Anglesey Land Holdings

Ecology Report (including Extended Phase 1 Survey)

Draft for Consultation

November 2024

Trueline Midlands Ltd
Registered Office: New Barn, Rempstone Road, Leicestershire LE12 6UE
Company No. 12362090. [T] 0800 030 6665 [E] info@trueline.co.uk

CONTENTS

TABLES

FIGURES

APPENDICES

A.0 EXECUTIVE SUMMARY

A.1 A Phase 1 Habitat survey of the site has been undertaken and this has determined the ecological conditions and value of habitats within the site. In tandem with this, surveys for protected species such as birds, invertebrates and badges have been carried out.

A.2 The surveys highlight that due to industrial heritage of the site, it predominantly comprises previously developed land and this land has very little or no value in terms of habitats and species. Surrounding the previously developed land there are boundary trees and woodland, including a couple of TPO areas, with vegetation and scrubland. The boundary woodland, including the TPO areas, are being retained as part of the development. The development proposals do include the proposed loss of some areas of plantation woodland within the north-west part of the site, and an existing hedgerow, but the vast majority of woodland planting will be retained and enhanced through improved management and new planting within the site itself.

A.3 There is one site of national importance in close proximity to the site, the Beddmanarch-Cymyran SSSI which is approximately 500m from the site. Given the site's coastal proximity, there is also the Holy Island SSSI, SPA and SAC approximately 2.5km from the site. There is no impact on these sites of importance from the proposed development.

A.4 In terms of protected species, there is evidence of birds, invertebrates and badgers on site with a summary of each noted below:

- Birds – all recorded species of birds on site are widespread to abundant in North Wales and the UK, and no significant overwintering populations were recorded. During construction, and in accordance with best practice, an appropriately experienced Ecological Clerk of Works (ECoW) will be on site to monitor any potential for disturbance of protected species and advise on mitigation should any disturbance occur.

- Invertebrates – the site includes areas of suitable habitat for invertebrates, including for Key Species, some of which are considered rare. However, the species composition is largely concentrated around the scrub fringe/grassland interface, woodlands and wetland features which won't be adversely impacted by the proposed development. Several measures are recommended to help provide suitable habitats for invertebrates including planting in foraging areas, butterfly banks, perennial swards and wetland enhancement.

- Badgers – there is evidence of badges on site within the existing green infrastructure and mitigation measures will be provided, in accordance with best practice, to ensure their protection.

A.4 Therefore, the impacts of the development on on-site ecology will be limited, and mitigated through a combination of better on-site management of existing features, plus new planting and landscaping within the site which will further enhance the quality and diversity of habitats on-site. Future reserved matters applications will include details of on-site and on-plot landscaping which will in combination help ensure an improved coverage of vegetation and potentially additional wet habitats associated with sustainable drainage features.

1.0 INTRODUCTION

1.1 This Ecology Report has been produced by Trueline Midlands Ltd on behalf of Anglesey. Land Holdings Ltd. It provides the results of Extended Phase 1 Habitat and preliminary protected species surveys undertaken at the former Penrhos Aluminium Works site (known as Prosperity Parc) and assesses the impact from the proposals on the ecology of the site. The Report is supported by appendices in relation to Bat, Badger and Wintering Bird surveys.

1.2 The proposed development is for an outline planning application for the redevelopment of Proposed Parc, and as described as follows:

'Outline permission for the demolition of structures and buildings to allow construction of new employment floorspace including, data centres (use class B8), offices and research and development space (use class B1), and battery energy storage (Unique use). Development to include drainage arrangements, retained and new landscaping, gatehouses, and other associated buildings, infrastructure and engineering works. All matters reserved except for (retained) site accesses from the A5.'

1.3 The results of the Extended Phase 1 Habitat Survey of the Prosperity Parc site are presented within this report. The location of the site and survey area is presented in Figure 1.

Site Location and context

1.4 The site sits within the former Penrhos Aluminium Works site on Anglesey, and has been subject to heavy industry since 1971. The aluminium plant began to close in 2009 before ending operations in 2013, with various small and medium-scale occupiers within parts of the site since then. The site is bounded to the north by the A5, to the south by the A55 (North Wales Expressway) and adjacent railway line, and to the west by Holyhead Retail Park. The land is largely flat with mounds and embankments to the north and west.

1.5 The site (87.92ha) mainly comprised of hardstanding and buildings. Other habitats recorded on-site include a wetland area, broadleaved woodland, broadleaf and coniferous woodland, semi-improved grassland, scattered scrub, and tall ruderal vegetation.

2.0 METHODOLOGY OF THE PHASE 1 HABITAT SURVEY

Desk Study

2.1 In order to compile existing baseline information, relevant ecological information was requested from both statutory and non-statutory nature conservation organisations including:

- Multi Agency Geographic information for the countryside (magic) website.
- North Wales Environmental Information Service (COFNOD).
- Joint Nature Conservation Committee (JNCC).
- British Trust for Ornithology (BTO).

2.2 Further inspection of colour 1 : 25000 OS base maps (www.ordancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk) was also undertaken to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.

2.3 The search for biodiversity information was relate to the significance of the sites and species and potential zones of influence, as follows:

- 10km around the application area for sites of international importance (e.g. Special Areas of Conservation SACS), Special Protection Areas (SPAs), Ramsar sites.
- 2km around the application area for sites of international importance (e.g. Sites of Special Scientific Interest (SSSIs)
- 1Km around the application site for sites of County Importance (e.g. sites of Importance for Nature Conservation (SINC)/Local wildlife Sites (LWS); Local Nature Reserves (LNR) and species records (e.g.: protected, UK BAP or notable species).

Extended Phase 1 Habitat Survey

2.4 An initial walkover survey was undertaken by Trueline in October 2022 in conjunction with the start of an overwintering bird survey, the walkovers aim was to identify specific habitats and features of ecological interest. Subsequently, an Extended phase 1 Habitat survey was undertaken in January 2023.

2.5 The team undertaking the surveys comprised: Sam Fletcher (BSc Hons), Craig Greenwel (CIEEM), (BMCL), GCN licence holder, low class badger licence. Tim Merlow (MCIEEM), Ornithologist. Amie Trewick (CIEEM) (BMCL).

Flora/Habitats

2.6 A standard Extended Phase 1 habitat Survey methodology was followed, where habitats were marked on a base plan. During the Extended Phase 1 a survey for the presence of invasive weeds was carried out. Features such as trees or buildings that lie dormant were considered for their ecological value and potential to provide habitat for protected species.

2.7 The single hedgerow on site was surveyed based on the methods set out by Clement and Tofts[1] Hedgerows were graded on a scale of 1-4, within which scale grades 1 and 2 are generally considered to be of nature conservation priority:

1 = high to very high value
2 = moderately high to high value
3 = moderate value
4 = low value

2.8 Hedgerows were also considered against the Hedgerow Regulations 1997 Wildlife and Landscape criteria, to identify any hedgerows, which would be classified as "important" for nature conservation under this part of the act. Under this methodology, hedgerows are assessed according to the average number of woody species present within 30m survey sections, the presence of additional features such as mature trees, ditches, and hedge banks.

Fauna

2.9 During the surveys of the site, observations, signs of or suitable habitat for any species protected under Part 1 of the Wildlife and Countryside Act 1981(as amended), the conservation of Habitats & Species Regulations 2010 and the Protection of Badgers Act 1992. Consideration was also given to the existence and use of the site by other notable fauna such as species of Principle Importance as noted under S41 of the Natural Environment and Rural Communities (NERC) Act 2006, the local BAP (LBAP) or Red Data Book (RDB) species.

[1] Hedgerow Evaluation and Grading System (HEGS) by D. Clements and R. Toft from 1992

3.0 RESULTS OF THE PHASE 1 HABITAT SURVEY

Desk Study

Stautory Designated Sites

3.1 The following provides a summary of relevant nature conservation within the search area.

Table 1: Summary of Nature Conservation Designation.

Site name/ Feature	Value and Status	Designation Summary	Proximity to Application Site
Beddmanarch-Cymyran SSSI	National	The SSSI is designated for its ornithological and botanical interest. Important overwintering waterbirds include ringed plover, greenshank, red-breasted merganser and goldeneye. The UKBAP priority habitats vegetated shingle, intertidal mudflats and seagrass beds occur exclusively in the SSSI and assessed as being part of the SSSI.	539m
Holy Island Coast SPA	International	The SPA is designated for its resident chough population.	2.5km
Holy Island Coast SAC	International	Designated for its habitats including, vegetation sea cliffs of the Atlantic and Baltic coasts. European dry heaths and North Atlantic wet heaths with *Erica tetralix.*	2.5km
Holy Island SSSI	National	The SSSI is designated for its breeding aux and other cliff nesting birds	2.5km
Tre Wilmot SSSI	National	The SSSI is designated for its acidic lowland heath habitats and plant species.	4.1km
Porth Dianna SSSI	National	The SSSI is designated for its coastal heath vegetation.	2.4km
Glannau Rhoscolyn SSSI	National	The SSSI is designated for its heath habitat and its breeding chough and peregrine.	2.7km
Glannau Rhoscolyn Reedbed SSSI	National	The SSSI is designated for its tall fen habitat.	2.7km
Anglesey Valley Lakes	National	The SSSI is designated for its wetland habitats and vegetation as well as its overwintering birds.	4.8km
Llyn Dinam SAC	International	Llyn Dinam SAC is designated fits natural eutropic lakes with *Magnopotamion* or *Hydroocharition*-type vegetation.	4.9km

Protected/Notable Species

3.2 Species records were returned for within 1km of the site indicated in Table 2 below.

Table 2 Protected and Notable species Records

Species	Conservation Status	Most Recent Record	Number of Records	Location Relative to Site
Mammals				
Badger *Meles meles*	WCA Sch6	2023	52	Closest record approx.825m AAA004
European otter *Lutra lutra*	WCA Sch5, WCA Sch6, CHSR	2022	10	Closest record approx. 1818m Peibio beach
Polecat *Mustela putorius*	WCA Sch6, NERC S.41	2021	3	Closest record approx. 1992m Holyhead golf club
Hedgehog *Erinaceus europaeus*	NERC S.41	2016	2	Closest record approx. 1513m Treaddur Bay
Red Squirrel *Sciurus vulgaris*	WCA Sch 5/6 Nationally endangered LBAP, BAP	2024	5	Closest record approx. 800m
Water Vole *Arvicola amphibius*	Nationally critically endangered Red list LBAP, BAP WCA Sch 7	2004	No Records	Closest record approx. 632
Bats				
Whiskered/Brandt's Bat *Myotis mystacinus/brandtil*	WCA Sch5 NERC S41	2007	2	Closest record approx. 728m
Pipistrelle Bat *Pipistrellus*	WCA Sch5 NERC S41	2007	3	Closest record approx. 1051m
Daubentons Bat *Myotis daubentonii*	WCA Sch5 NERC S41	2007	2	Closest record approx. 1077m
Brown Long-eared Bat	WCA Sch5 NERC S41	2004	2	Closest record approx. 2021m
Birds				
Lapwing *Vanellus vanellus*	BOCC Red LBAP	2023	5	Closest record approx. 949
Common Guillemot *Uria aalge*	BOCC Amber	2021	7	Closest record approx. 552m
Mistle Thrush *Turdus viscivorus*	BOCC Red	2021	8	Closest record approx. 707m
Fieldfare *Turdus pilaris*	BOCC Red WCA Sch 1	2022	7	Closest record approx. 1872m
Song Thrush *Turdus philomelos*	BOCC Amber LBAP	2023	12	Closest record approx. 806m
Redwing *Turdus iliacus*	BOCC Amber WCA Sch 1	2023	8	Closest record approx. 949m
Wren *Troglodytes*	BOCC Amber LBAP	2021	17	Closest record approx. 453m
Redshank *Tringa totanus*	BOCC Amber	2023	17	Closest record approx. 1710m
Greenshank *Tringa nebularia*	BOCC Amber WCA Sch 1	2023	6	Closest record approx. 949m
Sandwich Tern *Thalasseus sandvicensis*	BOCC Amber	2021	15	Closest record approx. 552m
Shelduck *Tadorna tadorna*	BOCC Amber	2022	10	Closest record approx. 552m

Black cap *Sylvia atricapilla*	BOCC Green	2023	5	Closest record approx. 1098m
Starling *Sturnus vulgaris*	BOCC Red LBAP	2023	21	Closest record approx. 552m
Arctic Tern *Sterna paradisaea*	BOCC Amber	2023	2	Closest record approx. 1836m
Common Tern *Sterna hirundo*	BOCC Amber	2023	8	Closest record approx. 949m
Siskin *Spinus spinus*	BOCC Green	2023	5	Closest record approx. 1051m
Shoveler *Spatula clypeata*	BOCC Amber	2021	6	Closest record approx. 521m
Eider *Somateria mollissima*	BOCC Amber	2023	2	Closest record approx. 1051m
Stonechat *Saxicola rubicola*	BOCC Green	2023	12	Closest record approx. 595m
Kittiwake *Rissa tridactyla*	BOCC Red	2020	5	Closest record approx. 1451m
Sand Martin *Riparia riparia*	BOCC Green	2023	4	Closest record approx. 949m
Goldcrest *Regulus regulus*	BOCC Green	2021	8	Closest record approx. 453m
Bullfinch *Pyrrhula*	BOCC Amber LBAP	2023	5	Closest record approx. 949m
Chough *Pyrrhocorax pyrrhocorax*	BOCC Green WCA Sch 1	2023	9	Closest record approx. 894m
Manx Shearwater *Puffinus puffunus*	BOCC Green	2022	3	Closest record approx. 1451m
Dunnock *Prunella modularis*	BOCC Amber LBAP	2022	16	Closest record approx. 632m
Great Crested Grebe *Podiceps cristatus*	BOCC Amber LBAP	2023	16	Closest record approx. 552m
Slavonian Grebe *Podiceps auritus*	BOCC Red	2023	44	Closest record approx. 949m
Grey Plover *Pluvialis squatarola*	BOCC Amber	2023	9	Closest record approx. 949m
Spoonbill *Platalea leucorodia*	BOCC Amber WCA Sch 1	2021	1	Closest record approx. 1031m
Willow Warbler *Phylloscopus*	BOCC Amber	2021	7	Closest record approx. 1051m
Chiff chaff *Phylloscopus*	BOCC Green	2022	11	Closest record approx. 806m
Cormorant *Phalacrocorax*	BOCC Green	2023	16	Closest record approx. 949m
Coal Tit *Periparus ater*	BOICC Green	2023	3	Closest record approx. 949m
House Sparrow *Passer domesticus*	BOCC Red LBAP	2023	50+	Closest record approx. 943m
Great Tit *Parus major*	BOCC Green	2021	14	Closest record approx. 552m
Osprey *Pandion haliaetus*	BOCC Amber WCA Sch 1	2023	3	Closest record approx. 1720m
Wheatear *Oenanthe oenanthe*	BOCC Amber	2021	7	Closest record approx. 551m
Whimbrel *Numenius phaeopus*	BOCC Red	2023	7	Closest record approx. 949m
Whinchat *Saxicola rubetra*	BOCC Red LBAP WCA 1	2023	18	Closest record approx. 949m
Grey Wagtail *Motacilla cinerea*	BOCC Amber	2022	2	Closest record approx. 1790m

