

AWE Aldermaston

Hydrus Project

Ecology Desk Study and Phase 1 Habitat Survey

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Summary

- S.1 RPS was commissioned to carry out an ecology desk study and Phase 1 Habitat Survey of the proposed Hydrus project redevelopment at AWE Aldermaston, Berkshire.
- S.2 The desk study aimed to identify statutory and non-statutory sites and protected or otherwise notable species present or potentially present on or near the site. A 2km buffer was established around the site in which to search for baseline ecological data for protected species and sites.
- S.3 Local Biological Record Centres, organisations and individuals were contacted to obtain existing biological records and details about designated wildlife sites within the specified search area. For designated sites and most species, this search area extended to 2km beyond the site boundary. Bat and otter records were requested to 5km beyond the site boundary.
- S.4 The ecological desk study for the Hydrus project at AWE Aldermaston has identified 6 statutory designated sites within 2km of the site boundary, including 5 Sites of Special Scientific Interest (SSSI), one of which is also partly designated as a Local Nature Reserve (LNR), and one additional LNR.
- S.5 16 non-statutory designated sites were identified within 2km of the site boundary. These include 2 Sites of Importance for Nature Conservation (SINC), 2 Wildlife Trust Reserves, one of which is also designated as an SSSI, and 12 Local Wildlife Sites, one of which is also designated as a Local Nature Reserve. 4 of the Local Wildlife Sites are situated within 1km of the site boundary. There are 6 sites of Ancient Woodland within 2km of the site boundary, five of which are contained within Local Wildlife Sites, and one which is contained within an SSSI.
- S.6 The desk study consultation also confirmed the presence of 66 protected or notable bird species, 9 protected or notable mammal species, 8 protected or notable herpetofauna species, 48 protected or notable invertebrate species and 3 protected or notable plant species.
- S.7 The phase 1 habitat survey identified the habitats present within the redevelopment red line boundary. The land proposed for the redevelopment at Hydrus comprises largely of neutral and acid grassland with some scattered semi-mature trees. A small copse, running wet ditch and a veteran oak tree are located in the southeast corner of the site. Common breeding birds, grass snakes, slow worms, bats and great crested newts have been recorded across the redevelopment site by Atkins in 2004.

1 Introduction

- 1.1 RPS was commissioned to carry out an ecology desk study and Phase 1 Habitat Survey of the proposed Hydrus project redevelopment at AWE Aldermaston, Berkshire.
- 1.2 The Hydrus project development boundary is located within the AWE Aldermaston site, situated in Berkshire. The central point of the site is approximately located at NGR SU 591 632 and shown on Figure 1.
- 1.3 The AWE Hydrus redevelopment will provide a replacement hydrodynamics testing facility research and development building, a support building, an associated electrical sub-station, and associated landscaped areas and construction related facilities. The redevelopment will involve the removal of derelict open ground, a wet ditch and grassland, plus tree felling.
- 1.4 The Hydrus redevelopment site is comprised largely of neutral and acid grassland with some scattered semi-mature trees. A small copse, wet ditch and a veteran oak tree are located in the southeast corner of the site.
- 1.5 The objectives of the Desk Study and Phase 1 Habitat Survey were to:
- Identify statutory and non-statutory sites for nature conservation within 2 km of the survey area;
 - Identify previous records of all protected or otherwise notable species within 2 km of the study area;
 - Identify and map the habitats present;
 - Assess the potential for legally protected fauna; and
 - Assess the potential impacts the redevelopment may have on the habitats present and make recommendations for reducing the impact.
- 1.6 This report includes a description of the survey methods employed, results obtained, conclusions about the nature conservation value of the site and recommendations to prevent potential impacts.

2 Methodology

Desk Study

- 2.1 The desk study was undertaken by obtaining ecological records and other information of relevance to the project, from various data sources. The area from which records were acquired extended to 2 km and information was requested concerning statutory or non-statutory wildlife sites, habitats and protected or otherwise notable species.
- 2.2 The survey and desk study area is within Berkshire. Information regarding statutory and non-statutory designated sites and protected species records were requested from the following organisations based on a map of the site and search area:
- Natural England (Berkshire and Buckinghamshire)
 - Environment Agency (Thames Regional Office)
 - West Berkshire Council
 - Thames Valley Environmental Record Centre (TVERC)
 - Hampshire Biodiversity Information Centre (HBIC)
 - Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT)
 - Berkshire and South Buckinghamshire Bat Group
 - Berkshire Bird Recorder
 - Reading RSPB Group
 - Berkshire Ornithological Club
 - Berkshire Amphibian and Reptile Group
 - Binfield Badger Group
 - Berkshire County Butterfly Recorder
 - Berkshire County Moth Recorder
- 2.3 Consultees were sent a map showing the site boundary and 2km and 5km (otters and bats) search zones (Figure 1). In addition to the above, the Natural England and 'Magic' government websites were consulted for information on any Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs). The JNCC website was also consulted for details of any Special Protection Areas (SPAs) and Ramsar sites.

Phase 1 Habitat Survey

- 2.4 A Phase 1 Habitat Survey of land within the Hydrus application boundary was carried out on 13th March 2009 by an experienced ecologist; the grassland was revisited on 21st July 2009 to confirm the habitat types during the correct time of year. The survey took account of the standard methodology as set out by the Joint Nature Conservation Committee *Handbook for Phase 1 Habitat Survey. A technique for environmental audit* (JNCC, 1993).
- 2.5 The area surveyed encompassed the entire project site as shown on Figure 1.
- 2.6 A walkover of the site was conducted and habitats were mapped onto Ordnance Survey base maps using the JNCC Phase 1 habitat categories. Typical plant species were recorded for each category of habitat, and the species names used followed Stace (1997). Target notes were made for features of ecological interest.
- 2.7 The potential presence of protected and rare species was considered. Due to the types of habitats present particular attention was paid to identify the presence or potential for bats, reptiles, amphibians, badgers, breeding birds and invertebrates. The presence of invasive species was also noted.

Bats

- 2.8 Semi mature to mature trees on the development land could provide potential roost sites for bats. Evidence of bat activity was searched for in these suitable locations during the walkover survey. No buildings or other standing structures exist on the Hydrus project site.
- 2.9 Evidence of bat activity is usually detected by the following signs:
- bat droppings (these will accumulate under an established roost);
 - insect wings (from feeding);
 - oil (from fur) and urine stains;
 - scratch marks; and
 - bat corpses.

Badgers

- 2.10 Evidence of badger (*Meles meles*) activity on a site is usually detected by one of the following signs:
- presence of holes with evidence of badgers such as footprints, discarded hair, etc.;
 - presence of dung pits or latrines;
 - presence of well used runs with subsidiary evidence of badger activity; and

- presence of other indications of badger activity, such as signs of foraging and footprints.

Birds

- 2.11 Bird species seen or heard during the course of the survey were recorded. Habitat that was deemed suitable to support breeding birds was recorded.

Herpetofauna

- 2.12 Natural and artificial objects such as pieces of wood, large stones, pieces of metal and rubble were lifted where they were found during the survey in order to search for reptiles and amphibians that shelter under such objects.
- 2.13 All reptiles and amphibians are ectothermic (cold-blooded) and although activity is dependent upon weather and temperature they are usually fully active from spring to autumn i.e. between April and September. The timing of the survey was not ideal for recording the presence of herpetofauna. However, habitat suitability for reptiles and amphibians was assessed during the survey

Invertebrates

- 2.14 During the walkover an invertebrate habitat assessment was conducted to establish if the proposed development site had the potential to support species such as local and scarce butterflies.

Invasive weeds

- 2.15 Invasive weeds were searched for during the survey. British legislation applies to a number of species that are listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended by the *Countryside and Rights of Way Act 2000*). This makes it an offence to plant or otherwise cause listed species to grow in the wild.

3 Results

Desk Study

- 3.1 The responses from the consultees are summarised in Table 1 below and copies of the responses received are included in Appendix 1. The data that accompanied these responses are discussed in this section.

Table 1 – Responses received from consultees

Consultee	Response
Environment Agency	Informed that otters are consolidating their presence in the Kennet Catchment
Natural England	Referred to TVERC
Thames Valley Environmental Record Centre (TVERC)	Records of protected species and designated sites within search area
Hampshire Biodiversity Information Centre (HBIC)	Records of protected species and designated sites within search area
West Berkshire Council	No response
Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT)	No response
Binfield Badger Group	Provided records of badgers within search area
Berkshire and South Buckinghamshire Bat Group	No response
Reading RSPB Group	No response
Berkshire Ornithological Club (BOC)	Provided records of birds within search area
Berkshire Bird Recorder	No response
Berkshire Amphibian and Reptile Group	No response
Berkshire County Butterfly Recorder	No response
Berkshire County Moth Recorder	Referred to TVERC

Designated Sites

Statutory Designated Sites

- 3.2 There are 6 statutory sites within 2km of the site boundary, five of which are designated as Sites of Special Scientific Interest (SSSI). Part of the Pamber Forest and Silchester Common SSSI is managed as a Local Nature Reserve (LNR). Part of Decoy Pit, Pools and Wood SSSI is managed as a Wildlife Trust Reserve and also contains an area of Ancient Woodland. Aldermaston Gravel Pits SSSI is also designated as a Wildlife Trust Reserve. Padworth

Common is designated as a Local Nature Reserve and also as a Local Wildlife Site (LWS). The locations and descriptions of these sites are summarised below in Table 2 and site locations are shown on Figure 2.

