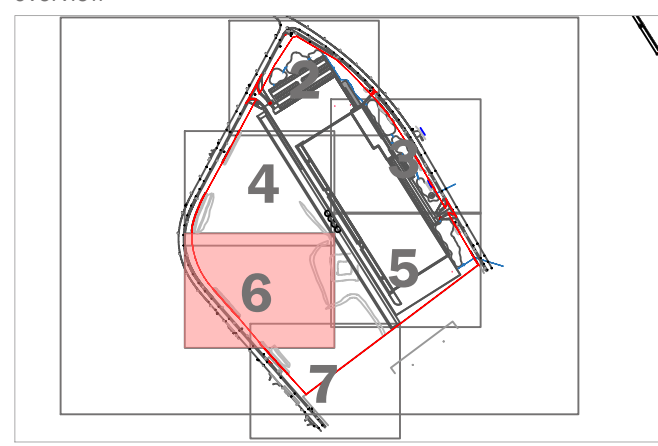


A risk assessment has been carried out on this design. Residual risks following this process are listed below. A copy of the full Design Risk Register is also available on request from EDP.

1. Soft landscaping implementation within a construction environment (across the site);
2. Installing trees (across the site);
3. Water bodies (proposed attenuation basins, pond and swales) presents risk of falling in and drowning; and
4. Works adjacent to existing/proposed highways (across the site)

For further guidance, refer to HSE Construction Design and Management Regulations 2015.

overview



This drawing is to be read in conjunction with all other drawings and specifications within the package.
These drawings have been prepared for design development and are not for construction.
All dimensions are in millimetres unless otherwise specified.
An electronic copy of this drawing, without amendments or alterations, is to be retained by the client.
All other drawings and specifications are to be retained by the client.
The drawing must not be copied or altered in any way without prior written consent from EDP.

purpose of issue **PLANNING**

a	Updates to address revised layout and drainage features	05-05-2022	EB
-	Original	04-03-2022	EB

rev / description date by

client
Glass Systems Ltd

project title
Baglan Way, Port Talbot

drawing title
Detailed Soft Landscape Design

date	05 APRIL 2022	drawn by	EB
drawing number	edp7017_0023a	checked	LH
scale	1:200 @ A0	QA	RB

Sheet 6 of 7



the environmental
dimension partnership

Registered office: 01385 740427 • www.edp-uk.co.uk • info@edp-uk.co.uk



Appendix EDP 3

Correspondence with Local Planning Authority Ecologist

This page has been left blank intentionally

Appendix EDP 4 Habitat Descriptions

Methodology

- A4.1 The principal habitats within the Application Site together with their dominant/characteristic plant species were identified during the Extended Phase 1 survey and botanical assessment.
- A4.2 The Extended Phase 1 survey was undertaken by a suitably experienced ecologist on 14 June 2021, during which the weather was dry, 22°C with no wind and 40% cloud cover.
- A4.3 The survey technique adopted for the habitat assessment was at a level intermediate between a standard Phase 1 survey technique¹², based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 survey. This level of survey does not aim to compile a complete floral and faunal inventory for the Application Site.
- A4.4 The level of survey involves identifying and mapping the principal habitat types and identifying the dominant plant species present in each principal habitat type. In addition, any actual or potential protected species are identified and scoped.
- A4.5 Given the presence of species-rich habitats identified during the Extended Phase 1 survey combined with the Site's designation as a SINC, initial survey effort was followed a botanical assessment of those habitats, undertaken on 31 August 2021, to provide a more robust assessment of their botanical diversity and condition.
- A4.6 The survey adopted the DAFOR methodology¹³ whereby all vascular plant species (and bryophytes where identifiable) were identified to the following abundance levels: D=Dominant; A = Abundant; F= Frequent; O = Occasional; and R = Rare. Where a species had a particularly localised status within a field it was noted with the prefix L (e.g. rare in the wider field but locally occasional = R/LO).
- A4.7 The survey was conducted by Phil Quinn MCIEEM – an ecologist who has over thirty years' experience of botanical survey across the UK, primarily in western England and south Wales.

¹² Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

¹³ DAFOR botanical survey technique – whereby occurrence of a species is noted to be Dominant, Abundant, Frequent, Occasional, or Rare

- A4.8 The botanical values of the habitats recorded were assessed against the criteria set out for habitat types within the 'Guidelines for the Selection of Local Sites in Wales prepared by the Wales Biodiversity Partnership';¹⁴ this document is hereafter referred to as the GSLSW.

Limitations

- A4.9 June and August are considered to be within the optimal period for undertaking an Extended Phase 1 survey and botanical assessment respectively. However, early flowering species may not be present at this time.
- A4.10 Surveys were limited to recording plant species present in both vegetative and floristic forms at the time of survey. The lack of any species record from this report cannot be taken to automatically infer species' absence from the Application Site.

Results

- A4.11 The distribution of different habitat types within and adjacent to the Site is illustrated at **Plan EDP 3** and further described below. A botanical species list is provided within **Table EDP A3.1**

Broadleaved Plantation Woodland

- A4.12 The northern, southern and western boundaries of the Application Site are defined by a belt of plantation woodland, relatively uniform in age and structure. The northern and southern tree line is relatively dense and fronted by dense bramble scrub (*Rubus fruticosus* agg.). In contrast, there are several gaps in the western boundary tree line up to 50m in length where the vegetation is replaced by a grass covered earth bund with occasional scattered trees or scrub. Semi-mature common ash (*Fraxinus excelsior*) is frequent whilst pedunculate oak (*Quercus robur*) and sycamore (*Acer pseudoplatanus*), also occurs occasionally. Goat willow (*Salix caprea*) is relatively abundant whilst hawthorn (*Crataegus monogynea*), alder (*Alnus glutinosa*), silver birch (*Betulus pendula*), Norway maple (*Acer platanoides*), hazel (*Corylus avellana*) and blackthorn (*Prunus spinosa*) also occurs. Pine (*Pinus* sp.) is present rarely. Understory species were sparse but were typical of those common herbs, rushes and grasses found on the Application Site.

¹⁴ Wales Biodiversity Partnership (2008). Guidelines for the Selection of Local Sites in Wales. Available at: <https://www.biodiversitywales.org.uk/File/53/en-GB>. [Accessed on 10 January 2022].



Photo EDP 1: Young plantation woodland at peripheries of Application Site.

- A4.13 Given its poor structural and botanical diversity, albeit with potential to support protected and notable species, plantation woodland is considered to be of **Site** level importance.

Dense and Scattered Scrub

- A4.14 An area in the south of the Application Site demonstrates an irregular topography with two linear mounds and low areas around them; both scattered and dense scrub including much dewberry (*Rubus caesius*) and common gorse (*Ulex europaeus*) is present here as well as a small area where sheep's sorrel (*Rumex acetosella*) and a lichen (of the genus *Cladonia*) were recorded. A small runnel to the north of this area supports a population of creeping forget-me-not (*Myosotis secunda*).



Photo EDP 2: Dense scrub within north-western corner of the Application Site.

- A4.15 Dense scrub vegetation is also present in association with the margins of the Application Site whilst scattered patches are present across grassland habitat which dominates the site. Scrub, particularly along the southern boundary of the Application Site is dominated by bramble.
- A4.16 Those scattered patches otherwise present across the Application Site or within the north-west corner of the Application Site comprise goat willow, grey willow (*Salix cinerea*) and their hybrid *Salix x reichardtii* along with immature silver birch, alder, common gorse, a non-native dogwood (*Cornus sp.*) and the invasive shrub sea buckthorn (*Hippophae rhamnoides*). Sea buckthorn is a native species on the east coast of England but is frequently planted in coastal locations elsewhere in the UK where it spreads vigorously and becomes a serious problem as it overwhelms other habitats of greater ecological value.
- A4.17 Patches of wall cotoneaster were also recorded across the northern extents of the Application Site. This species is an invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act (1981, as amended).
- A4.18 Given its poor structural and botanical diversity, relatively small extent and low distinctiveness, dense scrub is considered to be of no more than **Site** level importance.

Grassland

- A4.19 A mosaic of neutral grassland and marshy grassland is predominant over much of the remainder of the Application Site; some areas in the south are mostly dry ground and predominantly neutral grassland where common restharrow (*Ononis repens*) can be locally frequent. In the east of the site this neutral grassland/marshy grassland mosaic also

contains much scattered scrub including regrowth from recent scrub management works. Grassland habitat here is a qualifying feature of Panasonic SINC which overlaps with the Application Site in its entirety and forms a mosaic with scrub and reedbed communities.

Semi-improved Neutral Grassland

- A4.20 Semi-improved neutral grassland has colonised drier ground across the central extent of the Application Site. Vegetation height and structure is variable with those areas closest to site boundaries typically up to 40cm in height whilst grassland becomes more scattered and shorter (10cm) towards the centre of the Application Site where some bare ground and former access tracks and/or excavated spoil mounds prevail. Cock's-foot (*Dactylis glomerata*) and Yorkshire fog (*Holcus lunatus*) are abundant, whilst creeping buttercup (*Ranunculus repens*) and red clover (*Trifolium pratense*) is present in some quantity. Sweet vernal (*Anthoxanthus odoratum*), common bent (*Agrostis capillaris*), crested dog's-tail (*Cynosurus cristatus*) and false oat-grass (*Arrhenanthrum elatius*) occur occasionally. Other species recorded include teasel (*Diapsus fullonum*), chickweed (*Stellaria media*), glaucous sedge (*Carex flacca*), bird's-foot-trefoil (*Lotus corniculatus*), oxeye daisy (*Leucanthemum vulgare*), silver weed (*Potentilla anserina*), black medick (*Medicago lupulina*) and common ragwort (*Jacobaea vulgaris*).



Photo EDP 3: Semi-improved grassland looking eastwards.

- A4.21 In the north of the Application Site is an area of dry calcareous grassland over a skeletal substrate. Kidney vetch (*Anthyllis vulneraria*), fairy flax (*Linum catharticum*), yellow-wort (*Blackstonia perfoliate*), and a species of eyebright (*Euphrasia* sp.) are frequent here. A smaller area of calcareous grassland with kidney vetch is found in the southern centre of the site.

Marshy Grassland

A4.22 This Application Site is predominantly level and poorly drained with common reed (*Phragmites australis*) dominant over much of the southern third of the Application Site and locally frequent elsewhere. However, the reed does not form dense stands or reedbeds but is quite open and thus allows for a diverse wetland flora to occur within it where sedges and rushes are common and species such as fleabane (*Pulicaria dysenterica*) and water mint (*Mentha aquatica*) can be locally frequent and more notable species such as marsh willowherb (*Epilobium palustre*) are also present. Compact rush (*Juncus conglomeratus*), soft rush (*Juncus effusus*) and sharp -flowered/jointed rush (*Juncus acutiflorus*/*Juncus articulatus*) occurs occasionally as does cuckoo flower (*Cardamine pratensis*) and Southern marsh orchid (*Dactylorhiza praetermissa*). Ragged robin (*Silene flos-cuculi*) is occasionally present and localised in its distribution whilst yellow flag iris (*Iris pseudacorus*) occurs occasionally and marsh bedstraw (*Galium palustre*) rarely. A variety of sedge species were also recorded across this habitat and often locally abundant including common sedge (*Carex nigra*), spring sedge (*Carex caryophyllaea*), glaucous sedge and common spike rush (*Eleocharis palustris*).



Plan EDP 4: Abundant common reed within a matrix of marshy grassland.



Photo EDP 5: Marshy grassland along the northern boundary of the Application Site.



Photo EDP 6: Area of uneven ground in the north of the site with much purple loosestrife.

- A4.23 In the centre of the Application Site, and close to the areas of cleared scrub, are areas with a higher water table than elsewhere on the site where stands of sea club-rush (*Bolboschoenus maritimus*) are locally abundant, and small populations of southern marsh orchid (*Dactylorhiza praetermissa*) and the uncommon plant brookweed (*Samolus valerandi*) were recorded.
- A4.24 Collectively, marshy and semi-improved neutral grassland is considered to be of County importance and contributing the nature conservation value of the Panasonic SINC which overlaps the Application Site.

Ephemeral/Short Perennial Vegetation

- A4.25 Ephemeral and short perennial vegetation is common in the north of the Application Site around those areas of bare ground where off-road vehicle activity is most concentrated. There is also much common bird's-foot trefoil (*Lotus corniculatus*), glaucous sedge (*Carex flacca*) and common bent (*Agrostis capillaris*) here.



Photo EDP 7: Scattered patches of grassland and ephemeral vegetation along north-eastern extent of the Application Site.



Photo EDP 8: Ephemeral/short perennial vegetation at former site acces looking south.

- A4.26 Ephemeral/short perennial vegetation was typically record across the eastern extent of the Application Site particularly adjacent to or in association with a former access track. Here, bare ground predominates with patches of vegetation represented by such grassland species as perennial rye-grass (*Lolium perenne*), Yorkshire fog, cock's-foot, false oat-grass with creeping buttercup and silverweed. Wild strawberry (*Fragaria vesca*) occurs occasionally as does viper's bugloss (*Echium vulgare*), bird's-foot-trefoil, black medick and rarely red pimpernel (*Anagallis arvensis*). Ephemeral/short perennial vegetation is considered to be of **Negligible** importance.

