wasp species, shimmering ruby-tail *(Chrysis fulgida);* and 25 S7 moth species.

3.1.8. Moth species included cinnabar, garden tiger *(Arctia caja),* grass rivulet *(Perizoma albulata),* and white ermine *(Spilosoma lubricipeda).*

3.1.9. Butterfly species comprised Red Data Book (UK) (and S7) species marsh fritillary *(Euphydryas aurinia),* grayling *(Hipparchia semele),* and dingy skipper, all classed as Vulnerable (VU), and small heath classed as Near Threatened (NT). Small heath, grayling, and dingy skipper had all been recorded on Site. Marsh fritillary was recorded 1.4km northeast of the Site.

Species of Local Concern

3.1.10. A total of 39 records for 16 invertebrate species of Local Concern were returned within 2km. The records comprised six bee species; six dragonfly and damselfly species; two cricket species, long-winged cone-head *(Conocephalus fuscus)* and short-winged cone-head *(Conocephalus dorsalis);* one beetle species *Cantharis nigra (=thoracica)*; and one moth species *(Dichrorampha alpestrana).*

3.1.11. Six species were MTCBC Local Biodiversity Action Plan (LBAP) species, eight were Locally Important (LI) species for SEWBReC and two were LI for the Biodiversity Information Service (BIS).

3.1.12. Dragonfly and damselfly species of Local Concern black-tailed skimmer *(Orthetrum cancellatum),* golden-ringed dragonfly *(Cordulegaster boltonii),* and keeled skimmer *(Orthetrum coerulescens)* were all recorded on Site according to data searches.

3.2 HABITAT ASSESSMENT

3.2.1. Habitat descriptions for invertebrate sampling locations (see Figure 1-1) at Goat Mill Road, Merthyr Tydfil are detailed in Table 3-1. Descriptions are based on conditions at the time of the survey. See Appendix D for supporting photographs.

Table 3-1 – Invertebrate sampling locations habitat descriptions

Location number	Approximate Central Grid Reference	Description
1	SO 06180 07134	A roughly square patch of marshy grassland. Species included rush *(Juncus* spp.*)* and sedge *(Carex* spp.*)* species, lesser spearwort *(Ranunculus flammula),* bulrush *(Typha latifolia),* water mint *(Mentha aquatica),* and marsh thistle *(Cirsium palustre).* Willow *(Salix* spp.*)* was scattered throughout. Plantation woodland bordered its northwest and northeast edges. Marshy grassland transitioned into semi-improved neutral grassland at its southwest and southeast edges. A ditch usually supporting a small stream ran parallel to the northeast edge of the parcel. During wet weather a small stream flows along an engineered drainage channel at the northwest edge of the Site, under a concrete bridge and around the marshy grassland before continuing along the western boundary.
2	SO 06357 07158	Short semi-improved neutral grassland. A narrow ditch in a shallow valley crossed the grassland stretching from the engineered drainage channel at the northwest edge (see Location 1 description) to a strip of plantation woodland to the east. Immature willow, birch *(Betula* spp.*),* and hawthorn *(Crataegus monogyna)* trees were mostly scattered along the western edge of the parcel. Species included common bird's-foot trefoil *(Lotus corniculatus),* red clover *(Trifolium pratense),* kidney vetch *(Anthyllis vulneraria),* common vetch *(Vicia sativa),* and yarrow *(Achillea millefolium).* Bulrush was scattered throughout the ditch and common wintergreen *(Pyrola minor)* was noted next to it.
3	SO 06353 07042	Semi-improved neutral grassland on west facing slopes. Species included common bent *(Agrostis capillaris),* common knapweed *(Centaurea nigra),* common bird's-foot-trefoil *(Lotus corniculatus)* cock's-foot *(Dactylis glomerata),* yellow-rattle *(Rhinanthus minor),* oxeye daisy *(Leucanthemum vulgare),* meadow buttercup *(Ranunculus acris),* red clover *(Trifolium pratense),* ribwort plantain *(Plantago lanceolata),* dove's- foot cranesbill *(Geranium molle)* and Yorkshire fog *(Holcus lanatus)* in damper areas. The area was shaded by plantation woodland above (east) and below (west) the

Location number	Approximate Central Grid Reference	Description
		grassed slope. Deciduous species included willow, birch *(Betula* spp.*)*, alder *(Alnus* spp.*)*, dogwood *(Cornus sanguinea)*, hawthorn *(Cretaegus monogyna)*, oak *(Quercus* sp.*)* and aspen *(Populus tremula)*. Coniferous species included larch *(Larix* sp.*)* and pine *(Pinus* sp.*)*
4	SO 06198 06924	Short semi-improved neutral grassland on a brownfield site representative of most of the habitat on Site. Small areas of bare ground with patches of *Cladonia* lichens and heather *(Calluna vulgaris)* were noted where the stony substrate remained evident although most of the Site had grassed over. Species included common bird's-foot-trefoil, vetch species *(Vincia* spp.*)*, rush *(Juncus* spp.*)* and sedge *(Carex* spp.*)* species, common bent *(Agrostis capillaris)*, red clover, daisy *(Bellis perennis)*, wild carrot *(Daucus carota* subsp. *carota)*, creeping buttercup *(Ranunculus repens)*, meadow buttercup *(Ranunculus acris)*, wild thyme *(Thymus pulegioides)*, red bartsia *(Odontites vernus)*, common centaury *(Centaurium erythraea)*, rough hawkbit *(Leontodon hispidus)*, common knapweed, red fescue *(Festuca rubra)*, cat's-ear *(Hypochaeris radicata)*, sweet vernal-grass (*Anthoxanthum odoratum)*, black medic (*Medicago lupulina)*, oxeye daisy *(Leucanthemum vulgare)*, crested dog's-tail *(Cynosaurus cristatus)*, sneezewort *(Achillea ptarmica)*, and mouse-ear hawkweed *(Pilosella officinarum)*. Patches of dense scrub varying in size were scattered throughout this large grassland area which covered most of the Site. Scrub species included gorse *(Ulex europaeus)*, bramble *(Rubus fruticosus* agg.*)* great willowherb *(Epilobium hirsutum)*, rosebay willowherb *(Chamaenerion angustifolium)*, and scattered trees of willow and birch.
5	SO 06297 06798	Species composition largely the same as Location 3 although less shaded by plantation woodland above (east) and below (west) the grass slope.
6	SO 06222 06502	Semi-improved neutral grassland. Species included crested dog's-tail, white clover *(Trifolium pratense)*, ribwort plantain *(Plantago lanceolata)*, lesser trefoil *(Trifolium dubium)*, vetch species, common bird's-foot-trefoil, creeping bent *(Agrostis stolonifera)*, glaucous sedge *(Carex flacca)*, sheep's fescue *(Festuca ovina)*, creeping thistle *(Cirsium arvense)*, and autumn hawkbit *(Scorzoneroides autumnalis)*, perforate st john's-wort *(Hypericum perforatum)*, and common centaury. A damper area at its southeast edge close to the plantation woodland included dense stands of lesser pond sedge *(Carex acutiformis)*. Scattered willow and small bare stony ground patches mostly at the northern edge of the parcel.

