

PRELIMINARY ECOLOGICAL APPRAISAL

On behalf of Legal & General (Strategic Land) Ltd
Model Farm, Port Road, Rhoose



ECO00138 Model Farm
Preliminary Ecological
Appraisal (PEA)
A
24 May 2019

REPORT

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1 INTRODUCTION

Background to the Study

- 1.1 RPS were commissioned by Legal and General (Strategic Land) Ltd (the client) in May 2018 to undertake a Preliminary Ecological Appraisal (PEA) of a site named Model Farm north of Porthkerry, located in the Vale of Glamorgan. This document reports on the findings of the PEA.
- 1.2 It is our understanding that the client is progressing an outline planning application for a Class B1/B2/B8 Business Park.

Site Description

- 1.3 The site is located within the Vale of Glamorgan, north of Porthkerry and south of the A4226 and Port Road. The site can be located using a central grid reference of ST08026 67338. The client's total ownership extends to 109 ha, although the application site boundary extends to approximately 45 ha. The site is predominately comprised of pasture and arable fields intersected by hedgerows and areas of broadleaf woodland. The site includes two small water courses; Whitelands Brook and Bullhouse Brook. Model Farm house and outbuildings are located within the north of the site.
- 1.4 The site is north and west of Porthkerry Country Park, with the woodland in the south east of the site a continuation of woodland within the park intersected by a railway viaduct. The wider landscape supports further arable and pasture farmland with patches of broadleaf woodland, as well as Cardiff Airport to the west and Barry to the east.

2 METHODS

Desk Study

2.1 A desk study was carried out to identify any statutory or non-statutory wildlife sites within 2 km of the site as well as any records of protected or notable species. A data request was submitted to the South-East Wales Biological Records Centre (SEWBReC) in addition to a review of readily available online resources. These included:

- Multi-Agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk, Defra.
- Joint Nature Conservation Committee www.jncc.defra.gov.uk, JNCC.

2.2 The following designated sites were included in the data search:

- RAMSAR
- Special Marine Conservation Areas
- Special Areas of Conservation concern (SACs)
- Special Protected Areas (SPAs)
- Sites of Special Scientific Interest (SSSIs)
- National Nature Reserves (NNR)
- Local Nature Reserves (LNR)
- Sites Important for Nature Conservation (SINC)

Field Survey

2.3 The site walkover survey was undertaken on 16th May 2018, in accordance with The Handbook for Phase I Habitat Survey (JNCC, 2010) and guidelines on Preliminary Ecological Appraisal (IEEM 2012). Field survey work was completed by Kate Davis (GradCIEEM) and Mike Shewring (CEcol, MCIEEM).

2.4 Habitats within the site and (where possible) immediately adjacent were classified, mapped and described in terms of their structure and broad floristic composition. Where they were encountered, invasive non-native plant species listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended in 2010) were recorded, but a comprehensive search was outside of the survey scope given the size and complexity of the site.

2.5 The habitats within the site were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where species are not specifically mentioned, this indicates that no habitat of potential value for these species was identified during the survey.

Limitations

2.6 Due to the size of the site it was not possible to undertake a comprehensive search for protected and notable species in one visit. However, the report provides an assessment of the potential for protected and notable species to be present based upon the habitats identified within and in close proximity to the site.

3 RESULTS

Desk Study

Designated Sites

3.1 No internationally designated sites were located within the site boundary or 2 km search buffer.

3.2 A total of three SSSIs were located within 2 km of the site; Barry Woodlands, Cliff Wood and Fferr Walters, further information regarding these sites can be found in Table 1.

Table 1 SSSIs located within 2 km of the site

Site name	Approximate distance from site (m)	Size of the site (ha)	Reason for designation
Barry Woodlands	235	120.7	Semi-natural broadleaved woodland
Cliff Wood – Golden Stairs	265	13.4 ha	Good example of mixed woodland.
Fferr Walters	2000	24.87 ha	Species rich neutral grassland.

3.3 A total of 23 SINCs were identified within the search buffer, four of which were located within the site boundary, these were North West Bullhouse Brook, North Bullhouse Brook, West of the Old Rectory and South West of Church Farm. Further information regarding these four sites and additional sites located adjacent to the site can be found in Table 2. Further information regarding sites located within the 2 km search buffer can be found in Appendix 1.

Table 2 SINCs located within the site and 2 km search buffer

Site name	Approximate distance from site (m)	SINC description	UK BAP Priority Habitat	SINC Site Selection Criteria
North West Bullhouse Brook	Within	Ancient semi-natural broadleaved woodland	Lowland mixed deciduous woodland	H1:3 Native woodlands
North Bullhouse Brook	Within	Predominantly ancient semi-natural broadleaved woodland	Lowland mixed deciduous woodland	H1:3 Native woodlands
West of the Old Rectory	Within	Ancient semi-natural broadleaved woodland	Lowland mixed deciduous	H1:3 Native woodlands

woodland			
South West of Church Farm	Within	Species-rich unimproved neutral grassland	Lowland meadows H5:1 Lowland meadows
Porthkerry	Adjacent to site	Semi-natural broadleaved woodland on an ancient woodland site	Lowland mixed deciduous woodland H1:3 Native woodlands
Knock Man Down Wood	Adjacent to site	Predominantly semi-natural broadleaved woodland with some broadleaved plantation on an ancient woodland site	Lowland mixed deciduous woodland H1:3 Native woodlands

3.4 Two LNRs were located within 2 km of the site, these were Cliff Wood – Golden Stairs and Cwm Talwg Woodlands. Further information regarding these sites can be found in Table 3.

Table 3 LNRs located within 2 km of the site

Site name	Approximate distance from site (m)	Reasons for designations ¹
Cliff Wood – Golden Stairs	250	(Located within Cliff Wood – Golden Stairs SSSI)
Cwm Talwg Woodlands	1990	

Priority and Protected Species

3.5 Records of priority and protected species were also requested from the local records centre. Table 4 gives a summary of the most recent (within the last five years) records for each species identified within the site or 2 km search buffer. Further details regarding any species of conservation concern or locally important species can also be found in Appendix 1.

¹ No information available regarding reasons for designations for either site

Table 4 Summary of priority and protected species within site or 2 km search buffer

Species	Scientific Name	Legal/conservation status ²	No. of Records	Location of closest record (m)	Year of most recent record
Bats					
Pipistrelle bat species	<i>Pipistrellus</i>	EPS, HDir, WCA5, S7, Bonn, Bern, RD2 (UK), LBAP (VoG)	2 maternity roost	94	2017
Noctule	<i>Nyctalus noctula</i>	EPS, HDir, WCA5, S7, UKBAP, Bonn, Bern, RD2 (UK), LBAP (VoG)	1 record of 10 bats	198	2015
Other mammal species					
Brown Hare	<i>Lepus europaeus</i>	S7, UKBAP, Bern, LBAP (VoG)	2	379	2015
Hazel Dormouse	<i>Muscardinus avellanarius</i>	EPS, HDir, WCA5, S7, UKBAP, Bern, RD2 (UK), LBAP (VoG)	1	1226	2013
Polecat	<i>Mustela putorius</i>	HDir, S7, UKBAP, Bern, RD2 (UK), LBAP (VoG)	2	774	2015
Weasel	<i>Mustela nivalis</i>	NRW, Bern, LBAP	1	195	2015
European Hedgehog	<i>Erinaceus europaeus</i>	S7, UKBAP, Bern, LBAP (VoG)	11	6	2017
Reptiles					
Adder	<i>Vipera berus</i>	WCA5, S7, UKBAP, Bern, LBAP (VoG)	24	326	2017
Common Lizard	<i>Zootoca vivipara</i>	WCA5, S7, UKBAP, Bern,	1	740	2015

² Summary table of the conservation and legislation pertaining to species can be found in Appendix 1

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LBAP (VoG)

Slow Worm	<i>Anguis fragilis</i>	WCA5, S7, UKBAP, Bern, 30 LBAP (VoG)	189	2018
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Amphibians

Common Frog	<i>Rana temporaria</i>	HDir, WCA5, Bern, LBAP	16	146	2018
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Common Toad	<i>Bufo</i>	WCA5, S7, UKBAP, Bern, 20 LBAP (VoG)	93	2017
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Great Crested Newt	<i>Triturus cristatus</i>	EPS, HDir, WCA5, S7, UKBAP, Bern, RD1 (UK), RD2 (UK), LBAP (VoG)	2	1590	2013
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Palmar Newt	<i>Lissotriton helveticus</i>	WCA5, Bern, LBAP, LI(BIS)	11	146	2017
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Smooth Newt	<i>Lissotriton vulgaris</i>	WCA5, Bern, LBAP	4	146	2016
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Birds