Table 2 – Statutory designated sites within a 2km search area

Site Name	Designation	Description	Distance from site boundary
Decoy Pit, Pools and Wood	SSSI/ Wildlife Trust Reserve/part Ancient Woodland	<p>The northern part of the site is a partially in-filled gravel pit which has developed into a mosaic of shallow pools, a pond, heathland and scrub. The area supports locally scarce species including marsh speedwell (<i>Veronica scutellata</i>). Adjacent land is dominated by secondary birch woodland with heathland and a small valley bog where purple moor grass is abundant.</p> <p>Ancient semi-natural woodland occurs in Brickkiln Gully, Roundwood Gully and Roundwood Copse. The low lying gullies are permanently waterlogged and support alder woodland with a diverse ground flora. Other more common woodland types are present within the SSSI and contain species indicative of semi-natural ancient woodland including hard shield-fern (<i>Polystichum aculeatum</i>) and Solomon's-seal (<i>Polygonatum multiflorum</i>).</p> <p>Twenty three species of dragonfly and damselfly breed within the site - the greatest known number of breeding dragonfly and damselfly species in Berkshire. This includes 3 nationally scarce species: the downy emerald and brilliant emerald, and the site is also the only known Berkshire locality for the scarce blue-tailed damselfly. The site also supports a number of nationally uncommon species such as snipe, jack snipe, siskin, redpoll, woodlark, silver-studded blue butterfly and Devon carpet moth which is restricted in Berkshire to this single colony.</p> <p>The site covers 20.27 hectares.</p>	1280m south-east
Padworth Common	LNR/LWS	<p>The site is a mosaic of heathland, acid grassland and woodland plantation. The area north of the road is mostly pine plantation and the area to the south is more open and contains the main heathland and grassland areas of the site. Nightjar, woodlark and woodcock have been recorded here.</p> <p>The site covers 28.72 hectares.</p>	1480m east

Site Name	Designation	Description	Distance from site boundary
West's Meadow, Aldermaston	SSSI	<p>The site comprises two small fields of unimproved pasture bounded by ditch-and-bank hedge boundaries composed of species including mature oak, hawthorn, rowan and hazel. A small stream which borders the site contains water starwort (<i>Callitriche</i> spp.) and celery-leaved buttercup (<i>Ranunculus sceleratus</i>). The meadows consist of neutral to acidic herb-rich grassland of more than 80 species of grassland plants, many of which are largely restricted to 'ancient' meadows. Species including heath grass (<i>Danthonia decumbens</i>), eyebright (<i>Euphrasia nemorosa</i>) and bitter vetch (<i>Lathyrus montanus</i>) grow in the drier, more acidic areas whilst in the wetter areas species such as heath spotted orchid (<i>Dactylorhiza maculata</i>), devil's-bit scabious (<i>Succisa pratensis</i>), meadow-thistle (<i>Cirsium dissectum</i>) and the uncommon bristle club-rush (<i>Isolepis setacea</i>) can be found. An uncommon moss (<i>Dicranum bonjeanii</i>) has also been recorded.</p> <p>The site covers 1.2 hectares.</p>	1580m south
Wasing Wood Ponds	SSSI	<p>The site comprises a group of ponds which are especially important for dragonflies of which 21 species (more than half the total British dragonfly fauna) have been recorded breeding in or adjacent to the site. This includes some uncommon species such as the downy emerald (<i>Cordulia aenea</i>), brilliant emerald (<i>Somatochlora metallica</i>) and ruddy darter (<i>Sympetrum sanguineum</i>). A large area of woodland nearby is an important feeding area for dragonflies.</p> <p>The site covers 12.52 hectares.</p>	1660m south-west
Pamber Forest and Silchester Common SSSI	SSSI/LNR	<p>Pamber Forest is an extensive oak woodland dominated by sessile oak with a hazel understorey. The ground flora is dominated by bracken, bilberry (<i>Vaccinium myrtillus</i>) and heather (<i>Calluna vulgaris</i>). Richer soils to the south of the forest support many plants associated with ancient woodland including orpine (<i>Sedum telephium</i>), wood horsetail (<i>Equisetum sylvaticum</i>), lily-of-the-valley (<i>Convallaria majalis</i>) and a rare mountain fern (<i>Oreopteris limbosperma</i>).</p> <p>The woodland at the north of the site grades into the heathland of Silchester Common which, together with Tadley Common, represents the largest remnants of the once extensive north Hampshire heathland west of the River Loddon. These commons provide the best remaining example of the full transitions</p>	1940m south

Site Name	Designation	Description	Distance from site boundary
		<p>from dry to wet heathland in north-west Hampshire and west Berkshire.</p> <p>The west side of Pamber Forest is bounded by a series of wet, unimproved neutral to acid meadows with a rich flora containing many uncommon species.</p> <p>The site supports a rich, diverse invertebrate fauna including more than 40 species of nationally rare and nationally scarce species such as the light crimson underwing moth (<i>Catocala promissa</i>), deadwood beetles, silver-studded blue and grayling butterfly (<i>Hipparchia semele</i>). Areas of open heath and gorse scrub support stonechat, woodlark, nightjar and Dartford Warbler.</p> <p>The site covers 340.48 hectares and includes land which has been proposed for designation as an SPA. Pamber Forest (185.4 hectares) is managed as a Local Nature Reserve</p>	
Aldermaston Gravel Pits	SSSI/Wildlife Trust Reserve	<p>The site comprises mature flooded gravel workings surrounded by dense fringing vegetation, trees and scrub. Access to the shoreline is restricted due to extensively overgrown dense wet woodland dominated by willows and alder carr. Swamp vegetation has established in places on the lake margins, particularly in sheltered bays and inlets. On surrounding drier ground is a variety of trees and shrubs including oak, ash, cherry and hawthorn with a dense ground flora including common nettle and bramble. The irregular shoreline with islands, sheltered pools and narrow lagoons provides undisturbed habitat for many water birds including teal and shoveler. The surrounding marsh and scrub are important for a range of birds including 9 breeding warbler species, water rail, kingfisher and a breeding nightingale colony.</p> <p>The site covers 23.41 hectares.</p>	2000m north

Non-statutory designated sites

- 3.3 There are a total of 16 non-statutory designated sites within the 2km search area, including 2 Sites of Importance for Nature Conservation (SINC), 2 Wildlife Trust Reserves, and 12 Local Wildlife Sites (LWS), 4 of which are within 1km of the site boundary. The locations and descriptions of these sites (where available) are summarised in Table 3 overleaf and site locations are shown on Figure 2.

Table 3 – Non-statutory designated sites within a 2km search area

Site Name	Designation	Description	Distance from site boundary
Harbourhill Copse	LWS/Ancient Woodland	<p>The site is an area of ancient woodland which has been modified by the planting of conifers, sycamores and rhododendron. Some old coppiced trees remain and part of the site remains dominated by birch and oak. The ground layer is dominated by bracken and there are a variety of species associated with acidic soils including foxglove, heath bedstraw, broom, tormentil, sheep's sorrel, common centaury and yellow pimpernel. A rare rove beetle (<i>Zyras haworthi</i>) has been recorded here.</p> <p>The site covers 9.45 hectares.</p>	260m west
Black Pightle	LWS	<p>The site is an area of woodland described as species-rich but lacking in survey details. Butterfly records for the site include silver-washed fritillary, purple hairstreak and purple emperor.</p> <p>The site covers 19.16 hectares</p>	400m east
Jacob's Gully	LWS/Ancient Woodland	<p>The site is an area of ancient gully woodland dominated by neglected ash and alder coppice. Hazel coppice is abundant in the understorey and ground flora is dominated by bramble and bluebell. A small stream flows through the wood and the wetter areas support species such as marsh marigold, common marsh bedstraw, ragged robin, opposite-leaved golden saxifrage and yellow pimpernel. Other species include wood anemone, pignut, Solomon's-seal, thin-spiked wood sedge and primrose.</p> <p>The site covers 4.4 hectares.</p>	560m north-east
Jacob's Spinney	LWS	<p>Jacobs Spinney is a small area of oak and ash with birch and sweet chestnut in places and an area of alder.</p>	780m north-east