3.2.2. Plantation woodland surrounded much of the Site, and well-worn tracks crossed the extensive lower grassland, mainly frequented by dog walkers. See Table 3-1 Location 3 'Description' for an indication of representative species. Slender rush *(Juncus tenuis)* occurred alongside manmade tracks throughout.

3.3 FIELD SURVEY

3.3.1. A total of 191 terrestrial invertebrate species were recorded within the Site. Most were identified to species level (180), nine were identified to genus and two were identified to family level. See Table 3-2.

3.3.2. Representative species from a wide variety of invertebrate groups were recorded.

3.3.3. A full list of invertebrates recorded during the survey is provided in Appendix C.

Table 3-2 – Total number of species per order recorded within the Site.

Order	Number of species
Araneae (spiders)	19
Coleoptera (beetles)	26
Dermaptera (earwigs)	1
Diptera (flies)	32
Hemiptera (true bugs)	32
Hymenoptera (bees, wasps, and ants)	13
Isopoda (woodlice)	2
Lepidoptera (moths and butterflies)	43
Mecoptera (scorpionflies)	1
Neuroptera (lacewings and antlions)	1
Odonata (dragonflies)	1
Opiliones (harvestmen)	1
Orthoptera (grasshoppers and crickets)	8
Polydesmidae (millipedes)	1
Stylommatophora (slugs and snails)	9
Trombidiformes (mites)	1
Total number of species	191

Incidental sightings

3.3.4. Dingy skipper and S7 moth species cinnabar and blood-vein *(Timandra comae),* although not recorded during the invertebrate site visits in June and August 2025, were previously observed by ecologists on Site during other species-specific surveys in 2024. See Table 3-3.

Clearwing pheromone lures

3.3.5. No red-tipped clearwings were attracted to pheromone lures placed on willow around the Site during the June and August visits.

3.3.6. The more commonly recorded lunar hornet moth was attracted to a pheromone lure placed on willow near Location 2 (see Figure 1-1) at the northern end of the Site during the June survey.

Protected and Priority species

3.3.7. Of the 191 invertebrate species identified during the 2025 survey, at least 15 were Priority species i.e., species considered to be rare or scarce, localised, S7 Environment (Wales) Act 2016 listed species, of Local Concern and/or of Local Interest (LI). See Table 3-3.

Table 3-3 – Protected/Priority species recorded within the Site.

Common name	Scientific name	Family	Order	Conservation status
Hieroglyphic ladybird	*Coccinella hieroglyphica*	Coccinellidae	Coleoptera	Local
A green weevil	*Polydrusus formosa*	Curculionidae	Coleoptera	NS (Notable-A)
A micro moth	*Agriphila selasella*	Crambidae	Lepidoptera	Local
Small phoenix (caterpillar)	*Ecliptopera silaceata*	Geometridae	Lepidoptera	S7
Brown-spot pinion	*Anchoscelis litura*	Noctuidae	Lepidoptera	S7
Ear moth	*Amphipoea oculea*	Noctuidae	Lepidoptera	S7
Garden dart	*Euxoa nigricans*	Noctuidae	Lepidoptera	S7
Small heath	*Coenonympha pamphilus*	Nymphalidae	Lepidoptera	S7, RDB1 (UK) - NT
Six-belted clearwing	*Bembecia ichneumoniformis*	Sesiidae	Lepidoptera	NS
Short-winged conehead	*Conocephalus dorsalis*	Tettigoniidae	Orthoptera	Local LI (SEWBReC)
Long-winged conehead	*Conocephalus fuscus*	Tettigoniidae	Orthoptera	Local LI (SEWBReC)
Roesel's bush-cricket	*Metrioptera roeselii*	Tettigoniidae	Orthoptera	Local LI (SEWBReC)
Buff-tailed bumblebee	*Bombus terrestris*	Apidae	Hymenoptera	LBAP (MTR)
Common carder bee	*Bombus pascuorum*	Apidae	Hymenoptera	LBAP (MTR)
Red-tailed bumblebee	*Bombus lapidarius*	Apidae	Hymenoptera	LBAP (MTR)
Incidental sightings 2024				
Blood-vein	*Timandra comae*	Geometridae	Lepidoptera	S7
Cinnabar	*Tyria jacobaeae*	Noctuoidea	Lepidoptera	S7
Dingy skipper	*Erynnis tages*	Hesperiidae	Lepidoptera	S7, RDB1 (UK) - VU, LI(SEWBReC)

3.3.8. A species of *Megalonotus,* potentially the previously recorded Nationally Scarce Priority species *Megalonotus dilatatus* (a black ground bug) was observed. Its specific identification however was not definitively confirmed in the field.

4 DISCUSSION AND CONCLUSIONS

4.1.1 Recording efforts targeting diurnal species were concentrated in regions that closely matched those highlighted in a previous invertebrate report (FPCR, 2021). This approach ensured comprehensive coverage of the Site and some consistency in recording locations.

4.1.2 Night-time recording locations, primarily aimed at recording nocturnal moth species, were selected for their potential to attract species from various neighbouring habitats. One location was in marshy grassland (see Location 1, Figure 1-1), another was placed approximately 150m east of the marshy grassland in a patch of semi-improved grassland which featured small areas of bare ground and was bordered to the east by a strip of plantation woodland.

4.1.3 A total of 15 different Priority species were identified during the survey. Priority species included three bumblebee species buff-tailed *(Bombus terrestris),* common carder *(Bombus pascuorum)* and red-tailed *(Bombus lapidarius)* identified as LBAP species for Merthyr Tydfil. The Site is within a Buglife B-Line (Buglife {Accessed August 2025}).