Bullfinch	<i>Pyrrhula</i>	S7, UKBAP, WBR(RSPB), 19 LBAP (VoG), UKBR(RSPB)	322	2017
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Curlew	<i>Numenius arquata</i>	BDir22, S7, UKBAP, Bonn, 5 RD1 (UK), WBR(RSPB), LBAP (VoG), LI(VC43), UKBAm(RSPB)	506	2017
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Dunnock	<i>Prunella modularis</i>	S7, UKBAP, Bern, LBAP (VoG), UKBAm(RSPB)	31	65	2018
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Fieldfare	<i>Turdus pilaris</i>	BDir22, WCA1.1, LBAP, WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	1	1739	2015
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Grey Partridge	<i>Perdix perdix</i>	BDir21, S7, UKBAP, WBR(RSPB), LBAP (VoG), LI(VC43), UKBR(RSPB)	1	545	2015
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Hoopoe	<i>Upupa epops</i>	WCA1.1, Bern	1	1770	2015
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House Sparrow	<i>Passer domesticus</i>	S7, UKBAP, Bern, LBAP (VoG), WBAm(RSPB), UKBR(RSPB)	46	389	2018
Kestrel	<i>Falco tinnunculus</i>	S7, Bonn, Bern, CITES, WBR(RSPB), LBAP (VoG), LI(VC43), UKBAm(RSPB)	5	348	2015
Kingfisher	<i>Alcedo atthis</i>	BDir1, WCA1.1, Bern, LBAP, WBAm(RSPB), UKBAm(RSPB)	4	155	2017
Lapwing	<i>Vanellus vanellus</i>	BDir22, S7, UKBAP, Bonn, 4 WBR(RSPB), LBAP (VoG), LI(VC43), UKBAm(RSPB)		1284	2013
Lesser Redpoll	<i>Acanthis cabaret</i>	S7, UKBAP, WBR(RSPB), 1 LBAP (CON), LBAP (VoG), UKBAm(RSPB)		1770	2016
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>	S7, UKBAP, Bern, WBR(RSPB), LBAP (VoG), LI(VC43), UKBR(RSPB)	1	337	2013
Linnet	<i>Linaria cannabina</i>	S7, Bern, WBR(RSPB), LBAP, LBAP, UKBR(RSPB)	9	1473	2017
Long-tailed Duck	<i>Clangula hyemalis</i>	BDir22, WCA1.1, Bonn, RD1 (UK), WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	11	1942	2014
Mediterranean Gull	<i>Larus melanocephalus</i>	BDir1, WCA1.1, Bonn, Bern, LBAP, WBAm(RSPB), UKBAm(RSPB)	1	1942	2014
Nightjar	<i>Caprimulgus europaeus</i>	BDir1, S7, UKBAP, Bern, LBAP (VoG), WBAm(RSPB), LI(VC43), UKBR(RSPB)	1	1731	2013
Peregrine	<i>Falco peregrinus</i>	BDir1, WCA1.1, Bonn, Bern, CITES, LBAP (VoG), LI(VC43), UKBAm(RSPB)	7	337	2017
Redwing	<i>Turdus iliacus</i>	BDir22, WCA1.1, LBAP, WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	3	1406	2016

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Reed Bunting	<i>Emberiza schoeniclus</i>	S7, UKBAP, Bern, LBAP (VoG), WBAm(RSPB), UKBR(RSPB)	6	1717	2016
Skylark	<i>Alauda arvensis</i>	BDir22, S7, LBAP, WBAm(RSPB), UKBR(RSPB)	5	1697	2015
Song Thrush	<i>Turdus philomelos</i>	BDir22, S7, UKBAP, Bern, LBAP, WBAm(RSPB), UKBR(RSPB)	13	298	2017
Spotted Flycatcher	<i>Muscicapa striata</i>	S7, UKBAP, Bonn, Bern, WBR(RSPB), LBAP, UKBR(RSPB)	3	1313	2015
Starling	<i>Sturnus vulgaris</i>	BDir22, S7, UKBAP, Bern, WBR(RSPB), LBAP (VoG), UKBR(RSPB)	19	801	2018
Whimbrel	<i>Numenius phaeopus</i>	BDir22, WCA1.1, Bonn, LBAP, WBAm(RSPB), UKBR(RSPB), UKBAm(RSPB)	2	1907	2017
Yellowhammer	<i>Emberiza citrinella</i>	S7, UKBAP, Bern, WBR(RSPB), LBAP (VoG), UKBR(RSPB)	3	1795	2015

Fish

European Eel	<i>Anguilla anguilla</i>	S7, UKBAP, RD1 (UK), LBAP (VoG)	5	187	2015
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Invertebrates

Dingy Skipper	<i>Erynnis tages</i>	S7, UKBAP, RD1 (UK), LBAP (VoG), LI(SEWBReC)	4	378	2017
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Flora

Bluebell	<i>Hyacinthoides non-scripta</i>	WCA8, LBAP	4	48	2017
Parmotrema perlatum	<i>Parmotrema perlatum</i>	S7, LBAP	1	293	2014

Field Survey

Habitats

3.6 A map of the broad habitats identified during the field survey can be found in the drawing appendix under Figure 1.

Broadleaved Semi-Natural Woodland

3.7 The site supports a number of small blocks of broadleaf semi-natural woodland as well as two streams which are lined by woodland. The most westerly located woodland block (TN2) supports mature trees dominated by ash *Fraxinus excelsior*, with intermittent scots pine *Pinus sylvestris*, hawthorn *Crataegus rhipidophylla*, hazel *Corylus avellana* and field maple *Acer campestre*. The ground flora is heavily shaded by the mature canopy with frequent dog's mercury *Mercurialis perennis* and enchanter's nightshade *Circaea lutetiana*, as well as buckler fern *Dryopteris* sp., bluebell *Hyacinthoides non-scripta*, lesser celandine *Ranunculus ficaria*, hearts tongue fern *Asplenium scolopendrium*, speedwell *Veronica* sp. and lords and ladies *Arum maculatum*. Intermittent patches of dense scrub understory are also present dominated by bramble *Rubus fruticosus*. The source of a tributary of the Bullhouse Brook is also located within this block.

3.8 The central block of woodland (TN4) also supports a mature canopy of trees such as ash, oak *Quercus* sp., sycamore *Acer pseudoplatanus* and hawthorn. The ground flora is a similar assemblage as above with enchanter's nightshade, bluebell, buckler fern, hearts tongue fern and lesser celandine. Dense scrub is also present intermittently dominated by bramble with frequent nettle *Urtica dioica*.

3.9 The largest and most easterly woodland block (TN5) again supports a mature assemblage of trees including oak, sycamore, hazel, field maple, ash, beech *Fagus sylvatica*, hawthorn, copper beech *Fagus sylvatica* f. *purpurea* and holly *Ilex aquifolium*. The ground flora consists of enchanter's nightshade, frequent hearts tongue fern, bucklers fern, bluebell and occasional lords and ladies. Dense bramble is less frequent in this area of woodland, with multiple intersecting walking paths and Whitelands Brook in the south west corner.

3.10 Further areas of semi-natural broadleaf woodland are present bordering Bullhouse Brook and Whitelands Brook (TN12 & 13). These linear stretches of woodland have a similar assemblage of plant species. The woodland bordering Whitelands Brook supports significant patches of scrub understory dominated by bramble and nettle with occasional honeysuckle *Lonicera* sp (TN13).

Improved Grassland

3.11 The majority of the site is agricultural pasture supporting improved grassland. These improved grassland fields are dominated by perennial rye grass *Lolium perenne*, with occasional nettle *Urtica dioica*, broad leaved dock *Rumex obtusifolius*, cocks-foot sp. *Dactylis*, meadow foxtail *Alopecurus pratensis*, white clover *Trifolium repens*, brome sp. *Bromus*, thistle sp. *Cirsium* sp. and creeping buttercup *Ranunculus repens*.

Running Water

3.12 The source of two watercourses lie within the site; Bullhouse Brook and Whitelands Brook. These watercourses are relatively small streams (~50 cm to 150 cm in the south of the site) which join in the south-east corner of the site. The headwaters of Bullhouse Brook are located within the most westerly forestry block (TN2), with the source of Whitelands Brook approximately 500 m north of the most easterly block of woodland. The majority of the length of the streams are bordered by broadleaved semi-natural woodland. The source of the Bullhouse stream was dry at the time of survey with the river channel being evident, the stream began to flow at the southerly extent of the forestry block.

3.13 Both channels had soft, steep sided banks heavily shaded by trees for the majority of their length with the exception of a short stretch of Whitelands Brook when running through one of the improved

grassland fields (TN11). This stretch of the stream runs for approximately 150 m and has dense streamside vegetation either side for approximately 3 m throughout its length. This stretch of stream is also fenced off to prevent livestock access with two crossing points. Streamside vegetation is dominated by bramble, pendulous sedge *Carex pendula* and water dropwort *Oenanthe* sp. with frequent nettle, red campion *Silene dioica*, dock *Rumex* sp., dogwood *Cornus sanguinea*, honeysuckle, rosebay willow herb *Epilobium angustifolium*, soft rush *Juncus effusus*, thistle and vetch *Vicia* sp.

3.14 The stream beds were predominately either soft bank/silt or stone with little or no in channel vegetation.

Hedgerows

3.15 The majority of the agricultural field boundaries were lined with native species poor hedgerows. Although many of the hedgerows support in excess of seven woody species in total, these are often occasional and over distances greater than 30 m and as such have been classified as species poor.

Native Species Poor

3.16 The majority of the hedgerows within the site are intact and intensively managed (i.e. cut each year). Many were dominated by hawthorn with frequent blackthorn *Prunus spinosa*, elder *Sambucus nigra*, honeysuckle, hazel and dogwood. Many hedgerows also had occasional holly, field maple, willow *Salix* sp, beech, ash, oak and sycamore. Many of the hedgerows also had frequent bramble.

3.17 The majority of hedgerows were supported by a ground flora dominated by bramble and nettle with occasional dock, goosegrass *Galium aparine*, vetch and creeping buttercup.

Native Species Poor with Trees

3.18 Hedgerows with trees are frequent within the south of the site, particularly the northern and south-eastern border. This border backs on to a strip of broadleaf trees which borders the viaduct (TN8) and a private property which also has a strip of broadleaf trees around its border. This hedgerow is managed (cut) along the edge bordering the site, however it merges with the broadleaf trees to the back. Other hedgerows with trees were located occasionally throughout the site, species compositions were broadly similar to that previously listed for native species poor hedgerows with the addition of scattered mature tree species such as oak, ash, alder field maple and sycamore. In addition, the hedgerow to the north west of the site, adjacent to the airport also supported a Whitebeam *Sorbus* sp.

