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‘CARDIFF PARKWAY’ SITE, ST MELLONS, CARDIFF
INVERTEBRATE SURVEYS

March 2019

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Version No./Stage	Revisions: v.1.0 Final	Amendments: As issued	
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‘CARDIFF PARKWAY’ SITE, ST MELLONS, CARDIFF ENVIRONMENTAL IMPACT ASSESSMENT

INVERTEBRATE SURVEYS

1.0 Approach & Methods

- 1.1 The invertebrate fauna of the site was investigated during the summer of 2018. Aquatic and terrestrial invertebrates were sampled as far as possible in accordance with the guidelines provided by Natural Resources Wales (CCW 1996; 2004). Sampling was carried out in hot, dry, still weather conditions on 26-27 July 2018.
- 1.2 Aquatic invertebrate samples were collected at a series of stations within the site, each of about 50m in length where possible. Sampling stations are shown on Plan 1. Aquatic invertebrates were sampled from one bank using a long-handled D-frame dipping net of 300mm diameter and 1mm mesh. Dipping was carried out at approximately 5m intervals within the station and comprised series of deep sweeping in the water about 6 times, taking care not to disturb the sediment. Net contents were emptied into a white plastic sampling tray for sorting on the bankside and relevant invertebrates removed to tubes containing 70% ethanol solution. ‘Relevant invertebrates’ included aquatic representatives of:
- Coleoptera
 - Heteroptera
 - Ephemeroptera
 - Plecoptera
 - Trichoptera
 - Odonata (larvae)
 - Selected Diptera families (larvae)
 - Isopoda
 - Hirudinea
 - Mollusca
- 1.3 In addition, bankside and overhanging canopy vegetation within each station, where present, was swept using a long-handled sweep-net of 50cm diameter, 2mm mesh, on an *ad hoc* basis. Relevant invertebrates were mostly collected dry to tubes or by pooter. *Ad hoc* searching beneath refugia such as stones and logs was also carried out where such features were present, with invertebrates being collected dry to tubes where suitable or, where soft-bodied, to 70% ethanol solution.
- 1.4 General sampling of terrestrial invertebrates was also carried out elsewhere within the site where suitable habitats were available, using the same methods as above. Terrestrial sampling was mainly concentrated in the areas of the site indicated on Plan 1, although *ad hoc* sampling was also carried out elsewhere when suitable opportunities presented themselves.

Survey Constraints

- 1.5 In South Wales the summer of 2018 was marked by an extended period of very hot and dry weather which commenced in mid May following a period of unseasonably cold and wintry conditions which had occurred in March. Exceptionally hot and dry weather continued more-or-less unbroken throughout the months of June, July and August, and also into the first half of September. A number of warm weather records were equalled or exceeded during this period. This weather pattern meant that many wetland sites dried out quite early on in the year, and also that many vernal and early summer invertebrate had a much shorter flight season than usual, with many having peaked and disappeared by early June.
- 1.6 These conditions affected the surveys of the site in two ways: firstly, many of the internal reens within the site were dry at the time of survey and had evidently been so for some time; and secondly, populations of terrestrial invertebrates were noticeably less diverse and in fewer numbers than might otherwise have been expected for the time of year when the surveys were conducted. These factors are considered likely to have adversely affected the representativeness of the surveys which were carried out, although the significance of this is unclear.
- 1.7 In addition, significant areas of the site were inaccessible due to the dense overgrowth of bramble (*Rubus fruticosus* agg) and other thorny shrubs. This was particularly the case in the areas alongside Cypress Drive. Even where stands of tall ruderal vegetation were accessible for sweeping, this was often impeded by the presence of bramble and wild roses (*Rosa* spp) within the vegetation. The lack of access is not considered likely to have significantly affected the results of the surveys, however, as sufficient access to representative habitats was available in selected areas within the site.

1.8 Existing Records

- 1.8.1 Existing records of priority and protected invertebrate species for the site and its vicinity for a 2km radius were obtained from the local biological records centre (the South East Wales Biological Records Centre – SEWBRc). These are summarised in Table 1 below:

Table 1: Protected & Priority Species Recorded Within 2km of the Site

Protected & Priority Species	Status	Min distance
<i>Bombus humilis</i> (brown-banded carder-bee)	S7, UK BAP	300m
<i>Bombus sylvarum</i> (shrill carder-bee)	S7, UK BAP, NS	300m
<i>Erynnis tages</i> (dingy skipper butterfly)	S7, UK BAP, RD-VU	300m
<i>Agrochola lychnidis</i> (beaded chestnut moth)	S7, UK BAP	650m
<i>Cirrhia icteritia</i> (sallow moth)	S7, UK BAP	650m
<i>Rhizedra lutosa</i> (large wainscot moth)	S7, UK BAP	650m
<i>Allophytes oxyacanthae</i> (green-brindled crescent moth)	S7, UK BAP	<2km
<i>Chiasmia clathrata</i> (latticed heath moth)	S7, UK BAP	<2km
<i>Coenonympha pamphilus</i> (small heath butterfly)	S7, UK BAP	<2km
<i>Hydraecia micacea</i> (rosy rustic moth)	S7, UK BAP	<2km
<i>Lasiommata megera</i> (wall brown butterfly)	S7, UK BAP	<2km
<i>Tyria jacobaeae</i> (cinnabar moth)	S7, UK BAP	<2km

Key

S7	-	Environment (Wales) Act 2016, Species of Conservation Concern in Wales (“Section 7 species”)
UK BAP	-	UK Biodiversity Action Plan Priority Species (Natural Environment & Rural Communities Act 2006 “Section 41 species”)
RD-VU	-	UK Red Data Book – “Vulnerable”
NS	-	“Nationally Scarce”