Site Name	Designation	Description	Distance from site boundary
Upper Moors Gulley and Heath	LWS	<p>The site is mainly wet alder dominated woodland that lies in a narrow valley through which a stream flows. Some areas contain abundant birch and grey willow. Ground flora near the stream includes reed canary grass, greater tussock sedge, opposite-leaved golden saxifrage and yellow pimpernel. Bramble and bracken dominate away from the stream. Outside the gully, the woodland is dominated by oak, birch and rowan and there is some hazel coppice along with wood sorrel and Solomon's-seal. North of the gully is an area with some heathland and acid grassland among birch, oak and planted pine. Species found here include heather, cross-leaved heath, heath bedstraw, common centaury, wavy hair-grass, hairy wood-rush and heath speedwell.</p> <p>The site covers 13.96 hectares.</p>	1200m south
Decoy Heath (Eastern Area)	LWS	<p>The site is adjacent to the Decoy Heath Nature Reserve part of Decoy Pits, Pools and Woods SSSI. The pits have been filled and are in the process of being restored to heathland habitat.</p> <p>The site covers 6.23 hectares.</p>	1300m south-east
Breaches and Paice's Gullies	LWS/Ancient Woodland	<p>Breaches Gully is an area of ancient woodland dominated by oak, ash and hazel with a rich ground flora invaded by sycamore and with some broadleaved and conifer plantations. Paice's gully is an acid oak and birch woodland with some alder and an area of plantation.</p>	1400m west
Great Fishers	LWS/part Ancient Woodland	<p>This site is partly ancient woodland. There are stands of ash and oak, ash and birch and alder and birch. There are also areas of ash and alder plantation in the area to the west known as Aquavitae Copse. The site supports a good range of species associated with long established woodland, including moschatel, wood anemone, Solomon's-seal, early purple orchid, bluebell, pignut and yellow pimpernel.</p> <p>The site covers 14.54 hectares.</p>	1400m north-east

Site Name	Designation	Description	Distance from site boundary
Padworth Gully	LWS/Ancient Woodland	Padworth Gully is ancient woodland with a stream flowing through the site with a number of smaller subsidiary streams. In the vicinity of the streams the woodland is wet and dominated by alder. In the drier areas there is acidic oak and birch woodland with hazel coppice. The wet areas have wet woodland and wetland species such as marsh marigold, opposite-leaved golden-saxifrage and bog stitchwort. Other species typical of long established woodland found here include broad-leaved and violet helleborine, wood anemone, sanicle and primrose. In the drier areas there are elements of heath and acid grassland habitat with species such as heather, heath bedstraw, tormentil and pill sedge. The site covers 21.89 hectares.	1500m north-east
Benyons Inclosure	SINC	No description available.	1680m east
Woodland near Woolhampton (part)	LWS	The site is a large area of deciduous woodland with willow carr, wet willow and alder woodland including some coppice. There are open rides, drainage ditches and some areas of reedbed dominated by common reed. The site covers 34.7 hectares.	1730m north-west
Padworth Mill	LWS	Padworth Mill is an area of mixed tall wetland habitat, including areas along the river margins, willow woodland and willow carr on either bank of the River Kennet to the west of Padworth Mill. Wetland species recorded here include marsh marigold, greater tussock sedge, yellow flag iris, purple loosestrife and hemlock water dropwort. The site covers 4.78 hectares.	1940m north
Burnt Common A	SINC	No description available.	2000m east

Ancient Woodlands

- 3.4 There are 6 sites of Ancient Woodland within 2km of the site boundary and these are contained within other statutory and non-statutory designated sites (see Tables 2 and 3). Locations of Ancient Woodland are shown on Figure 2.

Flora

- 3.5 Three protected or other notable plant species have been recorded in the search area and are listed in Table 4 overleaf. These include 2 species listed on the IUCN Red List

(Vulnerable and Near Threatened) and 1 species listed as Nationally Scarce. The locations of the plant records are shown in Figure 6.

Table 4 – Protected or notable plant species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Dodder	HBIC	1	Pamber Forest and Silchester Common SSSI	2000m south	VU; nHS
Wild Pansy	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	NT
Sharp Rush	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	NS

Key: WCA: Wildlife and Countryside Act Schedule 8

- 3.6 1 record of Dodder has been provided on the southern edge of the search area in Pamber Forest and Silchester Common SSSI. Records of Wild Pansy and Sharp Rush are located within Decoy Pit, Pools and Woods SSSI.

Protected Species

- 3.7 Records of all protected species recorded post 1999 within 2km of the site that were provided by consultees are summarised in tables 5 to 8 and shown on Figures 3 to 6.

- 3.8 In this instance 'Protected Species' refers to any species specially protected under the following legislation:

- The Conservation (Natural Habitats &c.) Regulations 1994;
- European Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC (the Habitats Directive) Annex IV;
- Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) Annex I;
- Wildlife and Countryside Act 1981 (as amended); and
- Protection of Badger Act 1992.

- 3.9 Full details of protected species records are given in Appendix 2 and further information of the conservation status as listed below is provided in Appendix 3.

Other Notable Species

- UK BAP Priority Species (UKBAP);
- Local BAP Priority Species - Hampshire BAP (HBAP); Berkshire BAP (BBAP);
- Birds of Conservation Concern (Red or Amber);
- Nationally Scarce Invertebrate species (Notable/Na, Notable/Nb or Notable/N);

- IUCN Red List species 2001 – Vulnerable (VU), Near Threatened (NT);
- Rare and Scarce species (not based on IUCN criteria) – Nationally Scarce (NS)
- Locally notable species (Hampshire) – County Rare (CR), County Scarce (CS), County of Other Interest (CI), North Hampshire Rare (nHR), north Hampshire Scarce (nHS)

Birds

- 3.10 Sixty-six protected or notable bird species have been recorded in the search area and are listed in Table 3. These include 12 species listed on Schedule 1 of the Wildlife and Countryside Act (1981) of which 3 are also listed on Annex 1 of the EC Birds Directive, 3 additional species listed on Annex 1 of the EC the Birds Directive, 22 UKBAP Priority species, 6 Local (Hampshire) BAP Priority species, 1 Local (Berkshire) BAP Priority species and 22 Amber-listed species.
- 3.11 The locations of the bird records are shown on Figure 3 with a full list provided at Appendix 2. Bird records with grid references accurate to only 4 figures (i.e. records are located within a 1km grid square) are plotted at the centre point of the grid square.
- 3.12 The majority of bird records are located within Decoy Pit, Pools and Woods SSSI. Large numbers of bird records were also provided for Aldermaston Park to the south-east of the site and within Aldermaston to the north of the site.

Mammals

- 3.13 Records of 9 protected or other notable species of mammal have been provided for the search area and are listed in Table 5. These include 6 bat species which are European Protected Species and listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), otter which are European Protected Species and also listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), badgers which are protected under the Protection of Badgers Act 1991 and harvest mouse which is a UK and local BAP Priority species. The locations of the mammal records are shown on Figure 4 and full details at Appendix 2.

Table 4 – Protected or notable mammal species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Brown Long-Eared Bat	TVERC; HBIC	13	Heath End	2040m south	EPS2; WCA5; EUHS IV; UKBAP
Common Pipistrelle	TVERC; HBIC	6	Decoy Pit, Pools and Woods SSSI	1500m south-east	EPS2; WCA5; EUHS IV; BBAP; HBAP
Serotine	HBIC	1	Edge of Pamber Forest and	3150m south-east	EPS2; WCA5; EUHS IV; HBAP

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
			Silchester Common SSSI		
Natterer's Bat	TVERC	7	Ufton Court	3400m north-east	EPS2; WCA5; EUHS IV
Pipistrelle bat species	TVERC; HBIC	7	Aldermaston Wharf	2360m north	EPS2; WCA5; EUHS IV
A bat (<i>Chiroptera</i>)	HBIC	5	Heath End	2960m south	EPS2; WCA5; EUHS IV
Otter	TVERC	1	Ufton Bridge	4400m north-east	WCA5; EUHS II and IV; UKBAP; BBAP; HBAP
Badger	Binfield Badger Group	1	Aldermaston	1150m north-west	BA
Harvest Mouse	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; BBAP; HBAP

Key: HDir(IV): European Habitats Directive Annex 4, WCA5: Wildlife and Countryside Act 1981 Schedule 5, UKBAP: UK Biodiversity Action Plan Priority Species, BA: Badger Act 1992.

- 3.14 Bat records include 13 Brown Long-Eared bats, 6 Common Pipistrelles, 1 Serotine bat, 7 Natterer's bats, 7 unidentified Pipistrelles and 5 unidentified bats. Common Pipistrelles have been recorded within 2km of the site boundary. The majority of bat records are located south of the site around Pamber Forest and Silchester Common SSSI and Heath End.
- 3.15 One record of an otter was provided and is located on the River Kennet near Ufton Bridge approximately 4500m north-east of the site. Information provided by the Environment Agency indicates that otters are fairly widespread along the River Kennet.
- 3.16 Badgers are protected under the Protection of Badgers Act 1991. One record of a badger road casualty was provided for the search area and is located 1150m north-west of the site boundary on the A340.
- 3.17 Harvest mice are a UK BAP and local BAP (Berkshire and Hampshire) Priority species. One record of a harvest mouse was provided for the search area located in Decoy Pit, Pools and Woods SSSI.