4.1.4 Three S7 moth species brown-spot pinion *(Anchoscelis litura),* ear moth *(Amphipoea oculea),* garden dart *(Euxoa nigricans),* and the 'Local' micro moth *Agriphila selasella* were attracted to light at night-time moth traps. The larvae of brown-spot pinion and garden dart feed on a range of herbaceous plants, while those of ear moth and *Agriphila selasella* primarily feed on grasses.

4.1.5 Cricket species recorded on Site whose distribution within the UK is classified as 'Local' comprised short-winged conehead (*Conocephalus dorsalis)* and long-winged conehead *(Conocephalus fuscus)* found in various grassland locations on Site, and Roesel's bush-cricket *(Metrioptera roeselii)* found on the grass slopes east of the Site (Location 5, Figure 1-1). A single hieroglyphic ladybird *(Coccinella hieroglyphica)* also classed as 'Local' was found in the marshy grassland patch (Location 1, Figure 1-1). Hieroglyphic ladybirds live in strong association with heather *(Calluna vulgaris)* and are known to overwinter in heather, gorse *(Ulex europaeus),* and pine *(Pinus* sp.*)* all found on Site (Roy, H. *et.al*., 2018). Heather was primarily identified in association with bare ground patches at the Site.

4.1.6 A further three species, dingy skipper butterfly, and moths cinnabar and blood-vein, although not recorded during the 2025 survey were previously observed by ecologists during other species-specific surveys in 2024. It was likely that these species were still present during 2025 as key larval foodplants such as dock and sorrel species *(Rumex* spp.*)* for blood-vein, common ragwort *(Senecio jacobaea)* for cinnabar, and common bird's-foot-trefoil *(Lotus corniculatus) for* dingy skipper remained on Site. It was considered most likely that survey timings missed the peak flight periods for dingy skipper and cinnabar in particular for this season.

4.1.7 Of the five key species identified in a previous invertebrate report for the Site (FPCR, 2025) six-belted clearwing was recorded in the southern section of the Site (Location 6, Figure 1-1), dingy skipper was likely to be present (see 4.1.5), and possible *Megalonotus dilatatus* (definitive identification was not ascertained in the field, see 3.4.8) was recorded in the central section (Location 4). Although the tortoise beetle *(Cassida prasina)* and the small all-black weevil *Protapion filirostre* were not observed during the survey, their primary food plants yarrow*(Achillea millefolium)* and sneezewort *(Achillea ptarmica),* for the beetle, and black medic (*Medicago lupulina),* for the weevil were still present on Site. As any site visit can only provide a 'snapshot' for what is present on the day it is considered possible that these species remain on Site.

4.1.8 The targeted scope of survey effort may not fully represent the invertebrate assemblages found throughout the Site. However, based on the data searches, as well as the findings from the current (2025) and previous (FPCR, 2021) surveys, it is unlikely that legally protected invertebrate species are present.

4.1.9 There were however five S7 Environment (Wales) Act 2016 Priority species recorded during the survey and public bodies have an obligation to have regard for these species when carrying out their functions (Welsh Government, 2024). Maintaining and enhancing the diversity of habitats within the Site should therefore be a key aim of the mitigation strategy to ensure invertebrate diversity and productivity is maintained.

4.1.10 A sustained period of dry weather occurred prior to the 2025 survey visits. The marshy grassland had become significantly drier compared to previous surveys (Redstart, 2024 & 2025), with no standing water observed in August 2025. Both the wet ditch traversing the northern section of the Site and the engineered stream channel along the western boundary had completely dried up. Only a single dragonfly species, common darter *(Sympetrum striolatum),* was recorded during Site visits. The limited presence of invertebrates associated with damp or shaded habitats was likely attributable to the prevailing dry conditions. Suitable aquatic habitat for ovipositing dragonflies and damselflies was notably scarce.

4.1.11 Grayling previously recorded on Site (SEWBReC 2025) and dingy skipper often favour habitat with foodplants in sparse vegetation near bare ground in open, sunny positions (Butterfly Conservation [Accessed August 2025]). Six-belted clearwing moth prefers foodplants such as common bird's-foot-trefoil on eroded ground or the edges of paths (British and Irish moths [Accessed August 2025]). The mosaic nature of habitats on Site is considered of more importance than any single standalone habitat for these and other Priority invertebrate species.

4.1.12 The Open Mosaic Habitat (OMH) (see also NVC report, Redstart, 2025) of the Site is therefore assessed as being of Local to County importance for invertebrates.

4.1.13 The NVC report (Redstart, 2025) stated that bare ground had decreased since the previous ecological survey on Site (FPCR, 2021a), being mostly restricted to discrete patches in the east. A succession from bare ground to grassland was evidenced while conducting the invertebrate survey.

4.1.14 Dog-walkers were the most frequent visitors observed during surveys and dog waste was likely contributing to soil enrichment of the Site. This will likely result in the reduction of floral diversity for Priority invertebrate species.

4.1.15 In the continued absence of Site management such as regular grassland or scrub clearance, or the regulation of activities like dog walking the quality of the grassland habitat is expected to deteriorate further. Bare ground habitat subject to succession will eventually disappear. The loss of such habitats will likely result in natural succession from bare ground to grassland, grassland to scrub, and ultimately to woodland.

4.1.16 The long-term outcome of this gradual degradation of the OMH will likely result in the Site being less suitable to support Priority/protected invertebrate species.

5 RECOMMENDATIONS AND ENHANCEMENTS

5.1.1. Section 6.4.5 of Planning Policy Wales 12 (Welsh Government, 2024) states that 'Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions.' This means development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature. It must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site.

5.1.2. Section 6.4.11 of the policy states 'Planning authorities must follow a step wise approach to maintain and enhance biodiversity, build resilient ecological networks and deliver net benefits for biodiversity by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for. Enhancement must be secured by delivering a biodiversity benefit primarily on site or immediately adjacent to the site, over and above that required to mitigate or compensate for any negative impact.

5.1.3. As there will inevitably be loss of quality habitat for invertebrates and in particular Priority invertebrates as a result of the proposed development of a business enterprise park on the Site it is recommended that the following measures are adopted.