- 1.8.2 There are numerous records of the uncommon bumblebees *Bombus sylvarum* and *B. humilis* from the site vicinity, the most recent records being from 2016 in both cases. Both species have been recorded in the Hendre Lake Park area about 250-350m to the west of the site, as well as from various other locations nearby. *Bombus humilis* was recorded on the site by the present survey and can probably be assumed to be resident. *B. sylvarum* was not seen, however, and most of the recent records appear to relate either to the Hendre Lake Park area or to the sea-wall area well off-site to the south (Pavett 2004). The status of *B. sylvarum* on the site is therefore considered to require verification.
- 1.8.3 Dingy skipper butterfly (*Erynnis tages*) was recorded several times in Hendre Lake Park about 450m from the site in 2011 but does not appear to have been recorded more recently. It was not seen by the present survey, although the site does appear to contain some potentially suitable habitat (eg alongside Cypress Drive).
- 1.8.4 A number of uncommon moths have been recorded mainly at light-traps in the vicinity of the site, including those mentioned above. Any of the species listed in Table 1 could potentially occur as residents on the site, with cinnabar having been confirmed as a resident by the present survey.
- 1.8.5 In addition, both small heath (*Coenonymphus pamphilus*) and wall brown (*Lasiommata megera*) butterflies have also been recorded in the vicinity, both of which are also S7 & UK BAP listed. The habitats of the site also appear superficially suitable for both these species.

2.0 Survey Results

Aquatic Invertebrates

- 2.1 A list of the aquatic invertebrate species recorded is given in Table 2 below. Sampling for aquatic invertebrates was mainly confined to the main reens which run around the site boundaries to the west and east, ie Faendre Reen and Greenlane Reen respectively (see Plan 1). These are deep-water channels which did not show any signs of water-lowering or drying-out during the survey period.
- 2.2 Aquatic sampling opportunities within the site were more limited, with many of the internal reens being either dried-out or heavily overgrown with scrub and/or tall emergent vegetation such as common reed (*Phragmites australis*). Sampling within the southern section of the site was especially limited. The site does, however, also contain several other main reens including Ty-ffynnon Reen, Railway Reen and St Mellons Reen, sections of which were locally suitable for sampling.

Terrestrial Invertebrates

- 2.3 A list of the terrestrial invertebrates recorded is given at Table 3 below. At the time of survey much of the site comprised short swards of improved/semi-improved neutral pasture or mown grassland of low floristic diversity, with some areas in arable production. However, there were also some areas of neglected semi-improved neutral grassland which were of moderate floristic diversity, such as the series of narrow damp enclosures which extend southwards from the green lane which runs alongside Ty-ffynnon Reen (see Plan 1). There are also some patches of tall ruderal vegetation, such as alongside Cypress Drive, although these are often encroached by bramble and developing scrub.
- 2.4 The site also contains numerous sections of outgrown hedge and scrub, mostly rather impenetrable and heavily shaded beneath.

Table 2: Aquatic Invertebrate Species Recorded from the Site

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
MOLLUSCA	Gastropoda	Snails																					
Bithyniidae	<i>Bithynia tentaculata</i>	Faucet snail								X		X											
Lymnaeidae	<i>Lymnaea stagnalis</i>	Great pond-snail																					
Lymnaeidae	<i>Radix balthica</i> (=peregra)	Wandering snail			X		X					X		X	X								
Physidae	<i>Physella acuta</i>	Bladder snail	Naturalised																				
Physidae	<i>Physa fontinalis</i>	Bladder snail		X	X	X		X									X		X				
Planorbiidae	<i>Anisus vortex</i>	Whirlpool ram's-horn snail			X	X		X									X				X		
Planorbiidae	<i>Planorbarius corneus</i>	Great ram's-horn snail																					
Planorbiidae	<i>Planorbis planorbis</i>	Margined ram's-horn snail			X					X	X												
Succineidae	<i>Succinea putris</i>	Amber snail																					
MOLLUSCA	Bivalvia	Bivalve snails																					
Pisidiidae	<i>Pisidium</i> sp	Pea-mussel																					
Sphaeriidae	<i>Sphaerium</i> sp	Orb-mussel																					
ANNELIDA	Hirudinae	Leeches																					
Erpobdellidae	<i>Erpobdella octoculata</i>	Freshwater leech		X	X								X				X						
Erpobdellidae	<i>Erpobdella testacea</i>	Freshwater leech	Local		X																		
Glossiphoniidae	<i>Theromyzon tessulatum</i>	Freshwater leech			X	X																	
CRUSTACEA	Isopoda	Waterlouse																					
Asellidae	<i>Asellus aquaticus</i>	Water hog-louse		X	X	X		X		X	X			X	X	X			X		X	X	X
Asellidae	<i>Asellus meridianus</i>	Water hog-louse			X							X					X						
CRUSTACEA	Amphipoda																						
Gammaridae	<i>Gammarus pulex</i>	Freshwater shrimp								X													