Native Species Poor Defunct

3.19 Occasional species poor defunct hedgerows were also present. The species present in this habitat were broadly similar to those previously described, however the hedgerows have not been managed through regular cutting and have become overgrown with significant gaps that are not stock proof or have been infilled with fencing.

Dense Continuous Scrub

3.20 Dense continuous scrub was present in small intermittent patches within the site as well as a larger patch just outside the site boundary located within the private property in the south of the site. These areas were dominated by bramble with occasional nettle, thistle and honeysuckle. Dense scrub was also present within the understory of many of the areas of semi-natural broadleaf woodland.

Scattered Trees

3.21 Scattered broadleaf trees were present intermittently throughout the site, these usually consist of individual trees or a small group within the agricultural fields. In addition, there were two strips of trees located within the south of the site. One of which connects the largest block of woodland to that bordering Whitelands Brook to the north and one intersects the agricultural fields in the south as a continuation of the woodland outside of the site boundary.

3.22 The majority of the scattered trees were mature oaks, ash, sycamore, field maple, elm, hazel, and hawthorn.

Protected/notable Species

Bats

3.23 No direct evidence of bats was identified during the survey; however, the site supports habitats that provide potential roost sites as well as foraging and commuting habitat. All of the woodland blocks and smaller areas of broadleaf woodland (TN2, 4, 5, 13) provide moderate potential to support roosting bats along with a number of scattered trees within the site. The farm buildings to the north of the site and viaduct which borders the south of the site also provide habitat of moderate bat roost potential (TN6 & 22).

3.24 The network of hedgerows, woodland and stream corridors on site connected in the wider landscape through the rail corridor also provide suitable commuting corridors and foraging habitats for bats. These habitats also provide connectivity between the woodland (County Park) to the south of the site to that in the north.

3.25 The desk study also identified pipistrelle maternity roosts approximately 100 m to the south of the site.

Hazel Dormouse

3.26 No direct evidence of dormouse was identified during the survey. However, the site supports suitable summer and winter habitat for the species. The hedgerows, scrub and woodland blocks all contain habitats and tree/plant species suitable to support dormouse. The frequent honeysuckle also provides good nest making material.

3.27 The desk study identified a single dormouse record ~1.3km to the north east of the site.

Badger

3.28 Badger footprints were identified alongside Whitelands Brook (TN12). The whole site also provides suitable foraging habitat as well as suitable habitat to support badger setts. The thick areas of scrub within the site and woodland understory could have obscured any badger setts present due to the time constraints to undertake a comprehensive survey.

Otter

3.29 No direct evidence of otter *Lutra lutra* was identified during the survey. However, the site supports suitable habitat to support commuting otter as well as areas to support resting places such as within the woodland bordering the watercourses.

3.30 No records of otter were identified during the desk study.

Water Vole

3.31 No evidence of Water Vole was identified during the survey. A small section of Whitelands Brook provides marginally suitable habitat to support water vole (TN11), however this is isolated from further extents of suitable habitat and no records were identified during the desk study.

Reptiles

3.32 No evidence of reptiles was recorded during the survey. However, the site provides low habitat suitability for common reptile species within the hedgerow field boundaries.

3.33 Recent records of adder, common lizard and slow worm were also noted from the wider area during desk study.

Nesting Birds

3.34 The whole site provides suitable nesting habitat for breeding birds, with the hedgerows and field boundaries holding high suitability for a number of species. During the survey a number of species were either seen or heard including chiffchaff *Phylloscopus collybita*, blackcap *Sylvia atricapilla*, blue tit *Cyanistes caeruleus*, great tit *Parus major*, wren *Troglodytes troglodytes*, robin *Erithacus rubecula*, blackbird *Turdus merula* and buzzard *Buteo*. A woodpigeon *Columba palumbus* carcass was also identified within the most westerly forestry block which was identified as a kill from either a sparrowhawk *Accipiter nisus* or goshawk *Accipiter gentilis*, the latter of which is listed under Schedule 1 of the WCA.

3.35 Desk study records of 25 priority and/or protected species were noted within 2 km of the site from the last five years. These included bullfinch, curlew, dunnock, fieldfare, grey partridge, hoopoe, house sparrow, kestrel, kingfisher, lapwing, lesser redpoll, lesser spotted woodpecker, linnet, long-tailed duck, Mediterranean gull, nightjar, peregrine, redwing, reed bunting, skylark, song thrush, spotted flycatcher, starling, whimbrel and yellowhammer.

3.36 In addition, a total of 25 species of conservation concern were also identified within 2 km of the site during the desk study.

Great Crested Newt

3.37 A small area of standing water was identified within the farm yard in the north of the site (TN23), this appeared to be concrete lined with little to no vegetation. This area of standing water may provide the potential to support amphibians such as great crested newt of which there is a pond located approximately 1.5 km to the west of the site which is designated as a SINC due to the important breeding population of great crested newt that it supports. The surrounding terrestrial habitat is also suitable for this species.

Other Notable Species

3.38 Two stands of Japanese knotweed *Fallopia japonica* were noted during the survey (TN17 & 21). These were located within the property to the south of the site as well as one small stand within the hedgerow to the north.

4 DISCUSSION, EVALUATION & RECOMMENDATIONS

Designated Sites

4.1 Both Barry Woodlands SSSI and Cliff Wood SSSI are located 235 m and 265 m from the site respectively. Both sites are designated for the ancient woodland which they support. Due to the geographic separation of the proposed development to these designated sites, any direct significant impacts are considered unlikely.

4.2 The proposed Model Farm site also supports woodland habitat with some connectivity, particularly to Cliff Wood. This is likely to provide additional habitat resource, suitable movement corridors and ecological resilience to these statutorily protected sites. As such we would recommend retaining these areas as far as practicable.

4.3 The study site supports three SINCs; North West Bullhouse Brook, North Bullhouse Brook and West of the Old Rectory. These sites are designated for the ancient woodland which they support and should be retained and protected along with a suitable buffer.

4.4 A further SINC was identified within the south west of the site, South west of Church Farm SINC. This site has been designated for its species-rich unimproved neutral grassland. This site was surveyed during the site visit and was not identified as supporting this habitat and as such may have altered since first identified as a SINC. However, it should also be noted that given the timing of the survey and the cold start to the 2018 growing season indicator species for unimproved neutral grassland may not have been evident at the time of survey. As such if development is proposed in this area we would recommend a precautionary approach (i.e. SINC retained and protected along with a suitable buffer) or phase 2 detailed botanical survey during the optimal months (June/July/August). It is our understanding however that this site is out with any impact zone from the proposed development.

Habitats

Broadleaved Semi-Natural Woodland

4.5 The areas of semi-natural broadleaf woodland are of high ecological value within the context of the site. Mixed deciduous woodland is a UK BAP priority habitat and is a habitat of principal importance in Wales, listed under Section 7 of the Environment (Wales Act) 2016.

4.6 During the survey a number of ancient woodland indicator species were identified including dogs-mercury, enchanter's nightshade and bluebell. Many of the main woodland blocks are also designated as SINCs for supporting ancient woodland. It is therefore recommended that these habitats are retained and protected within the proposed development, along with a suitable buffer.

4.7 The woodland also holds the potential to support a variety of protected species such as bats, badger, dormouse and breeding birds.

Improved Grassland

4.8 The improved grassland within the site is dominated by perennial rye grass and has low ecological value.

Running Water

4.9 Both streams intersect areas of ancient woodland and designated sites; North of Bullhouse Brook and West of the Old Rectory. The streams themselves would also classify as a UK BAP priority habitat and as habitats of principal importance in Wales, listed under Section 7 of the Environment (Wales Act) 2016. These habitats should therefore be protected from potential impacts from the proposed development.

4.10 In the absence of mitigation or control measures surface water runoff and subsequent mobilisation of soils could cause pollution events, along with the use of machinery within the vicinity of the watercourses. However, the implementation of good working practices should protect the environment immediately around the working area and ultimately downstream. These would include habitat protection through appropriate buffers, pollution control measures and rapid remedial responses to potential polluting events.

Hedgerows

4.11 The majority of the agricultural fields on site are bordered by mature managed hedgerows. The majority of hedgerows on site supported at least 7 woody species across their length and provide a network of woody habitat connectivity across the site likely to be of importance to a variety of faunal species. However, the lack of significant floral diversity over a shorter length (i.e. 30 m) resulted in them being classed as species poor using JNCC phase 1 habitat criteria. Should the removal of hedgerows be required to facilitate the development further surveys may be required to identify whether any of the hedgerows present within the site are considered important under the Hedgerows Act 1997.

4.12 Hedgerows also provide important habitats and corridors for a number of protected species such as bats, dormice, reptiles and nesting birds in otherwise uniform landscapes such as improved grassland and arable agricultural fields. As such they should also be considered within the context of protected species within the site and retained as far as practicable within the future development.

Scattered Trees

4.13 The site supports a number of areas of scattered trees as well as individuals/ small stands scattered within the agricultural fields. The trees alone may be protected under tree protection orders and may also provide habitat for protected species such as bats and nesting birds. Scattered trees should therefore also be considered under the context of protected species and assessed for their suitability to support roosting bats.

Dense Continuous Scrub

4.14 The dense continuous scrub alone is of negligible ecological value. However, it holds the potential to support protected species such as dormouse, badger, reptiles and breeding birds.

