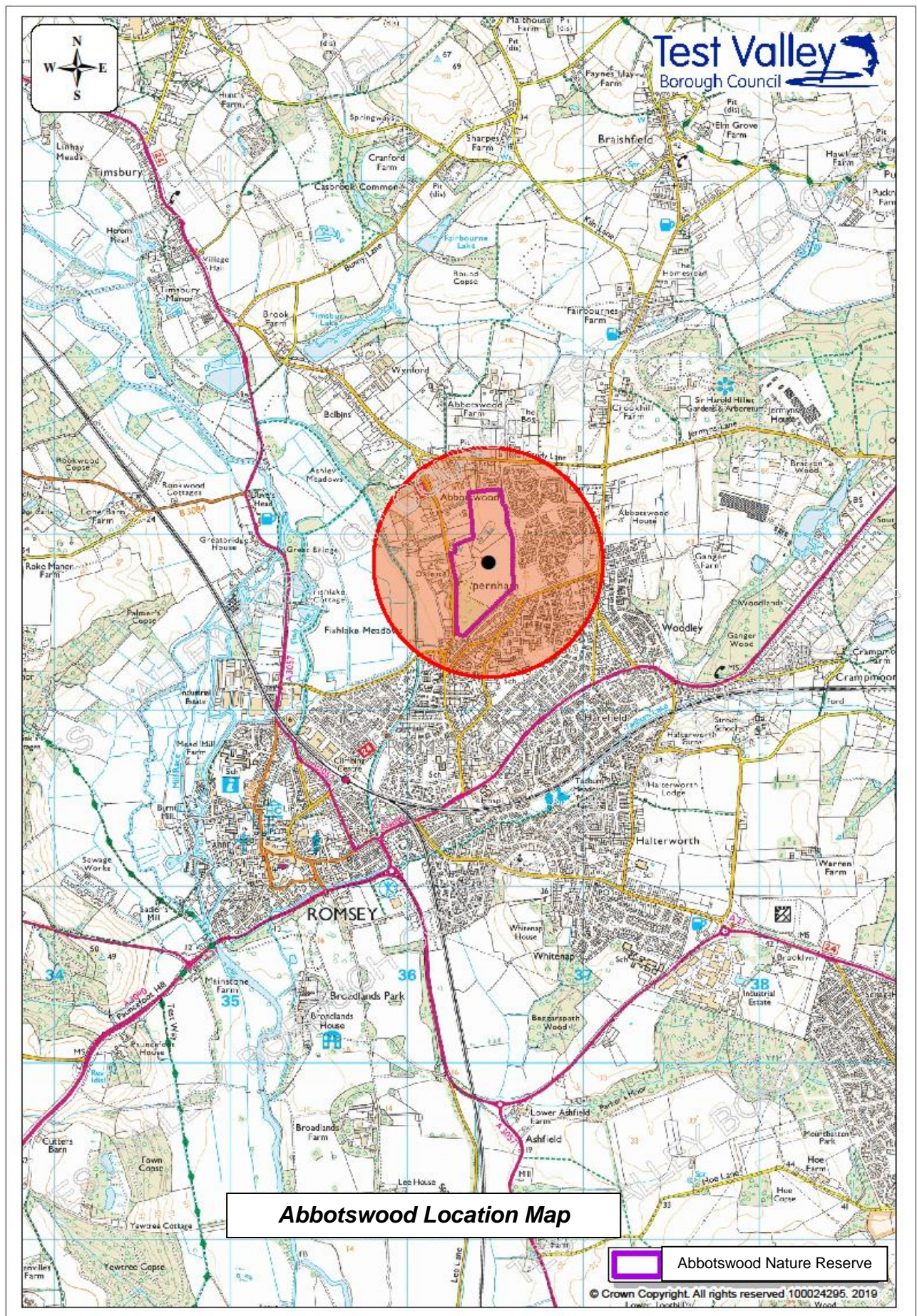


## **APPENDIX 1**

### **Maps**

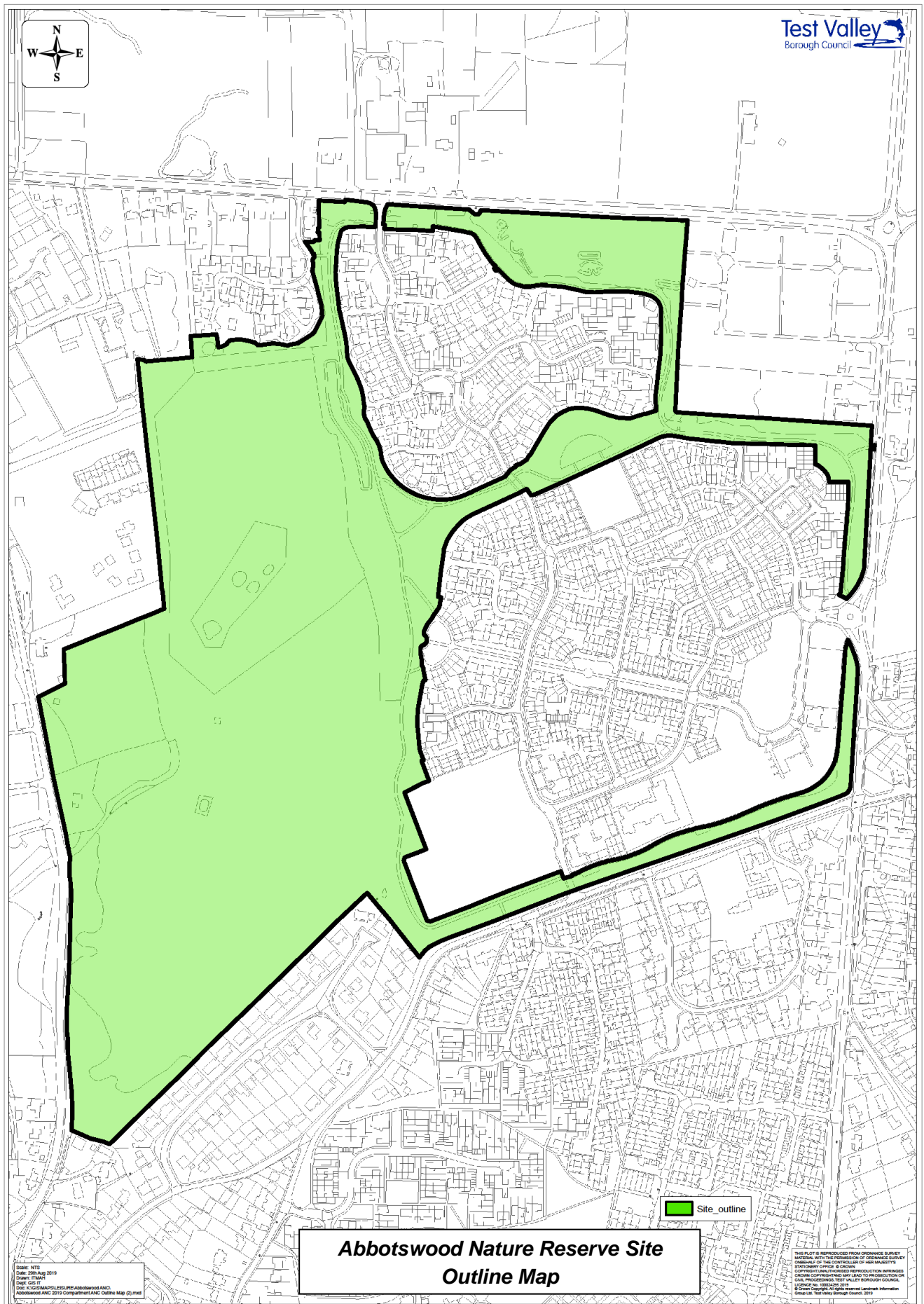


Map 1:

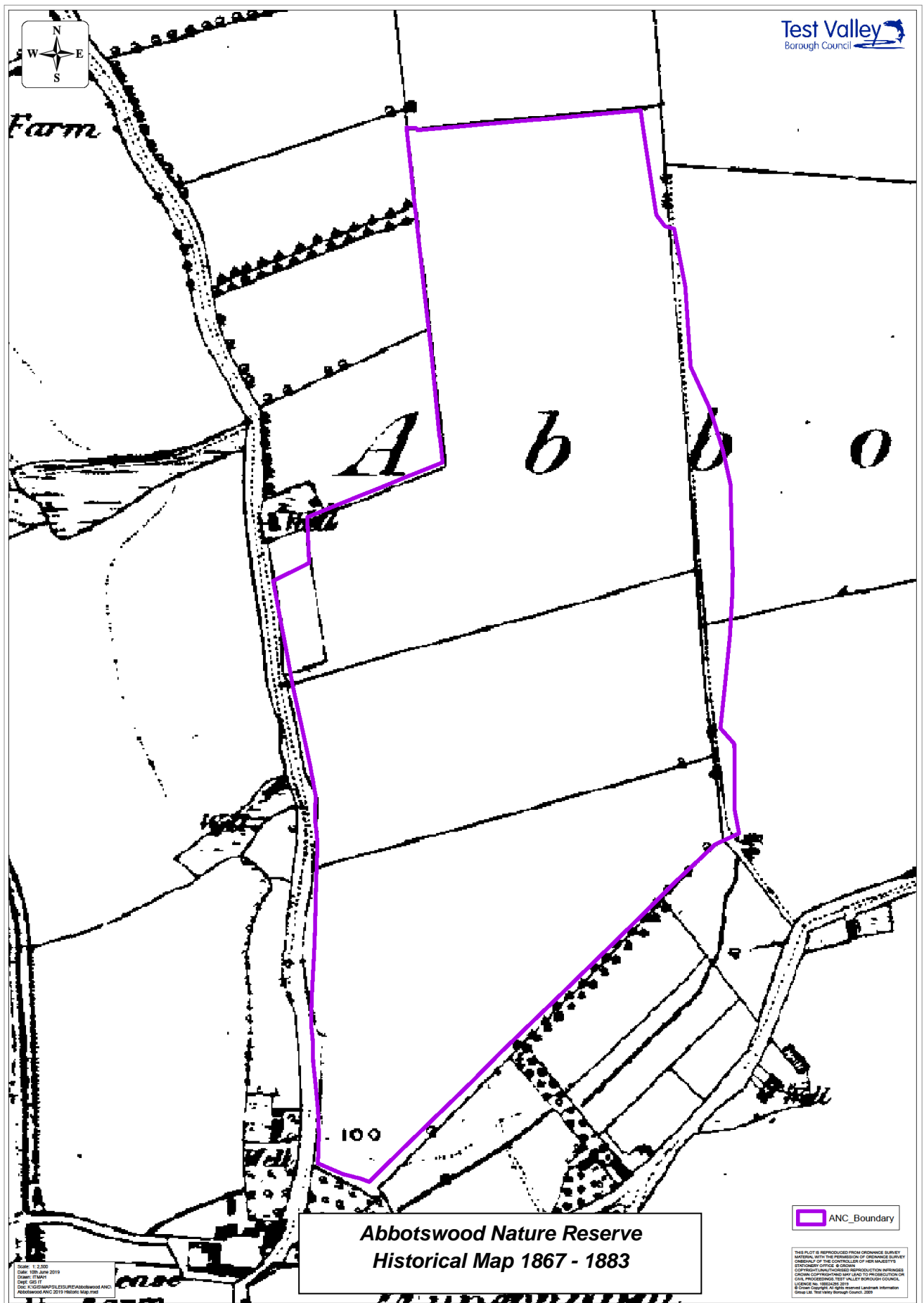




**Map 2:**

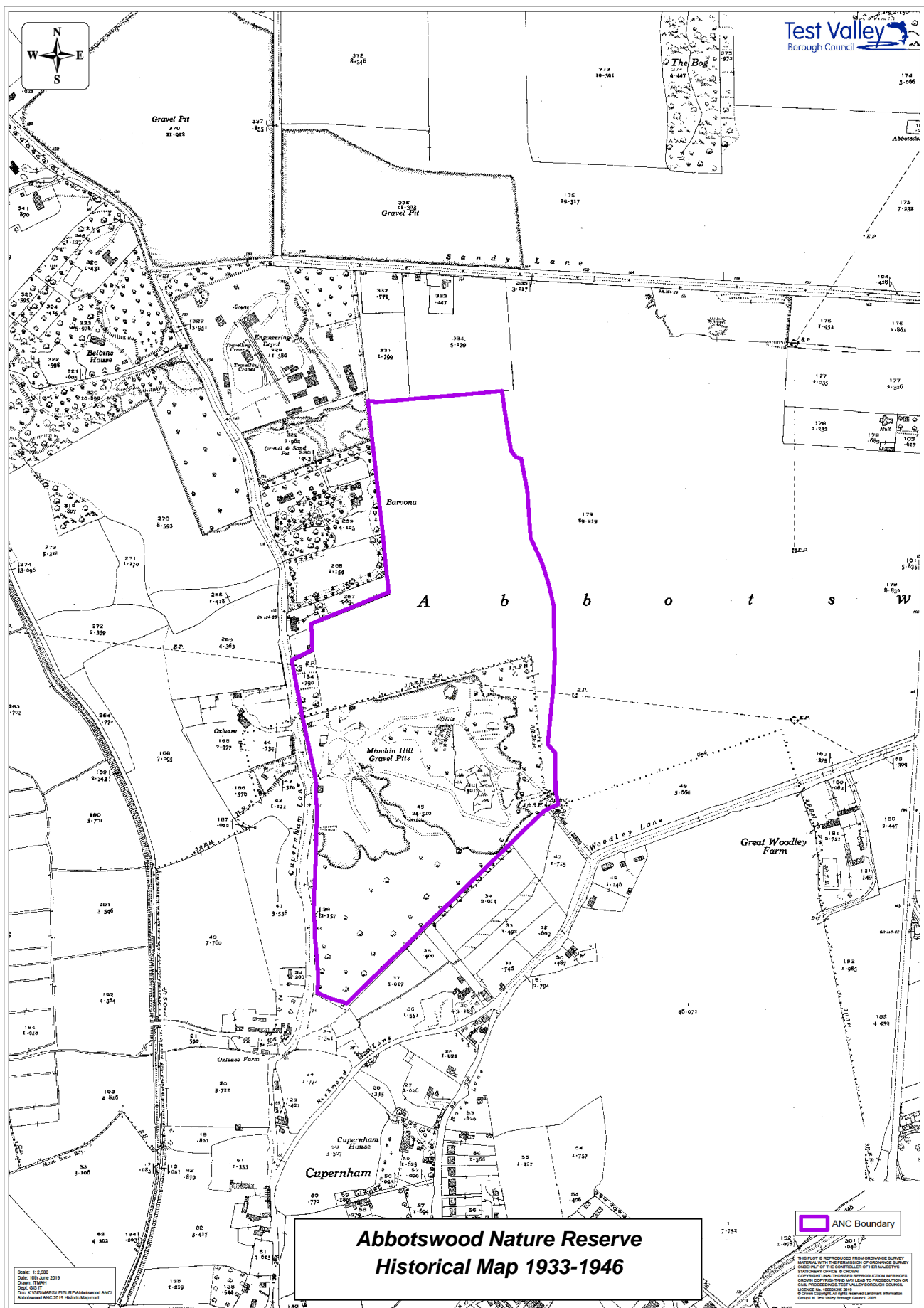


### Map 3a:

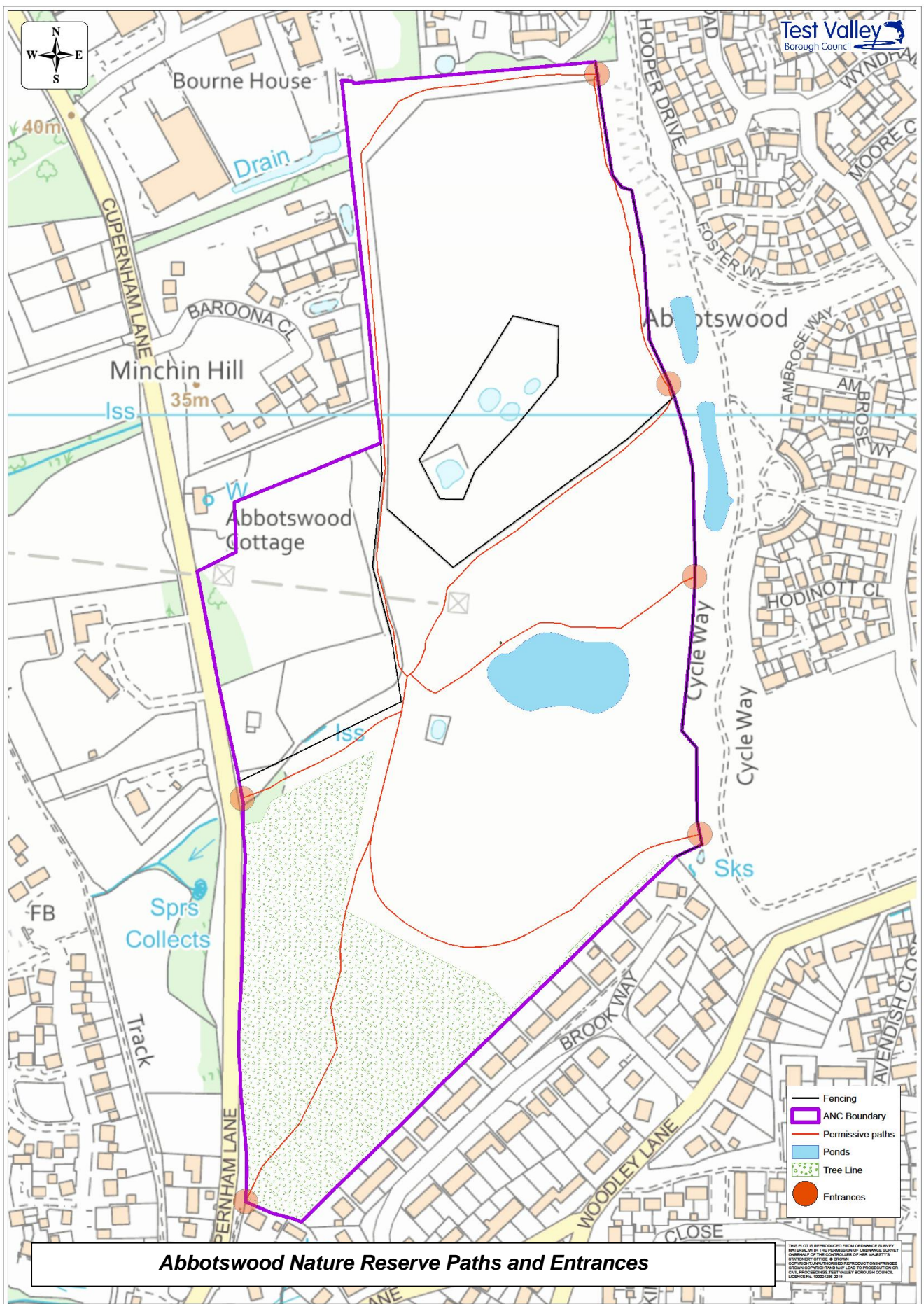