Tall Ruderal

- A4.27 Patches of tall ruderal vegetation were often recorded in association with each habitat with individual stands dominated by a single species including greater willowherb (*Epilobium hirsutum*), melilot (*Melilotus* sp.) and common nettle (*Urtica dioecia*). There is a small area in the north of the Application Site where soil and/or debris has been dumped and vegetation has subsequently covered that area. Small mounds are present here and also support a mosaic of tall herbs, tall ruderals, coarse grasses and scattered scrub; purple loosestrife (*Lythrum salicaria*) is locally abundant here. Tall ruderal vegetation is considered to be of **Negligible** importance.

Habitat Overview and Assessment against SINC Criteria

A4.28 The five habitat types present within the Application Site, which have been assessed against the GSLSW, and a description of qualifying criteria for designation as a SINC, are provided below:

- Marshy Grassland: 26 indicator species in total: The GSLSW requires that a minimum of 12 indicator species are required to consider a Marshy Grassland to be a candidate for SINC status by virtue of species-richness;
- Neutral Grassland: 18 indicator species. The GSLSW requires that species-rich Neutral Grassland be considered a candidate for SINC status;
- Calcareous Grassland: 19 indicator species in total of which 11 are shared Neutral Grassland Indicators. The GSLSW requires a minimum of 8 species to consider a Calcareous Grassland to be a candidate for SINC status; and
- Previously Developed Land: 5 characteristic species in total. The SINC guidance handbook doesn't give a minimum threshold number of Previously Developed Land characteristic species required *per se* however, it does state that the following sites should be considered for selection:

"It is considered that substantive nature conservation value can be demonstrated, and thus the site is eligible for Wildlife Site selection, if 20 or more plant species from the combined lists of grassland species (Tables 3-5) and the following list of characteristic (but not ubiquitous) additional species in Table 7 are present."

A4.29 In addition to the above, the notable plant brookweed is also present here but is not used as an indicator for any important habitat in the SINC guidance handbook, which is anomalous.

A4.30 As such, the Application Site continues to qualify as a SINC, designated under its Previously Developed Land status or as Marshy Grassland or Neutral Grassland as these latter two habitats are extensive across the Application Site and are frequently recorded here together as mosaic habitat.

A4.31 The Application Site also supports sufficient indicator species to be designated as calcareous grassland. However calcareous grassland is primarily recorded in one small area in the north of the Application Site, and thus is not a realistic habitat to use with regard to assessing the whole botanical value of this SINC. The calcareous grassland recorded here is likely to be present over a substrate of crushed cement or other lime-rich anthropogenic material.

A4.32 The extensive area of cut scrub in the centre of the Application Site suggests that scrub encroachment onto this site is considerable, and particularly so in those (particularly damp) areas where many of this Application Site more notable plant species are recorded. The most species-rich areas are, therefore, highly susceptible to being lost to scrub invasion

should management here cease. It is also possible that without management common reed will form dense stands at the expense of the species-rich plant assemblage currently present.

Table EDP A3.1: Botanical Species List

Common name	Scientific name	DAFOR	NG	CG	MG	PDL
Sycamore	<i>Acer pseudoplatanus</i>	R				
Yarrow	<i>Achillea millefolium</i>	O				
Common bent	<i>Agrostis capillaris</i>	F/LA				
Creeping bent	<i>Agrostis stolonifera</i>	A				
Alder	<i>Alnus glutinosa</i>	R/LO				
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>	F/LA				
Kidney vetch	<i>Anthyllis vulneraria</i>	R/LF		CG		
Thyme-leaved sandwort	<i>Arenaria serpyllifolia</i>	R				
False oat-grass	<i>Arrhenatherum elatius</i>	F				
Mugwort	<i>Artemisia vulgaris</i>	O				
Daisy	<i>Bellis perennis</i>	R/LO				
Birch seedlings	<i>Betula sp.</i>	O				
Yellow-wort	<i>Blackstonia perfoliata</i>	R		CG		
Sea club-rush	<i>Bolboschoenus maritimus</i>	O/LA				
Soft brome	<i>Bromus hordaceus</i>	O				
Buddleia	<i>Buddleia davidii</i>	O				
Hedge bindweed	<i>Calystegia sepium</i>	O/LF				
Cuckoo-flower	<i>Cardamine pratensis</i>	O	NG		MG	
Small yellow sedge	<i>Carex demissa</i>	O				
Glaucous sedge	<i>Carex flacca</i>	F/LA	NG	CG	MG	
Hairy sedge	<i>Carex hirta</i>	F/LA				
Tawny sedge	<i>Carex hostiana</i>	R/LO			MG	
Oval sedge	<i>Carex leporina</i>	R/LO				
Common sedge	<i>Carex nigra</i>	O	NG		MG	
False fox sedge	<i>Carex otrubae</i>	O				PDL
Black knapweed	<i>Centaurea nigra</i>	F	NG	CG		
Common centaury	<i>Centaureum erythreum</i>	O	NG	CG		
Creeping thistle	<i>Cirsium arvense</i>	F/LA				
Marsh thistle	<i>Cirsium plaustre</i>	R/LO				
Dogwood species	<i>Cornus sp.</i>	O/LF				
Wall cotoneaster	<i>Cotoneaster horizontalis</i>	R				
Crested dog's-tail	<i>Cynosurus cristatus</i>	O				
Cocksfoot	<i>Dactylis glomerata</i>	F				
Southern marsh orchid	<i>Dactylorhiza praetermissa</i>	R/LO	NG		MG	
Wild carrot	<i>Daucus carota</i>	F/LA		CG		
Tufted hair-grass	<i>Deschampsia caespitosa</i>	F				
Common teasel	<i>Dipsacus fullonum</i>	O				PDL
Viper's bugloss	<i>Echium vulgare</i>	R		CG		
Common spike-rush	<i>Eleocharis palustris</i>	O/LA			MG	
Great willowherb	<i>Epilobium hirsutum</i>	F/LA				
Marsh willowherb	<i>Epilobium palustre</i>	R/LF				
Hoary willowherb	<i>Epilobium parviflorum</i>	O				

Common name	Scientific name	DAFOR	NG	CG	MG	PDL
Field horsetail	Equisetum arvense	F				
Hemp agrimony	Eupatorium cannabinum	O/LF			MG	
Eyebright species	Euphrasia sp.	O/LF				
Red fescue	Festuca rubra	F				
Wild strawberry	Fragaria vesca	R				
Cultivated strawberry	Fragaria x ananassa	R				
Ash	Fraxinus excelsior	R				
Marsh bedstraw	Galium palustre	O			MG	
Ivy	Hedera helix	O/LF				
Hawkweed species	Hieracium sp.	O				
Sea buckthorn	Hippophae rhamnoides	O				
Yorkshire fog	Holcus lanatus	A				
Perforate St John's-wort	Hypericum perforatum	F	NG	CG		
Square-stemmed St John's-wort	Hypericum tetrapterum	O			MG	
Flag iris	Iris pseudacorus	R/LO			MG	
Bristle club-rush	Isolepis setacea	R/LO			MG	
Sharp-flowered rush	Juncus acutiflorus	O			MG	
Jointed rush	Juncus articulatus	F			MG	
Compact rush	Juncus conglomeratus	O/LF			MG	
Soft rush	Juncus effusus	F/LA				
Hard rush	Juncus inflexus	O				
Slender rush	Juncus tenuis	O/LF				
Meadow vetchling	Lathyrus pratensis	F/LA	NG			
Rough hawkbit	Leontodon hispidus	O	NG	CG		
Lesser hawkbit	Leontodon saxatilis	F	NG	CG		
Ox-eye daisy	Leucanthemum vulgare	O/LF	NG			
Wild privet	Ligustrum vulgare	R				
Fairy flax	Linum catharticum	O	NG	CG		
Common bird's-foot trefoil	Lotus corniculatus	F	NG	CG		PDL
Greater bird's-foot trefoil	Lotus pedunculatus	F				
Gipsywort	Lycopus europaeus	O/LF			MG	
Purple loosestrife	Lythrum salicaria	O/LF			MG	
Black medick	Medicago lupulina	F		CG		
Golden melilot	Melilotus altissima	F/LA				
Ribbed melilot	Melilotus officinalis	O				
Water mint	Mentha aquatica	F			MG	
Purple moor-grass	Molinia caerulea	O/LF			MG	
Creeping forget-me-not	Myosotis secunda	R/LO			MG	
Red bartsia	Odontites vernus	F				
Common restharrow	Ononis repens	O/LF	NG	CG		
Wild parsnip	Pastinaca sativa	O/LF		CG		
Timothy	Phleum pratense	O				
Common reed	Phragmites australis	A/LD			MG	
Hawkweed ox-tongue	Picris hieracioides	R		CG		
Mouse-ear hawkweed	Pilosella officinarum	O	NG	CG		PDL
Ribwort	Plantago lanceolata	F/LA				
Narrow-leaved meadow-grass	Poa angustifolia	R	NG	CG		

Common name	Scientific name	DAFOR	NG	CG	MG	PDL
Rough meadow-grass	Poa trivialis	F				
Silverweed	Potentilla anserina	F/LA				
Creeping cinquefoil	Potentilla reptans	A				
Selfheal	Prunella vulgaris	O/LF				
Fleabane	Pulicaria dysenterica	F			MG	
Meadow buttercup	Ranunculus acris	O				
Lesser spearwort	Ranunculus flammula	F			MG	
Creeping buttercup	Ranunculus repens	A				
Dewberry	Rubus caesium	O/LA				
Bramble	Rubus fruticosus agg.	O/LA				
Sheep's sorrel	Rumex acetosella	R				
Clustered dock	Rumex conglomeratus	R			MG	
Goat willow	Salix caprea	O				
Grey willow	Salix cinerea	F				
Creeping willow	Salix repens	R			MG	
Hybrid willow	Salix x reichardtii	F				
Elder	Sambucus nigra	O				
Brookweed	Samolus valerandi	R/LF				
Marsh ragwort	Senecio aquaticus	O			MG	
Common ragwort	Senecio jacobaea	F				
Groundsel	Senecio vulgaris	F				
Ragged robin	Silene flos-cuculi	R/LO				
Marsh woundwort	Stachys palustris	O			MG	
Dandelion	Taraxacum officinale agg	F				
Hop trefoil	Trifolium campestre	O		CG		PDL
Lesser trefoil	Trifolium dubium	F				
Alsike clover	Trifolium hybridum	R/LO				
Red clover	Trifolium pratense	F	NG			
White clover	Trifolium repens	F/LA				
Common reed-mace	Typha latifolia	O				
Common gorse	Ulex europaeus	O/LF				
Tufted vetch	Vicia cracca	O	NG			
Hairy vetch	Vicia hirsuta	F				
Common vetch	Vicia sativa	O				
Smooth tare	Vicia tetrapserma	F				
Total Indicator Species			18	19	26	5

This page has been left blank intentionally

Appendix EDP 5 Bat Survey Results

Methodology

A5.1 A number of habitats present within the Application Site, including mature trees, plantation woodland and grassland were identified as having the potential to support foraging and commuting bats. The following surveys for bats were undertaken with reference to national best practice guidelines¹⁵:

3. *Bat Roosting:*

d) *Visual assessments of mature trees for bat roosting potential.*

4. *Bat Foraging/Commuting Activity:*

c) *Manual transect surveys; and*

d) *Automated detector surveys’.*

Investigations of Bat Roosting – Trees

A5.2 To determine the potential impacts of future development upon bats potentially roosting within trees across the Application Site, all suitable trees/tree groups were subject to a preliminary ground level visual assessment with reference to current best practice guidance¹⁵.

A5.3 The tree survey involved a ground-based visual assessment of trees for the presence of, or potential to support, roosting bats by a suitably experienced ecologist.

A5.4 Suitable features for roosting bats sought for during the assessment included:

- Loose/peeling/fissured bark;
- Natural holes e.g. rot holes and holes from fallen limbs;
- Woodpecker holes;
- Cracks/splits or hollow tree trunks/limbs; and
- Thick-stemmed ivy.

¹⁵ Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines* (3rd edition). The Bat Conservation Trust, London

A5.5 Signs of roosting bats sought for included:

- Bat/s roosting *in-situ*;
- Bat droppings within or beneath a feature;
- Staining around or beneath a feature;
- Oily marks (staining) around roost access points;
- Audible squeaking from the roost; and
- Large/regularly used roosts or regularly used Sites may produce an odour.

A5.6 Based upon the results of the visual assessment and features/evidence identified, the following ratings for trees were used during the assessment:

- Known or confirmed roost - European Protected Species (EPS) licence required for works to tree to be completed lawfully;
- High suitability - A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis;
- Moderate suitability - A tree with one or more potential roost sites that could be used by bats but are unlikely to support a roost of high conservation status (with respect to roost type only);
- Low suitability - A tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen but with very limited roosting potential; and
- Negligible potential - Negligible features likely to support roosting bats.

Limitations

A5.7 Visual assessments for roosting bats can be undertaken at any time of year. As such these investigations were not limited by seasonal or climatic factors.

A5.8 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the Application Site at the time of survey.