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
ARACHNIDA	Araneae	Spiders																					
Cybaeidae	<i>Argyroneta aquatica</i>	Water-spider			X						X												
INSECTA	Trichoptera	Caddisflies																					
Phryganeidae	<i>Phryganea</i> sp	Caddisfly	Larva									X											
INSECTA	Odonata	Dragonflies & damselflies																					
Aeshnidae	<i>Aeshna cyanea</i>	Southern hawker	Adult		X																		
Aeshnidae	<i>Aeshna juncea</i>	Common hawker	Adult		X	X				X													
Aeshnidae	<i>Anax imperator</i>	Emperor dragonfly	Adult		X	X									X	X							
Coenagrionidae	<i>Enallagma cyathigerum</i>	Common blue damselfly	Adult					X		X													
Coenagrionidae	<i>Coenagrion puella</i>	Azure damselfly	Adult	X	X	X			X														X
Coenagrionidae	<i>Ischnura elegans</i>	Common blue-tailed damselfly	Adult											X	X								
Libellulidae	<i>Libellula depressa</i>	Broad-bodied chaser	Adult	X	X										X								
Libellulidae	<i>Orthetrum cancellatum</i>	Black-tailed skimmer	Adult – Local, CS	X																			
Libellulidae	<i>Sympetrum striolatum</i>	Common darter	Adult	X	X	X				X						X							
INSECTA	Heteroptera	Water-bugs																					
Corixidae	<i>Corixa punctata</i>	Water-boatman					X	X						X				X				X	
Corixidae	<i>Hesperocorixa linnaei</i>	Water-boatman							X			X					X						
Corixidae	<i>Hesperocorixa sahlbergi</i>	Water-boatman			X					X													X
Corixidae	<i>Sigara dorsalis</i>	Lesser water-boatman		X	X	X			X	X				X	X			X				X	
Corixidae	<i>Sigara lateralis</i>	Lesser water-boatman				X	X			X						X							
Gerridae	<i>Gerris lacustris</i>	Pond-skater		X	X			X		X					X	X							
Hydrometridae	<i>Hydrometra stagnorum</i>	Water-measurer		X												X							
Naucoridae	<i>Ilycoris cimicoides</i>	Saucer-bug		X		X				X	X				X					X			
Nepidae	<i>Nepa cinerea</i>	Water-scorpion		X					X					X									
Nepidae	<i>Ranatra linearis</i>	Water stick-insect	Local						X														
Notonectidae	<i>Notonecta glauca</i>	Backswimmer		X	X					X	X	X											

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
INSECTA	Lepidoptera 'Microlepidoptera'	Micromoths																					
Crambidae	<i>Cataglyphis lemnae</i>	Small china-mark moth	Adult		X	X											X						
INSECTA	Coleoptera	Water-beetles																					
Dytiscidae	<i>Agabus bipustulatus</i>	Diving-beetle		X				X															
Dytiscidae	<i>Agabus sturmi</i>	Diving-beetle				X						X			X		X						
Dytiscidae	<i>Dytiscus marginalis</i>	Diving-beetle				X																	
Dytiscidae	<i>Graptodytes pictus</i>	Diving-beetle	Local		X			X			X	X											
Dytiscidae	<i>Hydroporus angustatus</i>	Diving-beetle		X						X								X					
Dytiscidae	<i>Hydroporus nigrita</i>	Diving-beetle	Local in Wales				X																
Dytiscidae	<i>Hydroporus palustris</i>	Diving-beetle				X		X	X					X									
Dytiscidae	<i>Hydroporus pubescens</i>	Diving-beetle			X																		
Dytiscidae	<i>Hyphodryas ovatus</i>	Cherrystone diving-beetle		X	X			X		X	X	X	X			X				X			
Dytiscidae	<i>Ilybius quadriguttatus</i>	Diving-beetle		X		X						X	X					X					
Dytiscidae	<i>Laccophilus hyalinus</i>	Diving-beetle	Local in Wales							X													
Dytiscidae	<i>Laccophilus minutus</i>	Diving-beetle	Local		X									X									
Gyrinidae	<i>Gyrinus substriatus</i>	Whirligig beetle		X										X									
Halplidae	<i>Halplus immaculatus</i>	Crawling water-beetle	Local			X																	
Halplidae	<i>Halplus lineaticollis</i>	Crawling water-beetle			X																		
Halplidae	<i>Halplus ruficollis</i>	Crawling water-beetle		X	X		X	X		X		X			X	X	X				X		
Halplidae	<i>Peltodytes caesus</i>	Crawling water-beetle	NS				X			X													
Helophoridae	<i>Helophorus aequalis</i>	Crawling water-beetle												X	X								
Helophoridae	<i>Helophorus brevialpis</i>	Water scavenger-beetle		X	X					X	X	X					X	X				X	
Helophoridae	<i>Helophorus obscurus</i>	Water scavenger-beetle														X							
Hydraenidae	<i>Hydraena nigrita</i>	Moss-beetle									X												
Hydraenidae	<i>Hydraena testacea</i>	Moss-beetle	Local								X	X											
Hydraenidae	<i>Octhebius minimus</i>	Moss-beetle								X													
Hydrophilidae	<i>Anacaena globulus</i>	Water scavenger-beetle		X			X				X					X							
Hydrophilidae	<i>Anacaena limbata</i>	Water scavenger-beetle			X						X				X								
Hydrophilidae	<i>Anacaena lutescens</i>	Water scavenger-beetle		X	X							X											X
Hydrophilidae	<i>Helochares punctatus</i>	Water scavenger-beetle		X	X			X										X					

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Hydrophilidae	<i>Hydrobius fuscipes</i>	Water scavenger-beetle						X		X	X												
Hydrophilidae	<i>Laccobius bipunctatus</i>	Water scavenger-beetle		X																			
Hydrophilidae	<i>Laccobius minutus</i>	Water scavenger-beetle	Local	X																			
Noteridae	<i>Noterus clavicornis</i>	Large noterus beetle	Local	X	X			X		X	X						X	X				X	
INSECTA	Diptera	Flies																					
Thaumaleidae	<i>Thaumalea</i> sp	Trickle-midge	Larva			X																	

Key

NS : Nationally Scarce

CS : South Wales SINC “Contributory Species” (see under Table 3 below).