Pied/White Wagtail *Motacilla alba*	BOCC Green BOCC Amber	2022	6	Closest record approx. 949m
Gannet *Morus bassanus*	BOCC Green	2021	6	Closest record approx. 552m
Red Kite *Milvus milvus*	BOCC Amber	2021	1	Closest record approx. 1051m
Red- Breasted Merganser *Mergus serrator*	BOCC Amber	2021	6	Closest record approx. 1051m
Goosander *Mergus merganser*	BOCC Green	2023	4	Closest record approx. 949m
Common Scoter *Mareca strepera*	BOCC Red	2021	3	Closest record approx. 1724m
Gadwall *Mareca strepera*	BOCC Amber	2023	4	Closest record approx. 1051m
Wigeon *Mareca penelope*	BOCC Amber	2023	9	Closest record approx. 949m
Crossbill *Loxia curvirostra*	BOCC Green WCA Sch 1	2021	3	Closest record approx. 1051m
Grasshopper Warbler *Locustella naevia*	BOCC Red LBAP	2021	2	Closest record approx. 552m
Linnet *Linaria cannabina*	BOCC Red	2023	10	Closest record approx. 949m
Black-tailed Godwit *Limosa limosa*	BOCC Red LBAP	2022	9	Closest record approx. 552m
Bar-tailed Godwit *Limosa lapponica*	BOCC Amber	2022	7	Closest record approx. 552m
Great Black-backed Gull *Larus marinus*	BOCC Amber	2023	50+	Closest record approx. 949m
Lesser Black-backed Gull *Larus fuscus*	BOCC Amber	2023	50+	Closest record approx. 707m
Common Gull *Larus canus*	BOCC Amber	2023	50+	Closest record approx. 552m
Herring Gull *Larus argentatus*	BOCC Red LBAP	2023	50+	Closest record approx. 552m
Mediterranean Gull *Ichthyaetus melanocephalus*	BOCC Amber WCA Sch 1	2023	50+	Closest record approx. 552m
Swallow *Hirundo rustica*	BOCC Green	2023	50+	Closest record approx. 552m
Oystercatcher *Haematopus ostralegus*	BOCC Amber	2023	50+	Closest record approx. 552m
Shag *Gulosus aristotelis*	BOCC Red	2023	100+	Closest record approx. 949m
Red Throated Diver *Gavia stellata*	BOCC Green WCA Sch 1	2023	26	Closest record approx. 1052m
Great Northern Diver *Gavia immer*	BOCC Amber WCA Sch 1	2021	50+	Closest record approx. 1052m
Moorhen *Gallinula chloropus*	BOCC Amber	2023	200+	Closest record approx. 949m
Snipe *Gallimago gallinago*	BOCC Amber	2023	20	Closest record approx. 1052m
Fulmar *Fulmarus glacialis*	BOCC Amber	2021	3	Closest record approx. 552m
Puffin *Fratercula arctica*	BOCC Red	2023	4	Closest record approx. 552m
Kestrel *Falco tinnunculus*	BOCC Amber	2023	50+	Closest record approx. 545m

Peregrine *Falco peregrinus*	BOCC Green WCA Sch 1	2022	4	Closest record approx. 1051m
Merlin *Falco columbarius*	BOCC Red WCA Sch 1	2023	3	Closest record approx. 949m
Reed Bunting *Emberiza schoeniclus*	BOCC Amber LBAP	2021	3	Closest record approx. 552m
Little Egret *Egretta garzetta*	BOCC Green	2023	100+	Closest record approx. 635m
Great Spotted Woodpecker *Dendrocopos major*	BOCC Green	2024	50+	Closest record approx. 700m
House Martin *Delichon urbicum*	BOCC Red	2023	75+	Closest record approx. 552m
Mute Swan *Cygnus olor*	BOCC Green	2023	100+	Closest record approx. 949m
Whooper Swan *Cygnus olor*	BOCC Amber WCA Sch 1	2022	20+	Closest record approx. 1724m
Blue Tit *Cyanistes caeruleus*	BOCC Green	2023	200+	Closest record approx. 452m
Whitethroat *Curruca communis*	BOCC Amber	2023	7	Closest record approx. 949m
Cuckoo *Cuculus canorax*	BOCC Red	2022	3	Closest record approx. 552m
Raven *Corvus corax*	BOCC Green	2023	3	Closest record approx. 552m
Greenfinch *Chloris chloris*	BOCC Red	2023	50+	Closest record approx. 949m
Ringed Plover *Charadrius hiaticula*	BOCC Red	2023	200+	Closest record approx. 949m
Black Guillemot *Cepphus grylle*	BOCC Amber	2023	100+	Closest record approx. 552m
Goldfinch *Carduelis carduelis*	BOCC Green	2023	200+	Closest record approx. 552m
Goldeneye *Bucephala clangula*	BOCC Red	2023	100+	Closest record approx. 949m
Dark Bellied Brent Goose *Branta bernicla bernicla*	BOCC Amber LBAP	2023	200+	Closest record approx. 1051m
Scaup *Aythya marila*	BOCC Red WCA Sch 1	2023	200+	Closest record approx. 949m
Tufted Duck *Aythya fuligula*	BOCC Green	2023	20+	Closest record approx. 1051m
Pochard *Aythya ferina*	BOCC RED	2023	12	Closest record approx. 552m
Little Owl *Athene noctua*	BOCC Green	2023	1	Closest record approx. 2511m
Short eared Owl *Asio flammeus*	BOCC Amber	2020	1	Closest record approx. 1733m
Turnstone *Arenaria interpres*	BOCC Amber	2023	200+	Closest record approx. 1051m
Teal *Anas crecca*	BOCC Amber	2023	200+	Closest record approx. 949m
Mallard *Anas platyrhynchos*	BOCC Amber	2023	200+	Closest record approx. 1051m
Kingfisher *Alcedo atthis*	BOC Green WCA Sch 1	2023	10	Closest record approx. 1051m
Razorbill *Alca torda*	BOCC Amber	2023	22	Closest record approx. 552m
Skylark *Alauda arvensis*	BOCC Red LBAP	2021	4	Closest record approx. 552m

Sedge Warbler *Acrocephalus schoenobaenus*	BOCC Amber	2021	1	Closest record approx. 632m
Reed Warbler *Acrocephalus Scirpaceus*	BOCC Green	2021	1	Closest record approx. 632m
Amphibians & Reptiles				
Common Lizard *Zootoca vivipara*	Protected species	2004	1	Closest record approx. 781m
Great Crested Newt *Triturus cristatus*	Protected species	2018	1	Closest record approx. 1598m
Invertebrates				
Dark-barred Twin-spot Carpet *Xanthorhoe*	WCA Sch 5	2011	5	Closest record approx. 583m
Anomalous *Stilbia anomala*	WCA Sch 5	2009	1	Closest record approx. 583m
Buff Ermine *Spilosoma lutea*	WCA Sch 5	2009	6	Closest record approx. 600m
White Ermine *Spilsoma lubricopeda*	WCA Sch 5	2011	3	Closest record approx. 424
Shaded Broad-bar *Scotopteryx chenopodiata*	WCA Sch5	2013	3	Closest record approx. 552m
Mullein Wave *Copula marginepunctata*	WCA Sch 5	2012	3	Closest record approx. 552m
Sugar Kelp *Saccharina lattissima*	WCA Sch 5	2023	3	Closest record approx. 552m
Channelled Wrack *Pelvitia canaliculata*	WCA Sch 5	2023	2	Closest record approx. 644m
Powdered Quaker *Orthosia gracilis*	WCA Sch 5	2014	3	Closest record approx. 583m
Dot Moth *Malacosoma neustria*	WCA Sch 5	2011	1	Closest record approx. 600m
Shoulder Striped Wainscot *Leucani comma*	WCA Sch 5	2011	1	Closest record approx. 721m
Rosy Rustic *Hydraecia micacea*	WCA Sch 5	2009	2	Closest record approx. 500m
Grayling *Hipparchia semele*	WCA Sch 5	2021	1	Closest record approx. 949m
Ghost Moth *Hepialus humuli*	WCA Sch 5	2013	2	Closest record approx. 781m
Sea Oak *Halidrys siliquosa*	WCA Sch 5	2003	1	Closest record approx. 552m
Double Dart *Graphiphora augur*	WCA Sch 5	2011	1	Closest record approx. 707m
Bladder Wrack *Fucus vesiculosus*	WCA Sch 5	2003	1	Closest record approx. 894m
Toothed Wrack *Fucus serratus*	WCA Sch 5	2003	1	Closest record approx. 552m
White-line Dart *Euxoa tritici*	WCA Sch 5	2012	1	Closest record approx. 781m
Autumnal Rustic *Eugnorisma glareosa*	WCA Sch 5	2009	2	Closest record approx. 583m
August Thorn *Ennomos quercinaria*	WCA Sch 5	2015	2	Closest record approx. 707m
Small Phoenix *Ecliptopera silaceata*	WCA Sch 5	2014	8	Closest record approx. 500m

Small Square – spot *Diarsia rubi*	WCA Sch 5	2013	5	Closest record approx.500m
Sallow *Cirrhia icteritia*	WCA Sch 5	2012	2	Closest record approx. 583m
Green-brindled Crescent *Allophyes xyacantae*	WCA Sch 5	2015	4	Closest record approx. 707m
Knot Grass *Acronicta rumicis*	WCA Sch 5	2013	1	Closest record approx. 781m
Invertebrates				
Common Oyster *Ostrea edulis*	WCA Sch 7 BAP, LBAP-G	2015	10	Closest record approx. 1048m
Harlequin Ladybird *Harmonia axyridis*	GBNNSIP, INNS	2022	1	Closest record approx. 1000m
Blue Tailed Damselfly *Ischnura elegans*	LBAP-E	2011	2-5	Closest record approx. 985m
Alder Leaf Beetle *Agelastica alni*	RDB-NR RL-DD	2014	Larval feeding evidence	Closest record approx. 1022m
White Ermine *Spilosoma lubricipeda*	BAP, LBAP, Sch 7	2011	2	Closest record approx. 424m
Small square-spot *Diarsia rubi*	BAP, LBAP, SCH 7	2011	1	Closest record approx. 500m
Small Phoenix *Ecliptopera silaceata*	Bap, LBAP, SCH 7	2011	2	Closest record approx. 500m
Rosy Rustic *Hydraecia micacea*	BAP, LBAP, Sch 7	2009	1	Closest record approx. 500m
Sallow *Cirrihia icteritia*	BAP, LBAP, Sch 7	2009	1	Closest record approx. 583m
Powdered Quaker *Orthosia gracilis*	BAP, LBAP, Sch 7	2011	3	Closest record approx.583m
Anomalous *Stilbia anomala*	BAP, LBAP, Sch 7	2009	1	Closest record approx. 583m
Lackey *Malacosoma neustria*	BAP, LBAP, Sch 7	2009	1	Closest record approx. 600m
Green Brindled Crescent *Allophyes oxyacanthae*	BAP, LBAP, Sch 7	2015	2	Closest record approx. 707m
August Thorn *Ennomos quercinara*	BAP, LBAP, Sch 7	2015	2	Closest record approx. 707m
Double Dart *Graphiphora augur*	BAP, LBAP, Sch 7	2011	1	Closest record approx. 707m
Shaded Broad-bar *Scotopteryx chenopodiata*	BAP, LBAP, Sch 7	2011	1	Closest record approx. 707m
Dusky Brocade *Apamea remissa*	BAP, LBAP, Sch 7	2011	1	Closest record approx. 707m

Field Survey – Habitats

3.3 The Aluminium plant began end operation in 2009 before closing in 2013, with the site having small and medium-scale occupiers since then. The 87.92 ha site consists of a large amount of hardstanding and buildings, with little rudimental growth. Other habitats on site included dense scrub, mixed plantations woodlands, broadleaved plantation woodland and semi-improved grassland, an area of bracken, a wetland/reed bed and singular hedgerow and wet ditch.

3.4 The locations of the habitats described below are illustrated in figure 1 – Phase 1 Habitat Plan of the Ecology. A separate arboriculture report should be used in conjunction with this report. Botanical species list detailed in **Appendix A** of this survey report.

Broadleaved woodland

3.5 A broadleaf woodland possibly from plantation origin was located to the Northeast of the site. The woodland mainly comprised of semi-mature sycamore *Acer pseudoplanus,* other tree species present in the woodland were; Cherry *Prunus avium,* Oak *Quercus robur,* Ash *Fraxinus excelsior,* Hawthorn *Crataegus monogyna.* There was *Rhododendron ponticum* present throughout the woodland. The ground flora was heavily covered with bramble *Rubus fruticosus agg.* Other species present was Harts-tongue fern *Asplenium scolopendrium*, Common polypody *polypodium vulgare,* Cow parsley *Anthriscus sylvestris,* Common nettle, Bluebells *Hyacinthoides non-scripta, Snowdrops Galanthus nivalis,* Sphagnum moss *Sphagnum.*

Mixed Woodland

3.6 Broad-leaved semi natural woodland likely of plantation origin is situated along the Northern boundary. The woodland mainly consists of *Acer Pseudoplantus* (Sycamore), *Quercus Robur* (English Oak) which was probably before the plantation was planted and *Betula pendula* (Silver birch) exists on the woodland edges.Thorn scrub variously consisting of *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn) and *Sambucus nigra* (Elder) occurs in several places. The understory mainly consists of *Rubus fruticosus* (bramble) and *Pteridium auilinum* (Bracken).

Other Tall Herb and ferns

3.7 A standalone patch of predominantly bracken *Pteridium auilinum* with some rosebay willowherb *Chamaenerion angustifolium* is situated near the Southwestern boundary of the site.

Semi Improved grassland

3.8 Semi improved grassland occurs in isolated areas around the site, mainly around the perimeter and road verges. This habitat is managed by mowing, it has a uniform sward height of around 10cm and contains the most common grass. *Lolium perenne* (Perennial Rye-grass) together with *Trifolium scabrum* (Rough clover) dominated these areas.

Dense/Continuous scrub

3.9 An area of dense scrub was located on the southern boundary of backing on to the railway. The area consists of predominantly gorse *Ulex europaeus* with individual heather plants *Calluna vulgaris* dotted around the area. Larger areas of buddleia *Buddleia davidii* are present along the boundary fence.

Scattered Scrub

3.10 Occasional scattered srub including buddleia *Buddleia davidii,* gorse *Ulex europaeus,* bramble *Rubus armeniacus* were present in isolated patches across the site but predominantly along the old railway found along the southern boundary of the site.