Investigations of Bat Foraging/Commuting Activity

Manual Transect Surveys

- A5.9 Manual transect surveys were undertaken across the Application Site to identify its importance for a commuting/foraging bat assemblage on three occasions between July and September 2021. With reference to best practice guidelines, surveys were completed within the optimal survey months of April to September inclusive.
- A5.10 Full details including the survey type, date, timing, and weather conditions during each of the transect surveys undertaken during 2021 is given in **Table EDP A4.1**.

Table EDP A4.1: Date, timing and weather conditions of bat activity surveys.

Survey date	Dusk/ dawn	Survey time	Sunrise/ sunset time	Weather conditions			
				Temp (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
21.07.21	Dusk	21:19-23:19	21:19	18.0-19.0	0	Nil	0-1
25.08.21	Dusk	20:17-22:17	20:17	16.0-17.0	0-10	Nil	0-2
16.09.21	Dusk	19:28-21:28	19:28	16.0-17.0	20-60	Nil	1-2

- A5.11 Manual transect surveys were completed by an experienced bat surveyor across a single transect survey route designed to provide a representative cover of potential foraging or commuting habitats on site; woodland, trees and grassland. The transect route was walked at a slow and steady pace with ten 'listening stops'. The transect routes are illustrated at **Plans EDP 4a-4c**. All bats were recorded and their behaviour marked on survey maps in order characterise the value of the site and its component habitats to foraging and commuting bats.
- A5.12 Activity surveys were conducted using Elekon Batlogger detectors. Observations of the time, location, and activity of all bats seen or heard were noted. Bats were identified on the basis of their characteristic echolocation calls. Species of Myotis bat and long-eared bat are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Automated Detector Surveys

- A5.13 To supplement the bat transect survey data and to provide a more robust assessment of activity by horseshoe bat species (which are often under-recorded by transect surveys), bat activity within the Application Site was also sampled using static bat detectors which automatically trigger and record bat echolocation calls. Anabat Express (hereafter referred to as 'Anabats') were deployed in two locations throughout the Application Site. The locations at which Anabats were deployed is illustrated at **Plan EDP 4d**.

A5.14 Anabats were deployed for five consecutive nights during each month of July, August and September 2021. The Anabats were fixed in secure locations, with an external microphone attached approximately 1.0-2.5m above ground where possible and directed away from any trees/branches to maximise detection sensitivity. Minimum night-time air temperatures were recorded by a nearby weather station. **Table EDP A4.2** gives the sampling dates and microphone details for the Anabats deployed during the sampling periods.

Table EDP A4.2: Anabat sampling dates.

Sampling Period	Location Number	Microphone Height	Microphone Direction	Min Air Temperature °C
21.07.21 – 26.07.21	1	1.2m	North-east	14.0
	2	1.7m	East	
25.08.21 – 31.08.21	1	2.0m	South-east	10.0
	2	1.4m	South	
16.09.21 – 22.09.21	1	2m	East	10.0
	2	1.5m	North-east	

A5.15 The sound files recorded by the Anabats were filtered for each of the UK's bat species/species groups using Analook software's filter function. The parameters for the species filters are based on those proposed by Chris Corben and Kim Livengood¹⁶ and have been fine-tuned using known call parameters for each of the species. All files passing the various filters were checked manually using sonogram analysis in accordance with published guides¹⁷ to confirm the species identification of each bat call.

Limitations

A5.16 Due to climatic and environmental factors in the immediate vicinity of each of the Anabat locations, the sensitivity of each Anabat had to be adjusted and was therefore not consistent across all locations. This can affect the number of bat calls recorded by each detector and has been taken into account when describing bat activity levels in the results section.

A5.17 In addition, the identification of calls and species using Analook software is dependent upon the quality of the recording made which can be influenced by the following factors, which may limit levels of activity and species recorded:

- Weather conditions – rainfall and wind;
- Distance of bat from Anabat;
- Presence of obstructions through which the noise must pass i.e. trees; and
- Proximity of other noise sources such as roads.

¹⁶ Taken from Analook W training course and workshop, September 2013

¹⁷ Russ (2012). *British Bat Calls, a guide to species identification*. Pelagic Publishing, Exeter

Results

Investigations of Bat Roosting – Trees

- A5.18 With respect to semi-mature and mature trees present in association with the Application Site boundaries, no trees with suitable bat roosting features were identified during the ground level bat roost inspection. The Application Site is thus considered to be of negligible importance for a roosting bat assemblage.

Investigations of Bat Foraging/Commuting Activity

- A5.19 Bat foraging and commuting activity recorded during the transect and automated detector surveys undertaken between July 2021 and September 2021 is summarised by species/genus below and illustrated on **Plans EDP 4a-4d**. The following should be read in conjunction with these plans and automated detector survey results in **Tables EDP A4.3 - A4.5**.
- A5.20 A minimum of four bat species/species groups (Myotis bat species were not identified to species level), were confirmed to be present foraging and/or commuting within the Application Site during the course of the automated detector surveys. During the automated detector surveys, the vast majority of this behaviour (average 83.9% of Anabat recordings) related to common pipistrelle bat whilst soprano pipistrelle accounted for 14.9% of all anabat recordings. Other species representing less than 1% of Anabat recordings include noctule and Myotis species.
- A5.21 Only three species of bat were confirmed to be foraging and/or commuting within the Application Site during the course of manual transect surveys undertaken between July and September 2021. Only low levels of bat activity were recorded, this being dominated by common pipistrelle with occasional registrations of soprano pipistrelle bat. A single registration for Nathusius' pipistrelle was recorded during September 2021.
- A5.22 An evaluation of the bat assemblage at the Application Site identified during manual transect and automated detector surveys is provided below, with reference to the relative abundance and distribution of each bat species (with reference to the most up-to-date information on national species distribution¹⁸ and population trends¹⁹ available at the time of writing).

Common and Soprano Pipistrelle

- A5.23 Common and soprano pipistrelle bats are common and widespread across the UK, representing the most and second most abundant bat species in the UK respectively. Whilst having suffered significant historic declines, national population monitoring

¹⁸ Battersby, J. (Ed) & Tracking Mammals Partnership. (2005) *UK Mammals Species Status and Population Trends*. First Report by the Tracking Mammals Partnership. JNCC/Tracking Mammals Partnership, Peterborough

¹⁹ Bat Conservation Trust, 2021. The National Bat Monitoring Programme Annual Report 2020. Bat Conservation Trust, London. Available at www.bats.org.uk/our-work/national-bat-monitoringprogramme/reports/nbmp-annual-report.

indicates that common pipistrelle bats are increasing nationally, and soprano pipistrelle populations are considered to be stable.

- A5.24 Common pipistrelle recordings were the most frequent across the Application Site during the transect surveys. Only low numbers were recorded such that no patterns with respect to distribution could be determined. However, registrations were largely associated with the vegetated northern, southern and western boundaries of the Application Site. Soprano pipistrelle, in contrast, were rarely recorded during manual transect surveys in July and August with occasional registrations during automated detector surveys. Common and soprano pipistrelle bats using the Application Site is considered to be of **Site** importance.

Nathusius' Pipistrelle

- A5.25 Nathusius' pipistrelle is considered rare in the UK, though records have increased in recent years and they are considered widespread throughout the UK. Nathusius' pipistrelle was recorded on a single occasion during a manual transect survey undertaken in September 2021. The population recorded on the Application is, therefore, considered to be of **Site** Importance.

Myotid Bat Species

- A5.26 Myotid bat species occur throughout most of the UK, their populations considered to be either stable or increasing with the exception of Bechstein's bat, which is listed in Annex II of the EC Habitats Directive, and is considerably rarer.
- A5.27 Myotid bat species were rarely recorded during automated detector surveys only. The use of the Application Site by myotid bat species is considered to be of **Site** Importance.

Noctule

- A5.28 Noctule bat is widespread across the UK with the exception of northern Scotland, with its population and range considered to remain stable in the UK.
- A5.29 Only low numbers of noctule passes were recorded during automated bat detectors surveys, likely commuting across the Application Site. The population using the Application Site is considered to be of **Site** Importance.

Evaluation

- A5.30 Overall, habitats across the Application Site provide a suitable foraging resource for a bat assemblage whilst plantation woodland provides linear features for commuting. The Application Site is, however, largely disconnected from suitable habitat in the wider landscape by main roads including the M4 motorway, industrial and residential development. The low levels of bat activity recorded across the Application Site are considered typical for what is predominantly an urbanised area of Port Talbot.

A5.31 Based on results of the manual bat transect and automated detector surveys the overall bat population supported by the Application Site is likely to be of **Site** Importance.

Table EDP A4.3: Automated Detector Survey Results July 2021.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		21 Jul	22 Jul	23 Jul	24 Jul	25 Jul		
1	Common pipistrelle	46	93	37	80	20	276	95
	Soprano pipistrelle	4	4	1	4	1	14	5
	Total	50	97	38	84	21	290	100
2	Common pipistrelle	118	244	156	179	93	790	97
	Soprano pipistrelle	7	4	4	4	6	25	3
	Total	125	248	160	183	99	815	100

Table EDP A4.4: Automated Detector Survey Results August 2021. (*Less than 1%).

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		25 Aug	26 Aug	27 Aug	28 Aug	29 Aug		
1	Common pipistrelle	164	72	27	77	34	374	85
	Myotis sp.	0	0	1	0	0	1	0.5*
	Noctule	0	1	1	1	0	3	0.5*
	Soprano pipistrelle	1	3	9	31	16	60	14
	Total	165	76	38	109	50	438	100
2	Common pipistrelle	77	73	50	48	81	329	76
	Myotis sp.	0	0	5	3	5	13	2
	Noctule	0	0	0	2	1	3	0.5
	Soprano pipistrelle	19	20	13	15	23	90	20.5
	Total	96	93	68	68	110	435	100

Table EDP A4.5: Automated Detector Survey Results September 2021. (*Less than 1%).

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		16 Sep	17 Sep	18 Sep	19 Sep	20 Sep		
1	Common pipistrelle	5	5	7	0	6	23	19
	Soprano pipistrelle	4	4	88	1	1	98	81
	Total	9	9	95	1	7	121	100
2	Common pipistrelle	42	14	0	29	51	136	68.5
	Myotis sp.	1	0	0	2	0	3	1.5
	Noctule	0	0	0	2	0	2	1
	Soprano pipistrelle	18	15	0	12	12	57	29
	Total	61	29	0	45	63	198	100

Appendix EDP 6 Reptile Survey Results

Methodology

- A6.1 Areas of scrub grassland habitat across the Application Site provide potential basking, foraging, dispersal and hibernation opportunities for common and widespread species of reptile although existing development surrounding the Application Site is considered a barrier to dispersal of this species between the site and suitable habitat within the wider landscape.
- A6.2 To confirm the presence or likely absence of common reptile species and the extent of their usage of the Application Site, refugia-based reptile surveys were undertaken throughout the Application Site. With reference to best practice guidance²⁰, a minimum of seven survey visits were undertaken between August and October 2021.
- A6.3 During the reptile surveys, a total of 100 artificial refugia comprising roofing felt sheets measuring approximately 1m x 0.5m were deployed within suitable reptile habitat across the Application Site on 12 August 2021. Reptile refugia were left undisturbed *in situ* for a minimum two weeks prior to the commencement of the seven reptile surveys visits. Detailed weather conditions recorded during each survey visit undertaken throughout 2021 are summarised in **Table EDP A4.1**.

Table EDP A4.1: Date, timing and weather conditions of reptile survey visits undertaken during 2021.

Visit No.	Date	Start-Finish Time	Air Temp Range (°C)	Wind Speed (Beaufort)	Cloud Cover (%)	Rain
1	21.08.21	17:45-18:30	19.0-21.4	1-2	50-80	Nil
2	31.08.21	10:00-11:30	16.0-16.5	2-3	100	Nil
3	07.09.21	09:15-10:45	15.0-17.0	0-2	0	Nil
4	09.09.21	09:15-10:45	15.0-17.0	0-2	0	Nil
5	14.09.21	12:00-13:30	17.5-18.0	2-3	25-100	Nil
6	16.09.21	17:25-19:05	14.2-17.8	1-2	10-30	Nil
7	20.09.21	09:30-10:30	14.0-17.0	0-1	0-10	Nil
8	23.09.21	11:00-12:00	17.0-18.0	1-2	100	Nil
9	29.09.21	11:45-13:15	12.8-14.9	2-3	30-50	Nil
10	05.10.21	15:00-18:00	12.0-14.0	2-4	100	Drizzle before survey

²⁰ Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10, Froglife, Halesworth; DMRB (2005) *Nature conservation advice in relation to reptiles and roads. Volume 10, Section 4, Part 7, HA/116/05*. DMRB

- A6.4 During each survey visit, artificial refugia were individually checked by suitably experienced ecologists with any reptiles observed recorded, along with notes on their life stage (adult/juvenile) and sex where possible.
- A6.5 Where present, a peak count of the total number of individuals of a particular species was recorded. Peak counts have then used to estimate approximate population size for each reptile species recorded in accordance with published guidance²¹, as summarised below in **Table EDP A4.2**.

Table EDP A4.2: Population size class estimates.