Table 3: Terrestrial Invertebrate Species Recorded from the Site

Note: Ubiquitous species are not localised to sample points

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
MOLLUSCA	Gastropoda	Snails			
Helicidae	<i>Cepaea hortensis</i>	White-lipped snail			
Helicidae	<i>Cepaea nemoralis</i>	Brown-lipped snail			
Helicidae	<i>Cornu aspersa</i>	Garden snail			
Helicidae	<i>Trochulus hispidus</i>	Hairy snail			
Oxychilidae	<i>Oxychilus alliarius</i>	Garlic glass-snail			
Oxychilidae	<i>Oxychilus cellarius</i>	Cellar glass-snail			
MYRIAPODA	Diplopoda	Millipedes			
Julidae	<i>Cylindroiulus punctatus</i>	Millipede			
Julidae	<i>Tachypodiulus niger</i>	Black millipede			
Polydesmidae	<i>Polydesmus angustus</i>	Flat millipede			
MYRIAPODA	Chilopoda	Centipedes			
Lithobiidae	<i>Lithobius forficatus</i>	Centipede			
CRUSTACEA	Isopoda	Woodlice			
Armadillidiidae	<i>Armadillidium vulgare</i>	Pill-woodlouse			
Oniscidae	<i>Oniscus asellus</i>	Woodlouse			
Philosciidae	<i>Philoscia muscorum</i>	Woodlouse			
Porcellionidae	<i>Porcellio scaber</i>	Woodlouse			
Triconiscidae	<i>Trichoniscus pusillus</i> agg	Woodlouse			
ARACHNIDA	Aranea	Spiders			
Tetragnathidae	<i>Tetragnatha extensa</i>	Long-jawed orb-weaver			
Theridiidae	<i>Enoplognatha ovata</i> ss	Spider			

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Thomisidae	<i>Misumena vatia</i>	Flower spider			
ARACHNIDA	Opiliones	Harvestmen			
Leiobunidae	<i>Mitopus morio</i>	Harvestman			
Phalangidae	<i>Leiobunum rotundatum</i>	Harvestman			
Phalangidae	<i>Paroligolophus agrestis</i>	Harvestman			
INSECTA	Orthoptera	Grasshopper & crickets			
Acrididae	<i>Chorthippus brunneus</i>	Field grasshopper			
Phaneropteridae	<i>Leptophyes punctatissima</i>	Speckled bush-cricket	Local	CS	Damp grasslands, Ty-ffynnon Reen
Tettigoniidae	<i>Conocephalus dorsalis</i>	Short-winged conehead	Local	CS	Damp grasslands, Ty-ffynnon Reen
Tetrigidae	<i>Tetrix undulata</i>	Common groundhopper			
Tetrigidae	<i>Tetrix subulata</i>	Slender ground-hopper	Local	QS	Damp grasslands, Ty-ffynnon Reen
INSECTA	Dermaptera	Earwigs			
Forficulidae	<i>Forficula auricularia</i>	Earwig			
INSECTA	Heteroptera	Bugs			
Anthoridae	<i>Anthocoris nemorum</i>	Flower bug			
Coreidae	<i>Coreus marginatus</i>	Dock shieldbug			
Lygaeidae	<i>Kleidocerys resedae</i>	Catkin-bug			
Lygaeidae	<i>Lygus maritimus</i>	Ground bug			
Miridae	<i>Leptopterna dolabrata</i>	Grass-bug			
Miridae	<i>Liocoris tripustulatus</i>	Capsid-bug			
Miridae	<i>Notostira elongata</i>	Capsid-bug			
Miridae	<i>Orthotylus marginalis</i>	Capsid-bug			
Miridae	<i>Phytocoris varipes</i>	Capsid-bug			
Miridae	<i>Stenodema calcarata</i>	Grass-bug			
Miridae	<i>Stenodema laevigata</i>	Grass-bug			
Nabidae	<i>Nabis ferus</i>	Damsel-bug			
Nabidae	<i>Nabis limbatus</i>	Damsel-bug			

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Pentatomidae	<i>Acanthosoma haemorrhoidale</i>	Hawthorn shieldbug			
Pentatomidae	<i>Aelia acuminata</i>	Bishop's-mitre bug			
Pentatomidae	<i>Dolycoris baccarum</i>	Hairy shieldbug			
Pentatomidae	<i>Palomena prasina</i>	Green shield-bug			
Scutelleridae	<i>Eurygaster testudinaria</i>	Tortoise-bug	Local		Damp grasslands, Ty-ffynnon Reen
INSECTA	Homoptera	Planthoppers & leafhoppers			
Aphrophoridae	<i>Aphrophora alni</i>	Alder froghopper			
Aphrophoridae	<i>Neophilaenus lineatus</i>	Striped froghopper			
Aphrophoridae	<i>Philaenus spumarius</i>	Spittle-bug			
Cicadellidae	<i>Cicadella viridis</i>	Leafhopper			
Cicadellidae	<i>Evacanthus interruptus</i>	Leafhopper			
Cixiidae	<i>Cixius nervosus</i>	Lacehopper			
INSECTA	Lepidoptera 'Rhopalocera'	Butterflies			
Hesperiidae	<i>Thymelicus sylvestris</i>	Small skipper			
Lycaenidae	<i>Polyommatus icarus</i>	Common blue			
Nymphalidae	<i>Aglais urticae</i>	Small tortoiseshell			
Nymphalidae	<i>Aphantopus hyperantus</i>	Ringlet	Local		
Nymphalidae	<i>Inachis io</i>	Peacock			
Nymphalidae	<i>Maniola jurtina</i>	Meadow brown			
Nymphalidae	<i>Pararge aegeria</i>	Speckled wood			
Nymphalidae	<i>Polygonia c-album</i>	Comma			
Nymphalidae	<i>Pyrionia tithonus</i>	Gatekeeper			
Nymphalidae	<i>Vanessa atalanta</i>	Red admiral			
Nymphalidae	<i>Vanessa cardui</i>	Painted lady			
Pieridae	<i>Pieris brassicae</i>	Large white			
Pieridae	<i>Pieris napi</i>	Green-veined white			
INSECTA	Lepidoptera 'Heterocera'	Larger moths			
Erebidae	<i>Tyria jacobaea</i>	Cinnabar moth	S7, UK BAP	CS	Larvae on ragwort, by Cypress Drive