Wetland: Reedbed and scattered Broadleaved Trees

3.11 A sizeable wetland area to the western boundary is heavily vegetated with common reed *Phragmites australis* and some isolated patches of bulrush *Typha latifolia.*

Willow and other ruderal vegetation

3.12 An area of willow regen is situated to the North of the site, it is made up of goat willow *Salix Caprea* with bullrush *Scirpoides holoschoenus* scattered around in the wetter areas. There is also *Epilobium hirsutum (Great willowherb).* This area is subject to ongoing management by the landowner.

Native Hedgerow

3.13 There is one hedgerow on-site, details of canopy composition in addition to the physical characteristics of the hedgerows (profile, length, % gaps etc.) are presented in table 3.

Table 3: Hedgerow Composition and Descriptions

Ref	Canopy Species	Length	Notes	HEGS grade / value
H1	Hawthorn, blackthorne, field maple, elder, oak, birch	390m	Rus along aluminium works fence line. Completely unmanaged, 20% gaps, several mature trees, no connections.	3 / moderate

Standing Water

3.14 Pond P1 was located on the Northwestern boundary, it likely forms part of a sustainable drainage system (SUDS). The pond was approx. 25m x 12m and supported shallow water less than 10cm deep. A dense stand of common reed *Phragmites australis* covered 100% of the pond footprint. Pond P2 comprises of deep canal type areas of standing water which the creates the wider wetland area. Likely to be part of the same drainage system as P1. An approx. measurement was not possible due to dense vegetation and soft, uneven ground making access unsafe. A dense stand of common reed *Phragmites australis* and bulrush *Typha latifolia* completed covers the Southern and Eastern extend of the wetland area.

Running Water

3.15 The only ditch present on site runs from East to West towards the Northern edge of site (see Figure 1). Approximately 2m in width and supported shallow slow flowing water which was less than 10cm deep. The ditch flowed into the wetland area/P2. The ditch supported zero diversity of aquatic and marginal species due to site management through dredging. The Northern margins consisted of dense bramble *Rubus armeniacus* the entire length of the ditch.

Fauna

Bats

3.16 The site does not provide much in terms of potential foraging and movement habitats for bat species along linear features. The hardstanding and tall ruderal vegetation are of limited value to bats. As such the site overall is considered low value for bats. The buildings on site are considered unsuitable for bats so no further surveys are required. Notwithstanding the results

of the surveys, as a precautionary and beat practice approach to provide further roosting opportunities, bat boxes are proposed to be installed within the woodland towards the north-west boundary of the site. Bat boxes could also be installed on the buildings once developed.

Great Crested Newts

3.17 Suitable terrestrial habitat for great crested newts (GCN) *Triturus cristatus* was limited to hedgerow bases, small woodland, semi-improved grassland and scrub. These areas provide potential commuter corridors to other areas of the site and the railway, the has some potential for GCN to commute into the wider area. There are no freshwater ponds within 500m of the site so no further surveys off off-site ponds is required. The water in ponds P1 and P2 on site were found to be brackish water, making them unsuitable for GCN.

Reptiles

3.18 The site offers suitable habitat for reptiles, the open hard standing offers lots of potential areas to bask whilst the surrounding areas of scrub, tall ruderal, woodland and semi-improved grassland offer areas to forage. Hibernation habitat is also abundant with the surrounding woodland, scrub and scattered construction material. Reptile surveys were completed in 2023 (dates in 2023: 28 May, 12 June, 18 June, 03 July, 07 July, 16 July, 20 July), during which no reptiles were found. This absence is supported by the finding within the desktop survey which showed only one common lizard *Zootoca viviparous* record in 2004, some 781m away from site. No further reptile surveys are considered to be required.

Birds

3.19 Habitats within the site provide habitat for a range bird species. There are nesting and foraging opportunities within the site's woodland, hedge, scrub and wetland habitats. There is potential habitat for ground nesting skylark *Alauda arvensis.* The site is situated near the coastline were a range of wading and marine species are present. Such species may use the site for shelter or loafing. As a result of the Phase 1 surveys, full breeding bird survey were undertaken in 2023 (dates in 2023: 24 April, 13 May, 15 June, 12 July) and overwintering bird surveys were completed between October 2022 and March 2023 (see **Appendix B** of this report).

Red Squirrel

3.20 The site has two woodlands with potential for red squirrel *Sciurus vulgaris*. However, during the 2023 surveys (dates in 2023: 02 October, 06 November), no red squirrels, dreys, or evidence of feeding was recorded. The smaller of the two woodlands would provide a food source as the species of tree within the woodland contain seed/nuts which is a preferred food of the red squirrel. A study conducted by Verbeylen *et al* (2003) suggests that fragments of woodlands under 3.5ha will not be occupied by red squirrels which would suggest why they are not present.

Invertebrates

3.21 The mosaic of different habitats on site provides habitat for several invertebrate species. The desktop study highlighted many BAP, LBAP-G and schedule 7 species of which corresponded with the surveys undertaken in 2023. Details of which are shown in the comprehensive Invertebrate Survey Report in **Appendix C**.

Badgers

3.22 The application site provides foraging habitat for badgers within the grassland, tall ruderal vegetation, woodlands, scrub and wetland. The woodlands provide a movement corridor and opportunities for sett creation. One active main sett and one disused sett are located on site. A comprehensive badger survey has been undertaken, of which full details are presented in the associated Badger Survey Report in **Appendix D** of this report.

Other Species

3.23 No evidence of any other faunal species protected by statute or otherwise notable species was observed during the Phase 1 Habitat surveys. The site provides limited suitable habitat for water vole and limited suitability for otter, with the ditch being predominantly dry. No further survey was considered necessary given the sites lack of suitable for these species.

Conclusions of Extended Phase 1 Habitat Surveys

3.24 The surveys highlight that due to industrial heritage of the site, it predominantly comprises previously developed land and this land has very little or no value in terms of habitats and species. Surrounding the previously developed land there are boundary trees and woodland, including a couple of TPO areas, with vegetation and scrubland. The boundary woodland, including the TPO areas, are being retained as part of the development. The development proposals do include the proposed loss of some areas of plantation woodland within the north-west part of the site, and an existing hedgerow, but the vast majority of woodland planting will be retained and enhanced through improved management and new planting within the site itself.

3.25 There is one site of national importance in close proximity to the site, the Beddmanarch-Cymyran SSSI which is approximately 500m from the site. Given the site's coastal proximity, there is also the Holy Island SSSI, SPA and SAC approximately 2.5km from the site. There is no impact on these sites of importance from the proposed development.

3.26 In terms of protected species, the Phase 1 surveys found no evidence of reptiles, Great Crested Newts and red squirrels. The surveys also noted that the site provides limited suitable habitat for bats, water vole and limited suitability for otters. However, there is evidence of birds, invertebrates and badgers on site, and therefore further surveys provided are to understand their presence and activity on site.

4.0 ADDITIONAL SURVEYS

4.1 With the Phase 1 Survey demonstaing a need for further surveys for birds, invertebrates and badgers, these surveys have been undertaken with a summary of each provided below.

Birds

4.2 An overwintering birds survey was undertaken at the site between October 2022 and March 2023. The proposed development and associated infrastructure will result in the loss of on-site habitat which is suitable for wintering birds.

4.3 Birds recorded during the surveys that are most vulnerable to impacts are the notable species that are resident or overwintering on site, and relying on habitats on site for winter foraging – this comprise:

- Wood cock, *Scolopax rusticola*,
- Kestrel, *Falco Tinnunculus*,
- Skylark, *Alauda Arvensis*,
- Grey Wagtail, *Motacilla Cinerea*,
- Wren, *Troglodytidae*,
- Teal, *Anas Crecca*,
- Wigeon, *Anas Penelope*,
- Song Thrush, *Turdus Philomelos*.

4.4 The proposed development will likely result in temporary disturbance, to varying degrees, for all recorded species, affecting behaviours such as nesting, roosting and foraging. Operations likely to disturb birds include noise pollution and habitat loss from vegetation clearance, and noise from construction activities. Some permanent loss of scrub and grassland habitat is expected on site to accommodate for the development however, there are also opportunities to manage and enhance the existing wetland, woodland and grassland areas within the site which could encourage a greater variety of birds species to visit the site.

4.5 It should be noted that the site is of 'immediate zone of influence' conservation value since the species present are widespread and common in North Wales. The proximity of the site to important bird sites locally suggests that abundant habitat exists within the sites landscape for all recorded species. It is therefore expected that the loss of habitat on the site will not damage local populations of overwintering birds. However, birds on the site are likely to be displaced or affected by the development either temporarily or permanently by the disturbance and loss of habitat.

4.6 In terms of mitigation for construction, prior to the commencement of works on site and in accordance with best practice, the site Ecologist will brief contractors and provide a Precautionary Working Method Statement to ensure appropriate care and attention during the construction phase. The proposed works will be accompanied by an appropriately experienced Ecological Clerk of Works (ECoW) to monitor any potential for disturbance of protected species. Should the ECoW detect such disturbance, or any breach of the WCA for all bird species, they will temporarily pause works and advise accordingly.

Invertebrates

4.7 The surveys show that the site includes areas of suitable habitat for invertebrates, including for Key Species. However, the species composition is largely concentrated around the scrub fringe/grassland interface, woodlands and wetland features which won't be adversely impacted by the proposed development.

4.8 An analysis of the Key Species found reveals that the majority are not of great conservation concern. However, at least three of these species are still of local significance, being rare in Wales or at least with very few records in the country. Species such as Paralimnus phragmitis, Elaphropus parvulus, Agriotes sordidus, Sitona waterhouse, Ensina sonchi and Acanthiophilus helianthi are all rare in North Wales and Britain as a whole.

4.9 Several measures are recommended to help provide suitable habitats for invertebrates including planting in foraging areas, butterfly banks, perennial swards and wetland enhancement.

Badgers

4.10 A badger survey was undertaken in March 2023 to search for signs of badger across the whole of the former Penrhos Aluminium Works site.

4.11 The badger survey records that one active main sett was found within the site which consisted of approximately 6 active holes. A disused outlier sett comprising 4 holes and was in a poor condition, was also located within the site but there were no signs of recent badger activity, and it is therefore considered that the sett has been abandoned.

4.12 Based on the status of the active sett, and in view of the comparatively low levels of activity recorded during the survey within the wider site, it is considered the application site serves as part of the core territory for a badger social group. However, the social group is likely to forage along the railway corridor towards Penrhos Country Park where historic records show a lot of activity. The result of the survey supports the conclusion that a badger social group does utilise a small area of site for foraging, but this is just part of their more extensive territory.

4.13 In terms of mitigation, with both setts (the main active sett and disused outlier sett) to be closed as a result of the proposed development, an artificial badger sett will be constructed in an appropriate location away from the main activity on site. The process will focus on ensuring badgers suffer no harm of stress as a result of the development and all works will be in accordance with a Natural Resources Wales (NRW) licence. Given that the clan is unlikely to be reliant entirely on the lost habitat on site for foraging the proposed development is unlikely to result in a significant impact.

5.0 OVERALL CONCLUSIONS

5.1 The site comprises previously developed land with an industrial past and as a result, the surveys undertaken on site demonstrate limited habitats and protected species. The development of Prosperity Parc will result in the loss of some exisitng habitats on site, mainly scrub, grassland and plantation woodland toward the northeast of the site. However the proposals also include the enhancement and management of existing water bodies, grassland and woodland within the site which will create new habitat opporutnities.

5.2 Where protected species were identified and additional surveys were required, comprising birds, invertebrates and badges, their presence and activity on was limited. A summary of each species is provided below in terms of the impacts and recommended mitigation:

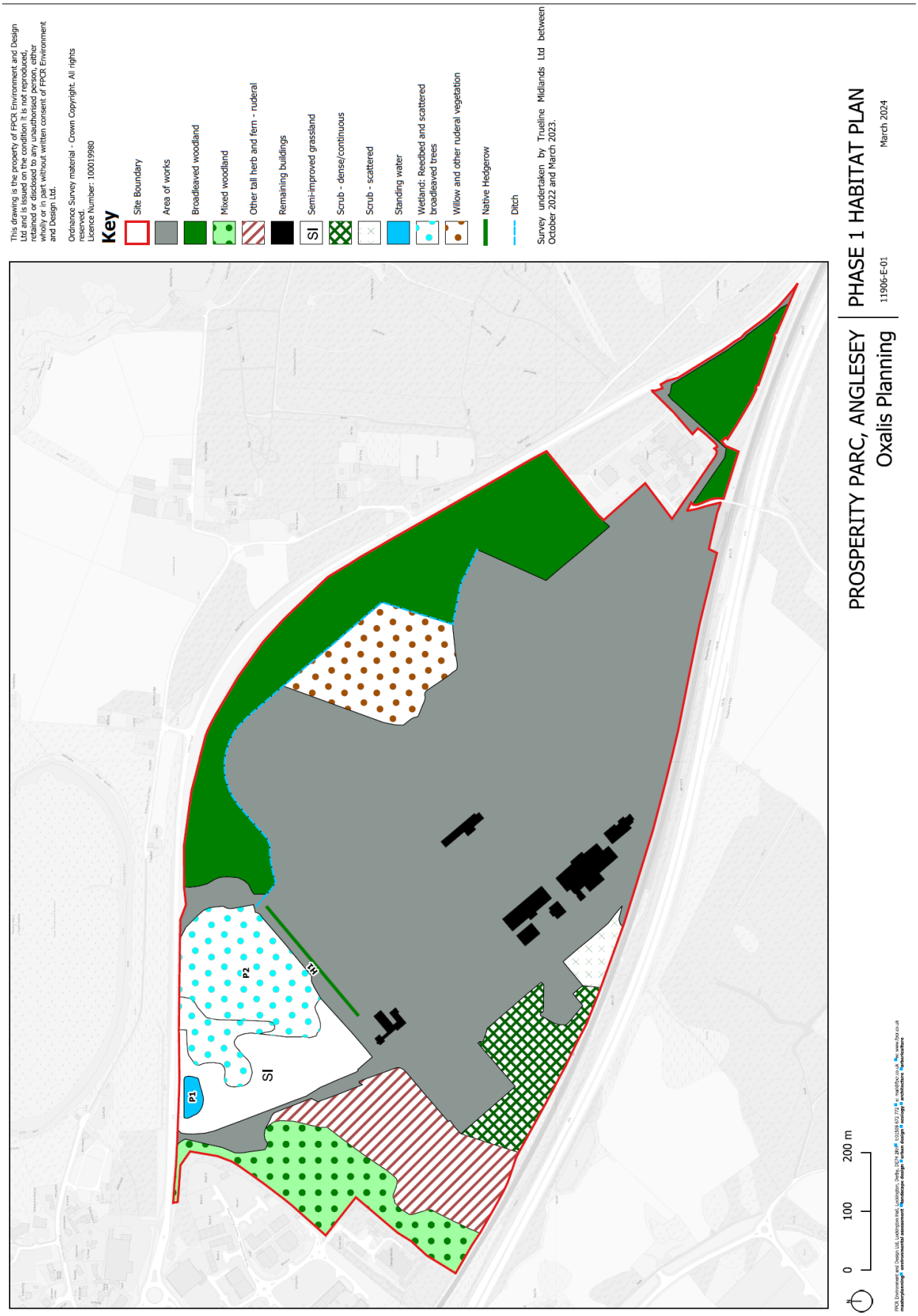
- Birds – all recorded species of birds on site are widespread to abundant in North Wales and the UK, and no significant overwintering populations were recorded. During construction, and in accordance with best practice, an appropriately experienced Ecological Clerk of Works (ECoW) will be on site to monitor any potential for disturbance of protected species and advise on mitigation should any disturbance occur.