### Map 3b:

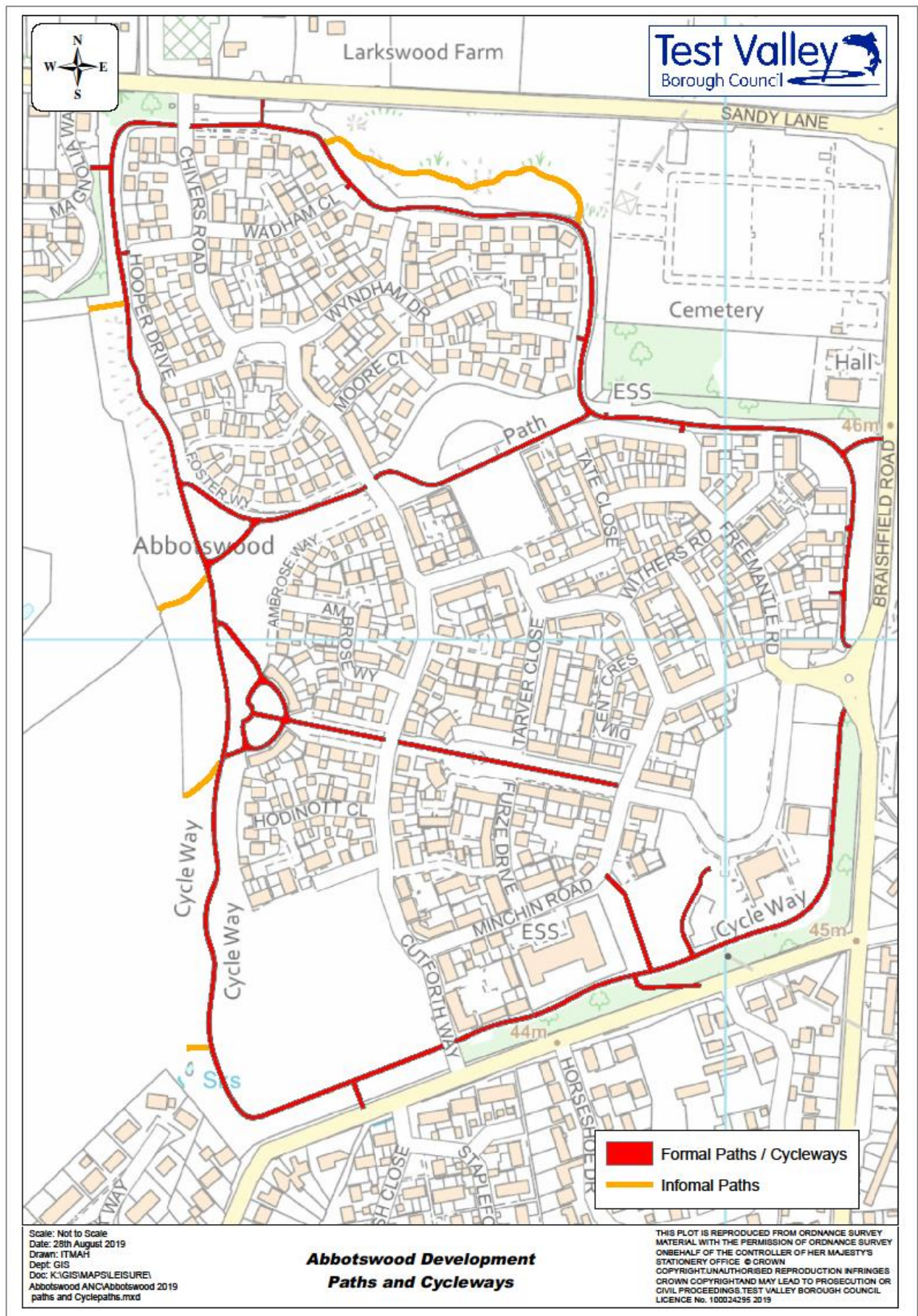


**Map 4a:**

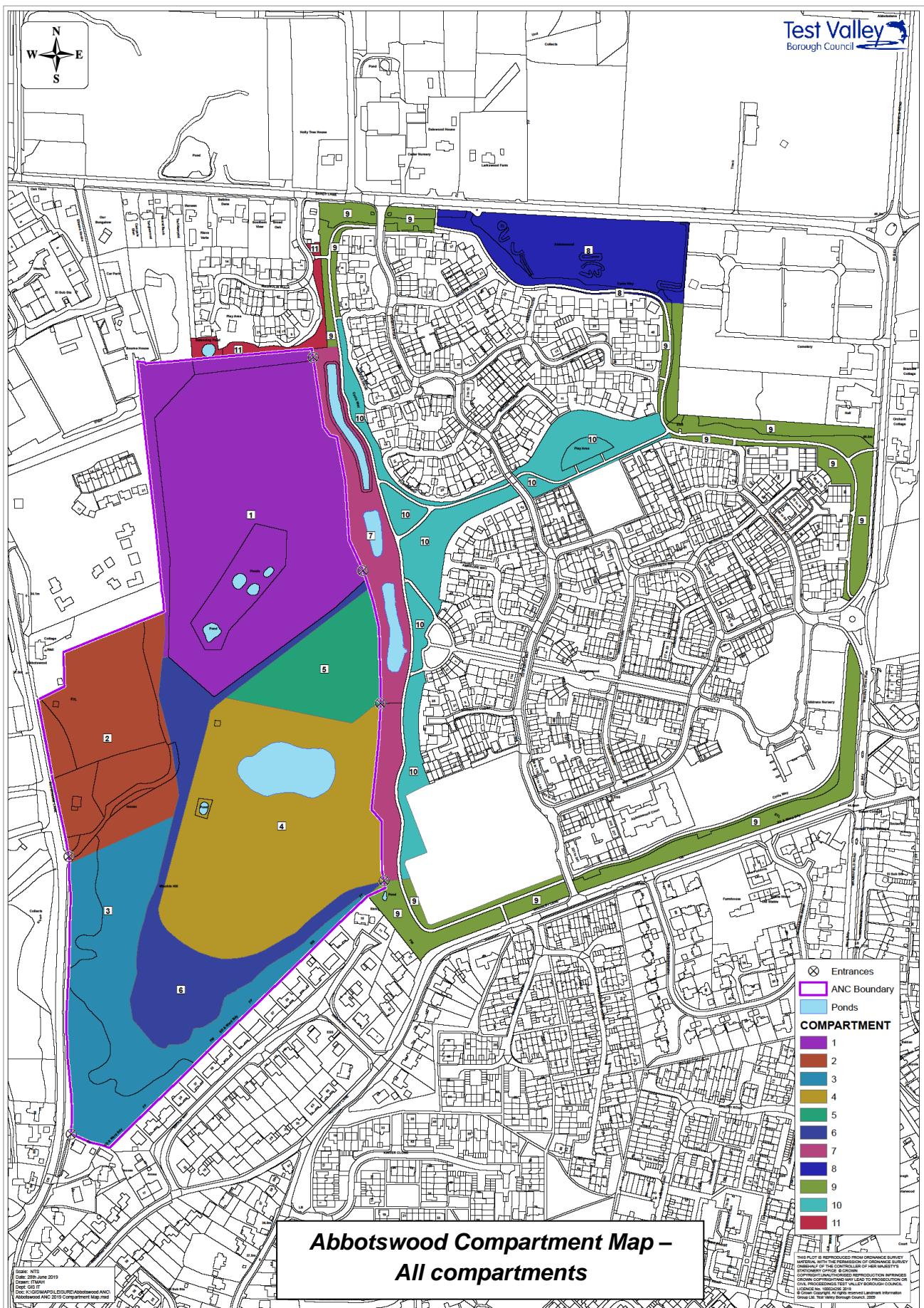




Map 4b:



Map 5a:

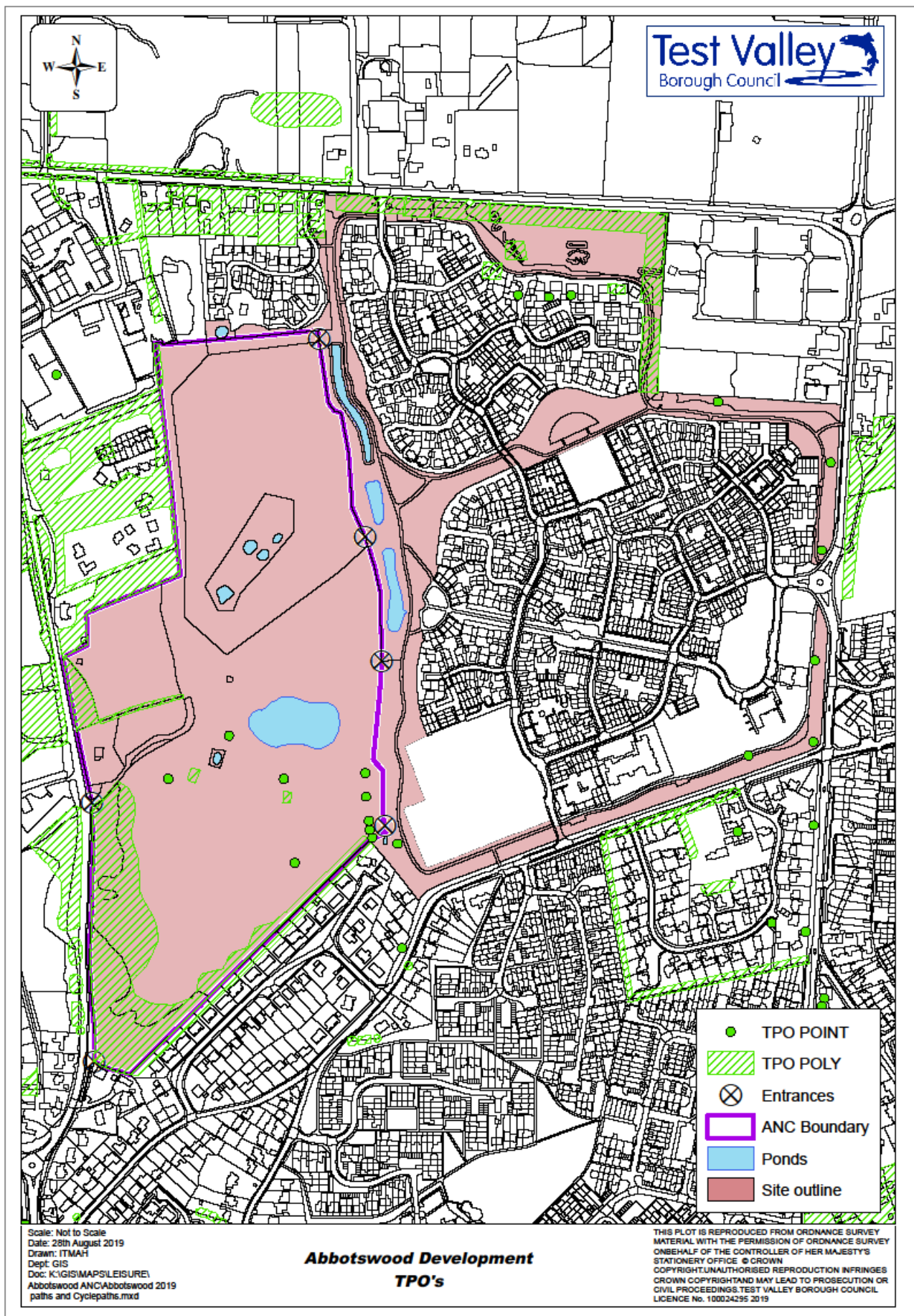




Map 5b:



Map 6:





## **APPENDIX 2**

### **SINC Designation**

Criteria for the selection of Sites of Importance for Nature Conservation in Hampshire can be seen on the following link:

<https://documents.hants.gov.uk/biodiversity/SINCCriteria.pdf>

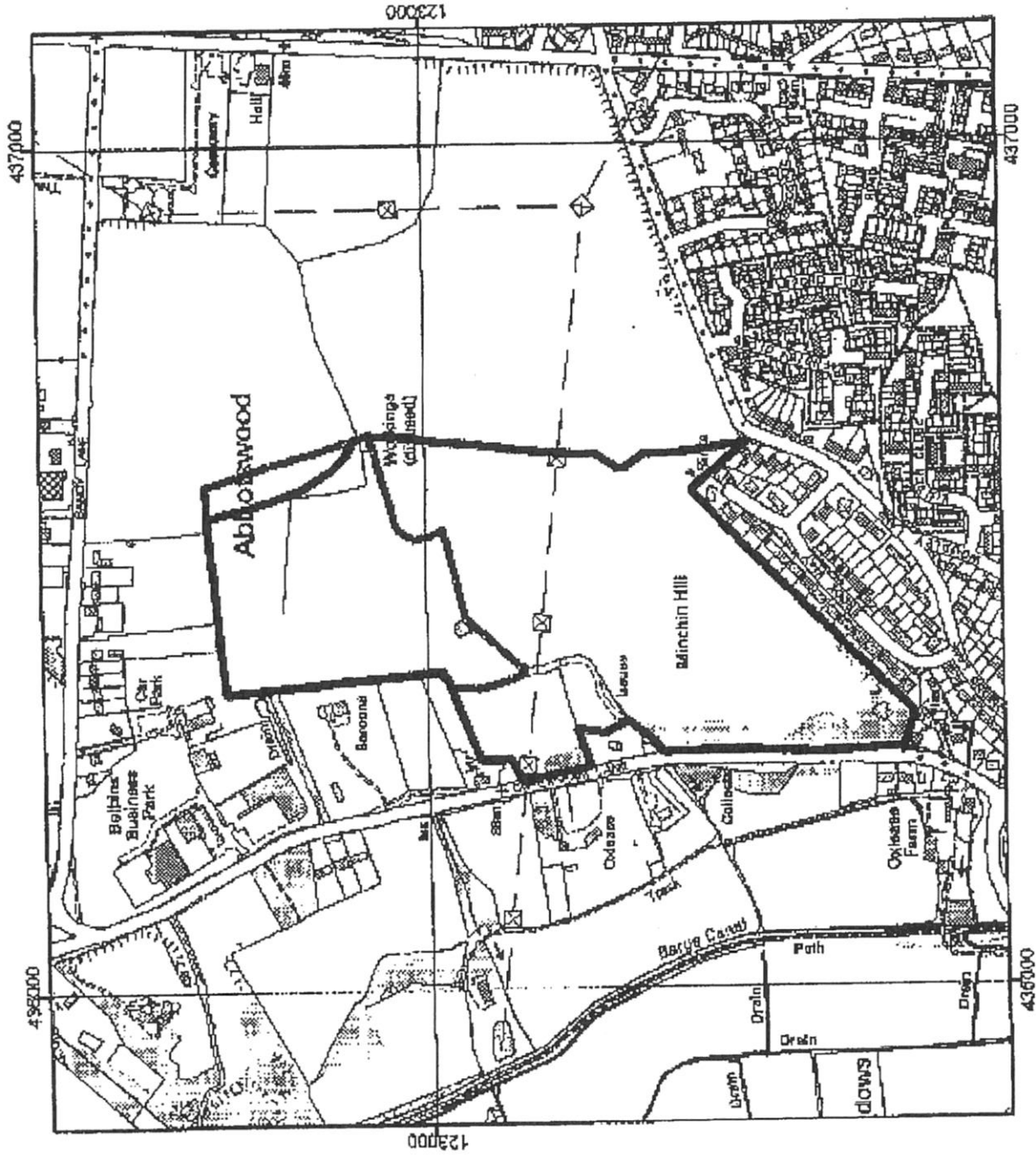
Sites of Importance  
for Nature Conservation  
(SINC-s)

Chivers Land (SU35502810) -  
W E Chivers and Sons Ltd

**B** Amended SINC boundary  
Previous SINC layer

Scale 1:7,000

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map with the permission of the Controller  
of Her Majesty's Stationery Office





## **APPENDIX 3**

### **Floral surveys**

Botanical species list from pre-development ecological survey

The following document was created by EPR ecological consultancy as part of the pre-development ecological report.

UG Indicators of unimproved grasslands in the Southern Region (after Brough and Gibbons 1986)

Latin	English	UG
<b>Trees/Shrubs</b>		
<i>Acer campestre</i>	Field Maple	
<i>Acer platanoides</i>	Norway Maple	
<i>Acer pseudoplatanus</i>	Sycamore	
<i>Aesculus hippocastanum</i>	Horse-chestnut	
<i>Betula pendula</i>	Silver Birch	
<i>Clematis vitalba</i>	Traveller's-joy	
<i>Corylus avellana</i>	Hazel	
<i>Crataegus monogyna</i>	Hawthorn	
<i>Cytisus scoparius</i>	Broom	
<i>Euonymus europaeus</i>	Spindle	
<i>Fagus sylvatica</i>	Beech	
<i>Fallopia japonica</i>	Japanese Knotweed	
<i>Fraxinus excelsior</i>	Ash	
<i>Hedera helix</i>	Ivy	
<i>Ligustrum vulgare</i>	Privet	
<i>Lonicera periclymenum</i>	Honeysuckle	
<i>Populus tremula</i>	Aspen	
<i>Prunus</i> sp.	Cherry cultivar	
<i>Prunus spinosa</i>	Blackthorn	
<i>Quercus robur</i>	Pedunculate Oak	
<i>Rosa canina</i>	Dog Rose	
<i>Rubus fruticosus</i>	Bramble	
<i>Salix caprea</i>	Goat Willow	
<i>Salix cinerea</i>	Grey Willow	
<i>Sambucus nigra</i>	Elder	
<i>Taxus baccata</i>	Yew	
<i>Ulex europaeus</i>	Gorse	
<i>Ulmus</i> sp.	Elm	
<b>Grasses</b>		
<i>Agrostis capillaris</i>	Common Bent	
<i>Agrostis stolonifera</i>	Creeping Bent	
<i>Alopecurus geniculatus</i>	Marsh Foxtail	
<i>Alopecurus pratensis</i>	Meadow Foxtail	
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	



<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Bromus hordeaceus</i>	Soft Brome
<i>Cynosurus cristatus</i>	Crested Dog's-tail
<i>Dactylis glomerata</i>	Cock's-foot
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Elytrigia repens</i>	Common Couch
<i>Festuca arundinacea</i>	Tall Fescue
<i>Festuca rubra</i>	Red Fescue
<i>Glyceria fluitans</i>	Floating Sweet-grass
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Phalaris arundinacea</i>	Reed Canary-grass
<i>Phleum pratense</i>	Timothy
<i>Poa annua</i>	Annual Meadow-grass
<i>Poa pratensis</i>	Smooth Meadow-grass
<i>Poa trivialis</i>	Rough Meadow-grass
<i>Vulpia bromoides</i>	Squirreltail Fescue