5.2 SEMI-IMPROVED NEUTRAL GRASSLAND AND MARSHY GRASSLAND

- Avoidance or minimal clearance of grassland habitats on Site.
- Maintainenance and improvement of habitat connectivity within and beyond the Site boundary through suitable planting of native, locally sourced species that reflect the area's natural diversity.
- Where loss is proposed, retained areas of grassland on Site should be subject to biodiversity improvement through a long-term management plan. The plan should include actions such as an appropriately timed cut and clear regime to ensure that soil fertility on Site remains low, enabling a diversity of plant species for a range of invertebrates including Priority species to flourish.
- Areas of retained grassland should be protected from activities such as dog walking which will cause soil enrichment over time. This would likely result in a decrease in the diversity of plant species leading to a degradation of habitat suitable to support Priority invertebrates.
- An accurate calculation of net loss due to development of quality grassland will be required, and, if required, off-site compensation provided. Any off-site compensation should be as close to the Site as possible. The selection of off- site compensation areas should also consider the habitat already present to ensure that existing valuable habitat is not adversely impacted.

5.3 OPEN MOSAIC HABITAT ON PREVIOUSLY DEVELOPED LAND/BARE GROUND

- Retain, maintain, and where possible create additional areas of bare ground for Priority invertebrate species such as six-belted clearwing, dingy skipper, and grayling adjacent to grassland suitable to support favoured larval foodplants e.g. common bird's-foot-trefoil. The retention of bare ground habitat on Site will also benefit heather on which the hieroglyphic ladybird largely depends on for survival.

5.4 POLLUTION PREVENTION MEASURES

5.4.1. Pollution prevention measures are required to avoid pollution being carried off Site (e.g., along retained culverts) and/or to other areas of the Site. These pollution prevention measures should be adopted as standard and this is particularly important where habitat is being retained. Standard best practice and pollution control measures are recommended in accordance with relevant guidance (e.g., CIRIA, 2001 and Environment Agency (2018). Guidelines for Pollution Prevention (GPP), particularly GPP 5 Works and maintenance in or near water, outlined in NetRegs (NetRegs, 2018) to ensure that watercourses/wet habitats within the are not directly or indirectly adversely affected by silt, dust, uncontrolled surface water run-off, inappropriate storage of materials and/or inappropriate refuelling of machinery. These measures should be detailed in a Risk Management Plan/ Construction Environmental Management Plan (CEMP).

- All materials (especially if hazardous or toxic) should be stored securely at least 7m away from the watercourse.
- All static machinery should be placed on drip-trays or oil absorbent nappies. Trays should be emptied regularly to ensure that they contain any spills.
- Refuelling of machinery should not be carried out on site.
- Location of site compounds should be discussed with an ecologist prior to commencement of the works.

5.5 RESEEDING/PLANTING OF GRASSLAND

- If reseeding/planting of grassland habitat is required a diverse mix of grassland/plant species is recommended to support a variety of invertebrates including Priority species. These should be native, locally sourced and carefully chosen to reflect the area's natural diversity to include species such as common bird's-foot-trefoil for six-belted clearwing and dingy skipper.
- Plant large groups of a single species in suitable locations. This is more beneficial than a large number of separate species as bumblebees in particular favour keeping to one type of flower when foraging. These would also provide food sources for moths, butterflies, and other invertebrates.

5.6 LONG AND TUSSOCKY GRASSLAND

- Retention of areas of long, tussocky grass in sunny locations to provide habitat for nesting bumblebee species, as well as other invertebrate species.

5.7 TREE PLANTING

- Plant native and locally sourced tree/shrub species to retain habitat connectivity within and beyond the Site boundary and/or mitigate trees lost through the development. Plant species such as hawthorn, hazel *(Corylus avellana),* bird cherry *(Prunus padus),* guelder-rose *(Viburnum opulus)* and holly (*Ilex aquifolium*) in suitable locations on site (under the guidance of an ecologist). Hazel would provide an early source of pollen and nectar for early emerging bees and other invertebrates. Grouping together these trees would be more beneficial for foraging invertebrates and would also provide food (berries) and dense cover for sheltering and nesting birds.

5.8 CREATION OF ADDITIONAL WATER BODIES

- Creation of wildlife ponds to establish additional habitat for damselfly and dragonfly species identified as of Local Concern via SEWBReC data searches and/or other invertebrate species dependent on aquatic/damp habitat for survival.
- Ponds would also be beneficial for other species such as amphibians, grass snake *(Natrix helvetica helvetica),* bats, and birds.

5.9 CREATION OF BEE BANK

- Creation of a bee bank: a crescent-shaped south-facing bank at least 3m long and up to 1m high surrounded by at least 1m of bare ground to be placed in a sunny area i.e., away from shade. The bank could be created using existing substrate and capped off with sub-soil from the Site and/or builders' sand. The bank's borders should also be covered with sand to suppress weeds and create additional nesting habitat for mining bees, as well as basking, nesting, burrowing, and hunting habitat for other invertebrates such as beetles, butterflies and ants. Information on the creation of bee banks can be found here: https://cdn.buglife.org.uk/2020/04/Bee-bank-booklet-4.pdf

5.10 CREATION OF GREEN ROOFS FOR INVERTEBRATES

- Where possible consider the creation of green roofs for invertebrates for the proposed development. Green roofs can be naturally colonised by grasses and wildflowers local to the area or can be seeded/planted with appropriate species. Information on the creation of green roofs for invertebrates can be found here: https://cdn.buglife.org.uk/2019/07/Creating-Green-Roofs-for-Invertebrates_Best-practice-guidance.pdf

5.11 BRASH PILES

- Brash piles created from vegetation removal would provide additional habitat for invertebrate species.

5.11.1. All recommendations regarding habitats on Site should consider the recommendations made in other species/habitat-specific reports for the Site e.g., NVC report (Redstart, 2025).