- Invertebrates – the site includes areas of suitable habitat for invertebrates, including for Key Species, some of which are considered rare. However, the species composition is largely concentrated around the scrub fringe/grassland interface, woodlands and wetland features which won't be adversely impacted by the proposed development. Several measures are recommended to help provide suitable habitats for invertebrates including planting in foraging areas, butterfly banks, perennial swards and wetland enhancement.

- Badgers – there is evidence of badges on site within the existing green infrastructure and mitigation measures will be provided, in accordance with best practice including a new artificial sett, to ensure their protection

5.3 Therefore, it can be concluded that the impacts of the development on on-site ecology will be limited, and mitigated through a combination of better on-site management of existing features, plus new planting and landscaping within the site which will further enhance the quality and diversity of habitats on-site. Future reserved matters applications will include details of on-site and on-plot landscaping which will in combination help ensure an improved coverage of vegetation and potentially additional wet habitats associated with sustainable drainage features.

FIGURE 1. PHASE 1 HABITAT MAP



APPENDIX A – BOTANICAL SPECIES LIST

Mixed / Broadleaved Woodland

SPECIES	COMMON NAME
Acer pseudoplatanus	Sycamore
Fagus sylvatica	Beech
Alnus glutinosa	Alder
Pinus sylvestris	Scots Pine
Populus alba	White Poplar
Salix caprea	Goat Willow
Crataegus monogyna	Hawthorne
Sambucus nigra	Elder
Fraxinus excelsior	Ash
Quercus robur	English Oak
Prunus avium	Cherry
Picea	Spruce
Acer pseudoplatanus	Sycamore
Fagus sylvatica	Beech
Larix decidua	Larch
Carpinus betulus	Hornbeam
Betula pendula	Silver Birch
Castanea Sativa	Sweet Chestnut
Pinus nigra	Black pine
Sorbus aucuparia	Rowan

Scrub

SPECIES	COMMON NAME
Buddleia davidii	Buddleia
Prunus spinosa	Blackthorne
Rosa cannina	Dog Rose
Rubus armeniacus	Bramble
Ulex europaeus	Gorse

Herbaceous

SPECIES	COMMON NAME
Pteridium auilinum	Bracken
Arum maculatum	Lords-and-Ladies
Aegopodium podagraria	Ground-elder
Calluna vulgaris	Heather
Carduus crispus	Welted Thistle
Cardamine pratensis	Cuckooflower
Calystegia sepium	Hedge Bindweed
Bryonia dioica	White Bryony
Chenopodium album	Fat-hen
Chenopodium polyspermum	Many-seeded Goosefoot
Digitalis purpurea	Foxglove
Epilobium hirsutum	Great Willowherb

Deschampsia cespitosa	Tufted Hair-grass
Glechoma hederacea	Ground-ivy
Heracleum sphondylium	Hogweed
Lemna minor	Common Duckweed
Silene dioica	Red Campion
Trifolium repens	White Clover
Taraxacum species	Dandelion
Typha latifolia	Bulrush
Urtica dioica	Common Nettle
Phragmites australis	Common reed
Lolium perenne	Perennial ryegrass

ANGLESEY LAND HOLDINGS

Over Wintering Bird Survey Report

Trueline Midlands Ltd

Ecology Report Appendix B

April 2023

CONTENTS

TABLES

APPENDICES

FIGURES

A.0 EXECUTIVE SUMMARY

A.1 Wintering bird surveys were undertaken from October 2022-March 2023 at the Anglesey land Holdings development site. A total of fifteen species were recorded, including three 'notable' species of conservation concern.

A.2 The application site currently provides a good variety of habitat and supports a diverse assemblage of breeding bird species. Through retention and improvement of habitats the site will continue to support most of these species despite the loss off some areas of open and scrub land being lost. The designated areas of retention will allow for connectivity between neighbouring sites.

A.3 All recorded species are widespread to abundant in North Wales and the UK, and no significant overwintering populations were registered.

A.4 The construction phase of development will have adverse impacts upon the recorded bird species due to noise disturbance, worker presence and the removal of habitat. Proposals for the remainder of the site are likely to have minor negative impacts on species which rely on scrub and reedbed habitat through loss of habitat. These habitats should be retained as much as possible with spot planting of native scrub species where possible.

1.0 INTRODUCTION

1.1 The following report was prepared by Trueline Midlands Ltd on behalf of Anglesey land Holdings. It provides results of an over wintering bird survey undertaken in 2023 at the proposed site, known hereafter as 'the site'.

Site Location and Context

1.2 The site sits withing the Penrhos estate on Anglesey, it has been subject to heavy industry since 1971. The Aluminium plant began to end operations in 2009 and closed in 2013. The site has had varies occupants since but nothing on the scale as the aluminium works. The 87.92 acre site consists of mainly concrete, with very little ruderal growth. There is an area of scrub and willow (Salix caprea) regeneration to the North of the site which sits on boggy land. Further to the North lies a mature plantation, consisting mainly of sycamore (Acer pseudoplatanus) with a few scattered oak (Quercus Robur). The plantation is dissected by the A5. There is only one wet ditch on site, the ditch is situated between the plantation and the scrub land. Dominant habitats on the site are neutral and modified grasslands, with areas of dense scrub, a hedgerows and hardstanding. The site is bounded to the north by the A5, to the south by the A55 (North Wales Expressway) and adjacent railway line, and to the west by Holyhead Retail Park. The land is largely flat with mounds and embankments to the north and west with the vast majority of the trees located along here.

1.3 Across London Road from the Southeastern tip of this site is Beddmanarch-Cyrmran SSSI, which includes a variety of coastal habitats between Holy Island and the 'Mainland'. Anglesey is selected primarily for its ornithological and botanical interest. Large areas of sandbank, mudflat and saltmarsh, as well as two stands of dune heath provide nationally important habitat for a wide range of waterbirds, both on passage and in winter. It is especially important for overwintering ringed plover, greenshank, red-breasted merganser and goldeneye. A number of coastal bird species also breed in the area, but the former importance of the Rocky Islands in the inland sea for tern breeding colonies diminished considerably in recent years.

Survey Objectives

- Identify the presence and distribution of birds on the site in the winter season;
- Assess the conservation importance of the site in relation to local bird populations;
- Evaluate the importance of the local bird populations and their habitat requirements; and
- Identify areas of ornithological importance and make recommendations to minimise the potential impact of the development.

Legislation

1.4 The Wildlife and Countryside Act 1981 (as amended). This is the principal legislation affording protection to UK wild birds. Under this legislation all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while in use or being built;
- Take or destroy the egg of any wild bird.

1.5 Species listed on Schedule 1 (WCA1) of the Wildlife and Countryside Act 1981 (*as amended*) are specially protected at all times.

1.6 Natural Environment and Rural Communities (NERC) Act 2006. A few birds feature on the Natural Environment and Rural Communities (NERC) Act 2006, Section 41 (S41) as those which are of principal importance for the conservation of biodiversity in England and Wales. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act, to have regard to the conservation of biodiversity in England, when conducting their normal functions. NERC species are those found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

2.0 METHODOLOGY

Desk study

2.1 The Phase 1 Habitat Survey Report included a desk study to identify any existing ornithological data relating to the application site and its surroundings. To compile an existing baseline, relevant information was obtained from both statutory and non-statutory nature conservation organisations, including:

- Multi Agency Geographic Information for the Countryside portal: https://magic.defra.gov.uk/
- Inspection of 1:25000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.
- The search area for biodiversity information was related to the significance of sites, species and potential zones of influence, as follows:
- 10km around the application area for sites of International Importance for birds (Special
- Protection Areas (SPAs) and Ramsar sites).
- 2km around the application area for sites of National or Regional Importance for birds (e.g. Sites of Special Scientific Interest (SSSIs)).
- 1km around the site for sites of County Importance for birds (e.g. local nature reserves (LNR) /Local Wildlife Sites (LWS)) and records (e.g.: protected, Species of Principal Importance, Local Biodiversity Action Plan (LBAP) species and other notable species).

Field Survey

2.2 The survey methodology followed published Bird Survey Guidelines. British Trust for Ornithology (BTO) species codes and symbols for bird activities were used to identify birds and denote activity, sex, and age where appropriate.

2.3 The survey visits took place from October 2022 to February 2023 to provide a baseline assessment of the sites ecological value for birds in winter.

2.3 The boundary of the survey area was mapped (Figure 1.), and a predetermined route walked route through the area which allowed the surveyor to approach to within 100m of each accessible spot. The route was walked slowly, taking time to stop and listen for birds and/or confirm any sub-optimal sightings through binoculars.

2.4 A route was mapped out prior to the surveys being undertaken, paying particular attention to any potential winter roost sites. Bird surveys were not undertaken in unfavourable conditions such as heavy rain or strong wind, which may negatively affect the results.

Table 1: Survey dates and weather conditions

Date	Cloud (OKTAS)	Rain	Wind (Beaufort Scale)	Visibility
October	1/8	Clear	2	Good >2km
November	5/8	Light Drizzle	4	Average >1km
December	4/8	Light Drizzle	4	Average >1km
January (Cancelled)	1/8	Clear	10	Good >2km
January	5/8	Light Showers	4	Average >1km
February	8/8	Light Drizzle	5	Poor <1km
March	4/8	Clear	2	Good >2km

3.0 Assessment

3.1 The conservation value of bird populations has been measured using two separate approaches: nature conservation value and conservation status. The CIEEM guidance on ecological impact assessment assesses nature conservation value within a geographical context. To attain each level of value, an ornithological resource or one of the features (species population or assemblage of species) should meet the criteria set out in Table 2. In some cases, professional judgement is required to increase or decrease the allocation of specific value, based upon local knowledge.

Table 2: Definition of Terms Relating to Nature Conservation Value

Conservation value	Evaluation criteria
International & European	A species which is part of the cited interest of an SPA and which regularly occurs in internationally or nationally important numbers. A species present in internationally important numbers (>1% of international population).
National	A species which is part of the cited interest of a SSSI and which regularly occurs in internationally or regionally important numbers. A nationally important assemblage of breeding or over-wintering species. A species present in nationally important numbers (>1% UK population). Rare breeding species (<300 breeding pairs in the UK).
Regional	Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), which are not covered above, and which regularly occurs in regionally important numbers. Species present in regionally important numbers (>1% of regional population). Sustainable populations of species which are rare or scarce within a region. Species on the BoCC Red List and which regularly occurs in regionally important numbers.
County	Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), which are not covered above and which regularly occurs in county important numbers. Sustainable populations of species which are rare or scarce within a county or listed as of principal importance under S41 of the NERC Act. A site designated for its county important assemblage of birds (e.g. a SINC Site). Species on the BoCC Red List and which regularly occur in county important numbers.
Local	A site occupied regularly by at least 2.5% of the county population of any one or more bird species. A site that holds one of the five largest colonies of colonial seabirds (with the exception of herring gull and black-headed gull), grey heron, little egret or sand martin. A site that has been recorded as being regularly used in recent years by at least one hundred passage bird species.
Immediate Zone of Influence (site)	All other BoCC Green-listed common and widespread species.

3.2 Particular attention has been given to bird species that are either WCA Schedule 1, NERC S41 and / or Bocc Red or Amber list species, as they are likely to be the most impacted in relation to further decline. Such species are referred to as 'notable' species.

4.0 Results

Desk Study

4.1 The data returned from the desk-survey records notable species recorded in winter within 1km of the site since 2018. Appendix 1 summarises the records of notable bird species used to compile the desk study and whether they were present on site during over wintering birds survey efforts.

4.2 Beddmanarch-Cymyran (SSSO), Ynys Mon/Anglsey (AONB), and Glannau Ynys Gybi – Holy Island Coast (SAC,SPA, SSI) designations fall within a 5km buffer of the site. The designations offer a diverse assemblage of habitat which in turn provides opportunity for many breeding bird populations. The flora and fauna included in the designations provide important foraging for over wintering bird populations.

Table 3: Notable species recorded on site, 2022-223 Winter bird survey.

Species	**Conservation Status**	**Status in N.Wales**
Woodcock	Red List	Widespread, common visitor
Kestrel	Amber List	Widespread resident
Skylark	Red List NERC	Widespread resident
Wood pigeon	Amber List	Abundant resident breeding species
Grey Wagtail	Amber List	Widespread resident
Wren	Amber List	Abundant resident breeding species
Teal	Amber List	Common visitor
Moorhen	Amber List	Widespread resident
Mallard	Amber List	Abundant resident breeding species
Wigeon	Amber List	Widespread resident
Song Thrush	Amber List NERC	Common and widespread but declining
Reed Bunting	Amber List	Widespread resident
Herring Gull	Red List	Widespread resident
Common Gull	Amber List	Widespread resident
Red Kite	Amber List	Common visitor

5.0 Discussion

Impact assessment

5.1 The following section provides an assessment of the potential impacts of the proposed development upon the present breeding bird populations. Where appropriate, recommendations are provided for mitigation and enhancement, considering the likely ecological impacts.

5.3 The proposed development and associated infrastructure will result in the loss of some habitat available on site.

5.3 The impact on bird species arising from the potential effects of development is based upon an understanding of each species' ecological requirements, the type of development, number of birds recorded on site, their nature conservation criteria based on legislation and current guidance (e.g.,Red and Amber listed Birds of Conservation Concern 5 (2021); S41 NERC Act priority species; Schedule 1 WCA 1981).

5.4 Birds recorded that are most vulnerable to impacts are the notable species that are resident or overwintering on site, and relying on habitats on site for winter foraging:

- Wood cock,
- *Scolopax rusticola*,
- Kestrel, *Falco Tinnunculus*,
- Skylark, *Alauda Arvensis*,
- Grey Wagtail, *Motacilla Cinerea*,
- Wren, *Troglodytidae*,
- Teal, *Anas Crecca*,
- Wigeon, *Anas Penelope*,
- Song Thrush, *Turdus Philomelos*.

5.5 The habitat requirements, species account, nature conservation value of these species are set out in Appendix 2. In addition, residual impacts arising from the proposed development in terms of habitat loss /change have been assessed. The proposed development will likely result in temporary disturbance, to varying degrees, for all recorded species, affecting behaviours such as nesting, roosting and foraging. Operations likely to disturb birds include noise pollution and habitat loss from vegetation clearance, and noise from construction activities. Some permanent loss of scrub and grassland habitat is expected on site to accommodate for the development. The site is of 'immediate zone of influence' conservation value since the species present are widespread and common in North Wales. The proximity of the site to important bird sites locally suggests that abundant habitat exists within the sites landscape for all recorded species.