#### **Sedges and Aquatics**

<i>Carex hirta</i>	Hairy Sedge
<i>Carex ovalis</i>	Oval Sedge
<i>Carex spicata</i>	Spiked Sedge
<i>Eleocharis palustris</i>	Common Spike-rush
<i>Sparganium erectum</i>	Branched Bur-reed

#### **Rushes and Wood-rushes**

<i>Juncus articulatus</i>	Jointed Rush
<i>Juncus conglomeratus</i>	Compact Rush
<i>Juncus effusus</i>	Soft-rush
<i>Juncus inflexus</i>	Hard Rush
<i>Luzula campestris</i>	Field Wood-rush

#### **Pteridophytes**

<i>Dryopteris filix-mas</i>	Male Fern
<i>Equisetum arvense</i>	Field Horsetail
<i>Polypodium sp.</i>	Polypody
<i>Pteridium aquilinum</i>	Bracken

#### **Forbs**

<i>Achillea millefolium</i>	Yarrow
<i>Agrimonia eupatorium</i>	Agrimony
<i>Anacamptis pyramidalis</i>	Pyramidal Orchid
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Anthriscus sylvaticus</i>	Cow Parsley
<i>Artemisia vulgaris</i>	Mugwort

<i>Arum maculatum</i>	Lords and Ladies
<i>Bellis perennis</i>	Daisy
<i>Bidens tripartita</i>	Trifid Bur-marigold
<i>Callitriche</i> sp.	Water-starwort
<i>Capsella bursa-pastoralis</i>	Sheperd's Purse
<i>Cardamine pratensis</i>	Cuckooflower
<i>Centaurea nigra</i>	Common Knapweed
<i>Centaureum erythraea</i>	Common Centaury
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Chaerophyllum temulum</i>	Rough Chervil
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium palustre</i>	Marsh Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Convolvulus arvensis</i>	Field Bindweed
<i>Crepis capillaris</i>	Smooth Hawk's-beard
<i>Cruciata laevipes</i>	Crosswort
<i>Daucus carota</i>	Wild Carrot
<i>Digitalis purpurea</i>	Foxglove
<i>Epilobium hirsutum</i>	Great Willowherb
	Short-fruited
<i>Epilobium obscurum</i>	Willowherb
	Square-stalked
<i>Epilobium tetragonum</i>	Willowherb
<i>Eupatorium cannabinum</i>	Hemp-agrimony
<i>Fallopia convolvulus</i>	Black-bindweed
<i>Galium aparine</i>	Cleavers
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill
<i>Geranium robertianum</i>	Herb Robert
<i>Geum urbanum</i>	Wood Avens
<i>Glechoma hederacea</i>	Ground-ivy
<i>Gnaphalium uliginosum</i>	Marsh Cudweed
<i>Heracleum sphondylium</i>	Hogweed
<i>Hypericum perforatum</i>	Perforate St John's-wort
<i>Hypericum pulchrum</i>	Slender St John's-wort
<i>Hypochaeris radicata</i>	Cat's-ear
<i>Iris foetidissima</i>	Stinking Iris
<i>Knautia arvensis</i>	Field Scabious
<i>Lactuca serriola</i>	Prickly Lettuce
<i>Lamium album</i>	White Dead-nettle
<i>Lathyrus nissolia</i>	Grass Vetchling *
<i>Lathyrus pratensis</i>	Meadow Vetchling
<i>Leontodon autumnalis</i>	Autumn Hawkbit
<i>Leontodon saxatilis</i>	Lesser Hawkbit
<i>Leucanthemum vulgare</i>	Oxeye Daisy
	Common Bird's-foot-
<i>Lotus corniculatus</i>	trefoil



<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil	
<i>Malva moschata</i>	Musk-mallow	
<i>Matricaria discoidea</i>	Pineappleweed	
<i>Matricaria recutita</i>	Scented Mayweed	
<i>Medicago lupulina</i>	Black Medick	
<i>Myosotis arvensis</i>	Field Forget-me-not	
<i>Myosotis</i> sp.	(Aquatic) Forget-me-not	
<i>Odontites vernus</i>	Red Bartsia	
<i>Ophrys apifera</i>	Bee Orchid	
<i>Orchis morio</i>	Green-winged Orchid	*
<i>Pastinaca sativa</i>	Wild Parsnip	
<i>Persicaria maculosa</i>	Redshank	
<i>Plantago lanceolata</i>	Ribwort Plantain	
<i>Plantago major</i>	Greater Plantain	
<i>Polygonum aviculare</i>	Knotgrass	
<i>Potentilla anserina</i>	Silverweed	
<i>Potentilla reptans</i>	Creeping Cinquefoil	
<i>Prunella vulgaris</i>	Selfheal	
<i>Pulicaria dysenterica</i>	Common Fleabane	
<i>Ranunculus acris</i>	Meadow Buttercup	
<i>Ranunculus bulbosus</i>	Bulbous Buttercup	
<i>Ranunculus</i> c.f. <i>trichophyllus</i>	Thread-leaved Crowfoot	
<i>Ranunculus flammula</i>	Lesser Spearwort	
<i>Ranunculus repens</i>	Creeping Buttercup	
<i>Rumex acetosa</i>	Common Sorrel	
<i>Rumex acetosella</i>	Sheep's Sorrel	
<i>Rumex crispus</i>	Curled Dock	
<i>Rumex obtusifolius</i>	Broad-leaved Dock	
<i>Rumex sanguineus</i>	Wood Dock	
<i>Senecio erucifolius</i>	Hoary Ragwort	*
<i>Senecio jacobaea</i>	Common Ragwort	
<i>Silene latifolia</i>	White Campion	
<i>Solanum dulcamara</i>	Bittersweet	
<i>Sonchus asper</i>	Prickly Sowthistle	
<i>Sonchus oleraceus</i>	Smooth Sowthistle	
<i>Stellaria graminea</i>	Lesser Stitchwort	
<i>Taraxacum officinale</i> agg.	Dandelion	
<i>Teucrium scorodonia</i>	Wood Sage	
<i>Trifolium dubium</i>	Lesser Trefoil	
<i>Trifolium hybridum</i>	Alsike Clover	
<i>Trifolium pratense</i>	Red Clover	
<i>Trifolium repens</i>	White Clover	
<i>Tripleurospermum inodorum</i>	Scentless Mayweed	

<i>Urtica dioica</i>	Common Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Veronica officinalis</i>	Heath Speedwell
<i>Veronica scutellata</i>	Marsh Speedwell
	Thyme-leaved
<i>Veronica serpyllifolia</i>	Speedwell
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia hirsuta</i>	Hairy Tare
<i>Vicia sativa</i> ssp. <i>sativa</i>	Common Vetch
<i>Vicia tetrasperma</i>	Smooth Tare

#### **Mosses**

*Brachythecium rutabulum*  
*Calliergon cuspidatum*  
*Eurhynchium praelongum*  
*Rhytidiadelphus*  
*squarrosus*  
*Scleropodium purum*

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<b>Total No. of species</b>	<b>170</b>	<b>3</b>
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## **APPENDIX 4**

### **Tree Management Strategy**

This section is still under development and will be available shortly.



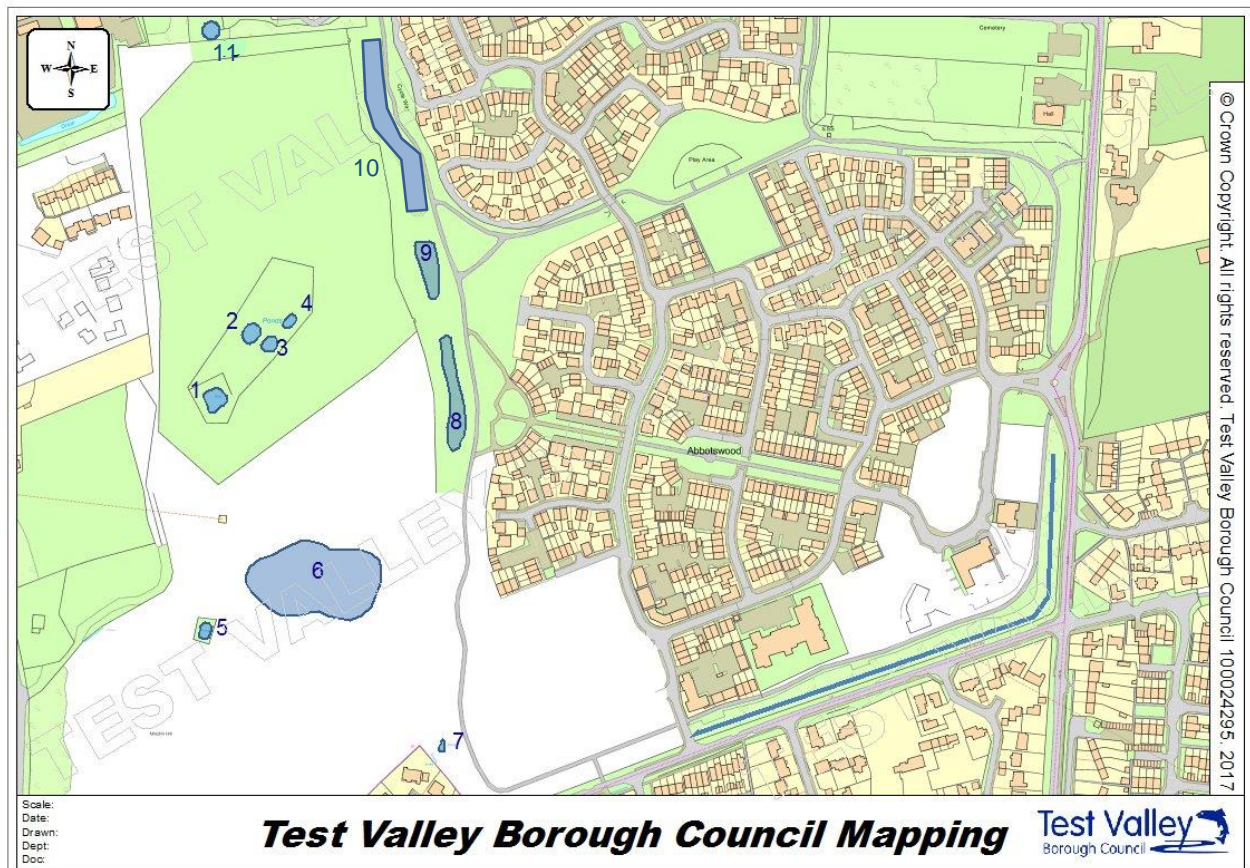
## **APPENDIX 5a**

### **Great Crested Newt Survey Strategy**

### GCN survey plan – section for management plan

Abbotswood Nature Reserve is also designated as an SINC due to the presence of a large breeding population of Great Crested Newts. As part of ongoing management of the site, the population of newts will be monitored in all known ponds within the site (Figure 1). The aim of the surveys is to therefore establish the great crested newt population size within Abbotswood, with the view of monitoring long term trends.