Herpetofauna

- 3.18 Records of 8 protected species of herpetofauna have been provided for the search area and are listed in Table 5 overleaf. These include 1 European Protected Species and 7 species listed under Schedule 5 of the Wildlife and Countryside Act (section 9(5) only). The locations of the herpetofauna records are shown in Figure 5 and full details provided at Appendix 2.

Table 5 – Protected or notable herpetofauna species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Great Crested Newt	TVERC	2	Decoy Pit, Pools and Woods SSSI	1350m south-east	EPS2; WCA5; EUHS II and IV; UKBAP; BBAP; HBAP
Common Frog	TVERC	22	West of A340	1160m south-west	WCA5 (section 9(5) only); EUHS V
Common Toad	TVERC	2	West of A340	1120m south-west	WCA5 (section 9(5) only); UKBAP; BBAP
Slow Worm	TVERC	57	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only); UKBAP; BBAP
Grass Snake	TVERC	13	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only); UKBAP; BBAP
Adder	TVERC	85	Near Raghill Farm	1120m east	WCA5 (section 9(5) only); UKBAP; BBAP
Common Lizard	TVERC	20	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only); BBAP
Smooth Newt	TVERC	18	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only)

Key: WCA5s9.5: Wildlife and Countryside Act 1981 Schedule 5, UKBAP: UK Biodiversity Action Plan Priority Species, HBAP: Hampshire BAP, BBAP: Berkshire BAP.

- 3.19 Great crested newt are a European Protected Species, protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Annexes II and IV of the Habitats Directive and are UK BAP and Local BAP Priority species. Two records of great crested newts were provided for the search area and are located within Decoy Pit, Pools and Woods SSSI.
- 3.20 Common frogs are listed in Annex 5 of the Habitats Directive and protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only). Twenty two records of common frogs were provided for the search area and the closest location is west of the A340 approximately 1160m from the site.
- 3.21 Common toads are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only) and are UK and Berkshire BAP Priority species. Two

records of common toads were provided for the search area and the closest location is west of the A340 approximately 1120m from the site.

- 3.22 Slow worms are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only) and are UK and Berkshire BAP Priority species. Fifty seven records of slow worms were provided for the search area and are located within Decoy Pit, Pools and Woods SSSI and within Padworth Common Local Nature Reserve.
- 3.23 Grass snakes are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only) and are UK and Berkshire BAP Priority species. Thirteen records of grass snakes were provided for the search area and are location within Decoy Pit, Pools and Woods SSSI.
- 3.24 Adders are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only) and are UK and Berkshire BAP Priority species. Eighty five records of adders were provided for the search area and the closest location is near Raghill Farm to the east of the site. Other records are located within Decoy Pit, Pools and Woods SSSI and Padworth Common Local Nature Reserve.
- 3.25 Common lizards are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only) and are a Berkshire BAP Priority species. Twenty records of common lizard were provided for the search area and the closest location is within Decoy Pit, Pools and Woods SSSI.
- 3.26 Smooth newts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (with respect to sale only). Eighteen records of smooth newts were provided for the search area and are located within Decoy Pit, Pools and Woods SSSI.

Invertebrates

- 3.27 Records of 48 protected species of invertebrates have been provided for the search area and are listed at Appendix 2. These include 2 species listed under Schedule 5 of the Wildlife and Countryside Act (section 9(5) only), 24 UK BAP priority species, 3 Berkshire BAP priority species, 5 Hampshire BAP priority species, 6 Notable species and 8 Nationally Scarce species. The locations of the invertebrate records are shown on Figure 6 and provided in more detail at Appendix 2.
- 3.28 Silver-studded blue and black hairstreak are both protected under Schedule 5 of the Wildlife and Countryside Act 1981 (with respect to sale only). There are records of both species within Decoy Pit, Pools and Woods SSSI with additional records for Silver-studded blue located north of Pamber Forest.
- 3.29 Other invertebrate records are concentrated in and around the Decoy Pit, Pools and Woods SSSI, Pamber Forest and in or around Padworth Common Local Nature Reserve.

Phase 1 Habitat Survey

Site Overview

- 3.30 The Hydrus project site covers an area of approximately 8.5 hectares, most of the Hydrus site consists of neutral grassland which in places can be considered flower-rich with patches of acid grassland. This grassland has developed over aggregate and broken ground is effectively “brownfield” in nature. A small deciduous copse is located in the southeast corner of the site with a field layer which is dominated by bramble. There are scattered trees over the remainder of the site and a veteran oak is located adjacent to the copse.
- 3.31 The site is bordered by areas of managed grassland interspersed with deciduous woodland and parkland trees.

Habitats Present within the Site Boundary

- 3.32 The results of the Extended Phase 1 Habitat Survey are described by habitat below. The Phase 1 Habitat Plan is shown on Figure 7 and the associated target notes are provided in Appendix 4. Plant names follow the nomenclature of Stace, 1997 with a full list at Appendix 5.
- 3.33 The ecological walkover survey results are provided below for the proposed Hydrus development, AWE Aldermaston, Berkshire. A list of plant species recorded is provided in Appendix 5 (nomenclature follows Stace, 1997). This section of the report should be read in conjunction with Figure 7 and the target notes provided in Appendix 4.

Broadleaved and Coniferous Scattered Parkland Trees

- 3.34 There are several scattered parkland trees present within the Hydrus redevelopment site; these include oak, Turkey oak, ash, crack willow, silver birch and London plane. These trees are scattered across the site but form a denser area to the south east of the site, adjacent to the existing copse. A very large, mature veteran oak tree forms one of these trees (target note 1, Figure 7).
- 3.35 The majority of these semi mature to mature trees do not have any bat roosting opportunities due to their well intact nature i.e. no heavy ivy cladding, splits, loose bark or woodpecker holes. However, the mature veteran oak tree is considered to offer high potential for roosting bats and invertebrates. Bird’s nests from this summer were observed in many of the trees on site.
- 3.36 The semi mature and mature trees are of medium ecological value due to their age and their opportunities for nesting and foraging birds and roosting and commuting/foraging habitat for

bats, especially the dense area of trees to the south east of the site. Due to its age and potential for a variety of wildlife, the veteran oak tree is considered to be high potential ecological value.

Semi-improved Acid Grassland

- 3.37 The grassland in the west of the site, especially that located to the south of the access road, has a fairly high degree of structural diversity and also large amounts of bare ground. The acidic nature of the grassland is confirmed *via* the presence of a number of small patches of heather and *Juncus*.
- 3.38 The application site used to support a number of acidic grassland communities, some of which were species-rich. These community types occur in a mosaic with semi-improved acidic grassland. Unfortunately these communities have been lost due to recent construction activities and associated topsoil strips as part of demolition works and ongoing permitted development borehole works.
- 3.39 The areas of acid grassland and spoil piles on site are of ecological value for invertebrates, foraging bats and birds, and herpetofauna.

Semi-improved Neutral Grassland

- 3.40 Large areas of semi-improved neutral grassland exist within the site, largely in-combination with the ephemeral habitats. These areas have colonised around where the buildings used to stand and include grasses such as perennial ryegrass, meadow foxtail, Yorkshire fog, annual meadow grass, cocks-foot and fescue with soft rush, black medick, birds foot trefoil, dandelion, creeping cinquefoil, ribwort plantain, common mouse ear, bristly ox-tongue, cleavers, broad-leaved dock, curled leaf dock, forget me not meadow buttercup, creeping buttercup, dove's-foot crane's-bill, common daisy, white clover, yarrow and occasional lichen species.
- 3.41 This grassland provides potential habitat for reptiles, invertebrates, foraging bats and cover for small mammals.

Hardstanding

- 3.42 All structures and buildings on the Hydrus project site were demolished between January and November 2007. Some areas of hardstanding do exist within the development boundary in the form of temporary access roads (target note 4 on Figure 7), temporary portacabins, existing access roads and footpaths.
- 3.43 These areas of hardstanding provide no value for wildlife.

Copse

- 3.44 A small copse exists to the south east of the Hydrus application site (target note 2 on Figure 7). The copse is formed mainly of oak, elder, beech, birch and poplar trees with an understorey of common nettle and dead wood.

- 3.45 Within the copse there are some areas of deadwood and log piles which are of ecological value for invertebrates, small mammals, herpetofauna and foraging and commuting bats.