5.6 It is therefore expected that the loss of habitat on the site will not damage local populations of overwintering birds. However, birds on the site are likely to be displaced or affected by the development either temporarily or permanently by the disturbance and loss off habitat.

Precautionary working method statement

5.7 Prior to the commencement of works, the site Ecologist, will brief contractors onsite. The brief, a Toolbox Talk for breeding birds and a Precautionary Working Method Statement, will aim to ensure appropriate care and attention during the construction phase.

5.8 All birds, their eggs, chicks, and nests are protected by the Wildlife and Countryside Act 1981 (as amended) whilst breeding. Schedule 1 bird species are afforded additional protection from disturbance. The proposed works will be accompanied by an appropriately experienced Ecological Clerk of Works (ECoW) to monitor any potential for disturbance of the three Schedule 1 protect species. Should the ECoW detect such disturbance, or any breach of the WCA for all bird species, s/he will temporarily pause works and advise accordingly.

Habitat enhancements

5.9 Onsite retained woodland and wetlands are valuable habitats for many of the notable species. By retaining as much woodland and surrounding unmanaged habitat, the impacts on species which rely on this site will be reduced. Remaining habitats should be enhanced with planting of native species to improve winter foraging opportunities for birds. Enhancing the wetland area by managing overgrown dense vegetation to great more open water to encourage a greater variety of species. This will benefit the majority of bird species recorded on site and may result in the use of the site by birds not previously recorded on site.

5.10 Likewise, grassland habitats present on site are valuable for resident skylark, as well as waterfowl species. Where possible, grassland should remain intact. Remaining grassland on site should also be enhanced by increasing plant species diversity and maintaining a higher sward height to improve habitat suitability. Ditches should also be retained or created to maintain connectivity between the site and the surrounding landscape. The installation of artificial nest boxes on structures should be considered since they provide winter roosts for many species, as well as providing breeding sites later in the year.

Assemblage

5.11 All the recorded species, notable or otherwise, are widespread and common breeding birds in North Wales and the UK. None were recorded in significant numbers. As outlined, some species may benefit from the above recommendations.

Conclusions

5.12 Construction phase impacts to birds will be frequent and of high magnitude but temporary; it is not considered that this will impact the onsite populations of the recorded assemblage in the long-term. The development will also lead to some permanent loss of habitat. However, if the site is managed in line with the recommendations provided in this report - retaining and enhancing existing habitat and artificial nest box placement - then habitat availability, connectivity, and species diversity on the site can be maintained by having less abundance of habitat but a higher quality.

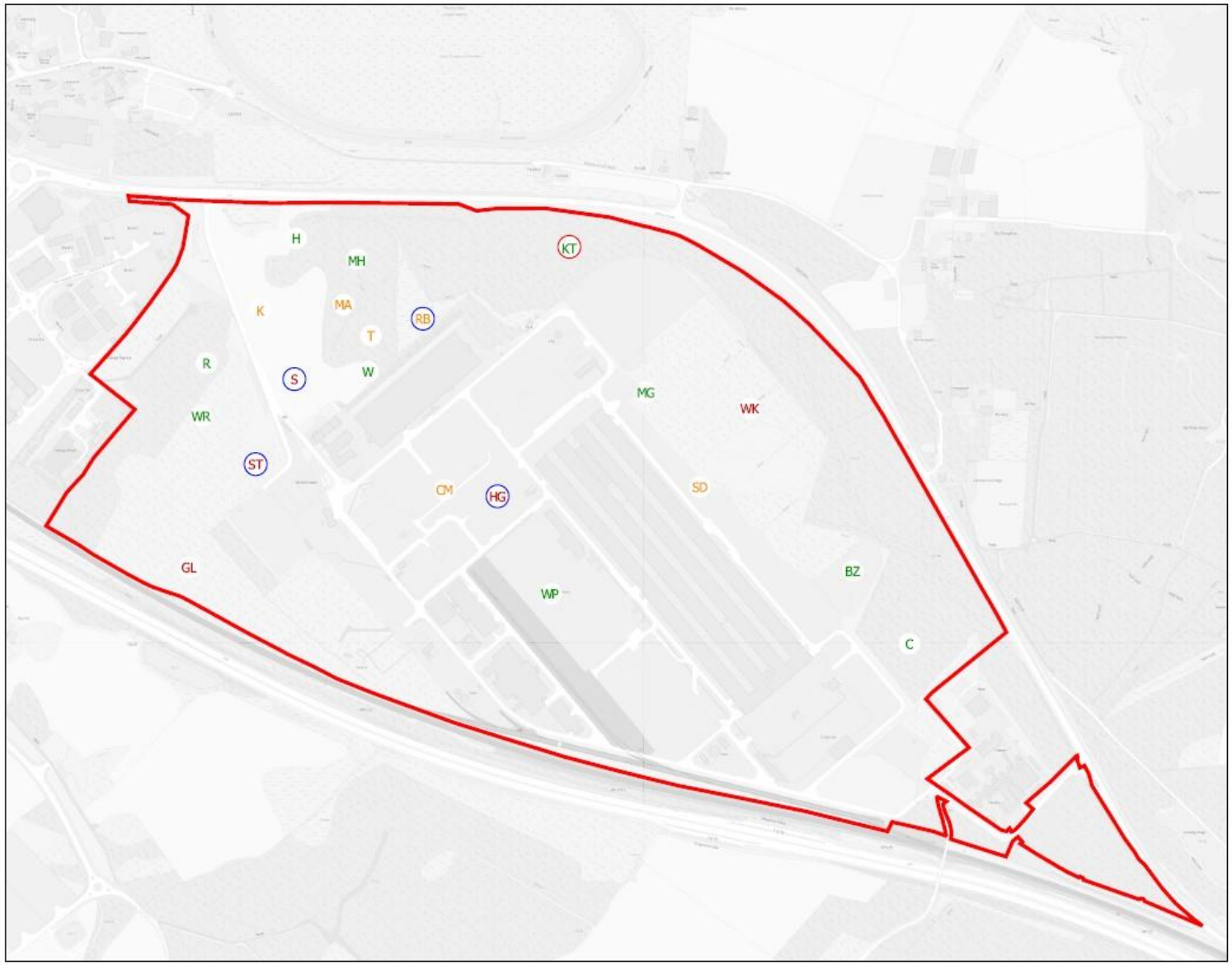
APPENDIX 1. Full Species List (Notable in blue).

Common Name	Binomial Name	Count	Conservation & Legislation Status
Buzzard	*Buteo buteo*	1	Green List
Blackbird	*Turdus merula*	3	Green List
Carrion crow	*Corvus corone*	12	Green List
Common gull	*Larus canus*	25	Amber List
Grey wagtail	*Motacilla cinerea*	2	Amber List
Heron	*Ardeidae*	1	Green List
Herring gull	*Larus argentatus*	14	Red List
Kestrel	*Falco tinnunculus*	1	Green List
Magpie	*Pica pica*	6	Amber List
Mallard	*Anas platyrhynchos*	2	Amber List
Moorhen	*Gallinula*	1	Amber List
Red kite	*Milvus milvus*	1	Green List
Reed bunting	*Emberiza schoeniculus*	1	Amber List
Robin	*Erithacus rubecula*	2	Green List
Skylark	*Alauda arvensis*	3	Red List, NERC
Song Thrush	*Turdus philomelos*	1	Amber List, NERC
Stock dove	*Columba oenas*	32	Green List
Teal	*Anas crecca*	4	Amber List
Wigeon	*Anas Penelope*	1	Amber List
Woodcock	*Scolopax rusticola*	1	Red List
Wood pigeon	*Columba palumbus*	9	Amber List
Wren	*Troglodytidae*	2	Amber List

Appendix 2 (below): Evaluation of species considered potentially sensitive to habitat loss/change.

Species and Conservation Status	Habitat requirements	Species account on site	Characteristics of unmitigated impact	Suggested mitigation, compensation, or enhancements	Residual impact
Woodcock Red list	In winter, woodcock are found in moist woodland, drier scrub and busy terrain.	Individual flushed from scrub on the Northern boundary towards denser woodland.	Negligible	Disturbance and removal of scrub vegetation should be minimised where possible. Retained scrub should be enhanced with native woody species. Work involving vegetation clearance should take place under supervision.	Negligible
Kestrel Amber list	Hunts on grass lawns and fields.	Individuals recorded on the western and eastern grasslands.	Minor loss of habitat	Grassland (all season habitat) should be retained and enhanced where possible.	Negligible
Skylark Red list NERC	Congregates on stubble fields and grasslands in winter.	Two individuals singing to the west of the site.	Minor loss of habitat	Grasslands (all season habitat) should be retained and enhanced where possible.	Negligible
Wood pigeon Amber list	Forages on grass lawns and fields	Flocks of varying sizes recorded (4-10) recorded foraging across site.	Minor loss of habitat	Disturbance and removal of scrub vegetation should be minimised where possible. Retained scrub should be enhanced with native woody species. Work involving vegetation clearance should take place under supervision.	Negligible
Grey wagtail Amber list	Forages beside rivers and shallow water	Individual recorded nears SUDS pond	Negligible	Suds pond to be retained and enhanced.	Negligible

Wren Amber list	Occurs in varied habitats	Numerous individuals recorded in Southern and Northern scrub land.	Loss of habitat	Disturbance and removal of scrub vegetation should be minimised where possible. Retained scrub should be enhanced with native woody species. Work involving vegetation clearance should take place under supervision.	Negligible
Teal Amber list	Found in lakes, ponds, and smaller, well vegetated watercourses	Two birds recorded foraging in SUDS on the Western boundary of the site.	Negligible	SUDS pond to be retained and enhanced.	Negligible
Moorhen Amber list	Found in watercourses and associated dense vegetation, Will forage in open grassland.	Birds seen foraging in Duds on Western boundary of the site.	Negligible	SUDS pond to be retained and enhanced.	Negligible
Mallard Amber list	Resident year round; found in parks, towns, and farmland near watercourses of all sizes including ditches and small pools.	Two birds on site. Birds dispersed and flew southwards.	None anticipated	SUDS pond to be retained and enhanced.	Negligible
Wigeon Amber list	Winter visitor, gather in large numbers on wet grasslands	Two birds forging near SUDS pond.	None anticipated	SUDS pond to be retained and enhanced	Negligible
Song thrush Amber list NERC	Prefer dense vegetation of parks, gardens and hedgerows. Feeds on snails, insects and worms.	Scrub vegetation on eastern boundary	Minor loss of habitat	Disturbance and removal of scrub vegetation should be minimised where possible. Retained scrub should be enhanced with native woody species. Work involving vegetation clearance should take place under supervision.	Negligible
Reed bunting	Associated with ponds, ditches, streams and boggy corners.	Heard and seen foraging on/ near reed beds of SUDS	None anticipated	SUDS pond to be retained and enhanced	Negligible



Key

Site Boundary

BoCC Red Listed Species

- GL Grey Wagtail
- HG Herring Gull
- S Skylark
- ST Song Thrush
- WK Woodcock

BoCC Amber Listed Species

- CM Common Gull
- K Kestrel
- MA Mallard
- RB Reed Bunting
- SD Stock Dove
- T Teal

BoCC Green Listed Species

- BZ Buzzard
- C Carrion Crow
- H Grey Heron
- MG Magpie
- MH Moorhen
- KT Red Kite
- R Robin
- W Wheatear
- WP Woodpigeon
- WR Wren

Additional Protections:

- NERC Species of Principal Importance
- Schedule 1 Species
- LBAP Species (underlined)

Survey undertaken by Trueline Midlands Ltd on 14th January 2023

0 100 200 m

PROSPERITY PARC, ANGLESEY
Oxalis Planning

Winter Bird Survey Results Plan
11906-E-02 March 2024

FPCR Environment and Design Ltd, Lockington Hall, Lockington, Derby, DE74 2RH T: 01509 672 772 E: mail@fpcr.co.uk W: www.fpcr.co.uk
masterplanning environmental assessment landscape design urban design ecology architecture horticulture

Anglesey Land Holdings
Invertebrate Assessment

Ecology Report Appendix C
October 2023

Trueline Midlands Ltd
Registered Office: New Barn, Rempstone Road, Wymeswold, Leicestershire LE12 6UE
Company No. 12362090. [T] 0800 030 6665 [E] info@trueline.co.uk

CONTENTS

1 INTRODUCTION

1.1 Background and Commission

The following report has been prepared by Trueline Midlands on behalf of Anglesey Land Holdings, the report provides details of a invertebrates survey undertaken in July and August 2023 to support the proposed Prosperity Parc on Holyhead, North Wales.

1.2 The Site

The subject site is located to the south of Holyhead, Anglesey. The site is bounded to the north by the A5, to the south by the A55 (North Wales Expressway) and adjacent railway line, and to the north-west by Holyhead Retail Park, with the coastline to the north and east.

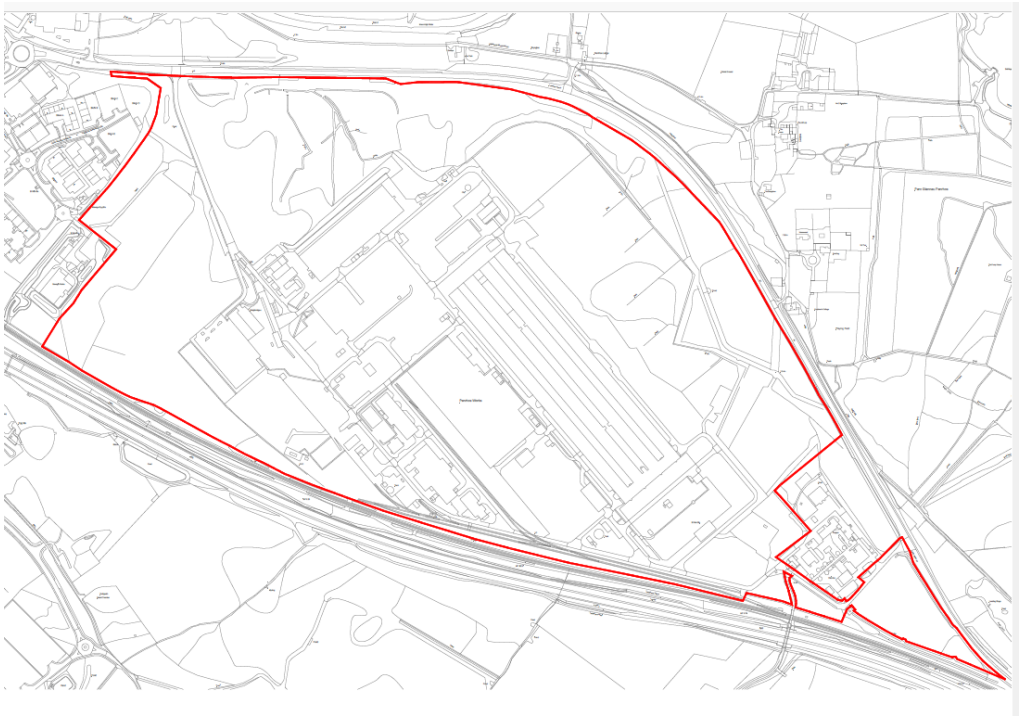


Figure 1. Site location

The site sits within the Penrhos Estate on Anglesey, it has been subject to heavy industry since 1971. The aluminium plant began to end finish production in 2009 before closing in 2013, with various small and medium scale businesses have occupied parts of the site since then. The site is bounded to the north by the A5, to the south by the A55 (North Wales Expressway) and adjacent railway line, and to the north-west by Holyhead Retail Park. The land is largely flat with mounds and embankments to the north and west. The site (87.92ha) mainly comprised of hardstanding and buildings. Other habitats recorded on-site include a wetland area, broadleaved woodland, broadleaf and coniferous woodland, semi-improved grassland, scattered scrub, and tall ruderal vegetation.