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Geometridae	<i>Captogramma bilineata</i>	Yellow shell			
Geometridae	<i>Epirrhoe alternata</i>	Common carpet			
Geometridae	<i>Idaea biselata</i>	Small fan-footed wave			
Noctuidae	<i>Autographa gamma</i>	Silver Y			
INSECTA	Diptera	Flies			
Dolichopodidae	<i>Campsicnemus curvipes</i>	Long-legged fly			
Dolichopodidae	<i>Dolichopus griseipennis</i>	Long-legged fly			
Dolichopodidae	<i>Dolichopus plumipes</i>	Long-legged fly			
Dolichopodidae	<i>Dolichopus signatus</i>	Long-legged fly			
Dolichopodidae	<i>Dolichopus trivialis</i>	Long-legged fly			
Dolichopodidae	<i>Dolichopus vitripennis</i>	Long-legged fly			
Dolichopodidae	<i>Poecilobothrus nobilitatus</i>	Long-legged fly			
Dolichopodidae	<i>Raphium commune</i>	Long-legged fly			
Dolichopodidae	<i>Syntormon denticulatus</i>	Long-legged fly			
Lonchopteridae	<i>Lonchoptera furcata</i>	Spear-winged fly			
Lonchopteridae	<i>Lonchoptera lutea</i>	Spear-winged fly			
Rhagionidae	<i>Chrysopilus cristatus</i>	Snipe-fly			
Rhagionidae	<i>Rhagio scolopaceus</i>	Snipe-fly			
Sciomyzidae	<i>Hydromyia dorsalis</i>	Snail-killing fly			
Sciomyzidae	<i>Pherbellia cinerella</i>	Snail-killing fly			
Sciomyzidae	<i>Pherbina coyleti</i>	Snail-killing fly			
Sciomyzidae	<i>Sepedon sphegea</i>	Snail-killing fly	Local		Faendre Reen
Sciomyzidae	<i>Tetanocera elata</i>	Snail-killing fly			
Stratiomyidae	<i>Chloromyia formosa</i>	Soldierfly			
Stratiomyidae	<i>Microchrysa polita</i>	Soldierfly			
Stratiomyidae	<i>Nemotelus notatus</i>	Soldierfly			
Stratiomyiidae	<i>Nemotelus uliginosus</i>	soldierfly			
Syrphidae	<i>Cheilosia fraterna</i>	Hoverfly			
Syrphidae	<i>Chrysogaster solstitialis</i>	Hoverfly			
Syrphidae	<i>Episyrphus balteatus</i>	Hoverfly			

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Syrphidae	<i>Eristalis arbustorum</i>	Hoverfly			
Syrphidae	<i>Eristalis horticola</i>	Hoverfly			
Syrphidae	<i>Eristalis intricarius</i>	Hoverfly			
Syrphidae	<i>Eristalis pertinax</i>	Hoverfly			
Syrphidae	<i>Eristalis tenax</i>	Hoverfly			
Syrphidae	<i>Eupeodes corollae</i>	Hoverfly			
Syrphidae	<i>Helophilus pendulus</i>	Hoverfly			
Syrphidae	<i>Lejogaster metallina</i>	Hoverfly			
Syrphidae	<i>Melanostoma mellinum</i>	Hoverfly			
Syrphidae	<i>Melanostoma scalare</i>	Hoverfly			
Syrphidae	<i>Parhelophilus frutetorum</i>	Hoverfly	Local		Faendre Reen
Syrphidae	<i>Pipizella viduata</i>	Hoverfly			
Syrphidae	<i>Platycheirus albimanus</i>	Hoverfly			
Syrphidae	<i>Platycheirus angustatus</i>	Hoverfly			
Syrphidae	<i>Sphaerophoria philanthus</i>	Hoverfly			
Syrphidae	<i>Sphaerophoria scripta</i>	Hoverfly			
Syrphidae	<i>Syritta pipiens</i>	Hoverfly			
Syrphidae	<i>Syrphys ribesii</i>	Hoverfly			
Syrphidae	<i>Syrphus vitripennis</i>	Hoverfly			
Syrphidae	<i>Xylota segnis</i>	Hoverfly			
Tabanidae	<i>Haematopota pluvialis</i>	Cleg			
Tephritidae	<i>Chaetostomella cylindrica</i>	Fruit-fly			
Tephritidae	<i>Sphenella marginata</i>	Fruit-fly			
Tephritidae	<i>Urophora jaceana</i>	Fruit-fly			
Ulidiidae	<i>Herina lugubris</i>	Picture-winged fly	Local		Damp grasslands, Ty-ffynnon Reen
INSECTA	Coleoptera	Beetles			
Apionidae	<i>Ceratapion gibbirostre</i>	Apionid weevil			
Cantharidae	<i>Cantharis cryptica</i>	Soldier-beetle			
Cantharidae	<i>Cantharis nigra</i>	Soldier-beetle			
Catharidae	<i>Cantharis pellucida</i>	Soldier-beetle			