Wet Ditch

- 3.46 A small running wet ditch runs from the southern boundary towards the copse to the south east of the site (target note 2 on Figure 7). The ditch itself contains a small amount of running water with grassed embankments and tall ruderals. Given the lack of other aquatic features on the site, the wet ditch is of ecological value for wildlife due to its embankments' potential to support reptiles, invertebrates and small mammals.

Tall Ruderals

- 3.47 Ruderal weeds such as overgrown broadleaved dock and willowherb were present along the embankments of the wet ditch and around the small copse to the south east of the site.
- 3.48 Tall ruderal vegetation is of ecological value as they do provide areas of inter-linkage around the AWE site, filling in gaps between woodland, scrub and grassland.

Ephemeral/short perennial

- 3.49 Several buildings have been demolished within the central section of the Hydrus site which is now formed of short perennial/ephemeral habitat; this habitat consists of shallow stony soil with scattered plant species such as black medick, willowherb and dock, typical of derelict urban sites. This bare ground coverage offers ecological value for protected species such as micro habitats for invertebrates and foraging for birds.

Other Habitat

- 3.50 Areas of topsoil have been stripped and piled in large spoil piles on the site for the temporary access road (target notes 7, 8, 9, 10, 12 and 13 on Figure 7). These mounds of semi improved neutral and acid grassland provide refuge and foraging areas for birds, small mammals, invertebrates and herpetofauna in a highly urbanised environment.
- 3.51 Two construction laydown areas exist within the Hydrus application boundary, one at the entrance to the site to the west and one to the north west, both are used in connection with permitted bore hole works (target notes 5 and 6 on Figure 7). These are temporary areas but are currently active sites, with portacabins and storage facilities present.

Habitats Beyond the site Boundary

- 3.52 The development site is surrounded by the remainder of the AWE Aldermaston site, of which the majority is hardstanding, with some recreational areas and thick screen planting along the main security fence boundary. A large area of acid grassland and heath is present to the south of the AWE main site, formed over disused bunkers.

Potential for Protected or Otherwise Notable Species

Plants and Habitats

- 3.53 No habitats covered by Annex I of the European Habitats Directive were recorded from within the study area.

Bats

- 3.54 Bats are protected by the Wildlife and Countryside Act 1981 Schedule 5 (as amended) and the Habitats Directive. The combined legislation means that it is illegal to intentionally or deliberately kill, injure or capture bats, deliberately disturb bats (in or out of a roost), recklessly disturb roosting bats or obstruct access to their roosts, damage or destroy bat roosts, possess or transport a bat, or bat part, unless acquired legally, sell (or offer for sale) or exchange bats or bat parts. Any works that could potentially affect a bat or its place of rest can only be conducted under a licence required in advance from Natural England.
- 3.55 No buildings or other standing structures exist within the Hydrus project site of ecological value for bats. Temporary portacabins exist within the construction laydown area to the south west of the site (target note 6 on Figure 7), these are unsuitable for bats due to their lack of roosting opportunities for bats i.e. flat roof, wrong material makeup etc.
- 3.56 The majority of the semi mature to mature trees within the Hydrus project have no bat roosting opportunities due to their well intact nature i.e. no heavy ivy cladding, splits, loose bark or woodpecker holes. However, the mature veteran oak tree is considered to provide high roosting opportunities for bats. The grassland, copse, wet ditch and scattered trees across the site provide suitable foraging and commuting habitat for bats.

Badgers

- 3.57 The Protection of Badgers Act 1992 protects badgers from wilful killing, injuring or taking badgers (or attempting to do these things), cruelly ill-treating badgers, digging for badgers or using badger tongs, possessing a dead badger or any part of one, or an object derived from one, if it was taken in contravention of the legislation existing at the time of death, possessing or selling live badgers, attaching any rings, tags or other marking device to a badger. There are exceptions for acts of mercy to injured or sick badgers. Disturbance of a badger sett may be carried out under a licence required in advance from Natural England.
- 3.58 Badgers are known to be within the AWE Aldermaston site but no signs were recorded within the Hydrus site boundary at the time of the walkover inspection.

Birds

- 3.59 All naturally occurring wild birds in Great Britain are protected by the Wildlife and Countryside Act and the Birds Directive. It is illegal to kill, injure or 'take' any wild bird, take or damage the nest of any wild bird whilst in use or being built. The eggs of all wild birds are also protected. Possession of any live wild birds, egg(s) or any part of a wild bird is an offence. The birds

listed in Schedule 1 are further protected by Special Penalties. The species listed in Annex I of the Birds Directive are the subject of special conservation measures to ensure their survival and reproduction in their area of distribution. Some species are also listed as UKBAP Priority Species.

- 3.60 During the site walkover many common bird species were recorded with a full list provided at Appendix 5. The scattered trees and copse within the Hydrus site boundary provide suitable nesting habitat for birds. Many active nests were recorded within the trees on site at the time of the walkover in both March and July 2009. The semi mature and mature trees and copse on site were identified as providing suitable habitat for nesting common bird species and also provide, along with the grassland, an important food source for the species utilising the environment.
- 3.61 A breeding bird survey has been conducted within the development red line boundary. Results of this survey are published in a standalone technical report.

Herpetofauna

- 3.62 Slow-worm (*Anguis fragilis*), common or viviparous lizard (*Lacerta vivipara*), adder (*Vipera berus*) and grass snake (*Natrix natrix*) are protected by the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) by part of Section 9(1) and all of Section 9(5). This means that they are protected against intentional or reckless killing and injuring (but not 'taking') and against sale and transporting for sale.
- 3.63 The majority of the grassland on the Hydrus site is deemed unsuitable for reptiles due to its regular mowing regime. However, the rough grassland margins around the copse, along the wet ditch and along the south, south east and eastern site boundaries do provide suitable basking and commuting habitat for reptiles.
- 3.64 All native amphibians are partially protected against sale under Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). Great crested newts are fully protected under the Act, and are listed on Schedule 2 of the Conservation Regulations, 1994, (Regulation 38) and on Annexes II and IV of the EC Habitats Directive.
- 3.65 A running wet ditch is present on the site but no ponds were recorded on the Hydrus site during the walkover survey. The Project Hydrus site is located within 500m of the North Ponds which are known to support a medium sized population of great crested newts.

Invertebrates

- 3.66 An Invertebrate Habitat Assessment was undertaken on the 21st July 2009 by a suitably experienced ecologist. The assessment looked at the overall intrinsic value of the site for invertebrates as well as particular features of interest.

- 3.67 Although a full species list was not generated, several species of note were recorded during previous site visits and during the habitat assessment. The full survey details can be found at Appendix 6.
- 3.68 Species that were incidentally recorded either during the habitat assessment include grizzled skipper (*Pyrgus malvae*), common blue (*Polyommatus icarus*), small heath (*Cecononympha pamphilus*), cinnabar moth (*Tyria jacobaeae*) and glow-worm (*Lampyrus noctiluca*). Both grizzled skipper are listed as UK Biodiversity Action Plan Priority species while common blue, small heath and glow-worm have all suffered regional declines in recent decades. All of these species are indicators of a reasonably diverse invertebrate community.
- 3.69 The Hydrus project site has a number of features which are important to invertebrate communities meaning the overall diversity is likely to be high given the size of the site. The grassland itself is structurally diverse, contains abundant bare ground and is locally florally diverse. The veteran oak tree should also be treated as a feature of high importance to invertebrates due to the presence of deadwood and the natural assemblage oak trees can support. The copse and ditch are less intrinsically valuable than the grassland and the oak tree but provide structural diversity and in the case of the ditch, a small amount of aquatic interest.

Invasive weeds

- 3.70 No invasive weeds were recorded within the site boundary at the time of the walkover survey.

Other

- 3.71 There are also a number of narrow animal runs throughout the site, which appear to have been created by foxes (*Vulpes vulpes*). Fox spraints and a fox itself were recorded during the survey on the Hydrus site (target note 11 on Figure 7). Numerous rabbit warrens are present within the copse to the south east of the site. It should be noted that both foxes and rabbits are protected under *The Wild Mammals (Protection) Act 1996*. Under this Act it is an offence to inflict unnecessary suffering to both these species.