Surveys will be conducted annually, using a torchlight survey technique, within the Newt breeding season between February and mid June. A total of 4-6 surveys will be conducted within this period, with the peak count contributing to the annual monitoring. This will be conducted in accordance with Natural England guidelines and under the supervision of a licenced surveyor. Full details are outlined within the Great Crested Newt survey plan.



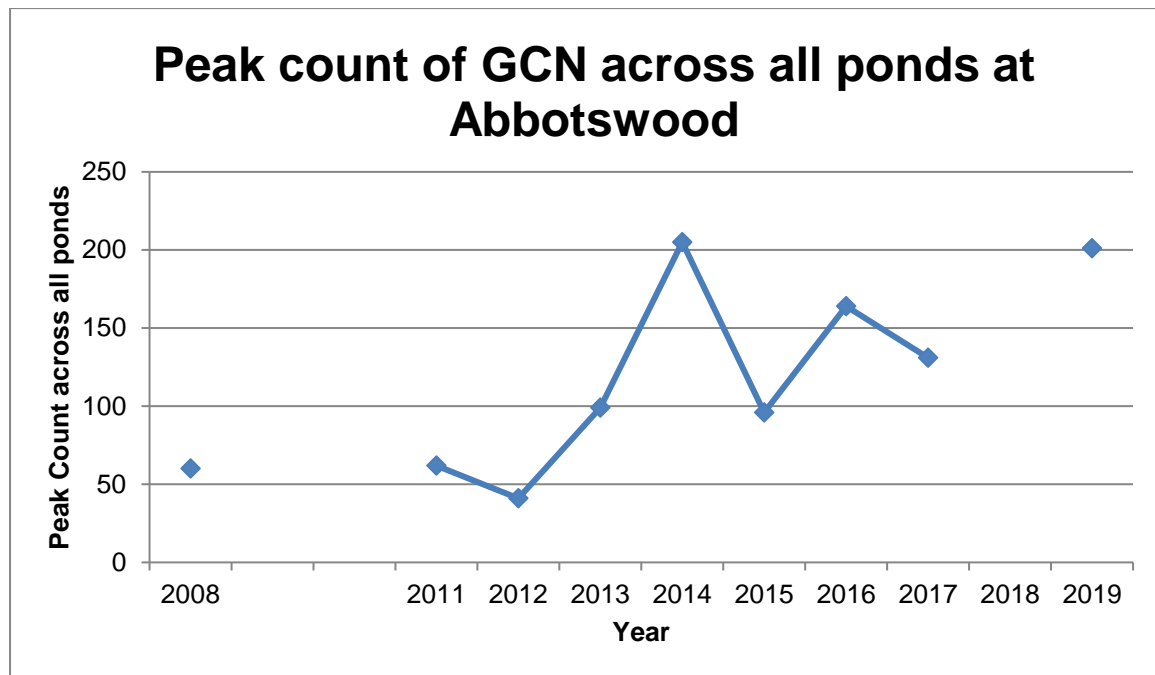
**Figure 1:** Locations of the 11 survey ponds at Abbotswood, including the area of wetland to be monitored, highlighted by a blue line.

## **APPENDIX 5B**

### **Great Crested Newt Survey results**



## GCN monitoring results



The graph above shows the number of Great Crested Newts (GCN) found within the Abbotswood ponds, as specified within Appendix 5a. EPR ecological consultancy conducted the pre-development survey in 2008 and subsequent construction phase surveys between 2011 and 2016. Test Valley Borough Council (TVBC) staff took over monitoring in 2017, with the help of EPR initially, with 2019 being the first year of full monitoring by TVBC. Results show annual fluctuations in the peak count, but a general increase in numbers since the pre-development figure (2008). TVBC will continue to monitor the species annually to ensure ongoing management remains beneficial to this species.

## **APPENDIX 6**

### **Pre-development reptile survey map**

The following document was created by EPR ecological consultancy as part of the pre-development ecological report.





2004 records:

- 1 Grass Snake
- 2 Grass Snake
- 1 Slow-worm
- 2 Slow-worm
- 3 Slow-worm

2007 records:

- GCN
- Grass snake
- Slow-worm

**8.8**  
Reptile Survey

1:3 500

BRS.1438\_50

FIGURE

TITLE

SCALE

DWG. NO.]



## **APPENDIX 7a**

### **Pre-development bird species list**

The following survey was conducted by EPR ecological consultancy as part of the pre-development ecological report.

### APPENDIX 3: BIRD SPECIES LIST

Number of registrations per visit (e.g. 40 Rooks = 1)

B – Breeding; F – Foraging; P – Passage; O – Fly over

SPECIES	UK STATUS		STATUS AT SITE
<i>Grey Heron</i> <i>Ardea cinerea</i>		O	Occasional birds over.
<i>Mallard</i> <i>Anas platyrhynchos</i>		B	Territories at western pond and by ephemeral pool in SE corner.
<b>Red Kite</b> <b>Milvus milvus</b>	Amber WCA Sch 1	O	A single sighting of a bird that came up from the western woodland and flew east across the site.
<b>Sparrowhawk</b> <b>Accipiter nisus</b>		O	Seen once soaring from woodland in the NE corner. Occasionally hunting across the site
<b>Buzzard</b> <i>Buteo buteo</i>		F	Regularly flying over the site and occasional feeding.
<b>Kestrel</b> <i>Falco tinnunculus</i>	Amber	F	Occasional bird feeding over western grassland.
<b>Hobby</b> <i>Falco subbuteo</i>	WCA Sch 1	O	A bird flew through on 29 April.
<b>Pheasant</b> <i>Phasianus colchicus</i>		B	Male seen on occasion in central grassland.
<b>Lapwing</b> <i>Vanellus vanellus</i>	Amber	B	5 Territories present in central and eastern grasslands 11adults and 4 broods of young on the 11 June.
<b>Ruff</b> <i>Philomachus pugnax</i>	Amber	P	Single recorded on one date by DS on eastern grassland.
<b>Snipe</b> <i>Gallinago gallinago</i>	Amber	F	Up to nine birds (7/4/04) flushed from wet areas around eastern side of site.
<i>Woodpigeon</i> <i>Columba palumbus</i>		B	Regularly seen in the trees and woodland around edge of site.
<i>Collared Dove</i> <i>Streptopelia decaocto</i>		F	1 to 2 Territories around houses along southern boundary of site.
<i>Cuckoo</i> <i>Cuculus canorus</i>	Amber	B	Occasional bird calling from wooded edges of western side of site.
<i>Barn Owl</i> <i>Tyto alba</i>	Amber WCA Sch 1	F	Bird seen hunting over central grassland during a late afternoon visits in winter 2003/4 and early spring.
<i>Little Owl</i> <i>Athene noctua</i>		B	Bird seen on occasion around northern woodland.
<i>Tatony Owl</i> <i>Strix aluco</i>		B	Calling bird heard on night of 21 July around western side of site.

SPECIES	UK STATUS		STATUS AT SITE
Swift <i>Apus apus</i>		O	Occasional birds seen overhead.
Green Woodpecker <i>Picus viridis</i>	Amber	B	3 Territories (SE corner and north woodlands)??
Great Spotted Woodpecker <i>Dendrocopos major</i>		B	1-2 Territories.
Skylark <i>Alauda arvensis</i>	Red BAP	B	8 Territories in central and western grasslands.
Swallow <i>Hirundo rustica</i>	Amber	F	Occasional birds foraging over grasslands.
House Martin <i>Delichon urbica</i>	Amber	F	Occasional birds foraging over grasslands.
Meadow Pipit <i>Anthus pratensis</i>	Amber	P	Flocked up birds at end of winter with maximum of ?? on ??
Yellow Wagtail <i>Motacilla flava</i>	Amber	P	A couple seen on central grassland.
Pied Wagtail <i>Motacilla alba yarrellii</i>		F	Occasional birds in central grassland.
Wren <i>Troglodytes troglodytes</i>		B	Common in scrub and woodland largely around the periphery of the site.
Dunnock <i>Prunella modularis</i>	Amber	B	Up to 22 Territories in scrub and woodland largely around the periphery of the site.
Robin <i>Erithacus rubecula</i>		B	Common in scrub and woodland largely around the periphery of the site.
Nightingale <i>Luscinia megarhynchos</i>	Amber	B	A singing bird in the northern woodland.
Stonechat <i>Saxicola torquata</i>	Amber	B	A single territory in the SW corner of the site.
Whentear <i>Oenanthe oenanthe</i>		P	A male on the central eastern grassland on the 27 April.
Blackbird <i>Turdus merula</i>		B	Around 14 territories in scrub and woodland largely around the periphery of the site.
Song Thrush <i>Turdus philomelos</i>	Red	B	Up to 6-8 territories in scrub and woodland largely around the periphery of the site.
Mistle Thrush <i>Turdus viscivorus</i>	Amber	F	Occasional around the NE end of the site.