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Cantharidae	<i>Cantharis thoracica</i>	Soldier-beetle			
Cantharidae	<i>Rhagonycha fulva</i>	Soldier-beetle			
Carabidae	<i>Abax parallelepipedus</i>	Ground-beetle			
Carabidae	<i>Agonum marginatum</i>	Ground-beetle			
Carabidae	<i>Loricera pilicornis</i>	Ground-beetle			
Carabidae	<i>Notiophilus biguttatus</i>	Ground-beetle			
Carabidae	<i>Notiophilus substriatus</i>	Ground-beetle			
Carabidae	<i>Pterostichus melanarius</i>	Ground-beetle			
Carabidae	<i>Pterostichus niger</i>	Ground-beetle			
Carabidae	<i>Pterostichus strenuous</i>	Ground-beetle			
Chrysomelidae	<i>Altica palustris</i>	Leafbeetle			
Chrysomelidae	<i>Apthona nonstriata</i>	Flea-beetle			
Chrysomelidae	<i>Phyllotreta undulata</i>	Flea-beetle			
Coccinellidae	<i>Adalia bipunctata</i>	Two-spotted ladybird			
Coccinellidae	<i>Coccinella septempunctata</i>	7-spotted ladybird			
Coccinellidae	<i>Harmonia anaxyridis</i>	Harlequin ladybird	INNS		
Coccinellidae	<i>Hippodamia variegata</i>	Adonis ladybird			
Coccinellidae	<i>Propylea quatuordecimpunctata</i>	14-spot ladybird			
Curculionidae	<i>Cionus scrophulariae</i>	Figwort weevil			
Oedemeridae	<i>Oedemera lurida</i>	Flower-beetle			
INSECTA	Hymenoptera	Bees, wasps & ants			
Apidae	<i>Apis mellifera</i>	Honeybee			
Apidae	<i>Bombus humilis</i>	Brown-banded carder-bee	S7, UK BAP, NS	QS	Grasslands S of Ty-ffynnon Reen
Apidae	<i>Bombus hypnorum</i>	Tree bumblebee			
Apidae	<i>Bombus lapidarius</i>	Red-tailed bumblebee			
Apidae	<i>Bombus pascuorum</i>	Common carder-bee			
Apidae	<i>Bombus terrestris</i>	Buff-tailed bumblebee			
Formicidae	<i>Lasius flavus</i>	Yellow meadow-ant			
Formicidae	<i>Lasius niger</i>	Common black ant			
Halictidae	<i>Lasioglossum lativentre</i>	Furrow-bee			

CLASS (Family)	ORDER (Species)	COMMON NAME	STATUS	SINC QUALIFICATION	NOTES
Halictidae	<i>Lasioglossum smeathmanellum</i>	Furrow-bee			
Vespidae	<i>Vespa germanica</i>	Wasp			
Vespidae	<i>Vespa vulgaris</i>	Wasp			

Key

S7 = Wales Species of Conservation Concern (“Section 7 species”)

NS = UK “Nationally Scarce” species

QS = SINC ‘Qualifying Species’

INNS = Invasive non-native species

UK BAP = UK Biodiversity Action Plan Species

CS = SINC ‘Contributory Species’

3.0 EVALUATION OF SURVEY RESULTS

- 3.1 Both of the surveys were carried out during an extended period of hot, dry weather. The air temperature on 26 July was 25-28°C and on 27 July was 21-22°C. On both occasions the conditions were still and dry with limited cloud. There had been no rain for some weeks ahead of the survey visits.
- 3.2 A full list of the invertebrate species recorded by the surveys is given in Tables 2 & 3. There are two priority invertebrate species recorded from the site to date, and others are likely to occur having been recorded elsewhere in the near vicinity. Some 226 invertebrate species have been positively identified from the site to date, comprising 72 aquatic species and 154 terrestrial species. Both lists include a number of uncommon and local species.
- 3.3 Numbers and diversity of aquatic invertebrates were subjectively assessed as being moderate to high on the site, although this was mostly confined to the main reens which run around the site periphery to the west and east (i.e. Faendre & Greenlane Reens) and the few larger reens which cross the site internally. Many of the internal reens of the site were of much less interest, however, being extensively overgrown and /or dried-out at the time of survey.
- 3.4 Numbers and diversity of terrestrial invertebrates were subjectively assessed as being moderate to low over much of the site, being greatest in the areas of least agricultural management and alongside the main boundary reens. The areas of neglected semi-improved neutral grassland and the tall bankside vegetation alongside Faendre Reen and, to a lesser extent, Greenlane Reen were considered to be the most valuable habitats for terrestrial invertebrates.
- 3.5 Numbers and diversity of both aquatic and terrestrial species were generally assessed as being greatest in the area of the site lying north of the railway.

3.6 Notable Species

Protected Species

- 3.6.1 None of the species recorded from the site are listed on either Schedule 2 of the Conservation of Habitats & Species Regulations 2017 ('European Protected Species') or on Schedule 5 of the Wildlife & Countryside Act 1981, as amended ('UK Protected Species') other than in respect of commercial trade.

Red Data Book Species

- 3.6.2 No Red Data Book species were recorded from the site. It is possible, however, that one such species, the shrill carder-bee (*Bombus sylvarum*), could occur on the site having been recorded in similar habitats at several locations within about 250-350m away from the site.

- 3.6.3 *Bombus sylvarum* is a declining species currently regarded as being ‘Vulnerable’ in the UK. The Gwent levels, of which the site forms a part, are a UK and Welsh stronghold for this species, which has declined significantly since the 1960s, being widespread in the Gwent Levels: Nash & Goldcliff SSSI (Smith 2013). There are currently only seven known populations remaining in the UK, four in England and three in Wales, and the species may now be in danger of extinction (<http://www.bwars.com/bee/apidae/bombus-sylvarum> - accessed 17 Feb 2019).

Section 7 Species (‘Priority Species’ in Wales)

- 3.6.4 Two of the recorded species are listed in Section 7¹ of the Environment (Wales) Act 2016, as shown below. Both were recorded on the site by the present survey.

Table 4: Section 7 Listed Species Recorded from the Site

<i>Bombus humilis</i>	Brown-banded carder-bee
<i>Tyria jacobaea</i>	Cinnabar moth

- 3.6.5 The site contains habitats which appear suitable for breeding by these species, which are therefore assumed to be resident.
- 3.6.6 From the available records it appears that a further 10 or so other such species could also potentially occur on the site, having been recorded recently in similar habitats within 2km. Several of these are recorded from Hendre Lake Park which lies less than 350m from the site and is contiguous with it.