4 Conclusions

Desk Study

- 4.1 The ecological desk study for the Hydrus project at AWE Aldermaston has identified 6 statutory designated sites within a 2km search area. Five are designated as SSSI and one is designated a Local Nature Reserve, with additional LNR, Wildlife Trust Reserve, Local Wildlife Site and Ancient Woodland designations in parts.
- 4.2 Seventeen non-statutory designated sites were identified within a 2km search area. These include 2 SINCR, 2 Wildlife Trust Reserves, one of which is also designated as an SSSI, the Thames Basin Heathlands IBA and 7 Local Wildlife Sites, one of which is also designated as a Local Nature Reserve. Six sites of Ancient Woodland were identified within a 2km search area, five of which are contained within Local Wildlife Sites, and one which is contained within an SSSI
- 4.3 A number of protected and notable species recorded within 2km of the site but no records were received from within the site boundary. Records included 66 bird species, 9 mammal species, 8 herpetofauna species, 48 invertebrate species and 3 plant species

Phase 1 Habitat Survey

- 4.4 During the Phase 1 Habitat Survey habitats were recorded on the Hydrus site that were deemed suitable for breeding and foraging birds, roosting, foraging and commuting bats, invertebrates and herpetofauna.
- 4.5 The Phase 1 Habitat Survey identified the habitats present within the redevelopment red line boundary. Most of the Hydrus site consists of neutral grassland which in places can be considered flower-rich with patches of acid grassland. This grassland has developed over aggregate and broken ground is effectively “brownfield” in nature. A small deciduous copse is located in the southeast corner of the site with a field layer which is dominated by bramble. There are scattered trees over the remainder of the site and a veteran oak is located adjacent to the copse.
- 4.6 The Phase 1 Habitat Survey identified habitats on site that were suitable for a range of protected species. Protected species surveys are currently underway for breeding birds, badgers, reptiles and bats on the Hydrus project site. Stand-alone technical reports will be produced for each of these surveys.
- 4.7 Clearance works have already commenced on site with large areas of acid grassland stripped back, buildings demolished, waterbodies filled in and temporary access roads and

construction laydown areas are in-situ as part of demolition works and ongoing permitted development borehole works.

- 4.8 Acid grassland, standalone trees and the wet ditch will be lost to the Hydrus project development proposals. The small copse, mature veteran oak tree and immediately surrounding trees are to be retained as part of the development proposals.

References

- Berkshire BAP, 2009. Biodiversity Action Reporting System - Biodiversity Action in Berkshire
- Hampshire BAP, September 2008. Hampshire Biodiversity Partnership – Biodiversity Action Plan for Hampshire
- Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment
- Joint Nature Conservation Committee (1990). Handbook for Phase1 habitat survey: A Technique for Environmental Audit
- JNCC (2008) Spreadsheet of conservation designations for UK taxa
- MAGIC. 2009. Ordnance survey map and designated site information accessed 22 May 2009 from [www.magic.gov.uk]
- Stace, C. (1997) New Flora of the British Isles. 2nd Edition. Cambridge University Press
- The Conservation (Natural Habitats &c.) Regulations 1994
- The Countryside and Rights of Way Act 2000
- The Wildlife and Countryside Act 1981 (as amended)
- UK BAP. 2008. UK Biodiversity Action Plan website. UK BAP, accessed 26th November 2008 from <http://www.ukbap.org.uk/default.aspx>

Figures

**Figure 1: Site Location and desk study search areas (2km
and 5km)**

**Figure 2: Statutory and non-statutory designated sites
within 2km**

Figure 3: Protected and notable bird species

Figure 4: Protected and notable mammal species

Figure 5: Protected and notable herpetofauna species

Figure 6: Protected and notable invertebrate and flora species

Figure 7: Phase 1 Habitat Map

Appendices

Appendix 1: Consultee Responses

Appendix 2: Protected Species Records

Protected or notable bird species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Woodlark	TVERC; BOC	25	Aldermaston Park	300 – 1640m south-east	WCA1; BDIR; UKBAP; BBAP; HBAP; Amber; CI
Kingfisher	TVERC; BOC	3	Aldermaston	450 – 1670m north	WCA1; BDIR; BBAP; Amber;
Red Kite	BOC	2	Aldermaston	450 – 1670m north	WCA1; BDIR; HBAP; Amber
Hobby	TVERC; BOC	3	Aldermaston Park	300 – 1640m south-east	WCA1; BBAP; HBAP; CI
Barn Owl	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	WCA1; BBAP; Amber
Fieldfare	TVERC; BOC	68	Aldermaston	450 – 1670m north	WCA1; Red
Redwing	TVERC; HBIC; BOC	57	Aldermaston	450 – 1670m north	WCA1; Red
Green Sandpiper	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	WCA1; Amber
Black Redstart	BOC	3	Aldermaston Park	300 – 1640m south-east	WCA1; Amber
Little Ringed Plover	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	WCA1
Brambling	TVERC	1	Aldermaston Park	300 – 1640m south-east	WCA1
Goshawk	BOC	1	Aldermaston Park	300 – 1640m south-east	WCA1
Nightjar	TVERC; HBIC; BOC	6	Aldermaston Park	300 – 1640m south-east	BDIR; UKBAP; BBAP; HBAP; Red; CI
Golden Plover	BOC	169	Aldermaston	450 – 1670m north	BDIR; HBAP; Amber

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Shelduck	BOC	6	Aldermaston	450 – 1670m north	BDIR; Amber
Skylark	TVERC; BOC	16	Aldermaston Park	300 – 1640m south-east	UKBAP; BBAP; HBAP; Red
Bullfinch	TVERC; HBIC; BOC	26	Aldermaston Park	300 – 1640m south-east	UKBAP; BBAP; HBAP; Amber
Linnet	TVERC; HBIC; BOC	31	Aldermaston Park	300 – 1640m south-east	UKBAP; HBAP; Red
Lapwing	TVERC; BOC	219	Aldermaston Park	300 – 1640m south-east	UKBAP; BBAP; Red
Turtle Dove	TVERC; BOC	2	Aldermaston	450 – 1670m north	UKBAP; HBAP; Red
Song Thrush	TVERC	15	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; HBAP; Red
Lesser Spotted Woodpecker	TVERC; BOC	2	West of Paice's Hill	610 – 2000m south-west	UKBAP; HBAP; Red
Grasshopper Warbler	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; HBAP Red
Yellow Wagtail	BOC	61	Aldermaston	450 – 1670m north	UKBAP; HBAP; Red
Grey Partridge	BOC	1	Aldermaston	450 – 1670m north	UKBAP; HBAP; Red
Reed Bunting	TVERC; HBIC; BOC	15	Aldermaston Park	300 – 1640m south-east	UKBAP; HBAP; Amber
Marsh Tit	TVERC; BOC	26	Aldermaston Park	300 – 1640m south-east	UKBAP; Red
Willow Tit	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; Red
Starling	TVERC; BOC	5	Aldermaston Park	300 – 1640m south-east	UKBAP; Red

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
House Sparrow	TVERC; HBIC	2	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; Red
Yellowhammer	TVERC; HBIC; BOC	12	Near Pamber Forest and Silchester Common SSSI	1280 – 2000m south	UKBAP; Red
Cuckoo	TVERC; HBIC; BOC	7	Aldermaston Park	300 – 1640m south-east	UKBAP; Red
Tree Pipit	TVERC; HBIC	9	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; Red
Ring Ouzel	BOC	1	West of Paice's Hill	610 – 2000m south-west	UKBAP; Red
Lesser Redpoll	BOC	4	Aldermaston	450 – 1670m north	UKBAP; Red
Dunnock	TVERC	8	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; Amber
Curlew	BOC	1	Aldermaston Park	300 – 1640m south-east	UKBAP
White-fronted Goose	BOC	1	Aldermaston	450 – 1670m north	HBAP
Nightingale	TVERC; HBIC; BOC	4	Aldermaston	450 – 1670m north	HBAP; Amber; CS
Swift	BOC	10	Aldermaston Park	300 – 1640m south-east	BBAP; Amber
Whinchat	BOC	1	Aldermaston	450 – 1670m north	HBAP; Amber
Pochard	BOC	70	Aldermaston	450 – 1670m north	HBAP; Amber
Gadwall	BOC	2	Aldermaston	450 – 1670m north	HBAP; Amber
Snipe	TVERC; BOC	26	Aldermaston Park	300 – 1640m	HBAP; Amber

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
				south-east	
Kestrel	TVERC	4	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Teal	TVERC; BOC	20	Aldermaston	450 – 1670m north	Amber
Ringed Plover	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Woodcock	TVERC; HBIC; BOC	17	Aldermaston Park	300 – 1640m south-east	Amber
Redshank	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Stock Dove	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Green Woodpecker	TVERC; HBIC	9	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Swallow	TVERC; BOC	7	Aldermaston	450 – 1670m north	Amber
House Martin	TVERC; BOC	16	Aldermaston Park	300 – 1640m south-east	Amber
Meadow Pipit	TVERC; HBIC	8	Near Pamber Forest and Silchester Common SSSI	1280 – 2000m south	Amber
Grey Wagtail	TVERC; HBIC; BOC	11	Aldermaston Park	300 – 1640m south-east	Amber
Mistle Thrush	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Amber
Willow Warbler	TVERC; HBIC; BOC	19	Aldermaston	450 – 1670m north	Amber
Redstart	HBIC	2	Near Pamber Forest and Silchester Common SSSI	1280 – 2000m south	Amber

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Mallard	BOC	6	Aldermaston Park	300 – 1640m south-east	Amber
Shoveler	BOC	4	Aldermaston	450 – 1670m north	Amber
Tufted Duck	BOC	11	Aldermaston	450 – 1670m north	Amber
Little Grebe	BOC	3	Aldermaston	450 – 1670m north	Amber
Jack Snipe	BOC	4	Aldermaston Park	300 – 1640m south-east	Amber
Black-headed Gull	BOC	35	Aldermaston	450 – 1670m north	Amber
Common Gull	BOC	1	Aldermaston Park	300 – 1640m south-east	Amber
Wheatear	BOC	31	Aldermaston	450 – 1670m north	Amber

Key: UKBAP: UK Biodiversity Action Plan Priority Species, Red/Amber: Birds of Conservation Importance.