Species	Population Size Estimate		
	Low	Medium	High
Slow-worm (<i>Anguis fragilis</i>)	< 50/ ha	>50/ ha	> 100/ ha
Common lizard (<i>Zootoca vivipara</i>)	< 20/ ha	>40/ ha	> 80/ ha
Grass snake (<i>Natrix helvetica</i>)	< 2/ ha	2-4/ ha	> 4/ ha
Adder (<i>Viperus berus</i>)	< 2/ ha	2-4/ ha	> 4/ ha

Limitations

- A6.6 Reptile surveys undertaken within the Application Site were largely completed during suitable weather conditions and within recognised months for reptile surveys (April-September/October). The first survey visit did, however, coincide with a period of hot weather such that evidence of reptiles may have been missed. However, additional survey effort was scheduled to ensure a minimum of seven survey visits were completed under optimal conditions. The results of survey effort are considered sufficient to confirm presence of a population and provide an indication of population size.

Results

- A6.7 Dense scrub, boundary tree lines and species-rich grassland is considered optimal habitat for a common reptile, whilst populations of common lizard and slow-worm are known to occur in the wider landscape.
- A6.8 Reptile surveys of the Application Site confirmed the presence of slow-worm within the Application Site. Full details of the number of individuals and peak survey count for both species is given in **Table EDP A4.3**.

²¹ Herpetofauna Groups of Britain and Ireland (1998). *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards*. HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs).

Table EDP A4.3: Number, and peak survey count, of reptiles recorded within Application Site.

Visit	Visit Date	Common Lizard			Grass Snake			Slow-worm		
		Adult	Juv.	Total	Adult	Juv.	Total	Adult	Juv.	Total
1	21.08.21	0	0	0	0	0	0	0	0	0
2	31.08.21	0	0	0	0	0	0	0	0	0
3	07.09.21	0	0	0	0	0	0	3	0	3
4	09.09.21	0	0	0	0	0	0	0	0	0
5	14.09.21	0	0	0	0	0	0	2	0	2
6	16.09.21	0	0	0	0	0	0	1	0	1
7	20.09.21	0	0	0	0	0	0	0	0	0
8	23.09.21	0	0	0	0	0	0	0	0	0
9	29.09.21	0	0	0	0	0	0	1	0	1
10	05.10.21	0	0	0	0	0	0	0	0	0
Maximum Count Recorded per Visit:		0			0			3		
Population Size Class Estimate:		-			-			Low		

- A6.9 A peak survey count of three slow-worm was recorded on the third survey visit, with one or two individuals also being recorded on the fifth, sixth and ninth reptile survey visits, indicating the presence of a low common reptile population supported by the Application Site. In respect of the low population, combined with limited suitable habitat in immediate landscape and the absence of connectivity between the Application Site and suitable offsite habitat, the Application Site is therefore considered to be of **Local** importance for reptiles.

This page has been left blank intentionally

Appendix EDP 7 Invertebrate Survey Results

Methodology

A7.1 Invertebrate surveys of the Application Site were undertaken on two occasions during 2021; 24 August and 8 September by an experienced entomologist on behalf of EDP. Each survey was conducted during dry and sunny conditions, where possible, when invertebrates are generally most active, particularly pollinating insects. A summary of the weather conditions and activities undertaken during each survey are provided within **Table EDP A7.1**.

Table EDP A7.1: Weather conditions.

Survey Date	Survey Time	Activity	Weather Condition
24/08/21	6 hours 35 mins	Familiarisation with habitats present by walking around survey area, while deploying a variety of sampling techniques. This included aerial netting, hand searching, suction sampling, sweep netting, beating and visual searching. Start (10:00). End (16:35). A variety of sampling techniques deployed in order to sample for as many invertebrate taxa as possible.	Overcast with sunny intervals. Air temperature was 17°C at the start of the survey, rising to 23°C by the end of the day. Moderate breeze, with wind speeds up to 7.5 miles per hour (mph) coming from an easterly direction.
08/09/21	6 hours 30 mins	A variety of sampling techniques deployed in order to sample for as many invertebrate taxa as possible. Start (9:45). End (16:15).	Overcast. Air temperature of 21°C at the start of survey, rising to 24°C by the end of the day. Average wind speeds of around 13mph coming from an east-south-east direction.

A7.2 Terrestrial invertebrates were sampled using several different active sampling techniques including:

- Aerial netting – a lightweight 40cm diameter net mounted on a meter long pole was used to catch flying insects as and when encountered;
- Beating – a white sheet is held/placed below branches of a bush or tree. Then a suitable stick or pole used to tap the branches to dislodge invertebrates onto the white sheet. Target invertebrates are then selectively removed using an aspirator;
- Hand searching – this involved sieving plant litter, looking under stones, debris etc. for invertebrates that may be feeding, resting or sheltering;

- Suction-sampling (i.e. vacuum sampling) – a modified leaf-blower was used to collect invertebrates from habitats that would otherwise be difficult to sample from using a sweep net (e.g. very short or very long vegetation). This method is particularly effective at catching species which do not fly readily or which live in deep vegetation. Samples were emptied into a large white tray and target taxa selectively removed using an aspirator;
- Sweep netting – a sturdy 40cm diameter net mounted on a meter long pole was moved vigorously through long vegetation to dislodge invertebrates. Target invertebrates were then selectively removed from the sweep net using an aspirator; and
- Visual searching – insects were observed foraging, basking, nesting, hunting, mating etc. in their associated habitats without the need to deploy other sampling techniques (e.g. sweep netting).

Target groups

- A7.3 Principal target groups for the survey were Araneae (spiders), Coleoptera (beetles), Hemiptera (true bugs) and aculeate Hymenoptera (bees and wasps), though other invertebrate taxa were also recorded when encountered. By targeting these groups, a more balanced overview of the invertebrate fauna present was achieved.
- A7.4 Where practical, invertebrates were identified in the field using an x10 or x20 hand lens. Where identification was not possible in the field, representative specimens were collected and later identified using a binocular microscope. Samples were either stored dry and later pinned to aid identification (e.g. aculeates and flies) or stored in 70 to 90% isopropyl alcohol (e.g. many beetles and all spiders). Invertebrate identification was to species level wherever possible.

Sampling Area

- A7.5 Sampling was conducted by walking in a zigzag manner throughout the survey area, while deploying a variety of sampling techniques appropriate to the target groups outlined below, in order to cover as much ground as possible during each site visit. Due to the size of the Application Site, the survey area was subdivided into two distinct sections as illustrated at **Plan EDP 5**, with sampling time divided equally between these two sections across the two survey visits. Section 1 thus received the most survey attention during August 2021 whilst Section 2 received the most attention during September 2021.
- A7.6 Section 1 supports a wide variety of habitats including marshy grassland, bare ground, sparsely-vegetated grassland and scrub predominantly rich in flowering plants. Section 2 is generally more open with extensive areas of bare ground and areas largely dominated by common reed.

Limitations

- A7.7 Due to the time of commission, surveys were restricted to August and September 2021. No surveys were undertaken during the spring months of March, April, May and peak month of June. As such, only those invertebrate species active in summer and early autumn will be represented in samples. As such, the results present only a snapshot of the invertebrate fauna present within a limited time period (August and September), thus interpretation of the results requires caution.

Results

- A7.8 A total of 211 invertebrate species were identified during the surveys of the Application Site completed in August and September 2021. A full list of invertebrate species recorded is provided within **Table EDP A7.3** at the end of this Appendix.
- A7.9 As anticipated (being the target groups), Araneae (spiders), Coleoptera (beetles) and Hemiptera (true bugs) were fairly well represented with a total of 25 species, 57 species and 42 species recorded respectively (**Table EDP A7.1**). However, fewer Hymenoptera (bees, wasps and ants) were encountered than what would have been expected given the flower-rich conditions (17 species); this is probably explained by the absence of sampling during the spring period, during which time most ground-nesting solitary bees are active.

Table EDP A7.1: Analysis of invertebrate groups recorded.

Species Groups Recorded	Number of Species
Araneae (spiders)	25
Coleoptera (beetles)	57
Diptera (flies)	14
Hemiptera (true bugs)	42
Hymenoptera (bees, wasps and ants)	17
Lepidoptera (butterflies and moths)	17
Mollusca (slugs and snails)	14
Orthopteran (grasshoppers and crickets)	7
Other	18
Total species	211

Species of Conservation Interest

- A7.10 Of the 211 invertebrate species recorded, 31 (~15 %) are deemed to be of 'conservation interest' (i.e. species considered to be Nationally Local, Scarce or Rare, and/or are listed under Section 7 of the Environment (Wales) Act 2016 as species of 'principal importance for the conservation of biological diversity in Wales'. These species of 'conservation interest' are listed in **Table EDP A7.2**.

Table EDP A7.2: List of Species of Conservation Interest Recorded at the Application Site.

Species	Family	Order	Conservation Status	Habitat
<i>Agelena labyrinthica</i>	Agelenidae	Araneae	Local, mostly coastal in Wales	tall sward & scrub
<i>Agalenatea redii</i>	Araneidae	Araneae	Local	
<i>Mangora acalypha</i>	Araneidae	Araneae	Local	tall sward & scrub
<i>Floronia bucculenta</i>	Linyphiidae	Araneae	Very local, generally uncommon	tall sward & scrub
<i>Alopecosa barbipes</i>	Lycosidae	Araneae	Local, generally uncommon in Wales - Amber list	short sward & bare ground
<i>Cheiracanthium erraticum</i>	Miturgidae	Araneae	Local	tall sward & scrub
<i>Tibellus maritimus</i>	Philodromidae	Araneae	Local, generally uncommon	tall sward & scrub
<i>Tibellus oblongus</i>	Philodromidae	Araneae	Local in Wales	tall sward & scrub
<i>Heliophanus flavipes</i>	Salticidae	Araneae	Local	tall sward & scrub
<i>Xysticus erraticus</i>	Thomisidae	Araneae	Local	tall sward & scrub
<i>Catapion seniculus</i>	Apionidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Holotrichapion pisi</i>	Apionidae	Coleoptera	local in Wales	tall sward & scrub
<i>Stenopterapion meliloti</i>	Apionidae	Coleoptera	Very local in Wales, scarce	tall sward & scrub
<i>Stenopterapion tenue</i>	Apionidae	Coleoptera	Local	tall sward & scrub
<i>Synapion ebeninum</i>	Apionidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Cytilus sericeus</i>	Byrrhidae	Coleoptera	Local	
<i>Elaphropus parvulus</i>	Carabidae	Coleoptera	Nationally Scarce	running water
<i>Ophonus puncticeps</i>	Carabidae	Coleoptera	Very local in Wales	short sward & bare ground
<i>Cassida murraea</i>	Chrysomelidae	Coleoptera	Local, scarce	tall sward & scrub
<i>Scymnus haemorrhoidalis</i>	Coccinellidae	Coleoptera	Local	tall sward & scrub
<i>Tychius meliloti</i>	Curculionidae	Coleoptera	Local in Wales	short sward & bare ground
<i>Dictya umbrarum</i>	Sciomyzidae	Diptera	Notable	peatland
<i>Herina lugubris</i>	Ulidiidae	Diptera	Local	tall sward & scrub
<i>Herina palustris</i>	Ulidiidae	Diptera	Nationally Scarce	short sward & bare ground

Species	Family	Order	Conservation Status	Habitat
<i>Athysanus argentarius</i>	Cicadellidae	Hemiptera	Local in Wales, 2nd for VC41	tall sward & scrub
<i>Megophthalmus scabripennis</i>	Cicadellidae	Hemiptera	Local in Wales	tall sward & scrub
<i>Stenocranus minutus</i>	Delphacidae	Hemiptera	Local in Wales	tall sward & scrub
<i>Pachybrachius fracticollis</i>	Lygaeidae	Hemiptera	Local	peatland
<i>Bombus humilis</i>	Apidae	Hymenoptera	Section 7 Species	tall sward & scrub
<i>Bombus soroeensis</i>	Apidae	Hymenoptera	Very local in Wales, declining	tall sward & scrub; upland
<i>Leptoiulus belgicus</i>	Julidae	Julida	Nationally Scarce	shaded woodland floor

Species of Principal Importance in Wales

A7.11 Section 7 of the Environment (Wales) Act 2016 includes a statutory list of species deemed to be “of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales”. This replaces Section 42 of the Natural Environment and Rural Communities (NERC) Act 2006 and places a duty on Welsh Ministers to take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps. A total of one invertebrate species recorded during the survey is listed under Section 7 of the Environment (Wales) Act 2016.

Bombus humilis (Hymenoptera: Apidae), Brown-banded Carder Bee

A7.12 Once widespread in lowland Britain, populations of brown-banded carder bee declined substantially during the 20th century (Falk and Lewington, 2015). It is locally distributed in many regions of Britain but remains fairly widespread in south Wales.

A7.13 In common with other bumblebees, relatively large areas of suitable habitat (in the order of ten square kilometres) are required to maintain viable populations. A wide variety of habitats are exploited, though it is strongly associated with areas of tall, open grasslands supporting a good proportion of perennial plants. It flies between May and October, often peaking later than other bumblebees (Falk and Lewington, 2015). Queens like legumes (especially kidney vetch (*Anthyllis vulneraria*), clovers, bird's-foot-trefoils, ever-lasting peas and vetches), labiates (such as black horehound (*Ballota nigra*) and dead-nettles), honeysuckle, roses, thistles and teasel (*Dipsacus fullonum*).