Protected and Notable Species

Bats

4.15 Bats are protected by the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017 the protection afforded under these acts makes it an offence to kill, injure, capture/take bats, disturb or harass bats, damage or destruct their roosts or to obstruct access to a breeding or resting place.

4.16 Suitable habitat to support roosting, foraging or commuting bats is present across the entirety of the site. During the desk study two pipistrelle maternity roosts were identified 100 m to the south of the site as well as records for noctule within the search buffer. A range of bat species is expected to occur within the site and wider area.

4.17 The woodland, scattered mature trees and farm buildings have moderate potential to support roosting bat roosts along with the rail viaduct which runs adjacent to the site along the south-eastern boundary. Further survey would be required to identify the presence/absence of specific features which may support bat roosts and inform any further survey requirements.

4.18 In addition to the potential roosting habitat, the hedgerows and woodland within the site may provide suitable foraging and commuting habitat. Some of which may be important for movement to and

from the maternity roost identified just south of the site. As identified by the BCT 2016³, common and soprano pipistrelle bats are likely to have a Core Sustenance Zone (CSZ) of 2 and 3 km respectively. This CSR refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. As two pipistrelle maternity roosts were identified to the south of the site, the whole site will fall within the CSZ of the roosts. With reference to planning and development the CSZ could be used to indicate:

- The area surrounding the roost within which development work can be assumed to impact the commuting and foraging habitats of bats using the roost, in the absence of information of local foraging behaviour. This will highlight the need for species specific survey techniques where necessary;
- The area within which mitigation measures should ensure no net reduction in the quality and availability of foraging habitat for the colony, in addition to mitigations measures shown to be necessary following ecological survey work.

4.19 Further survey would be required to identify bat activity across the site through the use of static detectors and transect surveys.

4.20 Should roosts be identified within the vicinity of works a suitable license would be required to facilitate the works from Natural Resources Wales as well as the commitment to mitigating any potential impacts upon bats as a result of the development. Further survey to confirm the likely presence/absence of roosting bats and the levels of bat activity on site will be required to inform any planning submission.

Hazel Dormouse

4.21 Hazel dormouse is a European protected species provided full protection under the WCA and the Conservation of Habitats and Species Regulations 2017 making it an offence to deliberately capture, injure or kill, damage or destroy a resting or breeding place, deliberately or recklessly disturb whilst it's in a structure or place of shelter and block access to places of shelter.

4.22 The site supports relatively extensive habitat suitable for dormouse, including hedgerows, broadleaf woodland with a scrub understory and smaller patches of dense continuous scrub. These habitats provide food resources such as bramble and hazel as well as honeysuckle which is often utilised when available to construct nests. The site is also well connected through hedgerow networks and further broadleaf woodland. Dormouse are also present in the wider landscape with desk study records within 1.3 km of the site noted.

4.23 In order to identify the presence of any dormice in the area further survey will be required to inform any planning submission. This would consist of the use of the nest tubes within suitable habitat. Should dormice be identified within the site a suitable license may be required from NRW to undertake works along with the commitment to mitigate any potential impacts upon the species as a result of the development.

Badger

4.24 Badgers are afforded protection under the Protection of Badgers Act 1992 which makes it an offence to intentionally capture, kill or injure a badger, damage, destroy or block access to their setts and disturb badgers within their setts.

4.25 Suitable badger habitat is present throughout the site, with evidence of badger also identified during the survey (TN12). In order to identify any setts in the vicinity of the development further survey would be required.

³ Bat Conservation Trust (BCT) 2016 Core Sustenance Zones: Determining Zone Size

Otter

4.26 Otters are classified as a European Protected Species under Annex IV of the European Habitats Directive as well as being protected under the WCA 1981. They are also listed as a priority species under the UK post-2010 Biodiversity Framework.

4.27 Suitable habitat to support otter was identified during the field survey along the streams and bordering woodland. Should the development require works within 200 m of the watercourses a targeted otter survey would be recommended to identify the presence of any otters using the site.

Reptiles

4.28 The widespread reptile species of the UK; common lizard, slow worm, grass snake and adder are protected under the WCA which protects them against killing and injury.

4.29 The site supports areas of habitat with a low suitability for widespread reptile species. Depending on the nature of habitat affected by the development i.e. suitable hibernacula or places of shelter, it may be necessary to carry out further surveys to inform the development.

Nesting Birds

4.30 Nesting birds are protected under the WCA which makes it illegal to intentionally kill, injure or take a wild bird and take damage or destroy its nest or egg. In addition, some bird species are listed under Schedule 1 of the WCA which also makes it an offence to disturb them whilst they are building a nest, nesting or in or near a nest that contains their young as well as disturb their young. The Conservation of Habitats and Species Regulations 2017 also places a duty upon all competent authorities to provide and protect habitat for wild birds and as such any planning submission will be assessed in this context.

4.31 The site is made up of a number of habitats with high potential to support breeding birds such as woodland and field margins/ hedgerows. The agricultural fields also offer some potential for breeding birds.

4.32 As such breeding bird survey work would be recommended to inform future development works where these habitats cannot be largely retained. These surveys should aim to identify any birds of conservation concern which may be using the site.

Great Crested Newt

4.33 The pond/standing water located within the farmyard in the north of the site holds the potential to support great crested newt. Due to the presence of a SINC located ~1.5 km to the west of the site and the extensive presence of suitable terrestrial habitat within the site we would recommend further surveys to identify the presence/absence of great crested newt should the development impact the pond and/or the surrounding 500 m.

4.34 In order to identify the presence/absence of great crested newt we would recommend carrying out an eDNA survey of the pond. Should this indicate the presence of great crested newt further survey effort would be required to identify the size of the population.

Other Notable Species

4.35 Japanese knotweed is listed under Schedule 9 of the WCA as an invasive plant species which makes it an offence to facilitate its spread. The site also has the potential to support further schedule 9 species.

4.36 Japanese knotweed was identified during the survey in two locations. We would recommend a suitable eradication strategy be developed and implemented as soon as possible at the site in order to both facilitate future development and prevent further spread. A commitment to eradication may form part of any planning obligations post consent.

4.37 In order to meet legal requirements further consideration would be required during any construction phase. This would likely consist of the following measures; no earthworks should be carried out within 10 m of the visible plants as they the area could contain live Japanese knotweed material. The area should be cordoned off with a no works exclusion zone to avoid facilitating its spread. Should any be identified within the vicinity of the proposed development a method statement would need to be approved prior to works in order to clear the area. Control options include herbicide applications (ideally injections) in mid / late summer and early autumn or controlled excavation and removal to a licensed waste facility.

5 CONCLUSIONS

5.1 This preliminary ecological appraisal recorded habitats present within the site and made an assessment for the potential presence of protected species. In addition, a desktop study was undertaken to identify any designated sites that may be adversely impacted by any future proposals of the site and highlight any known records for protected species.

5.2 Four Sites Important to Nature Conservation are located within the site, in order to protect these designated sites, it is recommended that they, along with the habitat immediately adjacent to them, is retained and protected during the construction of the proposed development. In order to protect the sites and adjacent environmental setting it is recommended that a 10 m buffer is retained around them.

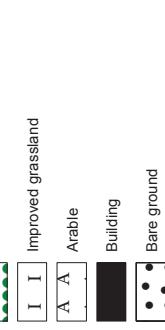
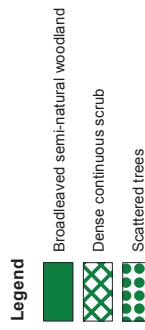
5.3 In order to inform any planning application and proposed development it is recommended that the following targeting surveys may be required;

- hedgerow survey;
- preliminary ground assessment of trees and buildings for bat roost potential and any subsequent roost surveys recommended from the ground assessment;
- bat activity surveys;
- Badger;
- Dormouse;
- Otter;
- Breeding bird;
- Reptile; and
- Great crested newt.

5.4 The development may also provide the opportunity to provide environmental enhancement such as broadleaf tree planting to maintain or enhance wildlife corridors and woodland, the addition of ponds and species-specific enhancement in response to the protected species survey results.