6 REFERENCES

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Appendix A

SUMMARY OF ECOLOGICAL DESK STUDY DATA

Public

Priority invertebrate species records within 2km of the Site

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Autumnal rustic	*Eugnorisma glareosa*	S7	1	September 2015
Blood-vein	*Timandra comae*	S7	2	August 2021
Brindled beauty	*Lycia hirtaria*	S7	3	2023
Broom moth	*Ceramica pisi*	S7	2	August 2022
Buff ermine	*Spilosoma lutea*	S7	6	2023
Cinnabar	*Tyria jacobaeae*	S7	9	August 2022
Dark-barred twin-spot carpet	*Xanthorhoe ferrugata*	S7	3	June 2021
Dingy skipper	*Erynnis tages*	S7, RDB1 (UK) - VU, LI(SEWBReC)	3	June 2021
Dot moth	*Melanchra persicariae*	S7	1	June 2023
Dusky brocade	*Apamea remissa*	S7	1	June 2015
Dusky thorn	*Ennomos fuscantaria*	S7	2	August 2022
Ear moth	*Amphipoea oculea*	S7	1	August 2015
Flounced chestnut	*Anchoscelis helvola*	S7	1	September 2015
Garden tiger	*Arctia caja*	S7	2	2023
Ghost moth	*Hepialus humuli*	S7	1	June 2021
Grass rivulet	*Perizoma albulata*	S7	4	June 2023
Grayling	*Hipparchia semele*	S7, RDB1 (UK) - VU, LI(SEWBReC)	3	July 2022
Green-brindled crescent	*Allophyes oxyacanthae*	S7	2	October 2023
Knot grass	*Acronicta rumicis*	S7	1	June 2015
Marsh fritillary	*Euphydryas aurinia*	HDir, WCA5, S7, Bern, RDB1 (UK) - VU	1	August 2021
Mottled rustic	*Caradrina morpheus*	S7	1	June 2015
Neglected rustic	*Xestia castanea*	S7	1	August 2015
Rustic	*Hoplodrina blanda*	S7	1	July 2023
Sallow	*Cirrhia icteritia*	S7	2	September 2021
Shimmering ruby-tail	*Chrysis fulgida*	S7	1	June 2019
Shoulder-striped wainscot	*Leucania comma*	S7	2	June 2022
Small heath	*Coenonympha pamphilus*	S7, RDB1 (UK) - NT	15	July 2023
Small phoenix	*Ecliptopera silaceata*	S7	2	2023
Small square-spot	*Diarsia rubi*	S7	1	June 2015
White ermine	*Spilosoma lubricipeda*	S7	1	June 2015

Invertebrate species records of Local Concern within 2km of the Site

Common Name	Scientific Name	Legislation / Conservation Status	No of Records	Most Recent Record
Bilberry bumblebee	*Bombus monticola*	LBAP (MTR)	1	May 2019
Black darter	*Sympetrum danae*	LI(SEWBReC)	2	2020
Black-tailed skimmer	*Orthetrum cancellatum*	LI(SEWBReC)	2	June 2019
Buff-tailed bumblebee	*Bombus terrestris*	LBAP (MTR)	3	August 2022
Cantharis nigra (=thoracica)	*Cantharis nigra (=thoracica)*	LI(BIS)	1	June 2018
Common carder bee	*Bombus pascuorum*	LBAP (MTR)	9	September 2023
Early bumblebee	*Bombus pratorum*	LBAP (MTR)	2	August 2022
Emerald damselfly	*Lestes sponsa*	LI(SEWBReC)	3	2022
Golden-ringed dragonfly	*Cordulegaster boltonii*	LI(SEWBReC)	2	July 2020
Keeled skimmer	*Orthetrum coerulescens*	LI(SEWBReC)	1	July 2017
Long-winged cone-head	*Conocephalus fuscus*	LI(SEWBReC)	2	September 2023
Red-tailed bumblebee	*Bombus lapidarius*	LBAP (MTR)	5	July 2023
Scarce blue-tailed damselfly	*Ischnura pumilio*	RDB1 (UK) - NT, LI(SEWBReC)	2	July 2018
Short-winged cone-head	*Conocephalus dorsalis*	LI(SEWBReC)	1	August 2022
Small garden bumble bee	*Bombus hortorum*	LBAP (MTR)	2	June 2018
Spike-marked drill	*Dichrorampha alpestrana*	LI(BIS)	1	June 2022

Legislation Abbreviation descriptions

Legislation/Conservation status abbreviation descriptions			
BAP	UK Biodiversity Action Plan	LI(SEWBReC)	Locally Important Species (as identified by local specialists) in SEWBReC area.
Bern	Bern Convention on the Conservation of European Wildlife and Natural Habitats	LI (VC##)	Locally Important Species (as identified by local specialists) in Vice County ##
HDir	EU Habitats Directive	RD1/RDB1(UK)	Red Data Book listing for the UK based on IUCN guidelines (CE= Critically Endangered, EN= Endangered, VU= Vulnerable, NT= Near Threatened, LC=Least Concern)
LBAP	Local Biodiversity Action Plan species for the listed area	RD1 (Wales)	Red Data Book listing for Wales based on IUCN guidelines
LBAP (MTR)	Merthyr Tydfil County Borough Council Local Biodiversity Action Plan	S7	Environment (Wales) Act 2016 (Section 7)
LI	Locally Important within the listed area	WCA5	Wildlife & Countryside Act 1981 Schedule 5 (Animals which are protected from killing and taking, possession, disturbance and sale)
LI (BIS)	Locally Important Species (as identified by local specialists) Biodiversity Information Service (BIS) for Powys and Brecon Beacons National Park	##	Vice County number. For more information on Vice Counties please visit the BBS website. https://websites.rbge.org.uk/bbs/recording/vcmappage.htm

Appendix B

SURVEY CONDITIONS

Public

Invertebrate Survey Conditions

Date of survey	Surveyors	Weather conditions
11 June 2025	Tara Okon (Consultant Ecologist) Eliott Spiller (Senior Ecologist)	Temperature: 16°C – 21°C Wind: 2 – 4 Precipitation: None Humidity: 61% - 73% Cloud cover: 0
14 August 2025	Tara Okon (Consultant Ecologist) Trevor Fletcher (Senior Ecologist)	***Day-time*** Temperature: 19°C - 23°C Wind: 3 – 4 Precipitation: Periodic spells of light rain, occasional heavy showers Humidity: 69% - 88% Cloud cover: 4 - 8 ***Night-time*** Temperature: 15°C - 19°C Wind: 3 Precipitation: None Humidity: 83% - 100% Cloud cover: 0

Key: Cloud: scale 0 - 8, 0 = clear skies, 4 = 50% cover, 8 = complete cloud cover

Wind: Beaufort scale 0 – 12 , 0 = calm, 2 = light breeze, 4 = moderate breeze, 6 = strong breeze, 7 = Moderate gale, 9 =Strong gale 12 = Hurricane