Protected or notable mammal species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Brown Long-Eared Bat	TVERC; HBIC	13	Heath End	2040m south	EPS2; WCA5; EUHS IV; UKBAP
Common Pipistrelle	TVERC; HBIC	6	Decoy Pit, Pools and Woods SSSI	1500m south-east	EPS2; WCA5; EUHS IV; BBAP; HBAP
Serotine	HBIC	1	Edge of Pamber Forest and Silchester Common SSSI	3150m south-east	EPS2; WCA5; EUHS IV; HBAP
Natterer's	TVERC	7	Ufton Court	3400m	EPS2; WCA5;

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Bat				north-east	EUHS IV
Pipistrelle bat species	TVERC; HBIC	7	Aldermaston Wharf	2360m north	EPS2; WCA5; EUHS IV
A bat (<i>Chiroptera</i>)	HBIC	5	Heath End	2960m south	EPS2; WCA5; EUHS IV
Otter	TVERC	1	Ufton Bridge	4400m north-east	WCA5; EUHS II and IV; UKBAP; BBAP; HBAP
Badger	Binified Badger Group	1	Aldermaston	1150m north-west	BA
Harvest Mouse	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; BBAP; HBAP

Key: HDir(IV): European Habitats Directive Annex 4, WCA5: Wildlife and Countryside Act 1981 Schedule 5, UKBAP: UK Biodiversity Action Plan Priority Species, BA: Badger Act 1992.

Protected or notable herpetofauna species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Great Crested Newt	TVERC	2	Decoy Pit, Pools and Woods SSSI	1350m south-east	EPS2; WCA5; EUHS II and IV; UKBAP; BBAP; HBAP
Common Frog	TVERC	22	West of A340	1160m south-west	WCA5 (section 9(5) only); EUHS V
Common Toad	TVERC	2	West of A340	1120m south-west	WCA5 (section 9(5) only); UKBAP; BBAP
Slow Worm	TVERC	57	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only); UKBAP; BBAP
Grass Snake	TVERC	13	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only); UKBAP; BBAP
Adder	TVERC	85	Near Raghill Farm	1120m east	WCA5 (section 9(5) only); UKBAP; BBAP
Common	TVERC	20	Decoy Pit, Pools and	1400m	WCA5 (section 9(5))

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Lizard			Woods SSSI	south-east	only); BBAP
Smooth Newt	TVERC	18	Decoy Pit, Pools and Woods SSSI	1400m south-east	WCA5 (section 9(5) only)

Key: WCA5s9.5: Wildlife and Countryside Act 1981 Schedule 5, UKBAP: UK Biodiversity Action Plan Priority Species, HBAP: Hampshire BAP, BBAP: Berkshire BAP.

Protected or notable invertebrate species

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Silver-Studded Blue	TVERC; HBIC	7	Decoy Pit, Pools and Woods SSSI	1500m south-east	WCA5 (section 9(5) only); UKBAP; BBAP; HBAP; CI
Black Hairstreak	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	WCA5 (section 9(5) only)
Common Fan-foot	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP; HBAP; NS
Grayling	TVERC	5	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP; HBAP
V-moth	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP; CR
Latticed Heath	TVERC	1	North of Decoy Pit, Pools and Woods SSSI	1450m south-east	UKBAP
Broom Moth	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP; CS
The Spinach	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP; nHR
The Lackey	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP; nHS

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Minor Shoulder-knot	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Small Heath	TVERC	26	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP
White Ermine	TVERC; HBIC	2	In or near Padworth Common LNR	1000 – 2000m east	UKBAP
Grey Dagger	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Knot Grass	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Ear Moth	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Mottled Rustic	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Shoulder-striped Wainscot	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Rosy Minor	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Grizzled Skipper	TVERC	3	Decoy Pit, Pools and Woods SSSI	1500m south-east	UKBAP
Shaded Broad-bar	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Buff Ermine	HBIC	4	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Powdered Quaker	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
The Rustic	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Cinnabar	TVERC; HBIC	4	North of Decoy Pit, Pools and Woods SSSI	1400m south-east	UKBAP

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
Blood-vein	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Oak Hook-tip	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	UKBAP
Small Red Damselfly	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	BBAP; HBAP; N
Brilliant Emerald	TVERC	2	Decoy Pit, Pools and Woods SSSI	1500m south-east	BBAP; HBAP; VU
Bog Bush Cricket	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	BBAP; Nb
Orange Footman	TVERC; HBIC	3	In or near Padworth Common LNR	1000 – 2000m east	HBAP; Nb
Scarce Blue-Tailed Damselfly	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	HBAP; NT
Small Black Arches	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	HBAP; NS
Purple Emperor	HBIC	1	Near Pamber Forest and Silchester Common SSSI	1280 – 2000m south	HBAP; CS
Downy Emerald	TVERC	4	Decoy Pit, Pools and Woods SSSI	1500m south-east	HBAP
Long-Winged Conehead	TVERC	3	Decoy Pit, Pools and Woods SSSI	1500m south-east	Na
Poplar Lutestring	TVERC	1	North-west of Benyons Inclosure SINC	920 – 2000m east	Nb
Rosy Marbled	TVERC	1	North-west of Benyons Inclosure SINC	920 – 2000m east	Nb
Woodland Grasshopper	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Nb
<i>Laccobius atrocephalus</i> (A scavenger)	TVERC	1	Decoy Pit, Pools and Woods	1500m south-east	Nb

Species	Source	Number of records (post 1999)	Closest location	Distance from site	Legislation
water beetle)			SSSI		
<i>Berosus signaticollis</i> (A scavenger water beetle)	TVERC	1	Decoy Pit, Pools and Woods SSSI	1500m south-east	Nb
Dotted Chestnut	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Dotted-border Wave	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Grass Wave	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Bilberry Pug	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Large Red-belted Clearwing	HBIC	2	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
White-barred Clearwing	HBIC	3	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Scarce Prominent	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS
Lead-coloured Pug	HBIC	1	South of Decoy Pit, Pools and Woods SSSI	1640 – 2000m south-east	NS

Key: Notable: Nationally Notable

Appendix 3: Conservation Status Details

Legally protected species

EU Habitats and Species Directive, Annexes II and IV

Annex II (Animal and plant species of Community Interest) to the Directive lists the habitats and species whose conservation requires the designation of special areas of conservation. Some of them are defined as “priority” habitats or species (in danger of disappearing). Annex IV lists animal and plant species in need of particularly strict protection.

EU Birds Directive, Annex 1

The Birds Directive 1979 is implemented through the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994. Annex 1 of the Directive lists rare and vulnerable species for which there are provisions for the identification and classification of Special Protection Areas.

The Conservation (Natural Habitats, &c.) Regulations 1994, Schedule 2

Species listed in Schedule 2 of the regulations are known as European protected species. It is an offence to deliberately capture or kill a wild animal of a European protected species; to deliberately disturb any such animal; to deliberately take or destroy the eggs of such an animal; or to damage or destroy a breeding site or resting place of such an animal. This applies to all life stages of the animals.

Wildlife and Countryside Act 1981 (as amended), Schedule 1

Certain bird species are listed on Schedule 1 of the Act and by this Act it is an offence to intentionally or recklessly disturb those birds while the bird is building a nest or is in, on or near a nest containing eggs or young and it is an offence to intentionally or recklessly disturb dependent young of such a bird.

Wildlife and Countryside Act 1981 (as amended), Schedule 5

Section 9.1 of the Act makes it an offence to intentionally kill, injure or take any wild animal included in Schedule 5.

Section 9.2 makes it an offence to possess an animal or anything derived from an animal included on Schedule 5.

Section 9.4 makes it an offence to intentionally or recklessly damage or destroy, or obstruct access to, any structure or place which any wild animal included in Schedule 5 uses for shelter or protection and to disturb any such animal while it is occupying a structure or places which it uses for that purpose.

Section 9.5 makes it an offence to sell or expose for sale an animal included in Schedule 5.

Otherwise notable species

UK Biodiversity Action Plan (BAP) Priority Species

Species which qualify for one or more of the following are priority species:

- species which are globally threatened
- species which are rapidly declining in the UK, i.e. by more than 50% in the last 25 years

Red or Amber listed birds in Gregory *et al.* (2002)

Species are included on the Amber list if they have an unfavourable conservation status in Europe, if their population or range has declined moderately in recent years, if their population has declined historically but has made substantial recent recovery, if they are rare breeders or if they have internationally important or localised populations.