Nationally Rare & Scarce Species

- 3.6.7 Two ‘Nationally Scarce’² species are recorded from the site, as shown below.

Table 5: Nationally Rare & Scarce Species Recorded from the Site

<i>Bombus humilis</i>	Brown-banded carder-bee
<i>Peltodytes caesus</i>	Crawling water-beetle

- 3.6.8 The site contains habitats which appear suitable for breeding by these species, which are therefore assumed to be resident.
- 3.6.9 Other such species could also potentially occur, having been widely recorded elsewhere in the contiguous and adjacent sections of the SSSI.

¹ In Wales the s.7 list of the EWA 2016 supersedes the s.42 list of the Natural Environment & Rural Communities Act 2006, which in turn replaced the ‘Priority Species’ lists of the UK Biodiversity Action Plan (UK BAP: UKSG 1995; UKBG 1998-1999) and its Welsh equivalent (WPB 2016).

² ‘Nationally Rare & Scarce’ species are considered to be nationally rare or uncommon in the UK, but are typically not as rare as RDB species: These species are usually separated into ‘Nationally Rare Na’ species, which have been recorded in 15-30x 10km squares of the UK; and ‘Nationally Scarce Nb’ species have been recorded in 31-100x 10km squares of the UK, although they may just be listed as ‘Nationally Scarce’ where the data is insufficient to make this distinction.

SINC Qualifying Species

- 3.6.10 The species listed in Table 6 below are considered to be grounds for consideration of a site as a Site of Importance for Nature Conservation (SINC) in Wales (WBP 2008).

Table 6: SINC Qualifying Species Recorded from the Site

<i>Bombus humilis</i>	Brown-banded carder-bee	Qualifying
<i>Tetrix subulata</i>	Slender ground-hopper	Qualifying
<i>Conocephalus discolor</i>	Short-winged conehead	Contributory
<i>Leptophyes punctatissima</i>	Speckled bush-cricket	Contributory
<i>Peltodytes caesus</i>	Crawling water-beetle	Contributory
<i>Tyria jacobaeae</i>	Cinnabar moth	Contributory

- 3.6.11 In the event that either shrill carder-bee (*Bombus sylvarum*) or dingy skipper butterfly (*Erynnis tages*), both of which have been recorded within 0.5km and for which the site supports suitable habitats, are also found to occur on the site these would also comprise 'Qualifying' species for SINC designation.
- 3.6.12 On this basis the site is considered to meet the qualifying threshold for SINC designation.

Local Species

- 3.6.13 20 of the species currently recorded from the site are regarded as being local either in the UK, Wales or South Wales context, as shown below.

Table 7: Local Species Recorded from the Site

<i>Aphantopus hyperantus</i>	Ringlet butterfly
<i>Conocephalus dorsalis</i>	Short-winged conehead
<i>Crepidodera plutus</i>	Flea-beetle
<i>Erpobdella testacea</i>	Freshwater leech
<i>Eurygaster testudinaria</i>	Tortoise-bug
<i>Graptodytes pictus</i>	Diving-beetle
<i>Haliphys immaculatus</i>	Crawling water-beetle
<i>Herina lugubris</i>	Picture-wing fly
<i>Hydraena testacea</i>	Water scavenger-beetle
<i>Hydroporus nigrita</i>	Diving-beetle
<i>Laccobius minutus</i>	Water scavenger-beetle
<i>Laccophilus halinus</i>	Diving-beetle
<i>Laccophilus minutus</i>	Diving-beetle
<i>Leptophyes punctatissima</i>	Speckled bush-cricket
<i>Noterus maculatus</i>	Large noterus beetle
<i>Orthetrum cancellatum</i>	Black-tailed skimmer
<i>Parhelophilus frutetorum</i>	Hoverfly
<i>Ranatra linearis</i>	Water stick-insect
<i>Sepedon spegea</i>	Snail-killing fly
<i>Tetrix subulata</i>	Slender groundhopper

- 3.6.14 The site supports habitats which appear broadly suitable for breeding by all the species listed above, and they are therefore assumed to be resident.

Invasive Non-native Species (INNS)

- 3.6.15 Harlequin ladybird (*Anaxyridis harmonae*) is present on the site. This is a fast-spreading and invasive predatory species from Asia which has been linked to declines in native ladybird (Coccinellidae) populations in the UK.
- 3.6.16 Zebra mussel (*Dreissina polymorpha*) was recorded from the nearby Hendre Lake in 2015 (SEWBRc data). Faendre Reen feeds directly into Hendre Lake and therefore it might be expected that this invasive and super-competitive Asian species could colonise into the site in the future.

3.5 Habitat Summary

- 3.5.1 The majority of the recorded invertebrates were found associated with the main water-holding reens, localised areas of neglected neutral semi-natural grasslands and marshy grasslands, and reedbeds and tall ruderal vegetation alongside Cypress Drive and the railway line. The secondary woodland, scrub and hedge habitats of the site were found to be less productive of invertebrates, with mainly common and ubiquitous species being found. The grazed pastures, mown grasslands and arable fields which make up the majority of the site were mostly assessed as being of negligible or low importance for invertebrates.
- 3.5.2 Aquatic and wetland habitats on the site were probably unusually dried-out at the time of survey due to the hot weather experienced in the spring and early summer of 2018, although the main reens did not appear to have been unduly affected. The latter were found to support moderate to high levels of aquatic invertebrates including at least some of the rare, scarce and local species which are known to occur elsewhere on the Gwent Levels: Rumney & Peterstone SSSI of which the site forms a part (Bratton 2002). The smaller internal reens and grips of the site did not appear likely to be exceptional for aquatic invertebrates, however, being mainly shallow and overshadowed, and with only a relatively few common and widespread species being recorded in those sections which were available for sampling.
- 3.5.3 Most of the site habitats of the site fall within those listed under Section 7 of the Environment (Wales) Act 2016 (Maddock 2011), including the open pasture grasslands and overgrown enclosures subdivided by drainage ditches ('Coastal & Floodplain Marsh'), the enclosure boundary scrub and neglected hedges ('Hedgerows'), and the dense reedbed areas ('Reedbeds').