FIGURES

Figure 1 – Phase 1 Habitat Map



Rev	Description	Date	Initial	Checked

RPS

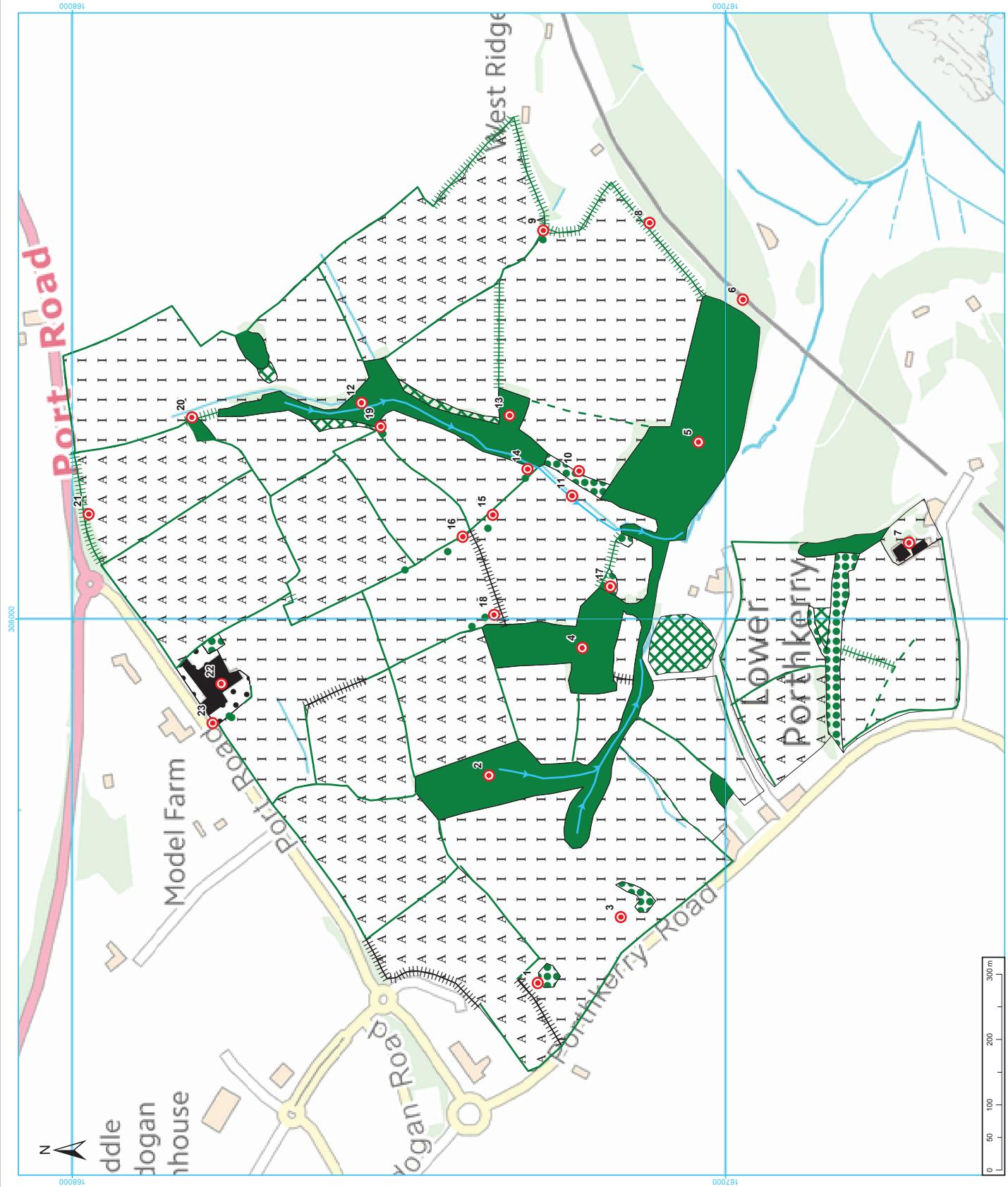
Willow Mere House, Compass Point Business Park
 Stocks bridge Way, St. Ives, Cambs. PE27 5JL
 T: 01480 466 335 E: rpscam@rpsgroup.com F: 01480 466 911

Client RPS Cardiff

Project Land at Rhoose

Title Phase 1 habitat

Status Drawn By
 Final KM
 Job Ref Scale @ A3
 ECO00138 1:5,776
 Drawing Number
 Figure X.X
 Rev B



APPENDICES

A.1 Appendix A

Table 5 Legislation and conservation status pertaining to protected and notable species

Abbreviation	Full details
BA	Protection of Badgers Act
UKBAP	UK Biodiversity Action Plan Priority Species
UKBAP (R)	UK Biodiversity Action Plan Priority Species (Research only species)
BDir1	EC Birds Directive Annex 1 Species
BDir21	EC Birds Directive Annex 2.1 Species
BDir22	EC Birds Directive Annex 2.2 Species
Bern	The Bern Convention on the Conservation of European Wildlife and Natural Habitats
Bonn	The Bonn Convention on the Conservation of Migratory Species of Wild Animals Species
CITES	Convention on International Trade in Endangered Species
EPS	European Protected Species
HDir	EU Habitats Directive Species
NRW	Natural Resources Wales Priority Species
RD1 (Wales)	Welsh Red Data Book listing based on IUCN guidelines
RD1 (UK)	UK Red Data Book listing based on IUCN guidelines
RD2 (UK)	UK Red Data Book listing not based on IUCN guidelines (Nationally Rare and Scarce)
WBR (RSPB)	RSPB Welsh Red listed birds (not based on IUCN criteria)
WBAm (RSPB)	RSPB Welsh Amber listed birds (not based on IUCN criteria)
UKBR (RSPB)	RSPB UK Red listed birds (not based on IUCN criteria)
UKBAm (RSPB)	RSPB UK Amber listed birds (not based on IUCN criteria)
S42	Natural Environment and Rural Communities Act 2006 (Section 42)
S7	Environment Act (Wales) Section 7 Species
WCA1.1	Wildlife and Countryside Act Schedule 1 Part 1 Species

WCA5	Wildlife and Countryside Act Schedule 5 Species
WCA8	Wildlife and Countryside Act Schedule 8 Species
WCA9	Wildlife and Countryside Act Schedule 9 Species
INNS	Invasive Non-Native Species
WSG.P	Guidelines for the Selection of Wildlife Sites in South Wales - Primary species
WSG.C	Guidelines for the Selection of Wildlife Sites in South Wales - Contributory species
WVP	IUCN Threat Listing of Welsh Vascular Plants
LBAP	Local Biodiversity Action Plan Species (those listed under the Vale of Glamorgan LBAP are listed as VoG)
LI (SEWBReC)	Locally Important Species (as identified by local specialists) in SEWBReC area.

Table 6 Remaining SINCs located within 2 km of site boundary

Site Name	Approximate distance from site (m)	SINC description	UK BAP Priority Habitat	SINC Site Selection Criteria
North East of Knock Man Down Wood	25	Large area of predominantly ancient semi natural broadleaved woodland	Lowland mixed deciduous woodland	H1:3 Native woodlands
North Cwm Barri	500	Ancient semi-natural broadleaved woodland and semi-natural broadleaved woodland, part on an ancient woodland site	Lowland mixed deciduous woodland	H1:3 Native woodlands
South of Cwm Ciddy Farm	525	Species-moderate neutral grassland	Lowland meadows	H5:1 Lowland meadows
Rhoose Point	720	Extensive site supporting a mosaic of habitats associated with old quarry and lime works including bare rock, maritime cliffs and slopes, ponds, calcareous to neutral grassland, reedbed, scrub and secondary woodland	Lowland meadows, Lowland calcareous grassland, Reedbeds, Ponds, Open mosaic habitats on previously developed land, Maritime cliffs and slopes	H1:4 Scrub communities H5:1 Lowland meadows H6:1 Lowland calcareous grassland H13:2 Ponds H14:3 Open mosaic habitats on previously developed land H15:1 Maritime

				cliffs and slopes
Land North of Blackton Farm	750	A series of small floodplain rush pastures with tall swamp vegetation	Purple moor grass and rush pastures, Reedbeds	H9:3 Purple moor grass and rush pastures H9:4 Reedbed
Church Hill Wood	1000	Predominantly ancient semi-natural broadleaved woodland and wood pasture with veteran oaks	Wood pasture and parkland, Lowland mixed deciduous woodland	H1:2 Wood pasture and parkland H1:3 Native woodlands
Walters Farm	1300	Series of species-rich neutral grasslands, locally damp, with large anthills	Lowland meadows	H5:1 Lowland meadows
Sutton Wood	1450	Semi-natural broadleaved woodland on an ancient woodland site	Lowland mixed deciduous woodland	H1:3 Native woodlands
West of Barry College	1450	Species-rich neutral grassland	Lowland meadows	H5:1 Lowland meadows
Curnix Farm	1550	Species rich neutral grassland	Lowland meadows	H5:1 Lowland meadows
Readers Way Pond	1580	Pond supporting important population of breeding Great crested newts	Ponds	S3 Amphibians: Great crested newts
Land South of Curnix Farm	1600	A series of small floodplain rush pastures with tall herb fen	Purple moor grass and rush pastures, Reedbeds	H9:3 Purple moor grass and rush pastures H9:4 Reedbed
Land South West of Curnix Farm	1700	Species-rich neutral grassland	Lowland meadows	H5:1 Lowland meadows
Land South of Penmark	1700	A former quarry site supporting a mosaic of bare soils and rock, dense scrub and neutral grassland	Open mosaic habitats on previously developed land	H1:4 Scrub communities H14:3 Open mosaic habitats on previously developed land H16 Mosaic habitats
North West of Welsh Hawking Centre	1760	Ancient semi-natural broadleaved woodland	Lowland mixed deciduous woodland	H1:3 Native woodlands
Font-y-Gary	1800	Old quarry with range of habitats including species rich calcareous grassland, neutral grassland, bare rock, maritime cliffs and	Lowland meadows, Lowland calcareous grassland, Reedbeds,	H1:4 Scrub communities H5:1 Lowland meadows H6:1 Lowland calcareous

		slopes, shallow pools and scrub	Ponds, Open mosaic habitats on previously developed land, Maritime cliffs and slopes	grassland H13:2 Ponds H14:3 Open mosaic habitats on previously developed land H15:1 Maritime cliffs and slopes
Land North of Penmark	1950	Two small fields with tall swamp vegetation, rush pasture with areas of reed	Purple moor grass and rush pastures, Reedbed	H9:3 Purple moor grass and rush pastures H9:4 Reedbed