A7.14 Workers and males visit many of the same species but are also known to like red bartsia (*Odontites vernus*), wild basil (*Clinopodium vulgare*), knapweeds, scabiouses, sowthistles, bristly oxtongue (*Helminthotheca echiodides*), hawk's-beards, cat's-ear (*Hypochaeris radicata*) and viper's-bugloss (*Echium vulgare*). Nesting typically occurs in undisturbed tall

grasslands, which provide shelter, warmth and nest materials. Carder bees nest on the surface of the ground and comb together grass and moss to cover the surface of their nest.

- A7.15 Within the Application Site, several workers (females) including a male (which was confirmed via examination of the genitalia) were observed foraging on legumes at various locations within the grassland (grid reference centred at SS749915) on 24 August 2021 with several females also being encountered on 08 September 2021.

Nationally Scarce Species

- A7.16 A total of four invertebrate species recorded during the survey are designated as 'Nationally Scarce'.

Elaphropus parvulus (Coleoptera: Carabidae), a ground beetle

- A7.17 *Elaphropus parvulus* is a very small (1.8-2.2mm) predatory ground beetle associated with damp sandy soils with little to no vegetation. The beetle can be found under stones in a wide variety of habitats include river shingle and gravel pits but can also be found in small damp crevices in the soil and in the deteriorating sandy joints of old patios in gardens.

- A7.18 Within the Application Site, two specimens were encountered by suction sampling the damp bare ground at grid reference SS748915 on 24 August 2021.

Dictya umbrarum (Sciomyzidae: Diptera), bog snailkiller

- A7.19 The bog snailkiller is a distinctive small greyish sciomyzid typically found on wet flushes. *D. umbrarum* is essentially a northern and western species with a strong preference for acidic, base-poor wetlands such as valley mire, boggy seepages/streamside's and boggy lakeshores (Falk 2021a). Adults have been recorded in April until September. The larvae appear to attack water snails of very specific acidic environments; it has been reared from *Lymnaea* species in laboratory conditions (Falk 2021a).

- A7.20 Within the Application Site, several specimens were observed around the wet flush at grid reference SS748915 on 24 August 2021.

Herina palustris (Diptera: Ulidiidae), a picture-winged fly

- A7.21 The picture-winged fly *Herina palustris* is widely distributed across southern England and along the south coast of Wales (from Glamorgan to Pembrokeshire), but appears to be declining; as such, it is considered provisionally Nationally Scarce by Falk, Ismay and Chandler (2016). Little is known of its ecology but it has been suggested that the larvae possibly develop in decaying vegetable matter. Adults are recorded from June to September. A high proportion of records are from the fixed grassland of coastal dunes (especially calcareous ones) but it can also occur on cliff top grassland and inland on chalk grassland (but possibly associated with a seepage), valley mire and the drier parts (Falk, 2021b).

- A7.22 Within the Application Site, specimens of both sexes were swept from the grasslands (grid reference centred at SS749915) on 24 August 2021. Few modern records exist of this species in both Wales and Britain and, as such, the population at the Application Site could contribute to the conservation of this species in south Wales.

Leptoiulus belgicus (Julida: Julidae), a millipede

- A7.23 *Leptoiulus belgicus* is a millipede associated with a wide range of different habitats with no particular preference evident. *L. belgicus* is a common species in southwest England and south Wales. In Wales, it can often be encountered under logs and from sieving leaf litter, especially in the Valley's – a much rarer species elsewhere.

- A7.24 Within the Application Site, this species was encountered by sieving damp grass litter at grid reference SS74859159 on 24 August 2021, and from damp leaf litter at grid reference SS74809164 on 08 September 2021.

Nationally Local Species

- A7.25 A total of 26 invertebrate species recorded during survey effort are designated as 'Nationally Local'.

Agelenatea redii (Araneae: Araneidae), Gorse Orb-weaver, local

- A7.26 Gorse Orb-weaver (*Agelenatea redii*) is a spider that is usually found amongst heather and gorse, and in tall vegetation on rough grassland. *A. redii* is widespread but local in Wales and England, found as far north as West Lancashire and North-east Yorkshire, but is mostly absent further north (Spider and Harvestman Recording Scheme, 2021a).

- A7.27 Within the Application Site, this spider was encountered frequently on both survey dates by sweep-netting and suction sampling the taller vegetation throughout the site.

Agelena labyrinthica (Araneae: Agelenidae), labyrinth spider, local

- A7.28 Labyrinth spider is a funnelweb spider that occurs low in the vegetation of uncultivated field edges, rough uncut grassland and low bushes of heather and gorse. Here it spins a large distinctive and conspicuous sheet web with a funnel retreat on or above the ground. The species is widespread in much of southern England but patchier in central England and tends to be more coastal in Wales. It is very scattered in northern England and not recorded from Scotland (Spider and Harvestman Recording Scheme, 2021b). It can occur at high densities where it does occur.

- A7.29 Within the Application Site, *A. labyrinthica* and their webs were observed in various locations throughout the site on both occasions.

Alopecosa barbipes (Araneae: Lycosidae), a wolf spider, local - Amber list

- A7.30 The wolf spider *Alopecosa barbipes* occurs on heathlands and old and unimproved grasslands, especially where there are areas of sparsely vegetated ground (Spider and Harvestman Recording Scheme, 2021c). The spider is widespread and patchily distributed across most of Britain but is generally a fairly local species.
- A7.31 Within the Application Site, a single specimen was encountered on bare ground at grid reference SS74829156 on 24 August 2021.

Athysanus argentarius (Hemiptera: Cicadellidae), a leafhopper, local, second VC41 site

- A7.32 The leafhopper *Athysanus argentarius* was historically considered scarce and confined to coastal areas in southeast England. In recent decades, however, it has expanded its distribution northwards and westwards and is now established inland across parts of central and southern England in a variety of grassland habitats (British Bugs, 2021a).
- A7.33 Within the Application Site, two specimens were encountered by suction sampling the grasslands toward the southern end of the site at grid reference SS748913 on 08 September 2021. These appear to be just the second confirmed records of this species in Wales (unconfirmed records from Anglesey), and also just the second record of this species in the vice-county of Glamorgan (VC41).

Bombus soroeensis (Hymenoptera: Apidae), broken-belted bumblebee, very local in Wales - declining

- A7.34 The broken-belted bumblebee is one of our least known bumblebees, partly because it has declined so substantially over recent years. This species is not currently regarded as being scarce or threatened. However, Natural England and BWARS (Bees, Wasps and Ants Recording Society) are currently in the process of updating its threat status for Great Britain. During the twentieth century this once widespread species experienced a substantial decline throughout much of England and Wales, disappearing entirely from most southern counties, with residual populations remaining mainly in west Wales and on Salisbury Plain; the bee still being frequent in the Scottish Highlands (Falk 2021a).
- A7.35 In common with other bumblebees, large areas (in the order of ten square kilometres) of suitable habitat are essential in maintaining viable populations - *B. soroeensis* being particularly vulnerable to habitat fragmentation. This species occurs on coastal heathland, moorland, chalk downland (Salisbury Plain) and various other flower-rich grasslands - favouring open, exposed sites that have a late flowering peak with an abundance of flowers (Falk 2021c). Newly emerged queens forage on plants such as bird's-foot trefoils, brambles, clovers, white dead-nettle (*Lamium album*) and wild raspberry (*Rubus occidentalis*) with workers foraging on bird's-foot trefoils, brambles, clovers, heathers, knapweeds, red bartsia (*Odontites vernus*), rosebay willowherb (*Chamaenerion angustifolium*) and scabious species (Falk 2021a).

- A7.36 Within the Application Site, several workers (females) including a male (which was confirmed via examination of the genitalia) were observed foraging throughout most of the site on both survey dates, particularly within the flower-rich area at grid reference centred at SS749915). The frequency of these sightings would suggest that they are nesting nearby or even on-site. There are seemingly few records for this species in Wales, with it having only been recorded five times in Glamorgan (VC41) within the past decade, with all coming from just two sites – Baglan Burrows (SS724923) and a garden in Swansea (SS65419365). Older records are present at Margam Moors (SS788854), located to the south of Application Site (ADERYN, 2021).

Cassida murraea (Coleoptera: Chrysomelidae), fleabane tortoise beetle, local/scarce

- A7.37 The fleabane tortoise beetle is a reasonably widespread but local species in the south and west of England and south Wales, becoming a much scarcer species in the rest of Britain - south Wales being a bit of a stronghold for this beetle. *C. murraea* occurs in various damp habitats, where it is mostly associated with common fleabane (*Pulicaria dysenterica*), but both adults and larvae can occasionally be encountered on Elecampane (*Inula helenium*) (Duff, 2016).

- A7.38 Within the Application Site, a single adult (red form) was swept from common fleabane from grid reference SS74829155 on 24 August 2021.

Catapion seniculus (Coleoptera: Apionidae), a weevil, local in Wales

- A7.39 The weevil *Catapion seniculus* is a small species (1.5-2.1mm) that is widespread but local in Wales. Occurring in a range of habitats, it is associated with clovers especially red clover (*Trifolium pratense*) (Duff, 2016).

- A7.40 Within the Application Site, a number of specimens were encountered from sweep netting and suction sampling the clovers (*Trifolium*) at various locations throughout the site on both survey occasions.

Cheiracanthium erraticum (Araneae: Miturgidae), a sac spider, local

- A7.41 The sac spider *Cheiracanthium erraticum* occurs low down in rough vegetation and heather, where it can often be found in a retreat constructed from two or three leaves, or grass heads stitched together, which will hold the female and egg sac (Spider and Harvestman Recording Scheme, 2021d). The females of this spider are the host species for the rare bloody spider-hunting wasp (*Homonotus sanguinolentus*). In Britain, *C. erraticum* is widespread south of the Wash, being more scattered in the west and in the north as far as central Scotland (Spider and Harvestman Recording Scheme, 2021d).

- A7.42 Within the Application Site, several specimens were suction sampled and swept from the grasslands (grid reference centred at SS748914) on 08 September 2021.

Cytillus sericeus (Coleoptera: Byrrhidae), a pill beetle, local

A7.43 The pill beetle *Cytillus sericeus* is a widespread species which is found locally in north, central and southeast England and Wales (Duff, 2016). The beetle can often be found in moss on damp soils in a wide range of habitats such as wetland margins, floodplain grassland, moorland, dunes and open woodland.

A7.44 Within the Application, a single specimen was suction sampled from a wet flush (grid reference SS74829161) on 24 August 2021.

Floronia bucculenta (Araneae: Linyphiidae), a money spider, local

A7.45 *Floronia bucculenta* is a money spider that occurs in a variety of damp habitats i.e. rough unmanaged grassland with scrub and tall herbaceous vegetation, low vegetation in marshy areas, open woodland and grass and tall heather. This spider is widespread in much of England, but apparently scarce in the south-west, absent from central and much of eastern Wales, with very scattered records coming from north of Yorkshire up as far as Perthshire in Scotland, but is considered to be very local and generally uncommon (Spider and Harvestman Recording Scheme, 2021e).

A7.46 Within the Application Site, specimens were encountered by sweep netting the grasslands (grid reference centred at SS749915) on 24 August 2021.

Heliophanus flavipes (Araneae: Salticidae), a jumping spider, local

A7.47 *Heliophanus flavipes* is a small (3.0-6.0mm) jumping spider that can be found in a wide variety of habitats, including grasslands, woodlands and wastelands and other disturbed places such as quarries, where it is commonly found in the drier areas. They are occasionally seen active on the surface of vegetation in warm weather but more commonly within litter. *H. flavipes* is a widespread species in much of the southern half of Britain and central eastern Scotland. In Wales, the spider tends to be more common in coastal regions (Spider and Harvestman Recording Scheme, 2021f).

A7.48 Within the Application Site, this spider was frequently encountered by suction sampling the low vegetation and ground throughout site on both survey dates. A sample of adults were examined on both visits to check for *H. cupreus*, a very similar species that shares same habitats but no *H. cupreus* could be found.

Herina lugubris (Diptera: Ulidiidae), a picture-winged fly, local

A7.49 The picture-winged fly *Herina lugubris* is widespread but local in England and Wales. It is typically found in calcareous or species-rich neutral marsh or grassland (Clements, 2020).

A7.50 Within the Application Site, specimens were encountered in the grasslands (grid reference centred at SS749915) on 24 August 2021.

Holotrichapion pisi (Coleoptera: Apionidae), a weevil, local in Wales

- A7.51 The weevil *Holotrichapion pisi* is a widespread but local species in Wales. The majority of the records come from the north; however, there is a small cluster of records from south Wales – mostly from several 10km grid squares west of the Application Site. The beetle is associated with medicks (*Medicago*); the larvae develop in the vegetative buds (Duff, 2016). In autumn, the larva empties a leaf bud at the stem. The bud then dries out, and the larva transforms it into a hibernaculum – a gall (Plant Parasites of Europe, 2021).
- A7.52 Within the Application Site, adult specimens were encountered by suction sampling the grasslands (grid reference centred at SS749915) on 24 August 2021.