1.3 Development Proposals

Outline permission for the redevelopment of the site to include demolition of structures and buildings for construction of new employment floorspace comprising data centres (B8 use), research and development, and office uses (B1 use), with battery energy storage system (Unique use). Development to include associated gatehouses, retained and new landscaping,

and other infrastructure and engineering works. All matters reserved except for (retained) site accesses from the A5.

The majority of the development is proposed within the previously developed land with a relatively small area of clearance of scrub and trees included to accommodate the development.

2 METHODOLOGY

The invertebrate surveys were undertaken By Tim Merlow who has over 20 years of ecology experience, particularly entomology. The survey works were undertaken using the following methodology in accordance with best practice. This very large working industrial area has numerous patches of open habitat varying from small linear sites along roads and rail tracks to large areas where various substrates have been tipped and are developing ruderal vegetation, gorse and willow scrub. Areas of potential habitat within site were marked using an aerial photo. These sampling compartments were refined on site and those that seemed to have the most interesting habitat, and produced good results on the first visit, were sampled at least twice and some on each of the three visits. Surveys of the site focused on areas of the site which were considered suitable for their type of habitat in relation to invertebrates and focus predominantly on grassland, scrub and boundary areas around the site. Surveys across the site were conducted on 15 and 30 July 2023, and 28 August 2023. On the 15 and 30 July 2023 most sampling was done with a 40cm diameter white- bag sweep-net combined with spot searching of particular features and some limited ground searching. The net was swept steadily from side to side whilst pacing steadily through the grass, herbage or scrub foliage, or in scrubby areas specimens were knocked from the foliage. Specimens were extracted from the net with a pooter or, in the case of larger specimens, individually potted in 30ml soda glass tubes. When sampling was completed or the pooter became too full, the contents were killed with ethyl acetate then transferred to a 30ml soda glass tubes together with a data label. On the third visit on 28 August all sampling was done with a vacuum sampler. This technique has the advantage in habitats that are sparsely vegetated or with very short vegetation of capturing many terrestrial species that are rarely found with a sweep-net. An additional reason for changing techniques was the short duration between visits. Because the sampling started late in the season, the visits were not sufficiently spaced to avoid significant overlap if the same area was sampled by the same technique so soon after previous visit. The very different suite of invertebrates found with vacuum sampling as opposed to sweep-netting overcomes the potential deficiency of the compressed sampling period.

The site was visited on three occasions in the latter part of the summer. Delays in access arrangements meant that the first sampling date on 15 July 2023 was later than hoped. This start date meant that the gap between the first and second visits was only two weeks, whereas 4-6 weeks would be normal for a three day survey. However, as much as was possible the second visit on 30 July 2023 sampled different compartments or areas within a compartment. The final survey on 28 August 2023 was reasonably well separated from the second.

2.1 Target Taxa

To appraise the site, several groups of invertebrates were targeted for recording using the range of methods outlined above. The groups used to assess the site are selected as they are positive indicators of habitat quality and can inform a surveyor about the site's potential as an invertebrate resource.

The key groups sampled and used for assessment include:

- Mollusca – slugs and snails Isopoda - woodlice Diplopoda – millipedes Chilopoda - centipedes
- Araneae – Spiders Neuroptera - lacewings
- Odonata - Dragonflies and Damselflies Orthoptera – Grasshoppers and crickets Dermaptera - earwigs
- Hemiptera, Auchenorrhyncha Froghoppers, Leafhoppers and Planthoppers (excluding females of difficult genera)
- Hemiptera, Heteroptera - True Bugs (excluding smaller Miridae)
- Trichoptera – Caddisflies
- Lepidoptera – Butterflies and Moths Trichoptera - caddisflies
- Coleoptera – Beetles (all except small Aleocharine rove beetles and other very small obscure families)
- Diptera - True Flies (except, Cecidomyiidae, Chironomidae, Ceratopogonidae, Simulidae, Phoridae, Sphaeroceridae, and females of some groups which are not identifiable).
- Hymenoptera, Symphyta - sawflies
- Hymenoptera, Aculeata - Ants, wasps and bees

Other incidental records have also been included. All captured invertebrates are held for later identification, except for easily identifiable species, which were identified in the field and released.

2.2 Limitations

Every attempt was made to visit in sunny, dry conditions, but this summer the weather conditions were unreliable and somewhat variable. On 15 July 2023 it was overcast, wet, but warm with a light breeze, becoming drier later. These conditions were not ideal for flying, sunloving insects, but the sweep-netting was unlikely to have been much affected once the vegetation dried out. The 30 July 2023 was cloudy with a cool NW wind, but dry with sunny 6 intervals 18-19°C. On 28 August 2023 it was sunny but cool with a light breeze, the vegetation damp in the morning. This latter factor was problematic for the vacuum sampling, damaging some samples taken in the early part of the visit. The late start of the survey meant that potentially important invertebrates with flight periods between April and June will have been missed. The nature of this site, with its bare and sparsely vegetated substrate that will warm up quickly in the early part of the year, is likely to be favourable for such early flying species. To some extent the likely value of such communities can be extrapolated from the samples obtained in July and August, but it is not possible to estimate what spring species of conservation importance might be present without surveying at that time of the year.

2.3 Analysis

A system of British conservation status for invertebrates has been in use since publication of the Red Data Book for insects, amended and supplemented by a series of JNCC Nature Conservation reviews (e.g. Falk, 1991a; Falk, 1991b). By this system, the rarest and most threatened species are given one of the Red Data Book (RDB) statuses. Species which do not qualify as RDB but are nonetheless uncommon are given one of the Nationally Scarce statuses. 'Key Species' are here defined by the following categories.

- British Red Data Book (RDB) and Nationally Scarce species (including statuses from JNCC texts which are published, 'in press' or 'in prep.').
- Species formerly regarded as either RDB or Nationally Scarce but recently downgraded.

For site assessment, the percentage of Key Species is a useful guide to the overall quality of the site for invertebrates, in comparison to other sites surveyed by the author using similar techniques. Higher quality sites support higher percentages of Key Species. To enable a fair comparison with survey data accumulated by the author over many years, species formerly regarded as either RDB or Nationally Scarce but recently downgraded are still treated as Key Species. There are numerous examples of invertebrates which have been listed as either RDB or Nationally Scarce and have subsequently been found to be more widespread and abundant, either as a result of actual increase in range size or population size, or as a result of improved understanding by entomologists of how to find or identify them. Where the authors regard the official conservation status to be out of date.

2.4 Desktop Study

A data search was commissioned by Trueline Midlands and analysed by Tim Merlow. The results of the (COFNOD) data search includes a limited range of Lepidoptera only, no other invertebrates were mentioned. The Mullein wave moth (*Scopula marginepunctata*) was the only species of conservation concern. All other species are common and generalist species.

3 SURVEY RESULTS

The survey identified 329 species of invertebrate, which were largely concentrated around the scrub fringe/grassland interface, woodlands and wetland features. The number of species identified represents a good diversity for three days of survey, especially as it was over little more than a six week period, with no spring sampling. To some extent, the lack of spring species was compensated for by the use of vacuum sampling which found a different range of species than did the sweep-netting and spot searching.

A broad range of invertebrate groups was covered to a greater or lesser extent and the species list includes representatives of the following groups: snails, woodlice, harvestmen, spiders, lacewings, dragonflies & damselflies, grasshoppers & crickets, earwigs, true bugs, froghoppers, planthoppers & leafhoppers, moths, butterflies, beetles, true flies, ants, wasps and bees. The main technique of sweep-netting was most efficient at sampling flying insects, with Diptera found in the greatest number (112 species, 34%).

The second largest group found was Coleoptera (78 species, 24%), including many phytophagous species swept from herbage, but also a good proportion of terrestrial species found using the vacuum sampler. Third in diversity was Lepidoptera, (37 species 11%), largely butterflies, day flying moths and micromoths. The Hymenoptera are rather poorly represented, given the habitat. The lack of spring visits and relatively cool conditions during some visits will have detracted from the diversity of these sun-loving insects found.

Of the 329 species identified by this survey, 32 (9.7%) are considered here as Key Species. 9.7% is a good proportion of Key Species, and indicates the site has areas of habitat which provide value for invertebrates. Seven of these species have RDB status (2.1%), again a high proportion further indicating the quality of the site for invertebrates of conservation concern. This site comes just in the upper quartile for quality based on the proportion of Key Species.

The species list from the surveys is set out in **Appendix A** of this report.

4 CONCLUSION OF SURVEY RESULTS

It is clear from the results of this survey set out above that the site includes areas of suitable habitat for invertebrates, including for Key Species. However, the species composition is largely concentrated around the scrub fringe/grassland interface, woodlands and wetland features which won't be adversely impacted by the proposed development.

An analysis of the Key Species found reveals that the majority are not of great conservation concern. However, at least three of these species are still of local significance, being rare in Wales or at least with very few records in the country; these are highlighted in the table found in **Appendix A**. Species such as *Paralimnus phragmitis*, *Elaphropus parvulus*, *Agriotes sordidus*, *Sitona waterhouse*, *Ensina sonchi* and *Acanthiophilus helianthi* are all rare in North Wales and Britain as a whole.

Other species in **Appendix A** not highlighted in the species column are either showing signs of increasing nationally but are still very scarce or are data deficient.

5 RECOMMENDATIONS

5.1 Introduction

It is also important to recognise that many invertebrates require a range of features and habitats to fulfil their complex lifecycles and as such the juxtaposition of these habitats and features are of high value and it is where all these habitats are in proximity that they are recommended for retaining. If elements cannot be retained then new, suitable habitat, features are recommended for creation.

This section suggests some potential measures which could be included within the Green Infrastructure proposals as part of the detailed design of the scheme. These measures primarily relate to the provision of habitats to support invertebrates.

5.2 Scrub fringe

Planting or retention of scrub provides a number of services. Scrub is an effective windbreak, providing sheltered elevated temperatures for invertebrates, foraging areas for predatory wasps, nectar and pollen for flower-dependant invertebrates and an overall key component of a rich invertebrate site. Where scrub needs to be planted, it should provide a long flowering season. Species that fulfil this requirement include:

- Blackthorn (*Prunus spinosa*);
- Willows (*Salix spp*);
- Field maple (*Acer campestris*);
- Fruit trees including Prunus (*plums and damsons*) and Malus (*apples*);
- Hawthorn (*Crataegus monogyna*).

Where possible, Ivy (*Hedera helix*) can be included in a planting scheme as this provides important late summer/autumn flowers.

5.3 Invertebrate (butterfly) Banks

Invertebrate banks could be included within the Green Infrastructure proposals at the detailed stage of development, and are a useful way to provide sunny aspects and shelter for a range

of thermophilic (heat loving) invertebrates. This is especially relevant to butterflies such as the common blue and brown argus, which were both recorded on the site.

- The material used for these can be a medium, coarse aggregate material. A limestone or other high pH material is preferable as this gives rise to a richer flora including bird's-foot trefoil. Material from on site would be suitable;
- The banks should be optimally in a southerly facing aspect for greatest sun exposure and in a crescent or sinuous shape, which further elevates the microclimate of the feature;
- The banks are ideally sown with a suitable flower mix, allowed to colonise naturally or could be topped with existing flower-rich turf, especially where it contains common bird's-foot trefoil and other useful flowering plants. A mixture of all three options can also be undertaken;
- These banks can be further diversified through the creation of small cliff faces dug into the bank to provide nesting locations for the black-headed mason wasp and other solitary bee and wasps species.

5.4 Perennial Swards

Areas of dense flowering patches could be created within the Green Infrastructure proposals.

Broadly, plants to consider should be of a wide range of flower types from open, flat daisy flowers such as ox-eye daisy and yellow composites to deep corolla type flowers including vetches and other Fabaeceae (for bumblebees and solitary bees). The plants could include:

- Hawkweeds (*Hieracium spp*);
- Common bird's-foot trefoil (*Lotus corniculatus*);
- Vetches (*Vicia species*);
- Red clover (*Trifolim pratense*);
- Other trefoils (*Fabaceae*);
- Meadow vetchling (*Lathyrus pratensis*);
- Wild carrot (*Daucus carota*);
- Common fleabane (*Pulicaria dysentarica*);
- Common knapweed (*Centaurea nigra*);
- Woundworts (*Stachys species*);
- White dead-nettle (*Lamium album*).

5.5 Juxtapositions and Interfaces

To increase the complexity of habitats, features such as the flowerrich invertebrate banks, patchy scrub fringe and flowery grassland/super abundances could be in close proximity to one another. An intricate mosaic of habitats and juxtapositions will generate opportunities and increase the value for invertebrates.

5.6 Wetland Enhancement

The site includes a range of invertebrates associated with wetlands. These species are predominantly flies and also Odonata (dragonflies and damselflies). The retention of the wetlands area will continue to encourage a rich diversity of species.

Wetlands/ponds that have well-vegetated margins will be the most optimal for a wide range of wetland flies and water beetles. Those with extensive shallow margins, that have a broad

drawdown zone to expose muddy margins and develop marshy grassland areas will also be of high value. Opportunity to create additional pools with different profiles within the site will benefit a wide a range of invertebrates. The ponds can vary from deep, permanent ponds with relatively little drawdown zone but still retain a shallow periphery for marginal plants that favours the dragonflies and damselflies to others that are of a shallower profile and occasionally dry out with extensive drawdown zones and on which marshy grassland vegetation can establish and only occasionally become inundated. Wetlands also generate a high biomass of flies, which if catered for in mitigation can in turn help bolster local populations of insectivorous species such as bats.