Table 7 Other species of Conservation Concern identified during the desk study

Scientific Name	Common Name	Status
<i>Actitis hypoleucus</i>	Common Sandpiper	Bonn, Bern, WBAm(RSPB)
<i>Adiantum capillus-veneris</i>	Maidenhair Fern	RD2 (UK), LBAP (VOG), LI(SEWBReC)
<i>Aegithalos caudatus</i>	Long-tailed Tit	WBAm(RSPB)
<i>Alopecurus bulbosus</i>	Bulbous Foxtail	RD2 (UK), LBAP (NEW, VOG), LI(SEWBReC)
<i>Anas clypeata</i>	Shoveler	BDir21, Bonn, CITES, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)
<i>Anas platyrhynchos</i>	Mallard	BDir21, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Anas strepera</i>	Gadwall	BDir21, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Andrena (Chlorandrena) humilis</i>	Buff-tailed Mining Bee	RD2 (UK)
<i>Andrena (Cnemidandrena) nigriceps</i>	Black-headed Mining Bee	RD2 (UK)
<i>Andrena (Hoplolandrena) bucephala</i>	Big-headed Mining Bee	RD2 (UK)
<i>Andrena (Hoplolandrena) trimmerana</i>	Trimmer's Mining Bee	RD2 (UK)
<i>Andrena (Margandrena) marginata</i>	Small Scabious Mining Bee	RD2 (UK)
<i>Andrena (Poecilandrena) labiata</i>	Red-girdled Mining Bee	RD2 (UK)
<i>Anthus pratensis</i>	Meadow Pipit	Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
<i>Apus apus</i>	Swift	LBAP (BRG, RCT, VOG), WBAm(RSPB), UKBAm(RSPB)

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<i>Arenaria interpres</i>	Turnstone	Bonn, Bern, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Argolamprotes micella</i>	Bright Neb	RD2 (UK)
<i>Asio flammeus</i>	Short-eared Owl	BDir1, Bern, CITES, WBR(RSPB), LBAP (CON, DEN, GWY, PEM, POW), LI(VC43), UKBAm(RSPB)
<i>Aythya ferina</i>	Pochard	BDir21, Bonn, WBR(RSPB), LBAP (CON, POW), UKBR(RSPB), UKBAm(RSPB)
<i>Aythya fuligula</i>	Tufted Duck	BDir21, Bonn, LBAP (CON, POW, VOG), WBAm(RSPB)
<i>Bombus rupestris</i>	Red-tailed (Hill) Cuckoo Bee	RDB2 (UK) - NB, LBAP (GWY)
<i>Brachypodium pinnatum</i>	Heath False-brome	LBAP (CON), LI(VC50, LR), WVP
<i>Brassica oleracea</i>	Wild Cabbage	RD2 (UK), LBAP (ANG, CON, VOG), LI(SEWBReC), LI(VC49, LS), LI(VC50, LR), LI(VC52, LS)
<i>Briza minor</i>	Lesser Quaking-grass	RD2 (UK)
<i>Calidris alba</i>	Sanderling	Bonn, Bern, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
<i>Calidris alpina</i>	Dunlin	Bonn, Bern, WBR(RSPB), LBAP (CON, GWY, POW), LI(VC43), UKBAm(RSPB)
<i>Calidris canutus</i>	Knot	BDir22, Bonn, LBAP (BBNP, CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Carex maritima</i>	Curved Sedge	UKBAP, RD1 (UK), RD2 (UK)
<i>Centaurium littorale</i>	Seaside Centaury	RD2 (UK), LBAP (ANG, BRG, CON, FLI, GWY), LI(VC48, LR), LI(VC49, LS), LI(VC51, LR)
<i>Clausilia (Andraea) dubia</i>	Craven Door Snail	RDB2 (UK) - S
<i>Colobaea punctata</i>	Colobaea punctata	RD2 (UK)
<i>Cryptocephalus aureolus</i>	<i>Cryptocephalus aureolus</i>	RD2 (UK)
<i>Cygnus olor</i>	Mute Swan	BDir22, Bonn, LBAP (CON, POW), WBAm(RSPB), UKBAm(RSPB)
<i>Delichon urbicum</i>	House Martin	Bern, LBAP (BRG, CON, POW, RCT, VOG), WBAm(RSPB), UKBAm(RSPB)
<i>Dicranomyia ornata</i>	Dicranomyia ornata	RD2 (UK)
<i>Ectemnius (Clytochrysus) ruficornis</i>	<i>Ectemnius (Clytochrysus) ruficornis</i>	RD2 (UK)
<i>Ectemnius (Clytochrysus) sexcinctus</i>	<i>Ectemnius (Clytochrysus) sexcinctus</i>	RD2 (UK)
<i>Galium parisiense</i>	Wall Bedstraw	RD1 (UK), RD2 (UK)

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<i>Gallinago gallinago</i>	Snipe	BDir21, Bonn, LBAP (ANG, CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBAm(RSPB)
<i>Gyrinus natator</i>	<i>Gyrinus natator</i>	RD1 (UK)
<i>Haematopus ostralegus</i>	Oystercatcher	BDir22, Bonn, LBAP (CON, GWY), WBAm(RSPB), LI(VC43), UKBAm(RSPB)
<i>Helleborus foetidus</i>	Stinking Hellebore	RD2 (UK), LBAP (CON, DEN), LI(BIS), LI(SEWBReC), LI(VC51, LS), LI(VC52, LS)
<i>Hippophae rhamnoides</i>	Sea-buckthorn	RD2 (UK), LBAP (CON), INNS
<i>Hirundo rustica</i>	Swallow	Bern, LBAP (ANG, CON, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)
<i>Larus canus</i>	Common Gull	BDir22, Bonn, WBR(RSPB), UKBAm(RSPB)
<i>Larus fuscus</i>	Lesser Black-backed Gull	BDir22, Bonn, Bern, LBAP (CON, GWY, PEM, POW, SNP), WBAm(RSPB), UKBAm(RSPB)
<i>Larus marinus</i>	Great Black-backed Gull	BDir22, Bonn, Bern, WBR(RSPB), UKBAm(RSPB)
<i>Lasioglossum (Lasioglossum) xanthopus</i>	Orange-footed Furrow Bee	RD2 (UK)
<i>Lepidium campestre</i>	Field Pepperwort	RD1 (UK), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), WVP
<i>Lithospermum purpureocaeruleum</i>	Purple Gromwell	RD2 (UK), LBAP (DEN, SWN, VOG), LI(VC50, LR), WVP
<i>Longitarsus curtus</i>	Longitarsus curtus	RD2 (UK)
<i>Lophosia fasciata</i>	Lophosia fasciata	RD2 (UK)
<i>Lymnocryptes minimus</i>	Jack Snipe	BDir21, Bonn, LBAP (CON, POW), WBAm(RSPB)
<i>Mecyna asinalis</i>	Coastal Pearl	RD2 (UK)
<i>Medicago polymorpha</i>	Toothed Medick	RD2 (UK), LBAP (VOG), LI(SEWBReC), WVP
<i>Meligethes fulvipes</i>	Meligethes fulvipes	RD2 (UK)
<i>Meligethes rotundicollis</i>	Meligethes rotundicollis	RD2 (UK)
<i>Mergus serrator</i>	Red-breasted Merganser	BDir22, Bonn, LBAP (CON, POW), WBAm(RSPB)
<i>Morus bassanus</i>	Gannet	Bonn, LBAP (CON, GWY, PEM), WBAm(RSPB), UKBAm(RSPB)
<i>Nephopterix angustella</i>	Spindle Knot-horn	RD2 (UK)
<i>Nomada fucata</i>	Painted Nomad Bee	RD2 (UK)
<i>Nysson dimidiatus</i>	Small Spurred Digger Wasp	RD2 (UK)

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Oedemera (Oncomera) femoralis	Oedemera (Oncomera) femoralis	RD2 (UK)
Oenanthe oenanthe	Wheatear	Bern, LBAP (BRG, CON, POW), WBAm(RSPB)
Ophonus (Ophonus) ardosiacus	Ophonus (Ophonus) ardosiacus	RD2 (UK)
Ophonus (Ophonus) azureus	Ophonus (Ophonus) azureus	RD2 (UK)
Orthochaetes setiger	Orthochaetes setiger	RD2 (UK)
Periparus ater	Coal Tit	Bern, LBAP (CON, POW), WBAm(RSPB)
Phalacrocorax carbo	Cormorant	Bonn, LBAP (CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)
Phoenicurus phoenicurus	Redstart	Bern, LBAP (CON, GWY, POW, SNP), WBAm(RSPB), UKBAm(RSPB)
Phylloscopus trochilus	Willow Warbler	WBR(RSPB), LBAP (CON), UKBAm(RSPB)
Phyllotreta consobrina	Turnip Fly	RDB2 (UK) - S
Phyllotreta punctulata	Phyllotreta punctulata	RD2 (UK)
Picus viridis	Green Woodpecker	Bern, LBAP (CLY, CON, DEN, FLI, GWY, PEM, POW, SNP), WBAm(RSPB), UKBAm(RSPB)
Platycleis albopunctata	Grey Bush-cricket	RD2 (UK), LBAP (GWY), LI(SEWBReC)
Poa bulbosa	Bulbous Meadow-grass	RD2 (UK), LBAP (VOG), WVP
Ponera coarctata	Indolent Ant	RD2 (UK)
Puffinus puffinus	Manx Shearwater	Bern, LBAP (CON, GWY, PEM), WBAm(RSPB), UKBAm(RSPB)
Regulus regulus	Goldcrest	Bern, LBAP (CON, POW), WBAm(RSPB), UKBAm(RSPB)
Rhinanthus minor subsp. minor	Yellow-Rattle	LBAP (ANG), WVP
Riparia riparia	Sand Martin	Bern, LBAP (CON, DEN, FLI, GWY, POW, VOG), WBAm(RSPB), UKBAm(RSPB)
Ruppia maritima	Beaked Tasselweed	LBAP (VOG), LI(VC48, LS), LI(VC49, LR), LI(VC51, LR), LI(VC52, LS)
Ruscus aculeatus	Butcher's-broom	HDir, LI(SEWBReC), WVP
Scabiosa columbaria	Small Scabious	LI(SEWBReC), LI(VC49, LS), WVP
Scolopax rusticola	Woodcock	BDir21, Bonn, LBAP (CON, DEN, FLI, GWY, POW), WBAm(RSPB), LI(VC43), UKBR(RSPB), UKBAm(RSPB)
Sinapis arvensis	Charlock	WVP