Appendix C

INVERTEBRATES RECORDED ON SITE

Public

Scientific name	Common name	Family	Order	Conservation status/ distribution
Aranae (spiders)				
Anyphaena accentuata	Buzzing spider	Anyphaenidae	Araneae	-
Araneus diadematus	Garden spider	Araneidae	Araneae	-
Araneus quadratus	4-spot orb-weaver spider	Araneidae	Araneae	-
Larinioides cornutus	Furrow orb weaver	Araneidae	Araneae	-
Mangora acalypha	Cricket bat spider	Araneidae	Araneae	-
Clubiona species	A foliage spider	Clubionidae	Araneae	-
Dictyna arundinacea/uncinata agg.	A mesh-webbed spider	Dictynidae	Araneae	-
Linyphia hortensis	A money spider	Linyphiidae	Araneae	-
Linyphia triangularis	Common sheetweb spider	Linyphiidae	Araneae	-
Neriene montana	A money spider	Linyphiidae	Araneae	-
Walckenaeria species	A money spider	Linyphiidae	Araneae	-
Pardosa pullata	Common Wolf-spider	Lycosidae	Araneae	-
Pisaura mirabilis	Nursery web spider	Pisauridae	Araneae	-
Heliophanus species	A jumping spider	Salticidae	Araneae	-
Enoplognatha ovata	Common candy-striped spider	Theridiidae	Araneae	-
Metellina segmentata/mengei agg.	A long-jawed orb weaver spider	Tetragnathidae	Araneae	-
Tetragnatha extensa	Common stretch spider	Tetragnathidae	Araneae	-
Tetragnatha species	A long-jawed orb weaver spider	Tetragnathidae	Araneae	-
Xysticus cristatus	A crab spider	Thomisidae	Araneae	-
Coleoptera (beetles)				
Aspidapion aeneum	A weevil	Apionidae	Coleoptera	-
Exapion ulicis	Gorse weevil	Apionidae	Coleoptera	-
Protapion species	A seed weevil	Apionidae	Coleoptera	-
Deporaus betulae	Birch leaf roller weevil	Attelabidae	Coleoptera	-
Perapion hydrolapathi	A weevil	Brentidae	Coleoptera	-
Abax parallelopipedus	A ground beetle	Carabidae	Coleoptera	-
Harpalus affinis	A ground beetle	Carabidae	Coleoptera	-
Paradromius linearis	A ground beetle	Carabidae	Coleoptera	-
Pterostichus madidus	Black clock beetle	Carabidae	Coleoptera	-
Cantharis rufa	A soldier beetle	Cantharidae	Coleoptera	-
Cantharis rustica	Rustic sailor beetle	Cantharidae	Coleoptera	-
Aphthona pallida	A flea beetle	Chrysomelidae	Coleoptera	-

Scientific name	Common name	Family	Order	Conservation status/ distribution
Crepidodera aurea	A flea beetle	Chrysomelidae	Coleoptera	-
Neocrepidodera transversa	A flea beetle	Chrysomelidae	Coleoptera	-
Coccinella hieroglyphica	Heiroglyphic ladybird	Coccinellidae	Coleoptera	Local
Coccinella semptempunctata	7-spot ladybird	Coccinellidae	Coleoptera	-
Harmonia axyridis	Harlequin ladybird	Coccinellidae	Coleoptera	Introduced non-native species : Common
Propylea quattuordecimpunctata	14-spot ladybird	Coccinellidae	Coleoptera	-
Polydrusus formosa	A green weevil	Curculionidae	Coleoptera	NS (Notable - A)
Rhinoncus leucostigma	A thick-nosed *Ceutorhynch* weevil	Curculionidae	Coleoptera	-
Sitona lineatus	Pea-leaf weevil	Curculionidae	Coleoptera	-
Trichosirocalus troglodytes	A weevil	Curculionidae	Coleoptera	-
Agriotes obscurus	Wireworm click beetle	Elateridae	Coleoptera	-
Agriotes pallidulus	A click beetle	Elateridae	Coleoptera	-
Oedemera lurida	False blister beetle	Oedemeridae	Coleoptera	-
Tachyporus chrysomelinus agg.	A rove beetle	Staphylinidae	Coleoptera	-
Dermaptera (earwigs)				
Forficula auricularia	Common earwig	Forficulidae	Dermaptera	-
Diptera (flies)				
Phytomyza agromyzina	A leaf-mining fly	Agromyzidae	Diptera	-
Leptogaster cylindrica	Striped slender robberfly	Asilidae	Diptera	-
Bibio leucopterus	A fly	Bibionidae	Diptera	-
Chrysopilus cristatus	A snipe fly	Chrysopilinae	Diptera	-
Dolichopus ungulatus	A long-legged fly	Dolichopodidae	Diptera	-
Limnellia quadrata	A shore fly	Ephydridae	Diptera	-
Minettia longipennis	A fly	Lauxaniidae	Diptera	-
Sapromyza species	A fly	Lauxaniidae	Diptera	-
Anabolia nervosa	A caddisfly	Limnephilidae	Diptera	-
Phaonia fuscata	A house fly	Muscidae	Diptera	-
Phaonia pallida	A house fly	Muscidae	Diptera	-
Phaonia species	A house fly	Muscidae	Diptera	-
Rhagio scolopaceus	A snipe fly	Rhagionidae	Diptera	-
Sciara hemerobioides	A fungus gnat	Sciaridae	Diptera	-
Coremacera marginata	Sieve-winged snailkiller	Sciomyzidae	Diptera	-
Ilione albiseta	Six-spotted snailkiller	Sciomyzidae	Diptera	-