SPECIES	UK STATUS		STATUS AT SITE
<i>Lesser Whitethroat</i> <i>Sylvia curruca</i>		B	Recorded along the southern boundary and in the north west corner.
<i>Whitethroat</i> <i>Sylvia communis</i>		B	Around six territories in scrub at various locations around the edges of the site and near the western pond.
<i>Garden Warbler</i> <i>Sylvia borin</i>		B	Recorded on occasion in the NE and SW corners of the site.
<i>Blackcap</i> <i>Sylvia atricapilla</i>		B	Occasion particularly around the SE corner.
<i>Chiffchaff</i> <i>Phylloscopus collybita</i>		B	Around five territories around the periphery of the site.
<i>Willow Warbler</i> <i>Phylloscopus trochilus</i>	Amber	B	2 territories in the south western and northern woodlands.
<i>Goldcrest</i> <i>Regulus regulus</i>	Amber	B	A territory around the western boundary near the pond.
<i>Long-tailed Tit</i> <i>Aegithalos caudatus</i>		B	1-2 territories.
<b>Blue Tit</b> <i>Parus caeruleus</i>		B	6-8 territories in wooded areas around the periphery of the site.
<b>Great Tit</b> <i>Parus major</i>		B	4-5 territories in wooded areas around the periphery of the site.
<b>Nuthatch</b> <i>Sitta europaea</i>		B	Recorded on occasion around the western boundary near the pond.
<b>Treecreeper</b> <i>Certhia familiaris</i>		B	Recorded on occasion around the western boundary near the pond.
<i>Jay</i> <i>Garrulus glandarius</i>		F	Once flying in the central scrub from the western side of the site.
<i>Magpie</i> <i>Pica pica</i>		B	Regular feeding around the site. At least one pair breeding.
<i>Jackdaw</i> <i>Corvus monedula</i>		F	Regularly a handful of birds feeding with Rooks in the central grasslands and probably breeding in the western woodland.
<i>Rook</i> <i>Corvus frugilegus</i>		F	A Rookery just off site to the west with flocks of up to 50-100 birds in central grasslands once fledged.
<i>Carrion Crow</i> <i>Corvus corone corone</i>		B	Occasion birds, particularly around the north of the site.
<i>Starling</i> <i>Sturnus vulgaris</i>	Red	F	Occasional flocks of 20-50 birds feeding in central grasslands.
<i>House Sparrow</i> <i>Passer domesticus</i>	Red	F	A few birds recorded regularly in hedge along southern and eastern boundary, and in scrub within eastern grassland.
<i>Chaffinch</i>		B	5-6 Territories in scrub and periphery of site.



SPECIES	UK STATUS		STATUS AT SITE
<b>Fringula coelebs</b>			
<i>Brambling</i>		P	Recorded on several casual occasions in scrub at western edge of site with a maximum of 6-10 on 9 April. Last seen 13 April.
<i>Fringilla montifringilla</i>			
<i>Greenfinch</i>		B	Around 12 Territories in wood edge and scrub across site.
<i>Carduelis chloris</i>			
<i>Goldfinch</i>		B	Occasional birds recorded.
<i>Carduelis carduelis</i>			
<i>Siskin</i>			Seen on occasion in western part of site in spring.
<i>Carduelis spinus</i>			
<i>Linnet</i>	Red	B	7-9 Territories in various parts of site but most associated with gorse and
<i>Carduelis cannabina</i>	BAP		bramble scrub in the north and near the western pond.
<i>Bullfinch</i>	Red	B	A couple of Territories recorded in NW and southern parts of site.
<i>Pyrrhula pyrrhula</i>			
<i>Hawfinch</i>	Amber	B	Pair seen on several occasions in early spring in SW corner of site. Male seen
<i>Coccothraustes coccothraustes</i>			singing.
<b>Reed Bunting</b>	Red	B	One territory in the willows just east of the western pond.
<b>Emberiza choeniclus</b>	BAP		

Annex I – Birds listed on Annex I of the Habitats Directive.

WCA Sch 1 – Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981.

BAP – UK Biodiversity Action Plan Priority Species

Birds of Conservation Concern (BoCC): Red List; Amber List (after Gregory *et al.* 2002).

**Total species list: 63 species**

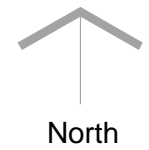
Breeding (possible, probable, confirmed): 38 species

## **APPENDIX 7b**

### **Pre-development ground nesting bird map**

The following document was created by EPR ecological consultancy as part of the pre-development ecological report.





- (L) Lapwing Territories
- (LI) Linnet Territories
- (S) Skylark Territories

**8.6**  
Bird Survey Skylark  
Linnet and Lapwing

as shown  
BRS.1438\_48

FIGURE  
E TITLE  
SCALE  
DWG. NO.

0 50 100 150 Metres

## **APPENDIX 8a**

### **Invertebrate survey results 2019**

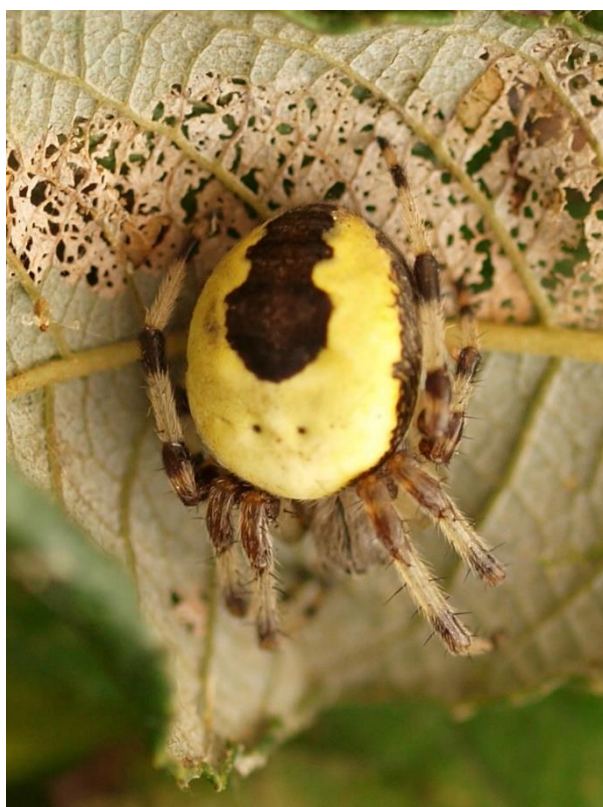


**INVERTEBRATE SURVEY OF**

**ABBOTSWOOD LNR**

**SOUTH HAMPSHIRE**

**OCTOBER 2019**



*Araneus marmoreus var. pyramidatus*

***Dr. Jonty Denton*** FRES FLS CEcol MCIEEM

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## Summary

A baseline survey of terrestrial and aquatic invertebrates was carried out across the LNR in the summer of 2019.

**Survey date/s:** 26<sup>th</sup> April, 4<sup>th</sup> May, 1<sup>st</sup>, 4<sup>th</sup> July 14<sup>th</sup> September 2019

**Species total:** A total of 273 invertebrate taxa identified of which 5 species had conservation designations.

Species		Family	Order	Conservation status
<i>Pardosa proxima</i>	A wolf spider	Lycosidae	Araneae	NS
<i>Telmatophilus schoenherrii</i>	A Typha beetle	Cryptophagidae	Coleoptera	RDB K
<i>Pelenomus canaliculatus</i>	A weevil	Curculionidae	Coleoptera	Nb
<i>Calamotropha paludella</i>	A micromoth	Crambidae	Lepidoptera	N:Nb

**UKBAP / SPI (NERC S41) species:**

Cinnabar Moth (*Tyria jacobaeae*) [Research Only] – Ragwort

## **INTRODUCTION**

The project brief was to provide baseline records for invertebrates across the wildlife area.

## **METHODOLOGY AND SITE VISITS**

The main emphasis of the survey was to find as many rare and notable species as possible within the reviewed groups.

The site was visited specifically for invertebrate surveying on the following dates;- 26<sup>th</sup> April, 4<sup>th</sup> May, 1<sup>st</sup>, 4<sup>th</sup> July 14<sup>th</sup> September 2019

Standard field techniques were employed to sample the invertebrate fauna across the site. These included sweeping vegetation with a wide mouthed sweep net, beating trees and bushes over a beating tray, and grubbing amongst tussocks and key host plant rosettes. Spot-netting at flowers and other resources and visual/hand searching of dead wood, tree trunks, bare ground etc. Aquatic sampling was carried out using a 0.5mm mesh GB nets pond net.

Because it is impracticable to survey all the potential invertebrates within any given site, only specific groups of species were examined during fieldwork. These groups are sufficiently well known as to allow meaningful comparisons to be made with other sites, both locally and nationally. They are also important as indicators of the quality of a site and the habitats present (see Brooks 1993).