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<i>Somateria mollissima</i>	Eider	BDir22, Bonn, LBAP (CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Sorbus domestica</i>	Service-tree	RD1 (UK), RD2 (UK), LBAP (VOG), WVP
<i>Sphecodes crassus</i>	Swollen-thighed Blood Bee	RD2 (UK)
<i>Staurothele rufa</i>	Staurothele rufa	RD1 (Wales), RD1 (UK), LBAP (VOG)
<i>Stercorarius parasiticus</i>	Arctic Skua	UKBAP, LBAP (CON), WBAm(RSPB), UKBR(RSPB)
<i>Sterna hirundo</i>	Common Tern	BDir1, Bonn, Bern, WBR(RSPB), LBAP (ANG, CON, GWY), UKBAm(RSPB)
<i>Sterna paradisaea</i>	Arctic Tern	BDir1, Bonn, Bern, WBR(RSPB), LBAP (ANG, CON, GWY), UKBAm(RSPB)
<i>Sterna sandvicensis</i>	Sandwich Tern	BDir1, Bonn, Bern, LBAP (ANG, CON, GWY), WBAm(RSPB), UKBAm(RSPB)
<i>Stratiomys potamida</i>	Banded General	RD2 (UK)
<i>Sylvia borin</i>	Garden Warbler	LBAP (BRG, CON, POW), WBAm(RSPB)
<i>Sylvia communis</i>	Whitethroat	LBAP (CON, POW), WBAm(RSPB)
<i>Tadorna tadorna</i>	Shelduck	Bonn, Bern, LBAP (CON, GWY, VOG), WBAm(RSPB), UKBAm(RSPB)
<i>Tiphia minuta</i>	Small Tiphia	RD2 (UK)
<i>Tournotaris bimaculatus</i>	Tournotaris bimaculatus	RD2 (UK)
<i>Trachyphloeus alternans</i>	Trachyphloeus alternans	RD2 (UK)
<i>Tringa erythropus</i>	Spotted Redshank	BDir22, Bonn, LBAP (CON), WBAm(RSPB), UKBAm(RSPB)
<i>Tringa totanus</i>	Redshank	BDir22, Bonn, LBAP (ANG, CON, GWY, POW), WBAm(RSPB), UKBAm(RSPB)
<i>Uria aalge</i>	Guillemot	Bonn, LBAP (CON, PEM), WBAm(RSPB), UKBAm(RSPB)
<i>Vanoyia tenuicornis</i>	Long-horned Soldier	RD2 (UK)
<i>Vicia bithynica</i>	Bithynian Vetch	RD1 (UK), RD2 (UK), LBAP (DEN, VOG), LI(VC50, LR), LI(VC51, LR), WVP

Table 8 Locally Important Species identified during the desk study

Scientific Name	Common Name	Status
<i>Anacamptis pyramidalis</i>	Pyramidal Orchid	LBAP (BRG, CLY, TRA), LI(SEWBReC), LI(VC47), LI(VC48, LS)
<i>Apium graveolens</i>	Wild Celery	LBAP (BRG), LI(SEWBReC), LI(VC48, LS), LI(VC49, LR), LI(VC50), LI(VC52, LS)

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<i>Argynnis paphia</i>	Silver-washed Fritillary	LBAP (BRG, CDF, CON, FLI, MON, NEW, POW, SWN), LI(SEWBReC), LI(VC43)
<i>Atriplex portulacoides</i>	Sea-purslane	LBAP (GWY), LI(SEWBReC), LI(VC48, LR), LI(VC49, LS), LI(VC50, LR)
<i>Ballota nigra</i>	Black Horehound	LI(SEWBReC)
<i>Blackstonia perfoliata</i>	Yellow-wort	LBAP (GWY), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LS), LI(VC52, LS)
<i>Brachytron pratense</i>	Hairy Dragonfly	RD2 (UK), LBAP (BRG, CLY, GWY, PEM, SNP), LI(BIS), LI(SEWBReC)
<i>Bromopsis erecta</i>	Upright Brome	LBAP (BGW, CON), LI (VC43), LI(SEWBReC), LI(VC47), LI(VC49, LR), LI(VC50, LS), LI(VC51, LS), LI(VC52, LR)
<i>Bryonia dioica</i>	White Bryony	LI(SEWBReC), LI(VC49, LR)
<i>Caloplaca granulosa</i>	Caloplaca granulosa	RDB1 (Wales) - NT, RDB1 (UK) - NT, RDB2 (UK) - R, LBAP (VOG)
<i>Calopteryx splendens</i>	Banded Demoiselle	LBAP (CLY, SNP), LI(BIS), LI(SEWBReC)
<i>Calopteryx virgo</i>	Beautiful Demoiselle	LBAP (CLY, SNP), LI(BIS), LI(SEWBReC)
<i>Carex riparia</i>	Greater Pond-sedge	LBAP (BRG, DEN, GWY), LI (VC43), LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC49, LS), LI(VC50, LS), LI(VC52)
<i>Carex strigosa</i>	Thin-spiked Wood-sedge	LBAP (BRG), LI (VC43), LI(BIS), LI(SEWBReC), LI(VC50, LR), LI(VC51, LR)
<i>Centaurea scabiosa</i>	Greater Knapweed	LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LR), LI(VC50, LS)
<i>Cirsium acaule</i>	Dwarf Thistle	LBAP (DEN, FLI), LI(SEWBReC), LI(VC47), LI(VC50, LR), LI(VC51, LR)
<i>Cirsium eriophorum</i>	Woolly Thistle	LBAP (BRG), LI (VC43), LI(SEWBReC)
<i>Conocephalus dorsalis</i>	Short-winged Cone-head	LBAP (BRG, TRF), LI(SEWBReC)
<i>Conocephalus fuscus</i>	Long-winged Cone-head	LI(SEWBReC)
<i>Crataegus laevigata</i>	Midland Hawthorn	LBAP (BGW), LI(SEWBReC), LI(VC52, LR), WVP
<i>Daphne laureola</i>	Spurge-laurel	LBAP (GWY), LI(SEWBReC), LI(VC47), LI(VC49, LS), LI(VC52, LS)
<i>Diplotaxis tenuifolia</i>	Perennial Wall-rocket	LBAP (CON, GWY), LI(SEWBReC), LI(VC47), LI(VC49, LR), LI(VC50), LI(VC51, LS)
<i>Echium vulgare</i>	Viper's-bugloss	LBAP (BGW, GWY), LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC49, LS), LI(VC50, LS), LI(VC51, LS), LI(VC52, LS)
<i>Epipactis palustris</i>	Marsh Helleborine	CITES, RD1 (UK), LBAP (FLI, GWY, TRA, VOG), LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC49, LR), LI(VC51, LS)
<i>Euphorbia exigua</i>	Dwarf Spurge	RD1 (UK), LI(SEWBReC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), LI(VC52, LR), WVP
<i>Euphrasia tetraquetra</i>	Eyebright	RD1 (UK), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LR), LI(VC51, LR)

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<i>Filipendula vulgaris</i>	Dropwort	LBAP (ANG), LI(SEWBReC), LI(VC47), LI(VC49, LS), LI(VC50, LR), LI(VC51, LS), LI(VC52, LR)
<i>Fulmarus glacialis</i>	Fulmar	Bern, LBAP (VOG), UKBAm(RSPB)
<i>Gastridium ventricosum</i>	Nit-grass	RD2 (UK), LBAP (BRG, SWN, VOG), LI(SEWBReC), WVP
<i>Helianthemum nummularium</i>	Common Rock-rose	RD1 (UK), LBAP (GWY), LI (VC43), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LS)
<i>Hordeum secalinum</i>	Meadow Barley	LBAP (GWY), LI (VC43), LI(SEWBReC), LI(VC49, LS)
<i>Hypericum hirsutum</i>	Hairy St John's-wort	LI(BIS), LI(SEWBReC), LI(VC48, LR), LI(VC49, LR)
<i>Iris foetidissima</i>	Stinking Iris	LI(SEWBReC), LI(VC51, LS)
<i>Ischnura pumilio</i>	Scarce Blue-tailed Damselfly	RD1 (UK), RD2 (UK), LBAP (BGW, BRG, CLY, GWY, PEM, SNP, TRF), LI(BIS), LI(SEWBReC)
<i>Juncus subnodulosus</i>	Blunt-flowered Rush	LBAP (BGW, BRG, GWY), LI (VC43), LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC49, LS)
<i>Kickxia elatine</i>	Sharp-leaved Fluellen	LBAP (CON, GWY), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR), LI(VC52, LS)
<i>Koeleria macrantha</i>	Crested Hair-grass	LBAP (BRG), LI(SEWBReC), LI(VC48, LR)
<i>Lathyrus nissolia</i>	Grass Vetchling	LI (VC43), LI(SEWBReC), LI(VC49, LR), LI(VC50, LS)
<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea	LI (VC43), LI(SEWBReC), LI(VC49, LS)
<i>Leptophyes punctatissima</i>	Speckled Bush-cricket	LI(SEWBReC)
<i>Limonium binervosum</i>	Rock Sea-lavender	LBAP (ANG, BRG, CDF, CON, SWN), LI(SEWBReC), LI(VC49, LS), LI(VC52, LS)
<i>Limonium binervosum</i> agg.	Rock Sea-Lavender agg.	LBAP (CER, GWY, PEM), LI(SEWBReC), LI(VC49, LS), LI(VC52, LS)
<i>Linum bienne</i>	Pale Flax	LBAP (BRG), LI(SEWBReC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)
<i>Malva arborea</i>	Tree-mallow	LBAP (CON, DEN), LI(SEWBReC), LI(VC50)
<i>Marrubium vulgare</i>	White Horehound	RD2 (UK), LBAP (BGW, BRG, CON, DEN), LI(SEWBReC), LI(VC48, LR), LI(VC49, LS), LI(VC50, LR), WVP
<i>Melanargia galathea</i>	Marbled White	LBAP (SWN, VOG), LI(BIS)
<i>Myosotis ramosissima</i>	Early Forget-me-not	LI(SEWBReC), LI(VC47), LI(VC48, LS)
<i>Myriophyllum spicatum</i>	Spiked Water-milfoil	LBAP (BGW, BRG), LI(SEWBReC), LI(VC48, LR), LI(VC50, LR)
<i>Narcissus pseudonarcissus</i> subsp. <i>pseudonarcissus</i>	Daffodil	LBAP (TRF), LI (VC43), LI(BIS), LI(SEWBReC)
<i>Neottia nidus-avis</i>	Bird's-nest Orchid	CITES, RD1 (UK), LBAP (DEN, TRA, VOG), LI (VC43), LI(SEWBReC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR), LI(VC52, LR)