4.0 ASSESSMENT OF INVERTEBRATE VALUE

- 4.1 The site is evaluated in relation to the criteria set out at Appendix 1. The survey results are assessed as follows.
- 4.2 The site falls within the *Gwent Levels: Rumney & Peterstone Site of Special Scientific Interest* which is designated in large part for its invertebrate interest, particularly aquatic invertebrates. One of the species mentioned in the published SSSI citation as a reason for notification is actually recorded from the site, although *Physella acuta* (= *Physa heterostrophia*) is a naturalised introduction which is no longer considered rare in Britain. The site also supports a number of other aquatic species which are characteristic of the Gwent Levels SSSI series, however, and which contribute to their status, including the Nationally Scarce water-beetle *Peltodytes caesus*.
- 4.3 Whilst clearly meeting the criteria for SSSI selection as part of a much larger contiguous wetland system, it is however noted that the invertebrate fauna recorded from the site in isolation contains only one of the 25 qualifying species recorded since 1980 from the SSSI as a whole (Bratton 2002). Considered in isolation it is therefore unlikely that the site would qualify as an SSSI for its invertebrate fauna alone (although it may well do so for other reasons).
- 4.4 Criteria for the identification of Sites of Importance for Nature Conservation (SINCs) in Wales are set out by WBP (2008), the invertebrate criteria being listed at Section S.5. This states that consideration for selection should be given to:

“Any site which supports a species which is listed in the UK Red Data Book or listed on the Section 42 List³ with the specific requirement for site protection action.”

“Any site which supports an important assemblage or population(s) of ‘Nationally Scarce’ species. To be determined in consultation with appropriate experts.”

‘Important assemblages’ are not defined in the guidance and are therefore open to expert interpretation.

- 4.5 Consideration for SINC selection should also be extended to any sites which support species recorded from ten or fewer 10km grid squares in Wales, or from four or fewer sites in the vice-county area, as well as any site which supports a “*significant population or assemblage of Local Priority Species listed in a Local Biodiversity Action Plan*”. Further detailed criteria are also set out for Lepidoptera (butterflies & moths), Odonata (dragonflies & damselflies) and Orthoptera (grasshoppers, crickets etc).
- 4.6 Under these criteria the site is considered to meet the threshold for SINC designation for its invertebrate fauna (see Table 6 above). The criteria set out by WBP (2008) are intended to apply at the Unitary Authority level, indicating value at least in the District context.

³ Of the Natural Environment & Rural Communities Act 2006, which is now superseded by Section 7 of the Environment (Wales) Act 2016.

- 4.7 On this basis the site in isolation is assessed as being of County value for its invertebrate fauna, taking into account its contribution to a wider system which is of National value as a whole.
- 4.8 It is possible that further survey at other times of the year, and/or using additional survey methods such as moth-trapping at night for example, could generate additional species of interest which might necessitate upward-revision of the present assessment.

5.0 REFERENCES

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Wales Biodiversity Partnership (WBP 2008) *Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales*. Wales Biodiversity Partnership/Welsh Assembly Government.

APPENDIX 1: DEFINITIONS OF SITE VALUE

International Value

Site carrying an internationally recognised designation such as Ramsar Site, World Heritage Site, Special Protection Area, Special Area of Conservation, Biosphere Reserve or Biogenetic Reserve, or:

Habitats: site supporting nationally significant areas of habitats of defined international community interest.

Species: site supporting nationally significant populations of species of defined international community interest.

National Value

Site meeting published Site of Special Scientific Interest (SSSI) designation criteria (NCC 1989), whether so designated or not.

Habitats: site supporting nationally significant areas of habitats of defined national rarity or interest.

Species: site supporting nationally significant populations or communities of UK Red Data Book, Nationally Notable or protected species (other than badger).

County Value

Site identified as a County Wildlife Site (CWS), Site of Importance to Nature Conservation (SINC) or similar at the county level (ie greater than district, borough or city level); meeting published CWS designation criteria at this level (where these exist), but falling short of SSSI designation criteria, whether designated as a CWS or not.

Habitats: site supporting good examples of nationally threatened habitats, or extensive areas of habitats which are rare or unique in the county.

Species: site supporting large or strong populations or communities of nationally rare or protected species (other than badger), or of species which are rare in the county and uncommon nationally.

District Value

Sites failing to meet County Value criteria, but nevertheless supporting habitats, species or communities which appreciably enrich the ecological resource of the county, especially by virtue of their size or extent; meeting published CWS designation criteria at county borough level (where these exist) whether designated as a CWS or not.

Habitats: sites supporting habitats uncommon in the county, small but unmodified fragments of nationally threatened habitats, or comprising extensive areas or systems of semi-natural habitats.

Species: sites supporting nationally rare species, or strong populations or communities of regionally uncommon species, which would not otherwise be present (ie they are critically dependant on the site characteristics).

Local Value

Habitats which fail to meet District Value criteria, but which appreciably enrich the ecological resource of the locality. This category can be further divided into:

- **High Local Value:** just failing to meet District Value Criteria; supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area.

- **Local Value:** sites which are of ecological value only in the context of their immediate surroundings. Rare or uncommon species may occur but are not restricted to the site or critically dependent upon it for their survival in the area.

Sites failing to meet any of the above can be considered as being of 'Negligible' ecological value.