Scientific name	Common name	Family	Order	Conservation status/ distribution
Pherbellia cinerella	Stripe-headed little snailkiller	Sciomyzidae	Diptera	-
Tetanocera elata	Field buff snail-killer	Sciomyzidae	Diptera	-
Episyrphus balteatus	Marmalade hoverfly	Syrphidae	Diptera	-
Eristalis tenax	Drone fly	Syrphidae	Diptera	-
Sphaerophoria interrupta	Interrupted globetail hoverfly	Syrphidae	Diptera	-
Sphaerophoria scripta	Common twist-tailed hoverfly	Syrphidae	Diptera	-
Phasia hemiptera	Blue-winged tachinid	Tachinidae	Diptera	-
Chaetostomella cylindrica	A fruit fly	Tephritidae	Diptera	-
Tephritis bardanae	A fruit fly	Tephritidae	Diptera	-
Urophora cardui	Thistle gall fly (gall on thistle)	Tephritidae	Diptera	-
Urophora jaceana	A fruit fly	Tephritidae	Diptera	-
Urophora quadrifasciata	Four-barred knapweed gall fly	Tephritidae	Diptera	-
Tipula oleracea	Common cranefly	Tupilidae	Diptera	-
Tipula paludosa	A cranefly	Tipulidae	Diptera	-
Herina germinationis	A picture-winged fly	Ulidiidae	Diptera	-
Herina lugubris	Four-spotted wingwaver	Ulidiidae	Diptera	-
Hemiptera (true bugs)				
Acyrthosiphon pisum	Pea aphid	Aphididae	Hemiptera	-
Aphis fabae	Black bean aphid	Aphididae	Hemiptera	-
Aphrophora alni	Alder spittlebug	Aphrophoridae	Hemiptera	-
Aphrophora pectoralis	A froghopper	Aphrophoridae	Hemiptera	-
Philaenus spumarius	Common froghopper	Aphrophoridae	Hemiptera	-
Athysanus argentarius	Silver leafhopper	Cicadellidae	Hemiptera	-
Cicadella viridis	Green leafhopper	Cicadellidae	Hemiptera	-
Kybos cf. *smaragdula*	A leafhopper	Cicadellidae	Hemiptera	-
Coreus marginatus	Dock bug	Coreidae	Hemiptera	-
Cymus glandicolor	A plant bug	Lygaeidae	Hemiptera	-
Megalonotus species *	A ground bug	Lygaeidae	Hemiptera	-
Acetropis gimmerthalii	A mirid bug	Miridae	Hemiptera	-
Calocoris roseomaculatus	Rosy plant bug	Miridae	Hemiptera	-
Capsus ater	Black plant bug	Miridae	Hemiptera	-
Hoplomachus thunbergi	A mirid bug	Miridae	Hemiptera	-
Leptoterna dolabrata	Meadow plant bug	Miridae	Hemiptera	-

Scientific name	Common name	Family	Order	Conservation status/ distribution
Leptoterna ferrugata	Red meadow plant bug	Miridae	Hemiptera	-
Lygocoris pabulinus	Common green capsid bug	Miridae	Hemiptera	-
Myrmus miriformis	A plant bug	Miridae	Hemiptera	-
Orthocephalus coriaceus	A plant bug	Miridae	Hemiptera	-
Phytocoris varipes	A plant bug	Miridae	Hemiptera	-
Polymerus palustris	A plant bug	Miridae	Hemiptera	-
Stenodema holsata	Grass plant bug	Miridae	Hemiptera	-
Stenodema laevigata	A plant bug	Miridae	Hemiptera	-
Teratocoris antennatus	A plant bug	Miridae	Hemiptera	-
Trigonotylus ruficornis	A plant bug	Miridae	Hemiptera	-
Aelia acuminata	Bishop's mitre shieldbug	Pentatomidae	Hemiptera	-
Dolycoris baccarum	Hairy shieldbug	Pentatomidae	Hemiptera	-
Eurydema oleracea	Brassica shieldbug	Pentatomidae	Hemiptera	-
Piezodorus lituratus	Gorse shieldbug	Pentatomidae	Hemiptera	-
Palomena prasina	Green shieldbug	Pentatomidae	Hemiptera	-
Eurygaster testudinaria sensu stricto	Tortoise bug	Scutelleridae	Hemiptera	-
Hymenoptera (bees, wasps, and ants and relatives)				
Apis mellifera	Honey bee	Apidae	Hymenoptera	-
Bombus hypnorum	Tree bumblebee	Apidae	Hymenoptera	-
Bombus lapidarius	Red-tailed bumblebee	Apidae	Hymenoptera	-
Bombus lucorum agg.	White/buff-tailed bumblebee	Apidae	Hymenoptera	-
Bombus pascuorum	Common carder bee	Apidae	Hymenoptera	-
Lasius flavus	Yellow meadow ant	Formicidae	Hymenoptera	-
Lasius niger	Black garden ant	Formicidae	Hymenoptera	-
Myrmica rubra	Red ant	Formicidae	Hymenoptera	-
Lasioglossum calceatum/albipes	A furrow bee	Halictidae	Hymenoptera	-
Enicospilus ramidulus	An ichneumon	Ichneumonidae	Hymenoptera	-
Fenusa dohrnii	Dorhn's alder mining sawfly	Tenthredinidae	Hymenoptera	-
Tenthredo arcutata/brevicornis/notha/schaefferi agg.	A sawfly	Tenthredinidae	Hymenoptera	-
Vespula vulgaris	Common wasp	Vespidae	Hymenoptera	-
Isopoda (woodlice)				
Armadillidium vulgaris	Common pill woodlouse	Armadillididae	Isopoda	-

Scientific name	Common name	Family	Order	Conservation status/ distribution
Philoscia muscorum	Common striped woodlouse	Philosiidae	Isopoda	-
Lepidoptera (moths and butterflies)				
Agriphila selasella	A micro moth	Crambidae	Lepidoptera	Local
Agriphila tristella	A micro moth	Crambidae	Lepidoptera	-
Crambus perlella	Satin grass-moth	Crambidae	Lepidoptera	-
Nomophila noctuella	Rush veneer	Crambidae	Lepidoptera	-
Pyrausta despicata	Straw-barred pearl	Crambidae	Lepidoptera	-
Drepana falcataria	Pebble hook-tip	Drepanidae	Lepidoptera	-
Euclidia glyphica	Burnet companion	Erebidae	Lepidoptera	-
Ecliptopera silaceata	Small phoenix (caterpillar)	Geometridae	Lepidoptera	S7
Ectropis crepuscularia	The Engrailed	Geometridae	Lepidoptera	-
Ennomos alniaria	Canary-shouldered thorn	Geometridae	Lepidoptera	-
Peribatodes rhomboidaria	Willow beauty	Geometridae	Lepidoptera	-
Petrophora chlorosata	Brown sliver-line	Geometridae	Lepidoptera	-
Rhodometra sacraria	The vestal	Geometridae	Lepidoptera	Migrant
Cameraria ohridella	Horse-chestnut leaf miner	Gracillariidae	Lepidoptera	-
Opisthograptis luteolata	Brimstone	Geometridae	Lepidoptera	-
Polyommatus icarus	Common blue	Lycaenidae	Lepidoptera	-
Stigmella aurella	A micro moth	Nepticulidae	Lepidoptera	-
Agrotis puta	Shuttle-shaped dart	Noctuidae	Lepidoptera	-
Amphipoea oculea	Ear moth	Noctuidae	Lepidoptera	S7
Amphipyra pyramidea	Copper underwing	Noctuidae	Lepidoptera	-
Noctua janthe	Lesser broad-bordered yellow underwing	Noctuidae	Lepidoptera	-
Anchoscelis litura	Brown-spot pinion	Noctuidae	Lepidoptera	S7
Conistra vaccinii	The chestnut	Noctuidae	Lepidoptera	-
Diarsia rubi	Small Square-spot	Noctuidae	Lepidoptera	-
Euxoa nigricans	Garden dart	Noctuidae	Lepidoptera	S7
Noctua pronuba	Large yellow underwing	Noctuidae	Lepidoptera	-
Xestia c-nigrum	Setaceous Hebrew character	Noctuidae	Lepidoptera	-
Xestia xanthographa	Square-spot rustic	Noctuidae	Lepidoptera	-
Notodonta dromedarius	Iron prominent	Notodontidae	Lepidoptera	-
Aglais urticae	Small tortoiseshell	Nymphalidae	Lepidoptera	-
Aphantopus hyperantus	Ringlet butterfly	Nymphalidae	Lepidoptera	-