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<i>Ophrys apifera</i>	Bee Orchid	CITES, LBAP (CLY, GWY, TRA, TRF), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LS)
<i>Orobanche hederae</i>	Ivy Broomrape	RD2 (UK), LBAP (ANG, CON), LI(SEWBReC), LI(VC48, LR), LI(VC50, LS), LI(VC52, LS)
<i>Orobanche minor</i>	Common Broomrape	LI(SEWBReC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)
<i>Orthetrum cancellatum</i>	Black-tailed Skimmer	LBAP (CLY, SNP), LI(BIS), LI(SEWBReC)
<i>Orthetrum coerulescens</i>	Keeled Skimmer	LBAP (BGW, BRG, CLY, SNP), LI(BIS), LI(SEWBReC)
<i>Papaver dubium</i> subsp. <i>lecoqii</i>	Yellow-juiced Poppy	LI(SEWBReC), LI(VC52, LR)
<i>Paris quadrifolia</i>	Herb-paris	LBAP (CDF, CON, FLI), LI(VC43), LI(BIS), LI(SEWBReC), LI(VC51, LS), LI(VC52, LR)
<i>Petroselinum segetum</i>	Corn Parsley	LBAP (NEW), LI(SEWBReC)
<i>Picris hieracioides</i>	Hawkweed Oxtongue	LI(VC43), LI(SEWBReC), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR)
<i>Plantago media</i>	Hoary Plantain	RD1 (UK), LI(VC43), LI(SEWBReC), LI(VC48, LR), LI(VC49, LR), LI(VC50, LS), LI(VC52, LR)
<i>Platanthera chlorantha</i>	Greater Butterfly-orchid	RD1 (UK), LBAP (GWY, MON, TRA), LI(VC43), LI(SEWBReC), LI(VC49, LS), LI(VC50, LS), LI(VC51, LS), LI(VC52, LR)
<i>Populus nigra</i>	Black-poplar	LBAP (CRM, DEN, FLI, SNP, TRA, WRE), LI(SEWBReC), LI(VC52)
<i>Ranunculus auricomus</i>	Goldilocks Buttercup	LI(BIS), LI(SEWBReC), LI(VC48, LR), LI(VC49, LS), LI(VC52, LS)
<i>Rhamnus cathartica</i>	Buckthorn	LI(BIS), LI(SEWBReC), LI(VC50, LS), LI(VC51, LS)
<i>Rosa spinosissima</i>	Burnet Rose	LI(VC43), LI(SEWBReC), LI(VC47)
<i>Rosa stylosa</i>	Short-styled Field-rose	LI(SEWBReC), LI(VC51, LR)
<i>Rubia peregrina</i>	Wild Madder	LBAP (CON), LI(SEWBReC), LI(VC48, LR), LI(VC50, LS), LI(VC51, LR), LI(VC52, LS)
<i>Salvia verbenaca</i>	Wild Clary	RD1 (UK), LBAP (CON, DEN), LI(SEWBReC), LI(VC49, LR), LI(VC51, LR), LI(VC52, LR)
<i>Samolus valerandi</i>	Brookweed	LBAP (CON), LI(SEWBReC), LI(VC47), LI(VC51, LS)
<i>Schoenoplectus lacustris</i>	Common Club-rush	LBAP (GWY), LI(SEWBReC), LI(VC49, LS), LI(VC50, LS)
<i>Schoenus nigricans</i>	Black Bog-rush	LBAP (VOG), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC49, LS), LI(VC51, LR)
<i>Silaum silaus</i>	Pepper-saxifrage	LI(BIS), LI(SEWBReC), LI(VC50, LS)
<i>Silene uniflora</i>	Sea Campion	LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC50, LR)
<i>Southbya tophacea</i>	Green Blackwort	RD1 (UK), RD2 (UK), LBAP (FLI, VOG), LI(VC41, LR), LI(VC45, LR), LI(VC51, LR), LI(VC52, LR), LI(WWBIC)
<i>Spiranthes spiralis</i>	Autumn Lady's-tresses	RD1 (UK), LBAP (CON, GWY, TRA), LI(SEWBReC), LI(VC48, LS), LI(VC49, LS), LI(VC50, LR), LI(VC51, LS), LI(VC52, LS)

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<i>Stachys arvensis</i>	Field Woundwort	RD1 (UK), LBAP (GWY, VOG), LI(VC48, LS), WWP
<i>Staurothele guestphalica</i>	<i>Staurothele guestphalica</i>	RD1 (Wales), RD1 (UK), LBAP (VOG)
<i>Tetrix subulata</i>	Slender Ground-hopper	LBAP (BRG), LI(SEWBReC)
<i>Torilis nodosa</i>	Knotted Hedge-parsley	LI(SEWBReC), LI(VC47), LI(VC49, LS), LI(VC50, LR), LI(VC51, LR), LI(VC52, LS)
<i>Trifolium scabrum</i>	Rough Clover	LBAP (CON, GWY), LI (VC43), LI(SEWBReC), LI(VC47), LI(VC48, LS), LI(VC49, LR), LI(VC50, LR), LI(VC51, LR), LI(VC52, LR)
<i>Trifolium striatum</i>	Knotted Clover	LI (VC43), LI(SEWBReC), LI(VC47), LI(VC48, LR), LI(VC50, LS)
<i>Veronica agrestis</i>	Green Field-speedwell	LI(SEWBReC), LI(VC48, LS)
<i>Veronica polita</i>	Grey Field-speedwell	LI(SEWBReC)
<i>Viburnum lantana</i>	Wayfaring-tree	LI(SEWBReC), LI(VC51, LS)
<i>Vicia sylvatica</i>	Wood Vetch	LBAP (GWY, VOG), LI(VC49, LR), LI(VC51, LR)
<i>Viola hirta</i>	Hairy Violet	LI (VC43), LI(SEWBReC), LI(VC47), LI(VC49, LS), LI(VC50, LS), LI(VC52, LS)

A.2 Phase 1 Habitat Survey Target Notes

Target Note	Grid Reference	Description	Photos
1	ST 07443 67287	Ash and Hawthorn trees. Moderate bat roost potential.	
2	ST 07761 67362	Woodland block. Moderate bat roost potential. Potential to support dormouse, badger and otter.	
3	ST 07544 67160	Small stand of dead and dying Ash around manure pile. Moderate bat roost potential.	
4	ST 07956 67219	Woodland block. Moderate bat roost potential. Potential to support dormouse, badger and otter.	

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5	ST 08271 67041	Woodland block. Moderate bat roost potential. Potential to support dormouse, badger and otter. Stone wall also running along western edge.		
6	ST 08489 66973	Viaduct bordering eastern boundary. Moderate bat roost potential.		
7	ST 08117 66719	Japanese Knotweed stands to the south of buildings		
8	ST 08607 67116	Hedgerow with trees backing onto woodland strip. Woodland strip has moderate bat roost potential.		
9	ST 08595 67279	Ivy covered Ash with moderate bat potential.		
10	ST 08227 67224	Strip of scattered trees linking woodland, dominated by mature oak with moderate bat roost potential.		

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11	ST 08189 67235	Whitelands brook bordered by ~3 m either side with scrub and marginal vegetation. Habitat provides marginally suitable habitat to support water vole and otter.		
12	ST 08331 67557	Badger print next to stream		
13	ST 08312 67330	Woodland strip bordering Whitelands brook. Thick scrub understory in places. Moderate bat roost potential, dormouse, otter and badger potential.		
14	ST 08230 67303	Ivy covered Ash with moderate bat potential.		

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15	ST 08160 67356	Ash with moderate bat roost potential	
16	ST 08126 67402	Oak with moderate bat roost potential	
17	ST 08050 67176	Mature Oaks with moderate bat roost potential	
18	ST 08007 67354	Oak and Ash tree with moderate bat roost potential	 
19	ST 08295 67528	Mature ivy covered Ash with moderate bat roost potential	
20	ST 08309 67817	Hedge with trees meets block Ash, Hazel, Hawthorn.moderate bat roost potential.	
21	ST 08161 67975	Hedge with trees, small stand of Japanese knotweed	

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22	ST 07901 67772	Farm buildings with moderate bat roost potential.	
23	ST 07841 67785	Area of standing water/pond within farm, concrete lined with potential to support amphibians such as great crested newt.	