Mangora acalypha (Araneae: Araneidae), cricket-bat orb-weaver, local

- A7.53 The cricket-bat orb-weaver (*Mangora acalypha*) is widespread but patchily distributed in southern England and south Wales, where it occurs on heathland and in open woodland (Spider and Harvestman Recording Scheme, 2021g). There are seemingly few confirmed records of this species in Wales, especially in the vice-county of Glamorgan (VC41).
- A7.54 Within the Application Site, several individuals were encountered by sweeping the grasslands (grid reference centred at SS749915) on 24 August 2021.

Megophthalmus scabripennis (Hemiptera: Cicadellidae), a planthopper, local in Wales

- A7.55 The planthopper *Megophthalmus scabripennis* is regarded as a reasonably common species on grasses in England and Wales, found as far north as Lancashire, where it usually inhabits sandy places (British Bugs, 2021b). In Wales, most of the records come from the north – around Anglesey and the Snowdonia National Park, becoming more sporadic in the south.
- A7.56 Within the Application Site, several specimens were suction sampled from the grasslands (grid reference centred at SS749915) on 24 August 2021.

Ophonus puncticeps (Coleoptera: Carabidae), a ground beetle, local - very local in Wales

- A7.57 *Ophonus puncticeps* is a medium sized (6.5 - 9.0mm) ground beetle associated with dry open sparsely vegetated ruderal habitats, tending to be mostly coastal in Wales. Often found feeding on ripening seeds in the umbels of wild carrot (*Daucus carota*). A mating pair was observed in an umbel of wild carrot toward the eastern end of the site at grid reference SS750914 on 24 August 2021.

Pachybrachius fracticollis (Hemiptera: Lygaeidae), a groundbug, local

- A7.58 The groundbug *Pachybrachius fracticollis* is local and patchily distributed across much of England and Wales. Where it occurs in fens, bogs and wet heathland, frequently in association with bog Myrtle (*Myrica gale*), Cotton Grass and various sedges (British Bugs, 2021c).

- A7.59 Within the Application Site, specimens were encountered by suction sampling the grasslands (grid reference centred at SS749915) on 24 August 2021.

Scymnus haemorrhoidalis (Coleoptera: Coccinellidae), red-rumped scymnus, local

- A7.60 The red-rumped scymnus is a small (1.8-2.2mm), scarce but locally abundant ladybird typically associated with wetland habitats. This species tends to occur at plant roots or low down in the vegetation (Duff, 2020) where they feed on aphids.

- A7.61 Within the Application Site, two specimens were encountered by suction sampling of a wet flush at grid reference SS74829161 on 24 August 2021.

Stenocranus minutus (Hemiptera: Delphacidae) a planthopper, local in Wales

- A7.62 The planthopper *Stenocranus minutus* is a widespread species that can be found in a wide range of grassy habitats as far north as Yorkshire (British Bugs, 2021d), with a local and patchy distribution throughout Wales.

- A7.63 Within the Application Site, specimens were encountered by suction sampling the vegetation within grid square SS747914 on 08 September 2021.

Stenopterapion meliloti (Coleoptera: Apionidae), a weevil, scarce in Wales, local

- A7.64 *Stenopterapion meliloti* is a small (2.2-3.3mm) weevil associated with melilots; the larvae develop in the stem (Duff, 2016).

- A7.65 Within the Application Site, two adult specimens were encountered by sweep netting through the grasslands (grid reference centred at SS749915) on 24 August 2021. There are seemingly few records for this beetle in Wales. This recording may be the third recorded site for this species within the vice-county of Glamorgan (VC41).

Stenopterapion tenue (Coleoptera: Apionidae), a weevil, local

- A7.66 *Stenopterapion tenue* is a small (1.6-2.3mm) weevil associated with medicks (*Medicago*), especially on Black Medick (*M. lupulina*) (Duff, 2016); the larvae develop in the stem. *S. tenue* is a widespread and frequent species in southern England, becoming more local in the north and central England and Wales (Duff, 2016).

- A7.67 Within the Application Site, specimens were encountered by sweep netting and suction sampling the grasslands at grid reference centred at SS749915 on 24 August 2021.

Synapion ebeninum (Coleoptera: Apionidae), a weevil, local in Wales

- A7.68 The weevil *Synapion ebeninum* is associated with various herbaceous Fabaceae, including meadow vetchling (*Lathyrus pratensis*) and greater bird's-foot trefoil (*Lotus pendunculatus*). This species is considered local in England and Wales, becoming very local in southern Scotland (Duff, 2016).

- A7.69 Within the Application Site, specimens were encountered by suction sampling the grassland (grid reference centred at SS748914) on 08 September 2021.

Tibellus maritimus (Araneae: Philodromidae), a slender crab spider, local

- A7.70 *Tibellus maritimus* is a widespread but patchily distributed spider in Britain – it can be locally abundant. This species tends to occur in damp places, raised bogs, on sand-hills and rough ground, where it can be found on coarse grasses, heather, rushes, etc. (Spider and Harvestman Recording Scheme, 2021h).

- A7.71 Within the Application Site, specimens were swept from the vegetation within grid square SS747915 on 08 September 2021.

Tibellus oblongus (Araneae: Philodromidae), a slender crab spider, local in Wales

- A7.72 *Tibellus oblongus* is widespread and frequent spider in much of the southern half of Britain but becomes more local and patchily distributed in Wales. It occurs in a variety of dry or damp habitats, ranging from sand-hills to grasslands of most types, though; longer herbage seems to be preferred (Spider and Harvestman Recording Scheme, 2021i).

- A7.73 Within the Application Site, several mature specimens were swept from the grasslands (grid reference centred at SS749915) on 24 August 2021, and from grid square SS748914 on 08 September 2021.

Tychius meliloti (Coleoptera: Apionidae), sweet clover weevil, local in Wales

- A7.74 The sweet clover weevil (*Tychius meliloti*) is associated with melilots that occur on disturbed soils, roadsides, brownfields etc. The larva feeds within the pod on the developing seed.

- A7.75 Within the Application Site, specimens were swept from the grassland (grid reference centred at SS749915) on 24 August 2021. This species is regarded as widespread and frequent in central and southern England and south Wales (Duff, 2016). However, there are seemingly few records for this beetle in the vice-county of Glamorgan (VC41).

Xysticus erraticus (Araneae: Thomisidae), a crab spider, local

- A7.76 The crab spider *Xysticus erraticus* has a widespread but patchy distribution throughout Britain, where it occurs in grassland and heathland. The spider has a strong liking for shorter swards, such as those found on grazed calcareous grassland, upland base-rich flushes or disturbed sites; it may also occur in forests (Spider and Harvestman Recording Scheme, 2021j).

- A7.77 Within the Application Site, specimens were encountered by sweep netting the grasslands (grid reference centred at SS749915) on 24 August 2021.

Other Species of Interest

Bruchidius varius (Coleoptera: Chrysomelidae), a seed beetle, third recorded site in Wales

A7.78 The seed beetle *Bruchidius varius* was first recorded from a single specimen found in East Sussex in 1994 (Hodge, 1997) and is rapidly spreading through much of the southern half of Britain. It is mostly associated with red clover and zigzag clover (*Trifolium medium*), but adults can sometimes be found feeding on pollen of flowering hawthorn (*Crataegus monogynea*). This species occurs in woods, chalk pits grasslands and roadside verges (Duff, 2016).

A7.79 Within the Application Site, two adult beetles were encountered by sweep netting the grassland (grid reference centred at SS749915) on 24 August 2021.

Araneus quadratus (Araneae: Araneidae), four-spotted orb-weaver, locally common, possibly declining

A7.80 The four-spotted orb-weaver is a locally common spider with a patchy distribution throughout Britain, where it favours vegetation which has sufficient height and strength to support its large orb web, such as undisturbed grassland, heather and gorse (British Spiders, 2021k). Crocker & Daws (1996) suggest that it may be declining and possibly due to loss of suitable habitat.

A7.81 Within the Application Site, specimens were encountered on both survey dates at various locations throughout the site.

Overall Evaluation

A7.82 A total of 211 invertebrate species were recorded at the Application Site in 2021. Of the 211 species recorded, 31 (~15 %) are deemed to be of 'conservation interest'. This includes:

- 1 x Section 7 species;
- 4 x Nationally Scarce (NS) or Notable (Na or Nb) species; and
- 26 x Nationally Local species.

A7.83 Given the respectable diversity identified during survey effort, it is considered the Application Site provides important habitat for a number of scarce and local invertebrate species as well as suitable habitat for a wide range of invertebrates more generally. Species identified were noted to have diverse habitat associations which include: arboreal; brackish pools and ditches; marshland; decaying wood; lake; peatland; shaded woodland floor; short sward and bare ground; and tall sward and scrub. As such, the Application Site is considered to be of **Vice-County** importance for invertebrates, and potentially of greater importance for broken-belted bumblebee).

Table EDP A7.3: Full Invertebrate Species List for the Application Site.

Species	Family	Order	Conservation status	Habitat
<i>Arcitalitrus dorrieni</i>	Talitridae	Amphipoda	Introduced species	
<i>Agelena labyrinthica</i>	Agelenidae	Araneae	Local, mostly coastal in Wales	tall sward & scrub
<i>Agalenatea redii</i>	Araneidae	Araneae	Local	
<i>Araneus diadematus</i>	Araneidae	Araneae	Common	
<i>Araneus quadratus</i>	Araneidae	Araneae	Locally common, possibly declining	
<i>Hypsosinga pygmaea</i>	Araneidae	Araneae	Local	tall sward & scrub
<i>Larinioides cornutus</i>	Araneidae	Araneae	Common	peatland
<i>Mangora acalypha</i>	Araneidae	Araneae	Local	tall sward & scrub
<i>Clubiona comta</i>	Clubionidae	Araneae	Common	arboreal
<i>Erigone dentipalpis</i>	Linyphiidae	Araneae	Common	
<i>Floronia bucculenta</i>	Linyphiidae	Araneae	Very local, generally uncommon.	tall sward & scrub
<i>Alopecosa barbipes</i>	Lycosidae	Araneae	Local, generally uncommon in Wales. Amber list	short sward & bare ground
<i>Trochosa terricola</i>	Lycosidae	Araneae	Common	
<i>Ero cambridgei</i>	Mimetidae	Araneae	Common	tall sward & scrub
<i>Cheiracanthium erraticum</i>	Miturgidae	Araneae	Local	tall sward & scrub
<i>Tibellus maritimus</i>	Philodromidae	Araneae	Local, generally uncommon.	tall sward & scrub
<i>Tibellus oblongus</i>	Philodromidae	Araneae	Local in Wales.	tall sward & scrub
<i>Pisaura mirabilis</i>	Pisauridae	Araneae	Common	tall sward & scrub
<i>Euophrys frontalis</i>	Salticidae	Araneae	Common	tall sward & scrub
<i>Heliophanus flavipes</i>	Salticidae	Araneae	Local	tall sward & scrub
<i>Pachygnatha degeeri</i>	Tetragnathidae	Araneae	Common	
<i>Enoplognatha latimana</i>	Theridiidae	Araneae	Locally common	tall sward & scrub
<i>Paidiscura pallens</i>	Theridiidae	Araneae	Common	arboreal
<i>Misumena vatia</i>	Thomisidae	Araneae	Frequent	tall sward & scrub

Species	Family	Order	Conservation status	Habitat
<i>Xysticus cristatus</i>	Thomisidae	Araneae	Common	
<i>Xysticus erraticus</i>	Thomisidae	Araneae	Local	tall sward & scrub
<i>Chordeuma proximum</i>	Chordeumatidae	Chordeumatida	Common	shaded woodland floor
<i>Catapion seniculus</i>	Apionidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Eutrichapion ervi</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Eutrichapion viciae</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Exapion ulicis</i>	Apionidae	Coleoptera	Common	
<i>Holotrichapion pisi</i>	Apionidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Ischnopterapion loti</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Ischnopterapion virens</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Perapion hydrolapathi</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Protapion apricans</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Protapion assimile</i>	Apionidae	Coleoptera	Common	tall sward & scrub
<i>Stenopterapion meliloti</i>	Apionidae	Coleoptera	Very local in Wales, scarce	tall sward & scrub
<i>Stenopterapion tenue</i>	Apionidae	Coleoptera	Local	tall sward & scrub
<i>Synapion ebeninum</i>	Apionidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Cytilus sericeus</i>	Byrrhidae	Coleoptera	Locally common in Wales	
<i>Elaphropus parvulus</i>	Carabidae	Coleoptera	NS	running water
<i>Notiophilus substriatus</i>	Carabidae	Coleoptera	Common	short sward & bare ground
<i>Ophonus puncticeps</i>	Carabidae	Coleoptera	Very local in Wales	short sward & bare ground
<i>Paradromius linearis</i>	Carabidae	Coleoptera	Common	tall sward & scrub