Scientific name	Common name	Family	Order	Conservation status/ distribution
Coenonympha pamphilus	Small heath	Nymphalidae	Lepidoptera	S7, RDB1 (UK) - NT
Maniola jurtina	Meadow brown	Nymphalidae	Lepidoptera	-
Pararge aegeria	Speckled wood	Nymphalidae	Lepidoptera	-
Pyronia tithonus	Gatekeeper butterfly	Nymphalidae	Lepidoptera	-
Gonepteryx rhamni	Brimstone	Pieridae	Lepidoptera	-
Pieris brassicae	Large white	Pieridae	Lepidoptera	-
Pieris napi	Green-veined White butterfly	Pieridae	Lepidoptera	-
Pieris rapae	Small white	Pieridae	Lepidoptera	-
Bembecia ichneumoniformis	Six-belted clearwing	Sesiidae	Lepidoptera	NS
Sesia bembeciformis	Lunar hornet moth	Sesiidae	Lepidoptera	-
Lathronympha strigana	A micro moth	Tortricidae	Lepidoptera	-
Zygaena species	Burnet moth species (chrysalis only seen)	Zygaenidae	Lepidoptera	-
Mecoptera (scorpionflies)				
Panorpa communis	Common scorpionfly	Mecoptera	Panorpidae	-
Neuroptera (lacewings and antlions)				
Chrysopa perla	Pearl lacewing	Chrysopidae	Neuroptera	-
Odonata (dragonflies)				
Sympetrum striolatum	Common darter dragonfly	Libellulidae	Odonata	-
Opiliones (harvestmen)				
Phalangium opilio	Common harvestman	Phalangiidae	Opiliones	-
Orthoptera (grasshoppers and crickets)				
Chorthippus brunneus	Field grasshopper	Acrididae	Orthoptera	-
Myrmeleotettix maculatus	Mottled grasshopper	Acrididae	Orthoptera	-
Omocestus viridulus	Common green grasshopper	Acrididae	Orthoptera	-
Pseudochorthippus parallelus	Meadow grasshopper	Acrididae	Orthoptera	-
Tetrix undulata	Common groundhopper	Tetrigidae	Orthoptera	-
Conocephalus dorsalis	Short-winged conehead	Tettigoniidae	Orthoptera	Local
Conocephalus fuscus	Long-winged conehead	Tettigoniidae	Orthoptera	Local
Metrioptera roeselii	Roesel's bush-cricket	Tettigoniidae	Orthoptera	Local
Polydesmida (millipedes)				
Polydesmus species	A millipede spcies	Polydesmidae	Polydesmida	-
Stylommatophora (slugs and snails)				

Scientific name	Common name	Family	Order	Conservation status/ distribution
Arion hortensis agg.	Garden slug	Arionidae	Stylommatophora	-
Arion intermedius	Hedgehog slug	Arionidae	Stylommatophora	-
Arion subfuscus agg.	Dusky slug	Arionidae	Stylommatophora	-
Aegopinella nitidula	Smooth glass snail	Gastrodontidae	Stylommatophora	-
Cepaea hortensis	White-lipped snail	Helicidae	Stylommatophora	-
Cepaea nemoralis	Brown-lipped snail	Helicidae	Stylommatophora	-
Oxychilus alliarius	Garlic snail	Oxychilidae	Stylommatophora	-
Oxychilus cellarius	Cellar snail	Oxychilidae	Stylommatophora	-
Succinea putris	Amber snail	Succineidae	Stylommatophora	-
Trombidiformes (mites)				
Trombidiidae species	A red velvet spider mite species	Trombidiidae	Trombidiformes	-

**Megalonotus* species - possibly the previously recorded Nationally Scarce Priority species *Megalonotus dilatatus* although this was not confirmed in the field.

Appendix D

PHOTOGRAPHS

Public

Table D-1 – Photographs

	
1. Marshy grassland parcel at north-west of Site (see Location 1, Figure 1-1). Damp in places although no pools of water visible after prolonged period of dry weather. Photograph taken August 2025	2. Marshy grassland with pools of standing water (compare D-1.1 August 2025). Photograph taken April 2024.
	
3. Semi-improved neutral grassland with scattered willow and hawthorn at northern end of Site (see Location 2, Figure 1-1). Photograph taken August 2025.	4. Dry ditch running east to west across northern edge of Site (near Location 2, see Figure 1-1). Photograph taken August 2025.
	
5. Wet ditch at near Location 2 (see Figure 1-1) during April 2024. See Photograph D-1.4 for comparison of conditions during August 2025.	6. Semi-improved neutral grassland between strips of plantation woodland on west-facing slopes at eastern edge of Site (see Location 3, Figure 1-1). Photograph taken August 2025.

	
7. Semi-improved neutral grassland over a stony substrate covering the most extensive area of open land on Site (see Location 4, Figure 1-1). Photograph taken August 2025 looking north.	8. Semi-improved neutral grassland on west-facing slopes at eastern edge of Site (see Location 5, Figure 1-1). Less shaded than grass slopes at Location 3 (see D-1.6). Photograph taken August 2025 looking east up the slope.
	NO IMAGE
9. Semi-improved neutral grassland at Location 6 (see Figure 1-1). Small patches of re-vegetating bare ground in foreground and well-worn manmade track through Site, right of photograph. Photograph taken in August 2025 looking north.	



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