Bird species on the Red list may be Globally Threatened according to the IUCN, have undergone a historical population decline and not shown recent recovery, or have undergone a rapid population or range decline in recent years.

Appendix 4: Phase 1 Target Notes

Target Note No.	Target Note
1	Mature veteran oak tree, high bat and invertebrate potential.
2	Small copse.
3	Wet ditch, running water.
4	Newly constructed temporary access road.
5	Construction laydown area.
6	Construction laydown area and porta cabins.
7	Covered spoil piles (acid grassland).
8	Covered spoil piles (acid grassland).
9	Covered spoil piles (acid grassland).
10	Covered spoil piles (acid grassland).
11	Fox sighting.
12	Spoil piles running along temporary access road (acid grassland). Self seeding, suitable for small mammals, invertebrates, foraging and nesting birds and herpetofauna.
13	Spoil piles running along temporary access road (acid grassland). Self seeding, suitable for small mammals, invertebrates, foraging and nesting birds and herpetofauna.

Appendix 5: Species List

Plants:

annual meadow grass (*Poa annua*)
beech (*Fagus sylvatica*)
bell heather (*Erica cinerea*)
black medick (*Medicago lupulina*)
bracken (*Pteridium aquilinum*)
bramble (*Rubus fruticosus* agg.)
broadleaved dock (*Rubus obtusifolius*)
cinquefoil (*Potentilla reptans*)
cleavers (*Galium aparine*)
cock's-foot (*Dactylis glomerata*)
common bird's-foot trefoil (*Lotus corniculatus*)
common mouse-ear (*Cerastium fontanum*)
crack willow (*Salix fragilis*)
creeping buttercup (*Ranunculus repens*)
curled dock (*Rumex crispus*)
daisy (*Bellis perennis*)
elder (*Sambucus nigra*)
fescue (*Festuca* sp.)
hard rush (*Juncus inflexus*)
heather (*Calluna vulgaris*)
london plane (*Platanus x hispanica*)
meadow foxtail (*Alopecurus pratensis*)
oak (*Quercus robur*)
perennial rye-grass (*Lolium perenne*)
poplar (*Populus* sp.)

primrose (*Primula vulgaris*)
rhododendron (*Rhododendron ponticum*)
ribwort plantain (*Plantago lanceolata*)
rosebay willowherb (*Chamerion angustifolium*)
silver birch (*Betula pendula*)
soft rush (*Juncus effuses*)
stinging nettle (*Urtica dioica*)
teasel (*Dipsacus fullonum*)
turkey oak (*Quercus cerris*)
white clover (*Trifolium repens*)
yarrow (*Achillea millefolium*)
yorkshire fog (*Holcus lanatus*)

Birds:

feral pigeon
wood pigeon
blackbird
magpie
blue tit
green woodpecker
skylark
goldfinch
pied wagtail
robin

Appendix 6: Invertebrate Habitat Assessment

AWE HYDRUS, Invertebrate Habitat Assessment

Introduction

RPS was commissioned to undertake an invertebrate habitat assessment of the Hydrus site at AWE Aldermaston in Berkshire. The site is comprised predominantly of neutral grassland with margins of acid grassland which in places has regenerated over aggregates. As such, much of the site can be regarded as being “brownfield” in nature. There are also a number of scattered, semi-mature trees distributed through the grassland although predominantly in the west.

In addition to the grassland there is a small copse located in the southeast portion of the site. The trees within the copse itself are semi-mature but there is a veteran oak located adjacent to the copse. A small ditch drains away from the southern boundary towards the copse.

Methodology

An assessment of the overall intrinsic value of the site for invertebrates as well as particular features of interest was carried out as part of a walkover survey conducted on 21st July, 2009 by a suitably experienced ecologist.

The nature of this methodology means that any assessment is somewhat subjective, but factors used to evaluate the importance for invertebrates include features such as vegetation structural heterogeneity, floral diversity, presence of bare ground, presentation of “edge” habitats and presence of dead wood or sap runs. These are features known to enhance invertebrate diversity (e.g. Kirby, 2001; Alexander, 2002; Key, 2004; Bodsworth *et al.* 2005).

Although a full species list was not generated, several species of note were recorded during previous site visits and during the habitat assessment and these are reported in the next section.

Results

Much of the developing grassland over the site is interspersed with patches of bare ground and it is also structurally variable, especially to the south of the temporary access road. The copse, ditch and veteran oak can also be classed as features of raised interest for invertebrates. The following paragraphs discuss these features in more detail.

Acid Grassland

The grassland in the west of the site, especially that located to the south of the access road, has a fairly high degree of structural diversity and also large amounts of bare ground. The acidic nature of the grassland is confirmed *via* the presence of a number of small patches of heather and *Juncus*.

Structural diversity in sward height is a feature which can increase the diversity of invertebrates in a grassland environment. Microhabitat features are far more important to the diversity of an invertebrate

community than the overall nature of grassland. Variation in grassland structure provides a diversity of microhabitats which are important to invertebrates for feeding, basking, egg-laying and roosting. Large areas of exposed aggregate are also present within the grassland, again predominantly to the south of the access road. Bare ground is a very important microhabitat feature for many species and is used extensively for thermoregulation and also nesting in some species of solitary bees and wasps. The presence of bare ground can also substantially increase the diversity of an invertebrate community.

Species that were incidentally recorded either during the habitat assessment or other surveys include grizzled skipper (*Pyrgus malvae*), common blue (*Polyommatus icarus*), small heath (*Ceononympha pamphilus*), cinnabar moth (*Tyria jacobaeae*) and glow-worm (*Lampyris noctiluca*). Both grizzled skipper are listed as UK Biodiversity Action Plan Priority species while common blue, small heath and glow-worm have all suffered regional declines in recent decades. All of these species are indicators of a reasonably diverse invertebrate community.

Copse

The small copse in the southeast of the site is unlikely to be of high intrinsic value in terms of its invertebrate fauna but several features associated with the copse do have raised interest in the context of the surrounding landscape. The “edge habitat” that is created where the wooded edge meets the grassland is a feature that will provide sheltered basking and roosting sites for a variety of invertebrate fauna. The shelter provided is likely to be of increased importance due to the lack of shelter elsewhere on the site.

Within the copse there are some areas of deadwood and log piles which will also be of raised interest for invertebrates.

Ditch

The small ditch which runs from the southern boundary towards the copse is also of increased invertebrate interest in the context of the surrounding landscape. In much the same way as the copse provides structural diversity and roosting areas the ditch also provides these features on a smaller scale.

The ditch itself contains a small amount of running water and given the lack of other aquatic features on the site it will add some value to the overall invertebrate community. A bank which runs to the east of the stream may also provide nesting sites for bees and wasps.

Veteran Oak

Dead wood is an important – and often overlooked – resource for invertebrates. Native broad-leaved trees generally provide the most valuable and greatest diversity of dead wood habitats, in particular oak and willow. Saprophytic invertebrates require dead wood as an integral part of their life-cycle and

the more variety of dead wood locations, positions, aspects and structure the greater the variety of invertebrates that are likely to be present.

The veteran oak tree features a number of splits, cracks and sap runs as well as dead wood located both *in situ* on the tree and as fallen wood. In addition, mature oak trees support a highly diverse and specific invertebrate community which rely on the foliage, roots and bark of the tree.

This tree should be considered a very important invertebrate feature.

Discussion

The Hydrus site at AWE has a number of features which are important to invertebrate communities meaning the overall diversity is likely to be high given the size of the site. The grassland itself is structurally diverse, contains abundant bare ground and is locally florally diverse. The veteran oak tree should also be treated as a feature of high importance to invertebrates due to the presence of deadwood and the natural assemblage oak trees can support. The copse and ditch are less intrinsically valuable than the grassland and the oak tree but provide structural diversity and in the case of the ditch, a small amount of aquatic interest.

The retention of the copse and veteran oak should be a priority and any areas which are to remain undeveloped (especially those surrounding the copse and oak tree) should be managed as grassland to maintain or even enhance the invertebrate communities. A sympathetic mowing regime will maintain the structural diversity and also the varied floral community which will benefit the species present on the site.

References

Alexander, K.N. (2002) *The invertebrates of living and decaying timber in Britain and Ireland – a provisional checklist*. English Nature.

Bodsworth, E., Shepherd, P. and Plant, C.W. (2005) *Exotic plant species on brownfield land: their value to invertebrates of nature conservation importance*. English Nature Research Report number 650.

Key, R. (2000) Bare ground and the conservation of invertebrates. *British Wildlife* 11: 183-191.

Kirby, P. (1992) *Habitat management for invertebrates: a practical handbook*. JNCC.