Species	Family	Order	Conservation status	Habitat
<i>Philorhizus melanocephalus</i>	Carabidae	Coleoptera	Common	short sward & bare ground
<i>Poecilus versicolor</i>	Carabidae	Coleoptera	Common	tall sward & scrub
<i>Pterostichus minor</i>	Carabidae	Coleoptera	Common	peatland
<i>Aphthona lutescens</i>	Chrysomelidae	Coleoptera	Local in Wales	tall sward & scrub
<i>Aphthona nonstriata</i>	Chrysomelidae	Coleoptera	Common	peatland
<i>Bruchidius varius</i>	Chrysomelidae	Coleoptera	Spreading, 3rd site in Wales.	tall sward & scrub
<i>Bruchus loti</i>	Chrysomelidae	Coleoptera	Common	tall sward & scrub
<i>Cassida murraea</i>	Chrysomelidae	Coleoptera	Local/scarce	tall sward & scrub
<i>Cryptocephalus pusillus</i>	Chrysomelidae	Coleoptera	Frequent	arboreal
<i>Hydrothassa marginella</i>	Chrysomelidae	Coleoptera	Common	
<i>Longitarsus luridus</i>	Chrysomelidae	Coleoptera	Common	tall sward & scrub
<i>Longitarsus suturellus</i>	Chrysomelidae	Coleoptera	Common	tall sward & scrub
<i>Phaedon tumidulus</i>	Chrysomelidae	Coleoptera	Common	tall sward & scrub
<i>Psylliodes chrysocephala</i>	Chrysomelidae	Coleoptera	Frequent	tall sward and scrub
<i>Sphaeroderma testaceum</i>	Chrysomelidae	Coleoptera	Frequent	tall sward & scrub
<i>Adalia decempunctata</i>	Coccinellidae	Coleoptera	Common	arboreal
<i>Coccinella septempunctata</i>	Coccinellidae	Coleoptera	Common	
<i>Propylea quattuordecimpunctata</i>	Coccinellidae	Coleoptera	Common	
<i>Rhyzobius litura</i>	Coccinellidae	Coleoptera	Common	tall sward & scrub
<i>Scymnus haemorrhoidalis</i>	Coccinellidae	Coleoptera	Local	tall sward & scrub
<i>Hypera postica</i>	Curculionidae	Coleoptera	Common	short sward & bare ground
<i>Mecinus pascuorum</i>	Curculionidae	Coleoptera	Common	tall sward & scrub
<i>Sitona hispidulus</i>	Curculionidae	Coleoptera	Common	tall sward & scrub
<i>Sitona lineatus</i>	Curculionidae	Coleoptera	Common	tall sward & scrub
<i>Sitona sulcifrons</i>	Curculionidae	Coleoptera	Common	tall sward & scrub

Species	Family	Order	Conservation status	Habitat
<i>Sitona suturalis</i>	Curculionidae	Coleoptera	Common	tall sward & scrub
<i>Trichosirocalus troglodytes</i>	Curculionidae	Coleoptera	Common	tall sward & scrub
<i>Tychius meliloti</i>	Curculionidae	Coleoptera	Local in Wales	short sward & bare ground
<i>Dryops luridus</i>	Dryopidae	Coleoptera	Common	lake; marshland
<i>Hydroporus melanarius</i>	Dytiscidae	Coleoptera	Common	peatland
<i>Anacaena limbata</i>	Hydrophilidae	Coleoptera	Common	marshland
<i>Nanophyes marmoratus</i>	Nanophyidae	Coleoptera	Frequent	peatland
<i>Oedemera lurida</i>	Oedemeridae	Coleoptera	Common	tall sward & scrub
<i>Bisnius fimetarius</i>	Staphylinidae	Coleoptera	Common	tall sward & scrub
<i>Metopsia clypeata</i>	Staphylinidae	Coleoptera	Frequent	tall sward & scrub
<i>Quedius semiobscurus</i>	Staphylinidae	Coleoptera	Frequent	short sward & bare ground
<i>Stenus clavicornis</i>	Staphylinidae	Coleoptera	Common	tall sward & scrub
<i>Stenus flavipes</i>	Staphylinidae	Coleoptera	Common	shaded woodland floor; wet woodland
<i>Tasgius globulifer</i>	Staphylinidae	Coleoptera	Frequent	short sward & bare ground
<i>Forficula auricularia</i>	Forficulidae	Dermaptera	Common	
<i>Dictya umbrarum</i>	Sciomyzidae	Diptera	Notable	peatland
<i>Ilione albiseta</i>	Sciomyzidae	Diptera	Common	
<i>Limnia unguicornis</i>	Sciomyzidae	Diptera	Frequent	
<i>Pherbina coryleti</i>	Sciomyzidae	Diptera	Common	
<i>Episyrphus balteatus</i>	Syrphidae	Diptera	Common	tall sward & scrub
<i>Eristalis arbustorum</i>	Syrphidae	Diptera	Common	
<i>Eristalis pertinax</i>	Syrphidae	Diptera	Common	peatland
<i>Myathropa florea</i>	Syrphidae	Diptera	Common	decaying wood
<i>Scaeva pyrastris</i>	Syrphidae	Diptera	Common	tall sward & scrub
<i>Dasysyrphus tricinctus</i>	Syrphidae	Diptera	Common	
<i>Sphaerophoria scripta</i>	Syrphidae	Diptera	Common	tall sward & scrub

Species	Family	Order	Conservation status	Habitat
<i>Syrirta pipiens</i>	Syrphidae	Diptera	Common	tall sward & scrub
<i>Herina lugubris</i>	Ulidiidae	Diptera	Local	tall sward & scrub
<i>Herina palustris</i>	Ulidiidae	Diptera	NS	short sward & bare ground
<i>Cyphoderus albinus</i>	Cyphoderidae	Entomobryomorpha	Common	
<i>Acanthosoma haemorrhoidale</i>	Acanthosomatidae	Hemiptera	Common	arboreal
<i>Anthocoris nemorum</i>	Anthocoridae	Hemiptera	Common	
<i>Aphrophora alni</i>	Aphrophoridae	Hemiptera	Common	
<i>Neophilaenus campestris</i>	Aphrophoridae	Hemiptera	Frequent	tall sward & scrub
<i>Neophilaenus lineatus</i>	Aphrophoridae	Hemiptera	Common	tall sward & scrub
<i>Philaenus spumarius</i>	Aphrophoridae	Hemiptera	Common	
<i>Aphrodes makarovi</i>	Cicadellidae	Hemiptera	Common	tall sward & scrub
<i>Athysanus argentarius</i>	Cicadellidae	Hemiptera	Local in Wales, 2nd for VC41	tall sward & scrub
<i>Cicadella viridis</i>	Cicadellidae	Hemiptera	Common	
<i>Cicadula quadrinotata</i>	Cicadellidae	Hemiptera	Frequent	tall sward & scrub
<i>Euscelis incisus</i>	Cicadellidae	Hemiptera	Common	tall sward & scrub
<i>Megophthalmus scabripennis</i>	Cicadellidae	Hemiptera	Local in Wales	tall sward & scrub
<i>Zyginidia scutellaris</i>	Cicadellidae	Hemiptera	Common	tall sward & scrub
<i>Coreus marginatus</i>	Coreidae	Hemiptera	Common	tall sward & scrub
<i>Conomelus anceps</i>	Delphacidae	Hemiptera	Common	
<i>Kelisia guttula</i>	Delphacidae	Hemiptera	Common	short sward & bare ground
<i>Florodelphax leptosoma</i>	Delphacidae	Hemiptera	Frequent	marshland
<i>Stenocranus minutus</i>	Delphacidae	Hemiptera	Local in Wales	tall sward & scrub
<i>Cymus glandicolor</i>	Lygaeidae	Hemiptera	Common	marshland
<i>Cymus melanocephalus</i>	Lygaeidae	Hemiptera	Common	tall sward & scrub
<i>Megalonotus chiragra</i>	Lygaeidae	Hemiptera	Common	short sward & bare ground

Species	Family	Order	Conservation status	Habitat
<i>Pachybrachius fracticollis</i>	Lygaeidae	Hemiptera	Local	peatland
<i>Peritrechus geniculatus</i>	Lygaeidae	Hemiptera	Frequent in south Wales	tall sward & scrub
<i>Stygnocoris sabulosus</i>	Lygaeidae	Hemiptera	Common	tall sward & scrub
<i>Adelphocoris lineolatus</i>	Miridae	Hemiptera	Common	tall sward & scrub
<i>Blepharidopterus angulatus</i>	Miridae	Hemiptera	Common	arboreal
<i>Notostira elongata</i>	Miridae	Hemiptera	Common	tall sward & scrub
<i>Oncotylus viridiflavus</i>	Miridae	Hemiptera	Common	tall sward & scrub
<i>Phytocoris varipes</i>	Miridae	Hemiptera	Common	tall sward & scrub
<i>Stenodema calcarata</i>	Miridae	Hemiptera	Common	tall sward & scrub
<i>Himacerus major</i>	Nabidae	Hemiptera	Frequent	tall sward & scrub
<i>Himacerus mirmicoides</i>	Nabidae	Hemiptera	Common	tall sward & scrub
<i>Nabis limbatus</i>	Nabidae	Hemiptera	Common	tall sward & scrub
<i>Nabis (Nabis) ferus</i>	Nabidae	Hemiptera	Common	tall sward & scrub
<i>Nabis (Nabis) rugosus</i>	Nabidae	Hemiptera	Common	tall sward & scrub
<i>Aelia acuminata</i>	Pentatomidae	Hemiptera	Frequent	tall sward & scrub
<i>Dolycoris baccarum</i>	Pentatomidae	Hemiptera	Common	tall sward & scrub
<i>Palomena prasina</i>	Pentatomidae	Hemiptera	Common	tall sward & scrub
<i>Piezodorus lituratus</i>	Pentatomidae	Hemiptera	Common	
<i>Myrmus miriformis</i>	Rhopalidae	Hemiptera	Frequent	tall sward & scrub
<i>Rhopalus subrufus</i>	Rhopalidae	Hemiptera	Frequent	
<i>Eurygaster testudinaria</i>	Scutelleridae	Hemiptera	Frequent	tall sward & scrub
<i>Aplexa hypnorum</i>	Physidae	Hygrophila	Common	brackish pools & ditches; marshland
<i>Anisus (Anisus) leucostoma</i>	Planorbidae	Hygrophila	Common	marshland
<i>Bombus humilis</i>	Apidae	Hymenoptera	Section 7 Species	tall sward & scrub
<i>Bombus jonellus</i>	Apidae	Hymenoptera	Frequent	

Species	Family	Order	Conservation status	Habitat
<i>Bombus lapidarius</i>	Apidae	Hymenoptera	Common	tall sward & scrub
<i>Bombus pascuorum</i>	Apidae	Hymenoptera	Common	tall sward & scrub
<i>Bombus pratorum</i>	Apidae	Hymenoptera	Common	shaded woodland floor; tall sward & scrub
<i>Bombus soroeensis</i>	Apidae	Hymenoptera	Very local in Wales, declining	tall sward & scrub; upland
<i>Bombus terrestris</i>	Apidae	Hymenoptera	Common	tall sward & scrub
<i>Diplolepis rosae</i>	Cynipidae	Hymenoptera	Common	
<i>Lasius flavus</i>	Formicidae	Hymenoptera	Common	short sward & bare ground
<i>Lasius niger</i>	Formicidae	Hymenoptera	Common	short sward & bare ground
<i>Lasius platythorax</i>	Formicidae	Hymenoptera	Common	short sward & bare ground
<i>Myrmica ruginodis</i>	Formicidae	Hymenoptera	Common	shaded woodland floor
<i>Myrmica scabrinodis</i>	Formicidae	Hymenoptera	Common	tall sward & scrub
<i>Halictus tumulorum</i>	Halictidae	Hymenoptera	Frequent	short sward & bare ground
<i>Lasioglossum calceatum</i>	Halictidae	Hymenoptera	Common	short sward & bare ground
<i>Athalia rosae</i>	Tenthredinidae	Hymenoptera	Common	
<i>Dolichovespula sylvestris</i>	Vespidae	Hymenoptera	Common	arboreal
<i>Armadillidium nasatum</i>	Armadillidiidae	Isopoda	Common	tall sward & scrub
<i>Armadillidium vulgare</i>	Armadillidiidae	Isopoda	Common	
<i>Oniscus asellus</i>	Oniscidae	Isopoda	Common	
<i>Philoscia muscorum</i>	Philosciidae	Isopoda	Common	
<i>Porcellio scaber</i>	Porcellionidae	Isopoda	Common	