Appendices

Appendix A – Invertebrate Species List

Species	English Name	Key species designation	current national status	Regional status
Conocephalus discolor	Long-winged Conehead (a cricket)	**Nationally Scarce a**	no longer of conservation concern	rapidly increasing
Forficula lesnei	Lesne's Earwig	**Nationally Scarce b**	Increasing in range	still very local
Paralimnus phragmitis	A leaf-hopper	**Nationally Scarce b**	Very local	Rare in wales
Pentastiridius leporinus	A Cixiid leaf hopper	**Nationally Scarce b**	relatively frequent but very local	relatively frequent but very local
Bembecia ichneumoniformis	Six-belted Clearwing (a moth)	**Nationally Scarce b**	becoming more frequent	becoming more frequent
Calophasia lunula	Toadflax Brocade (a moth)	**RDB3**	rapidly spreading north and west	very rare, first larval records
Elaphropus parvulus	A ground beetle	**Nationally Scarce b**	very local	very rare in Wales
Agriotes sordidus	A click beetle	**RDB3**	Rare	very rare in Wales
Silis ruficollis	A soldier beetle	**Nationally Scarce b**	Increasingly frequent	Increasingly frequent
Meligethes fulvipes	A pollen beetle	**Nationally Scarce**	probably overlooked	probably overlooked
Meligethes rotundicollis	A pollen beetle	**Nationally Scarce**	probably overlooked	rare but probably under recorded
Hippodamia variegata	Adonis Ladybird	**Nationally Scarce b**	Increasingly frequent	Increasingly frequent
Sitona waterhousei	A weevil	**Nationally Scarce b**	Scarce	Scarce
Sibinia primita	A weevil	**Nationally Scarce b**	very local	local but well established
Platypalpus ruficornis	A hybotid fly	**(Nationally Scarce) None**	apparently increasing	few records, overlooked?
Platypalpus stabilis	An empid fly	**(Nationally Scarce) None**	Increasingly frequent	frequent
Micromorphus albipes s.l.	A dolichopodid fly	**(Nationally Scarce) None**	frequent but taxonomy unresolved	frequent but taxonomy unresolved
Pipizella virens	A hoverfly	**Nationally Scarce**	Increasingly frequent	well established

Species	English Name	Key species designation	current national status	Regional status
Melieria picta	A picture-winged fly	**Nationally Scarce**	Local, coastal	Local, coastal
Ensina sonchi	A gallfly	**None (Nationally Scarce b)**	Scarce	possibly new record for Wales
Acanthiophilus helianthi	A gallfly	**Nationally Scarce b**	Local	Local
Campiglossa malaris	A gallfly	**RDB1 (RDBK)**	increasing rapidly	recent arrival and increasing
Tephritis matricariae	A gallfly	**(RDBK)**	increasing rapidly	recent arrival and increasing
Homoneura interstincta	A lauxanid fly	**RDB3**	Increasingly frequent	few records, overlooked?
Homoneura patelliformis	A lauxanid fly	**Nationally Scarce**	Local, overlooked	Possibly 1st Welsh record but probably overlooked
Homoneura thalhammeri	A lauxanid fly	**Nationally Scarce**	Frequent and under recorded	local but under recorded
Pherbellia griseola	A snail-killing fly	**Nationally Scarce**	Local	Local but well established
Liriomyza intonsa	An agromyzid fly	**New for Britain**	First for Britain but certainly overlooked	First for Wales but certainly overlooked
Trachysiphonella scutellata	A frit fly	**Nationally Scarce (None)**	frequent and much under recorded	Rare but very under recorded
Cistogaster globosa	A parasite fly	**RDB1 (RDB2)**	Spreading and becoming more frequent	Recent arrival but increasing
Bombus sylvarum	Shrill Carder Bee	**Nationally Scarce b**	Very local but common in places	very important colony locally
Hylaeus signatus	Large Yellow-faced Bee	**Nationally Scarce b**	Local but commoner than formerly	Local and scarce

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Mollusca: Vertiginidae	*Vertigo pygmaea*	Common Whorl Snail		X						
Mollusca: Valloniidae	*Vallonia excentrica*	Eccentric Grass Snail						X		
Mollusca: Helicidae	*Trichia striolata*	Strawberry Snail		X						
Mollusca: Helicidae	*Trichia hispida*	Hairy Snail					X			X
Mollusca: Helicidae	*Cepaea nemoralis*	Grove or Brown-lipped Snail		X						
Mollusca: Helicidae	*Cepaea hortensis*	White-lipped Snail		X						
Mollusca: Helicidae	*Helix aspersa*	Garden or Common Snail								X
Isopoda: Philosciidae	*Philoscia muscorum*	Common Striped Woodlouse						X		
Isopoda: Armadillidiidae	*Armadillidium nasatum*	a pill woodlouse			X	X				
Isopoda: Armadillidiidae	*Armadillidium vulgare*	Common Pill Woodlouse		X	X	X		X		X
Isopoda: Porcellionidae	*Porcellio scaber*	Common Rough Woodlouse						X		X
Opiliones: Phalangiidae	*Phalangium opilio*			X			X			X
Opiliones: Leiobunidae	*Dicranopalpus ramosus*				X					
Araneae: Mimetidae	*Ero furcata*					X				
Araneae: Linyphiidae	*Pelecopsis parallela*									X
Araneae: Linyphiidae	*Cnephalocotes obscurus*							X		
Araneae: Tetragnathidae	*Pachygnatha degeeri*					X		X		
Araneae: Araneidae	*Hypsosinga pygmaea*			X						
Araneae: Lycosidae	*Pardosa pullata*				X					
Araneae: Pisauridae	*Pisaura mirabilis*							X		
Araneae: Clubionidae	*Clubiona stagnatilis*					X				
Araneae: Thomisidae	*Ozyptila sanctuaria*				X					
Araneae: Salticidae	*Heliophanus flavipes*			X				X		
Neuroptera: Hemerobiidae	*Hemerobius stigma*					X				
Odonata: Lestidae	*Lestes sponsa*	Emerald Damselfly							X	
Odonata: Coenagriidae	*Ischnura elegans*	Blue-tailed Damselfly		X	X					
Odonata: Coenagriidae	*Enallagma cyathigerum*	Common Blue Damselfly		X	X					
Odonata: Coenagriidae	*Erythromma viridulum*	Small Red-eyed Damselfly				X				

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Orthoptera: Tettigoniidae	*Pholidoptera griseoaptera*	Dark Bush Cricket							X	
Orthoptera: Conocephalidae	*Conocephalus discolor*	Long-winged Conehead	Nationally Scarce a			X				
Orthoptera: Phaneropteridae	*Leptophyes punctatissima*	Speckled Bush Cricket		X						
Orthoptera: Acrididae	*Chorthippus albomarginatus*	Lesser Marsh Grasshopper		X					X	
Orthoptera: Acrididae	*Chorthippus brunneus*	Common Field Grasshopper			X	X	X	X		
Orthoptera: Acrididae	*Chorthippus parallelus*	Meadow Grasshopper		X	X	X		X		
Dermaptera: Forficulidae	*Forficula auricularia*	Common Earwig			X	X				
Dermaptera: Forficulidae	*Forficula lesnei*		Nationally Scarce b			X				
Hemiptera: Lygaeidae	*Drymus sylvaticus*				X					
Hemiptera: Lygaeidae	*Kleidocerys resedae*				X					
Hemiptera: Lygaeidae	*Megalonotus chiragra*			X						
Hemiptera: Lygaeidae	*Peritrechus geniculatus*					X				
Hemiptera: Lygaeidae	*Stygnocoris sabulosus*			X	X			X		
Hemiptera: Miridae	*Phytocoris varipes*			X		X				
Hemiptera: Miridae	*Stenodema laevigata*							X		
Hemiptera: Miridae	*Teratocoris antennatus*								X	
Hemiptera: Nabidae	*Himacerus major*							X		
Hemiptera: Nabidae	*Himacerus mirmicoides*			X	X	X		X		X
Hemiptera: Nabidae	*Nabis flavomarginatus*					X				
Hemiptera: Tingidae	*Acalypta parvula*			X	X			X		X
Hemiptera: Tingidae	*Kalama tricornis*			X						
Hemiptera: Tingidae	*Tingis cardui*					X				
Hemiptera: Coreidae	*Coreus marginatus*	Dock Bug		X		X				
Hemiptera: Cydnidae	*Sehirus luctuosus*	Forget-me-not Shieldbug		X						
Hemiptera: Pentatomidae	*Aelia acuminata*	Bishop's Mitre Shieldbug				X		X		
Hemiptera: Pentatomidae	*Podops inuncta*	Turtle Shieldbug				X			X	
Hemiptera: Pentatomidae	*Zicrona caerulea*	Blue Shieldbug		X						
Hemiptera: Rhopalidae	*Corizus hyoscyami*					X	X			
Hemiptera: Rhopalidae	*Rhopalus subrufus*						X			
Hemiptera: Aphrophoridae	*Aphrophora alni*			X	X					
Hemiptera: Aphrophoridae	*Philaenus spumarius*			X		X	X	X	X	
Hemiptera: Cicadellidae	*Megophthalmus scabripennis*			X	X	X	X	X		

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Hemiptera: Cicadellidae	*Cicadella viridis*				X	X				
Hemiptera: Cicadellidae	*Evacanthus interruptus*			X	X					
Hemiptera: Cicadellidae	*Anaceratagallia ribauti*			X		X	X	X		X
Hemiptera: Cicadellidae	*Psammotettix confinis*			X				X		
Hemiptera: Cicadellidae	*Paralimnus phragmitis*		Nationally Scarce b						X	
Hemiptera: Cicadellidae	*Mocydiopsis attenuata*							X		
Hemiptera: Cixiidae	*Pentastiridius leporinus*		Nationally Scarce b						X	
Hemiptera: Delphacidae	*Stenocranus major*							X		
Hemiptera: Delphacidae	*Chloriona glaucescens*								X	
Lepidoptera: Zygaenidae	*Zygaena filipendulae*	Six-spot Burnet		X	X	X		X	X	
Lepidoptera: Sesiidae	*Bembecia ichneumoniformis*	Six-belted Clearwing	Nationally Scarce b					X		
Lepidoptera: Oecophoridae	*Depressaria heraclei*	Parsnip Moth			X	X				
Lepidoptera: Gelechiidae	*Apodia bifractella*					X				
Lepidoptera: Momphidae	*Mompha raschkiella*				X	X				
Lepidoptera: Momphidae	*Mompha propinquella*			X	X					
Lepidoptera: Tortricidae	*Cochylis hybridella*			X						
Lepidoptera: Tortricidae	*Endothenia gentianaeana*			X						
Lepidoptera: Tortricidae	*Grapholita compositella*					X				
Lepidoptera: Tortricidae	*Grapholita janthinana*				X					
Lepidoptera: Pyralidae	*Calamotropha paludella*			X						
Lepidoptera: Pyralidae	*Crambus pascuella*			X	X					
Lepidoptera: Pyralidae	*Agriphila geniculea*			X						
Lepidoptera: Pterophoridae	*Marasmarcha lunaedactyla*					X				
Lepidoptera: Pterophoridae	*Stenoptilia zophodactylus*			X						
Lepidoptera: Hesperiidae	*Thymelicus lineola*	Essex Skipper		X		X		X		X
Lepidoptera: Hesperiidae	*Thymelicus sylvestris*	Small Skipper		X						
Lepidoptera: Pieridae	*Pieris brassicae*	Large White								X
Lepidoptera: Pieridae	*Pieris rapae*	Small White						X	X	
Lepidoptera: Pieridae	*Pieris napi*	Green-veined White		X		X				
Lepidoptera: Nymphalidae	*Maniola jurtina*	Meadow Brown		X		X		X		X
Lepidoptera: Nymphalidae	*Pyronia tithonus*	Gatekeeper		X	X	X			X	
Lepidoptera: Nymphalidae	*Vanessa atalanta*	Red Admiral				X				

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Lepidoptera: Nymphalidae	*Aglais io*	Peacock			X				X	
Lepidoptera: Nymphalidae	*Aglais urticae*	Small Tortoiseshell		X		X				
Lepidoptera: Nymphalidae	*Polygonia c-album*	Comma							X	
Lepidoptera: Lycaenidae	*Aricia agestis*	Brown Argus		X						
Lepidoptera: Lycaenidae	*Polyommatus icarus*	Common Blue			X	X				
Lepidoptera: Geometridae	*Scotopteryx chenopodiata*	Shaded Broad-bar	BAP		X					
Lepidoptera: Geometridae	*Eupithecia linariata*	Toadflax Pug				X				
Lepidoptera: Geometridae	*Aplocera plagiata*	Treble-bar		X						
Lepidoptera: Geometridae	*Chiasmia clathrata*	Latticed Heath	BAP	X				X		
Lepidoptera: Arctiidae	*Callimorpha dominula*	Scarlet Tiger			X					
Lepidoptera: Arctiidae	*Tyria jacobaeae*	Cinnabar	BAP	X		X		X		X
Lepidoptera: Noctuidae	*Shargacucullia verbasci*	Mullein		X						
Lepidoptera: Noctuidae	*Calophasia lunula*	Toadflax Brocade	RDB3			X				
Lepidoptera: Noctuidae	*Autographa gamma*	Silver Y						X		
Coleoptera: Carabidae	*Notiophilus biguttatus*									X
Coleoptera: Carabidae	*Bembidion lunulatum*					X				
Coleoptera: Carabidae	*Bembidion properans*			X	X					
Coleoptera: Carabidae	*Elaphropus parvulus*		Nationally Scarce b				X			
Coleoptera: Carabidae	*Amara aenea*				X		X			X
Coleoptera: Carabidae	*Amara communis*					X				
Coleoptera: Carabidae	*Amara tibialis*						X			
Coleoptera: Carabidae	*Bradycellus verbasci*					X				
Coleoptera: Carabidae	*Acupalpus dubius*							X		
Coleoptera: Carabidae	*Paradromius linearis*					X				
Coleoptera: Carabidae	*Syntomus foveatus*			X	X					X
Coleoptera: Hydrophilidae	*Megasternum concinnum*				X					
Coleoptera: Staphylinidae	*Stenus nanus*				X		X			
Coleoptera: Staphylinidae	*Stenus fulvicornis*					X				
Coleoptera: Staphylinidae	*Stenus latifrons*							X		
Coleoptera: Staphylinidae	*Stenus aceris*							X		
Coleoptera: Staphylinidae	*Stenus ossium*					X		X		
Coleoptera: Staphylinidae	*Philonthus varians*					X				X