Species	Family	Order	Conservation status	Habitat
<i>Trichoniscus pusillus</i>	Trichoniscidae	Isopoda	Common	
<i>Leptoiulus belgicus</i>	Julidae	Julida	NS	shaded woodland floor
<i>Drepana falcatoria</i>	Drepanidae	Lepidoptera	Common	arboreal
<i>Cabera exanthemata</i>	Geometridae	Lepidoptera	Common	arboreal
<i>Macrothylacia rubi</i>	Lasiocampidae	Lepidoptera	Common	tall sward & scrub
<i>Lycaena phlaeas</i>	Lycaenidae	Lepidoptera	Common	tall sward & scrub
<i>Polyommatus icarus</i>	Lycaenidae	Lepidoptera	Common	short sward & bare ground
<i>Autographa gamma</i>	Noctuidae	Lepidoptera	Common	
<i>Phalera bucephala</i>	Notodontidae	Lepidoptera	Common	arboreal
<i>Aglais io</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Aglais urticae</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Maniola jurtina</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Pararge aegeria</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Polygonia c-album</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Pyronia tithonus</i>	Nymphalidae	Lepidoptera	Common	tall sward & scrub
<i>Vanessa atalanta</i>	Nymphalidae	Lepidoptera	Common	
<i>Pieris napi</i>	Pieridae	Lepidoptera	Common	
<i>Pieris rapae</i>	Pieridae	Lepidoptera	Common	
<i>Zygaena filipendulae</i>	Zygaenidae	Lepidoptera	Common	tall sward & scrub
<i>Lamycetes emarginatus</i>	Henicopidae	Lithobiomorpha	Common	tall sward & scrub
<i>Micromus variegatus</i>	Hemerobiidae	Neuroptera	Common	tall sward & scrub
<i>Sympetrum striolatum</i>	Libellulidae	Odonata	Common	marshland
<i>Paroligolophus agrestis</i>	Phalangiidae	Opiliones	Common	
<i>Chorthippus brunneus</i>	Acrididae	Orthoptera	Common	tall sward & scrub
<i>Chorthippus parallelus</i>	Acrididae	Orthoptera	Common	tall sward & scrub
<i>Myrmeleotettix maculatus</i>	Acrididae	Orthoptera	Common	short sward & bare ground
<i>Omocestus viridulus</i>	Acrididae	Orthoptera	Common	tall sward & scrub

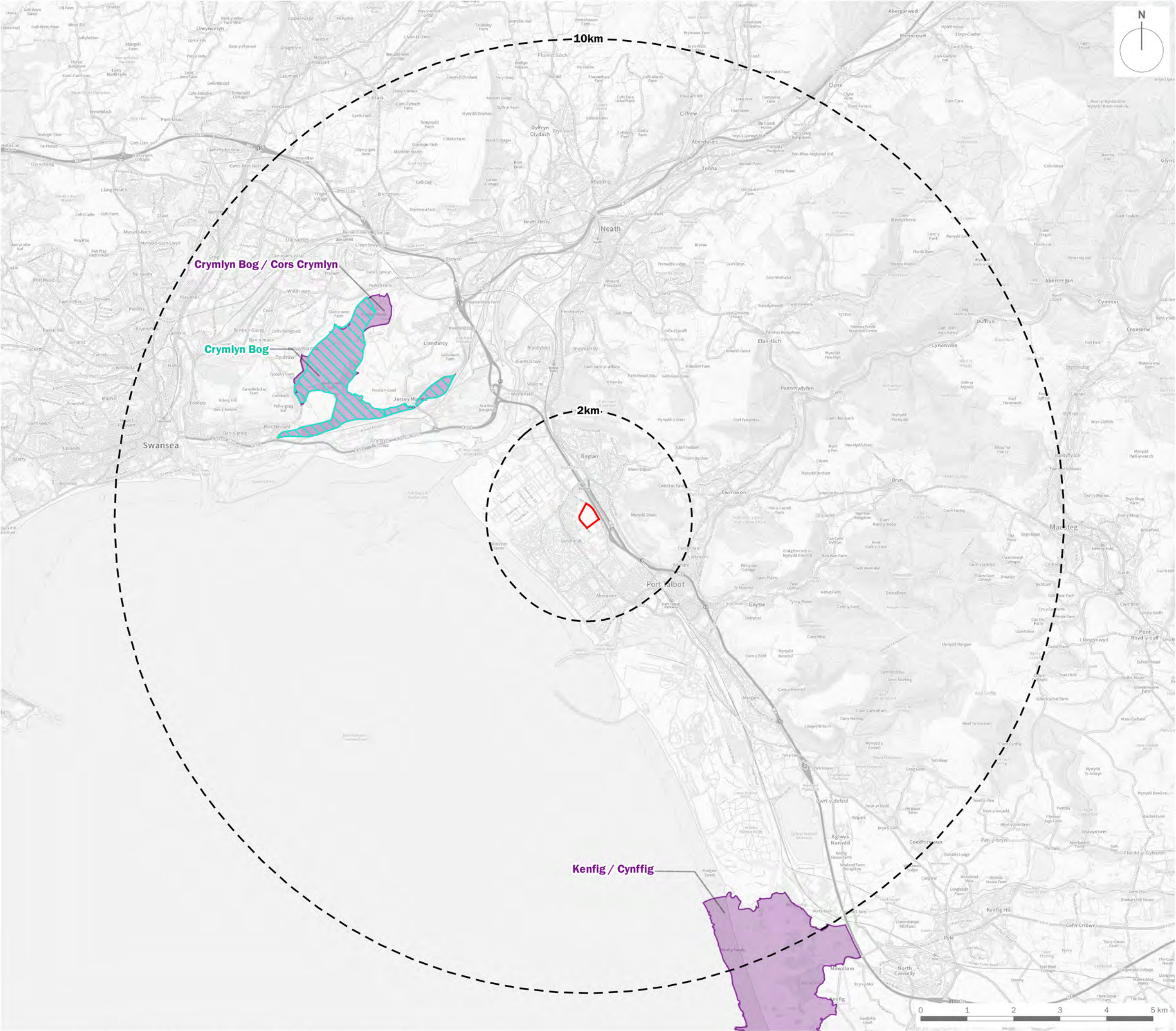
Species	Family	Order	Conservation status	Habitat
<i>Conocephalus dorsalis</i>	Conocephalidae	Orthoptera	Frequent in south Wales	tall sward & scrub
<i>Conocephalus fuscus</i>	Conocephalidae	Orthoptera	Common	tall sward & scrub
<i>Leptophyes punctatissima</i>	Phaneropteridae	Orthoptera	Common	tall sward & scrub
<i>Polydesmus angustus</i>	Polydesmidae	Polydesmida	Common	
<i>Valenzuela flavidus</i>	Caeciliusidae	Psocoptera	Common	
<i>Deroceras laeve</i>	Agriolimacidae	Pulmonata	Common	marshland
<i>Deroceras reticulatum</i>	Agriolimacidae	Pulmonata	Common	tall sward & scrub
<i>Arion (Arion) flagellus</i>	Arionidae	Pulmonata	Common	tall sward & scrub
<i>Cochlicopa cf. lubrica</i>	Cochlicopidae	Pulmonata	Common	tall sward & scrub
<i>Cepaea (Cepaea) nemoralis</i>	Helicidae	Pulmonata	Common	tall sward & scrub
<i>Monacha (Monacha) cantiana</i>	Hygromiidae	Pulmonata	Common	tall sward & scrub
<i>Aegopinella nitidula</i>	Oxychilidae	Pulmonata	Common	tall sward & scrub
<i>Oxychilus (Oxychilus) navarricus</i>	Oxychilidae	Pulmonata	Common	
<i>Oxyloma (Oxyloma) elegans</i>	Succineidae	Pulmonata	Common	marshland
<i>Vertigo (Vertigo) pygmaea</i>	Vertiginidae	Pulmonata	Common	tall sward & scrub
<i>Vertigo (Vertigo) substriata</i>	Vertiginidae	Pulmonata	Common	marshland
<i>Ctenophthalmus nobilis</i>	Ctenophthalmidae	Siphonaptera	Common	
<i>Xeroplexa intersecta</i>	Geomitridae	Stylommatophora	Common	short sward & bare ground

This page has been left blank intentionally

Plans

Plan EDP 1	Statutory Designations (edp7017_d007 02 August 2021 GY/EWi)
Plan EDP 2	Non-Statutory Designations (edp7017_d008 02 August 2021 GY/EWi)
Plan EDP 3	Phase 1 Habitat Plan (edp7017_d009a 04 November 2021 GY/EWi)
Plan EDP 4a	Manual Transect Survey Results – July 2021 (edp7017_d017a 25 January 2022 GY/EWi)
Plan EDP 4b	Manual Transect Survey Results – August 2021 (edp7017_d018a 25 January 2022 GY/EWi)
Plan EDP 4c	Manual Transect Survey Results – September 2021 (edp7017_d019a 25 January 2022 GY EWi)
Plan EDP 4d	Automated Detector Deployment Locations (edp7017_d020a 25 January 2022 GY/EWi)
Plan EDP 5	Reptile Survey Results (edp7017_d016a 25 January 2022 MJC/EWi)
Plan EDP 6	Invertebrate Survey Sections (edp7017_d021a 25 January 2022 GY/EWi)

This page has been left blank intentionally



Site Boundary

2km and 10km Range Rings

Ramsar Site

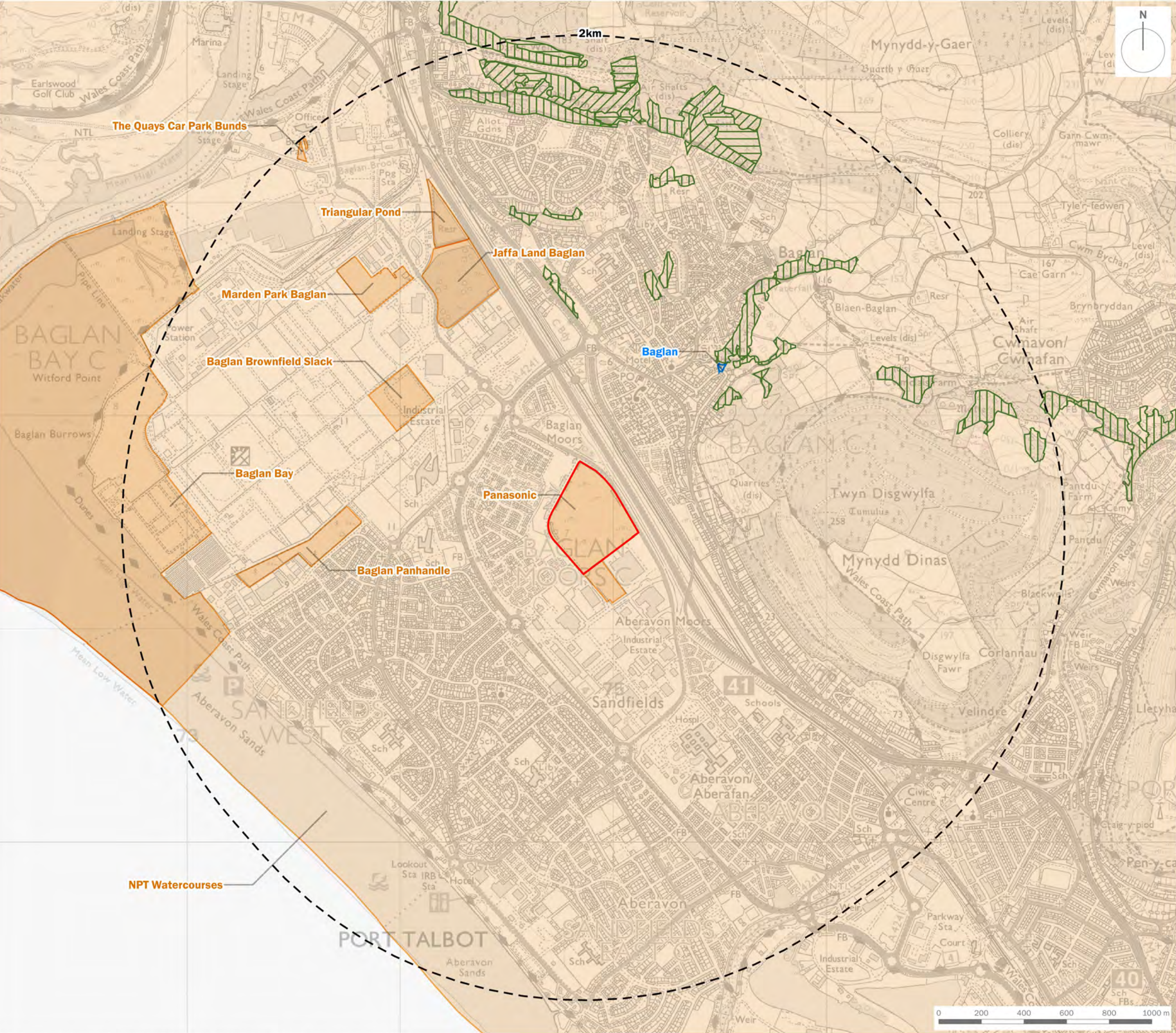
Special Area of Conservation (SAC)

client	Glass Systems Ltd		
project title	Baglan Way, Port Talbot		
drawing title	Plan EDP 1: Statutory Designations		
date	02 AUGUST 2021	drawn by	GY
drawing number	edp7017_d007	checked	EW
scale	1:80,000 @ A3	QA	RB

edp

the environmental
dimension partnership

Registered office: 01285 740427 · www.edp-uk.co.uk · info@edp-uk.co.uk



Site Boundary

2km Range Ring

Ancient Semi Natural Woodland

Plantation on Ancient Woodland Site

Restored Ancient Woodland Site

Wildlife Trust Reserve

Wildlife Site / SINC (Adopted)

NPT Watercourses encompasses all semi-natural waterbodies within NPTCC boundary

client	Glass Systems Ltd		
project title	Baglan Way, Port Talbot		
drawing title	Plan EDP 2: Non-statutory Designations		
date	02 AUGUST 2021	drawn by	GY
drawing number	edp7017_d008	checked	EW
scale	1:17,500 @ A3	QA	RB

edp

the environmental dimension partnership

Registered office: 01285 740427 · www.edp-uk.co.uk · info@edp-uk.co.uk