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Coleoptera: Staphylinidae	*Xantholinus linearis*				X					
Coleoptera: Staphylinidae	*Xantholinus longiventris*						X			
Coleoptera: Byrrhidae	*Cytilus sericeus*						X			
Coleoptera: Throscidae	*Trixagus carinifrons*									X
Coleoptera: Elateridae	*Agriotes sordidus*		RDB3						X	
Coleoptera: Cantharidae	*Rhagonycha fulva*			X	X				X	
Coleoptera: Cantharidae	*Silis ruficollis*		Nationally Scarce b		X					
Coleoptera: Malachiidae	*Anthocomus rufus*								X	
Coleoptera: Kateretidae	*Brachypterolus pulicarius*					X				X
Coleoptera: Kateretidae	*Brachypterus glaber*				X	X				
Coleoptera: Nitidulidae	*Meligethes aeneus*	Common Pollen Beetle				X				
Coleoptera: Nitidulidae	*Meligethes carinulatus*									X
Coleoptera: Nitidulidae	*Meligethes fulvipes*		Nationally Scarce		X	X			X	
Coleoptera: Nitidulidae	*Meligethes rotundicollis*		Nationally Scarce			X				
Coleoptera: Phalacridae	*Olibrus aeneus*					X	X			X
Coleoptera: Phalacridae	*Olibrus liquidus*									X
Coleoptera: Coccinellidae	*Rhyzobius litura*			X		X				X
Coleoptera: Coccinellidae	*Nephus redtenbacheri*			X						
Coleoptera: Coccinellidae	*Scymnus frontalis*			X						
Coleoptera: Coccinellidae	*Propylea quattuordecimpunctata*	14-spot Ladybird				X		X	X	
Coleoptera: Coccinellidae	*Harmonia axyridis*	Harlequin Ladybird			X	X			X	
Coleoptera: Coccinellidae	*Coccinella septempunctata*	7-spot Ladybird		X	X	X		X		
Coleoptera: Coccinellidae	*Coccinella undecimpunctata*	11-spot Ladybird					X		X	X
Coleoptera: Coccinellidae	*Hippodamia variegata*	Adonis' Ladybird	Nationally Scarce b	X		X	X			
Coleoptera: Oedemeridae	*Oedemera nobilis*	Swollen-thighed Beetle		X	X	X			X	
Coleoptera: Oedemeridae	*Oedemera lurida*			X		X		X		
Coleoptera: Anthicidae	*Omonadus floralis*					X				
Coleoptera: Scraptiidae	*Anaspis regimbarti*									X
Coleoptera: Chrysomelidae	*Chrysolina hyperici*			X						
Coleoptera: Chrysomelidae	*Gastrophysa viridula*	Green Dock Beetle				X				
Coleoptera: Chrysomelidae	*Phaedon cochleariae*								X	
Coleoptera: Chrysomelidae	*Chaetocnema hortensis*							X		

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Coleoptera: Chrysomelidae	*Cryptocephalus fulvus*			X	X		X			
Coleoptera: Chrysomelidae	*Cryptocephalus moraei*						X			
Coleoptera: Apionidae	*Omphalapion hookerorum*						X		X	X
Coleoptera: Apionidae	*Ceratapion onopordi*			X						
Coleoptera: Apionidae	*Ceratapion carduorum*							X		
Coleoptera: Apionidae	*Aspidapion radiolus*									X
Coleoptera: Apionidae	*Malvapion malvae*									X
Coleoptera: Apionidae	*Protapion apricans*							X		
Coleoptera: Apionidae	*Protapion assimile*							X		
Coleoptera: Apionidae	*Protapion nigritarse*					X				
Coleoptera: Apionidae	*Ischnopterapion loti*					X		X		
Coleoptera: Apionidae	*Eutrichapion viciae*				X					
Coleoptera: Erirhinidae	*Stenopelmus rufinasus*					X				
Coleoptera: Curculionidae	*Sitona hispidulus*					X	X	X		
Coleoptera: Curculionidae	*Sitona humeralis*							X		X
Coleoptera: Curculionidae	*Sitona lepidus*					X		X		X
Coleoptera: Curculionidae	*Sitona lineatus*			X		X		X		
Coleoptera: Curculionidae	*Sitona waterhousei*		Nationally Scarce b					X		
Coleoptera: Curculionidae	*Hypera postica*	Clover Leaf Weevil				X				
Coleoptera: Curculionidae	*Hypera zoilus*							X		
Coleoptera: Curculionidae	*Cionus scrophulariae*	Figwort Weevil		X	X	X				X
Coleoptera: Curculionidae	*Rhinoncus inconspectus*				X					
Coleoptera: Curculionidae	*Rhinoncus pericarpius*				X					
Coleoptera: Curculionidae	*Trichosirocalus troglodytes*					X		X		
Coleoptera: Curculionidae	*Tychius meliloti*					X				
Coleoptera: Curculionidae	*Sibinia primita*		Nationally Scarce b	X						
Coleoptera: Curculionidae	*Gymnetron pascuorum*							X		
Coleoptera: Curculionidae	*Rhinusa antirrhini*					X				X
Diptera: Limoniidae	*Dicranomyia chorea*				X					
Diptera: Scatopsidae	*Reichertella geniculata*								X	
Diptera: Stratiomyidae	*Chorisops tibialis*				X	X				
Diptera: Stratiomyidae	*Nemotelus notatus*					X		X	X	

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Diptera: Stratiomyidae	*Chloromyia formosa*			X		X				
Diptera: Acroceridae	*Acrocera orbiculus*							X		
Diptera: Asilidae	*Leptogaster cylindrica*			X						
Diptera: Hybotidae	*Platypalpus calceatus*				X					
Diptera: Hybotidae	*Platypalpus longiseta*				X	X				
Diptera: Hybotidae	*Platypalpus pallidiventris*				X					
Diptera: Hybotidae	*Platypalpus ruficornis*		(Nationally Scarce) None		X					
Diptera: Hybotidae	*Platypalpus stabilis*		(Nationally Scarce) None		X					
Diptera: Empididae	*Empis livida*			X						
Diptera: Dolichopodidae	*Argyra vestita*								X	X
Diptera: Dolichopodidae	*Chrysotus cilipes*					X				
Diptera: Dolichopodidae	*Chrysotus gramineus*				X					
Diptera: Dolichopodidae	*Dolichopus griseipennis*			X		X			X	
Diptera: Dolichopodidae	*Dolichopus nubilus*								X	X
Diptera: Dolichopodidae	*Machaerium maritimae*									X
Diptera: Dolichopodidae	*Rhaphium consobrinum*								X	
Diptera: Dolichopodidae	*Campsicnemus loripes*								X	
Diptera: Dolichopodidae	*Micromorphus albipes s.l.*		(Nationally Scarce) None						X	
Diptera: Dolichopodidae	*Teuchophorus monacanthus*								X	
Diptera: Lonchopteridae	*Lonchoptera bifurcata*			X		X			X	X
Diptera: Lonchopteridae	*Lonchoptera lutea*								X	
Diptera: Syrphidae	*Melanostoma mellinum*	a hoverfly							X	
Diptera: Syrphidae	*Platycheirus angustatus*	a hoverfly		X				X		
Diptera: Syrphidae	*Platycheirus fulviventris*	a hoverfly							X	
Diptera: Syrphidae	*Platycheirus granditarsus*	a hoverfly				X				
Diptera: Syrphidae	*Paragus haemorrhous*	a hoverfly		X		X				
Diptera: Syrphidae	*Chrysotoxum bicinctum*	a hoverfly				X				
Diptera: Syrphidae	*Episyrphus balteatus*	a hoverfly			X	X			X	
Diptera: Syrphidae	*Eupeodes corollae*	a hoverfly				X				
Diptera: Syrphidae	*Scaeva pyrastri*	a hoverfly			X	X			X	X
Diptera: Syrphidae	*Sphaerophoria rueppellii*	a hoverfly				X				
Diptera: Syrphidae	*Sphaerophoria scripta*	a hoverfly		X		X				

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Diptera: Syrphidae	*Neoascia tenur*	a hoverfly			X					
Diptera: Syrphidae	*Helophilus hybridus*	a hoverfly			X					
Diptera: Syrphidae	*Helophilus trivittatus*	a hoverfly		X						
Diptera: Syrphidae	*Pipizella virens*	a hoverfly	Nationally Scarce					X		
Diptera: Syrphidae	*Volucella bombylans*	a hoverfly			X					
Diptera: Syrphidae	*Syritta pipiens*	a hoverfly		X		X			X	
Diptera: Pipunculidae	*Tomosvaryella geniculata*					X				
Diptera: Pipunculidae	*Tomosvaryella sylvatica*				X					
Diptera: Conopidae	*Physocephala rufipes*				X	X				
Diptera: Lonchaeidae	*Lonchaea chorea*				X					
Diptera: Piophilidae	*Prochyliza nigrimana*								X	
Diptera: Ulidiidae	*Herina lugubris*			X	X					
Diptera: Ulidiidae	*Melieria picta*		Nationally Scarce						X	
Diptera: Platystomatidae	*Rivellia syngenesiae*					X		X		
Diptera: Tephritidae	*Ensina sonchi*		None (Nationally Scarce b)						X	
Diptera: Tephritidae	*Acanthiophilus helianthi*		Nationally Scarce b		X					
Diptera: Tephritidae	*Campiglossa malaris*		RDB1 (RDBK)			X		X		
Diptera: Tephritidae	*Campiglossa plantaginis*								X	X
Diptera: Tephritidae	*Sphenella marginata*					X				
Diptera: Tephritidae	*Tephritis cometa*								X	
Diptera: Tephritidae	*Tephritis formosa*					X				
Diptera: Tephritidae	*Tephritis matricariae*		(RDBK)	X	X	X			X	
Diptera: Tephritidae	*Terellia serratulae*			X		X				
Diptera: Lauxaniidae	*Homoneura interstincta*		RDB3		X					
Diptera: Lauxaniidae	*Homoneura patelliformis*		Nationally Scarce							X
Diptera: Lauxaniidae	*Homoneura thalhammeri*		Nationally Scarce		X	X				
Diptera: Lauxaniidae	*Calliopum aeneum*				X					
Diptera: Lauxaniidae	*Calliopum elisae*				X					
Diptera: Lauxaniidae	*Minettia tabidiventris*			X	X		X	X		
Diptera: Lauxaniidae	*Minettia fasciata*					X		X		
Diptera: Lauxaniidae	*Minettia tubifer*				X					
Diptera: Lauxaniidae	*Sapromyza quadripunctata*			X	X	X		X		

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Diptera: Chamaemyiidae	*Chamaemyia aridella*					X		X		X
Diptera: Chamaemyiidae	*Chamaemyia herbarum*					X				
Diptera: Chamaemyiidae	*Chamaemyia polystigma*								X	
Diptera: Sciomyzidae	*Pherbellia cinerella*			X						
Diptera: Sciomyzidae	*Pherbellia griseola*		Nationally Scarce			X				
Diptera: Sciomyzidae	*Dichetophora obliterata*					X				
Diptera: Sciomyzidae	*Ilione albiseta*			X						
Diptera: Sciomyzidae	*Limnia unguicornis*				X	X				
Diptera: Sciomyzidae	*Pherbina coryleti*								X	
Diptera: Sepsidae	*Sepsis fulgens*					X				
Diptera: Agromyzidae	*Cerodontha fulvipes*									X
Diptera: Agromyzidae	*Liriomyza intonsa*		New for Britain							X
Diptera: Agromyzidae	*Napomyza lateralis*									X
Diptera: Opomyzidae	*Geomyza balachowskyi*							X		
Diptera: Opomyzidae	*Opomyza petrei*					X				
Diptera: Anthomyzidae	*Anthomyza gracilis*				X					
Diptera: Chloropidae	*Cryptonevra flavitarsis*								X	
Diptera: Chloropidae	*Platycephala planifrons*								X	
Diptera: Chloropidae	*Thaumatomyia glabra*			X	X					
Diptera: Chloropidae	*Thaumatomyia hallandica*			X				X		X
Diptera: Chloropidae	*Thaumatomyia notata*				X					
Diptera: Chloropidae	*Oscinella frit*			X			X	X		X
Diptera: Chloropidae	*Oscinella nitidissima*					X				
Diptera: Chloropidae	*Trachysiphonella scutellata*		Nationally Scarce (None)	X						
Diptera: Drosophilidae	*Scaptomyza pallida*					X			X	X
Diptera: Ephydridae	*Discocerina obscurella*				X					
Diptera: Ephydridae	*Hydrellia griseola*								X	
Diptera: Scathophagidae	*Cordilurina albipes*					X				
Diptera: Scathophagidae	*Scathophaga litorea*								X	
Diptera: Anthomyiidae	*Pegoplata aestiva*					X			X	
Diptera: Anthomyiidae	*Pegoplata infirma*									X
Diptera: Fanniidae	*Fannia fuscula*								X	

Order: Family	Species	Vernacular	National Status	A	B	C	D	E	F	G
Diptera: Fanniidae	*Fannia polychaeta*				X					
Diptera: Muscidae	*Schoenomyza litorella*			X					X	
Diptera: Muscidae	*Helina evecta*					X				
Diptera: Rhinophoridae	*Phyto melanocephala*				X					
Diptera: Rhinophoridae	*Rhinophora lepida*			X		X		X		
Diptera: Sarcophagidae	*Sarcophaga haemorrhoa*					X				
Diptera: Sarcophagidae	*Sarcophaga nigriventris*					X				
Diptera: Tachinidae	*Dinera grisescens*				X					
Diptera: Tachinidae	*Eriothrix rufomaculata*			X						
Diptera: Tachinidae	*Lydella stabulans*					X				
Diptera: Tachinidae	*Phania funesta*					X				
Diptera: Tachinidae	*Cistogaster globosa*		RDB1 (RDB2)					X		
Hymenoptera: Formicidae	*Lasius flavus*	an ant			X			X		
Hymenoptera: Formicidae	*Lasius niger*	an ant		X	X			X		
Hymenoptera: Formicidae	*Myrmecina graminicola*	an ant						X		
Hymenoptera: Eumenidae	*Ancistrocerus gazella*	a mason wasp				X				
Hymenoptera: Crabronidae	*Ectemnius rubicola*	a digger wasp				X				
Hymenoptera: Crabronidae	*Entomognathus brevis*	a digger wasp				X				
Hymenoptera: Crabronidae	*Lindenius albilabris*	a digger wasp						X		
Hymenoptera: Crabronidae	*Pemphredon lethifera*	a digger wasp			X				X	X
Hymenoptera: Crabronidae	*Spilomena troglodytes*	a digger wasp								X
Hymenoptera: Crabronidae	*Trypoxylon attenuatum*	Slender Wood Borer Wasp				X				
Hymenoptera: Apidae	*Andrena dorsata*	a mining bee			X	X				
Hymenoptera: Apidae	*Andrena flavipes*	Yellow Legged Mining Bee				X				
Hymenoptera: Apidae	*Andrena nigroaenea*	a mining bee				X				
Hymenoptera: Apidae	*Apis mellifera*	Honey Bee			X	X			X	X
Hymenoptera: Apidae	*Bombus hortorum*	Small Garden Bumble Bee		X	X	X				
Hymenoptera: Apidae	*Bombus humilis*	Brown-banded Carder Bee	BAP	X	X	X		X	X	X
Hymenoptera: Apidae	*Bombus lapidarius*	Large Red Tailed Bumble Bee				X				
Hymenoptera: Apidae	*Bombus lucorum sens. lat.*	White-tailed Bumble Bee		X	X					
Hymenoptera: Apidae	*Bombus pascuorum*	Common Carder Bee		X	X	X			X	X
Hymenoptera: Apidae	*Bombus pratorum*	Early Bumble Bee			X	X			X	X

Appendix B - Definitions

Definitions of Red Data Book

Red Data Book category 1 (RDB1) - Endangered

Species which are known or believed to occur as only a single population within one 10km square of the national grid.

Red Data Book category 2 (RDB2) - Vulnerable

Species declining throughout their range or in vulnerable habitats.

Red Data Book category 3 (RDB3) - Rare

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

Nationally Notable (Scarce) category A (NS A) - Notable A

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

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

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

Nationally Notable (Scarce) (N) - Notable

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