Groups covered during the survey were:

- Mollusca (slugs and snails)
- Arachnida (spiders, harvestmen & pseudoscorpions)
- Isopoda (woodlice)
- Thysanura (bristletails)
- Ephemeroptera (mayflies)
- Odonata (dragonflies & damselflies)
- Plecoptera (stoneflies)
- Orthoptera (grasshoppers & crickets)
- Dictyoptera (cockroaches)
- Dermaptera (earwigs)
- Hemiptera-Heteroptera (true-bugs)
- Hemiptera-Homoptera (hoppers)
- Neuroptera (lace-wings)
- Mecoptera (scorpion-flies)
- Lepidoptera (butterflies & moths)
- Trichoptera (caddis flies)
- Diptera (true flies)
- Aculeate Hymenoptera (ants, bees & wasps)
- Coleoptera (beetles)

## RESULTS

A total of **274** species of invertebrate were recorded. A full species list with UK statuses is given in Appendix 1. Of the 274 species, **5 species have a conservation designation**. These are summarised in Table 1. IUCN re-evaluated species have their IUCN criteria given followed by their current UK rarity status in brackets. Those species that have not yet been IUCN re-evaluated have their current statuses in square brackets.

**Table 1. list of species with a conservation designation.**

Species	Family	Order	Conservation status
<i>Pardosa proxima</i>	Lycosidae	Araneae	NS
<i>Telmatophilus schoenherrii</i>	Cryptophagidae	Coleoptera	RDB K
<i>Pelenomus canaliculatus</i>	Curculionidae	Coleoptera	Nb
<i>Calamotropha paludella</i>	Crambidae	Lepidoptera	N:Nb
<i>Tyria jacobaeae</i>	Erebidae	Lepidoptera	Section 41 Priority Species – research only

## ECOLOGICAL ASSESSMENT

### PONDS

*Crassula helmsii* is present in all and very dense in the lower basins. Three-spined sticklebacks were also present which means they are no longer likely to produce Great Crested newts as the eggs and larvae will be predated by the sticklebacks. Adult GCN can be long lived and their presence will simply give a false impression of the viability of the population. The ponds were poorly designed being too deep and bowl shaped. Ponds which desiccate occasionally are on the whole better for wildlife as they prevent fish populations developing, and more species of invertebrate are associated with ephemeral water bodies.

### Balancing Lake

This is already developing some interest with extensive areas of common spike-rush on the draw down zones and marginals including *Typha* beds and sea Clubrush. The spectacular spider *Araneus marmoreus* var. *pyramidatus* is well established in the emergent zones. The weevil *Phytobius canaliculatus* is associated with *Myriophyllum*. Water-plantain is also frequent and host to several insect species.

Pale galingale is locally frequent but is an alien species and shouldn't be allowed to get too dominant.

Localised trampling and dog activity will lead to temporary disturbance but this also produces local open conditions which are exploited by a good range of beetles and bugs.

Cetti's Warblers were utilising the scrub around the lake edge.



## REFERENCES

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Hyman, P.S & Parsons, M.S. 1992. *A review of the scarce and threatened Coleoptera of Great Britain*. Part 1. JNCC, Peterborough.

Kirby, P. 1992. *A review of the scarce and threatened Hemiptera of Great Britain*. Peterborough, JNCC.

Merrit, P. 1990. *A review of the Nationally Notable Spiders of Great Britain*. Peterborough, NCC.

## APPENDICES

### APPENDIX 1. SPECIES LIST, 2019

Species	Family	Order	Conservation status
<i>Anyphaena accentuata</i>	Anyphaenidae	Araneae	common
<i>Agalenatea redii</i>	Araneidae	Araneae	local
<i>Araneus marmoreus</i> var. <i>pyramidatus</i>	Araneidae	Araneae	local
<i>Araneus quadratus</i>	Araneidae	Araneae	common
<i>Araniella cucurbitina</i> sensu stricto	Araneidae	Araneae	common
<i>Argiope bruennichi</i>	Araneidae	Araneae	local
<i>Hypsosinga pygmaea</i>	Araneidae	Araneae	Local
<i>Larinioides cornutus</i>	Araneidae	Araneae	common
<i>Mangora acalypha</i>	Araneidae	Araneae	common
<i>Clubiona phragmitis</i>	Clubionidae	Araneae	local
<i>Clubiona reclusa</i>	Clubionidae	Araneae	common
<i>Dictyna arundinacea</i>	Dictynidae	Araneae	common
<i>Erigone atra</i>	Linyphiidae	Araneae	common
<i>Hypomma bituberculatum</i>	Linyphiidae	Araneae	common
<i>Linyphia triangularis</i>	Linyphiidae	Araneae	common
<i>Pardosa proxima</i>	Lycosidae	Araneae	NS
<i>Pardosa saltans</i>	Lycosidae	Araneae	common
<i>Pirata piraticus</i>	Lycosidae	Araneae	common
<i>Trochosa terricola</i>	Lycosidae	Araneae	common
<i>Philodromus albidus</i>	Philodromidae	Araneae	common
<i>Philodromus aureolus</i>	Philodromidae	Araneae	common
<i>Philodromus cespitum</i>	Philodromidae	Araneae	common

Philodromus dispar	Philodromidae	Araneae	common
Tibellus oblongus	Philodromidae	Araneae	common
Pisaura mirabilis	Pisauridae	Araneae	common
Pachygnatha degeeri	Tetragnathidae	Araneae	common
Tetragnatha extensa	Tetragnathidae	Araneae	common
Tetragnatha montana	Tetragnathidae	Araneae	common
Anelosimus vittatus	Theridiidae	Araneae	common
Phylloneta sisypchia	Theridiidae	Araneae	common
Theridion varians	Theridiidae	Araneae	common
Xysticus cristatus	Thomisidae	Araneae	common
Xysticus ulmi	Thomisidae	Araneae	common
Anthicus antherinus	Anthicidae	Coleoptera	common
Exapion ulicis	Apionidae	Coleoptera	common
Cantharis decipiens	Cantharidae	Coleoptera	common
Cantharis lateralis	Cantharidae	Coleoptera	common
Rhagonycha fulva	Cantharidae	Coleoptera	common
Acupalpus dubius	Carabidae	Coleoptera	common
Agonum marginatum	Carabidae	Coleoptera	common
Amara aenea	Carabidae	Coleoptera	common
Bembidion biguttatum	Carabidae	Coleoptera	common
Harpalus affinis	Carabidae	Coleoptera	common
Paradromius linearis	Carabidae	Coleoptera	common
Pterostichus madidus	Carabidae	Coleoptera	common
Pterostichus nigrita	Carabidae	Coleoptera	common
Grammoptera ruficornis	Cerambycidae	Coleoptera	common
Crepidodera aurea	Chrysomelidae	Coleoptera	common
Donacia simplex	Chrysomelidae	Coleoptera	common
Galerucella lineola	Chrysomelidae	Coleoptera	common
Longitarsus pratensis	Chrysomelidae	Coleoptera	common
Longitarsus succineus	Chrysomelidae	Coleoptera	common
Psylliodes chrysocephala	Chrysomelidae	Coleoptera	common
Anisosticta novemdecimpunctata	Coccinellidae	Coleoptera	local
Coccidula rufa	Coccinellidae	Coleoptera	local
Coccinella septempunctata	Coccinellidae	Coleoptera	common
Harmonia axyridis	Coccinellidae	Coleoptera	common
Propylea quattuordecimpunctata	Coccinellidae	Coleoptera	common
Stethorus punctillum	Coccinellidae	Coleoptera	common
Subcoccinella vigintiquatuor punctata	Coccinellidae	Coleoptera	common
Tytthaspis sedecimpunctata	Coccinellidae	Coleoptera	common
Atomaria fuscata	Cryptophagidae	Coleoptera	common
Micrambe ulicis	Cryptophagidae	Coleoptera	common
Telmatophilus schoenherrii	Cryptophagidae	Coleoptera	RDB K

Telmatophilus typhae	Cryptophagidae	Coleoptera	common
Archarius salicivorus	Curculionidae	Coleoptera	common
Pelenomus canaliculatus	Curculionidae	Coleoptera	Nb
Phyllobius pomaceus	Curculionidae	Coleoptera	common
Phyllobius pyri	Curculionidae	Coleoptera	common
Phyllobius roboretanus	Curculionidae	Coleoptera	common
Polydrusus cervinus	Curculionidae	Coleoptera	common
Polydrusus pterygomalis	Curculionidae	Coleoptera	common
Rhamphus oxyacanthae	Curculionidae	Coleoptera	common
Sitona hispidulus	Curculionidae	Coleoptera	common
Sitona lineatus	Curculionidae	Coleoptera	common
Dasytes aeratus	Dasytidae	Coleoptera	common
Dryops luridus	Dryopidae	Coleoptera	local
Agabus bipustulatus	Dytiscidae	Coleoptera	common
Agabus nebulosus	Dytiscidae	Coleoptera	common
Colymbetes fuscus	Dytiscidae	Coleoptera	common
Dytiscus marginalis	Dytiscidae	Coleoptera	common
Hydroporus palustris	Dytiscidae	Coleoptera	common
Hydroporus planus	Dytiscidae	Coleoptera	common
Hydroporus tessellatus	Dytiscidae	Coleoptera	common
Hygrotus impressopunctatus	Dytiscidae	Coleoptera	common
Hygrotus inaequalis	Dytiscidae	Coleoptera	common
Laccophilus minutus	Dytiscidae	Coleoptera	common
Liopterus haemorrhoidalis	Dytiscidae	Coleoptera	local
Halipilus ruficollis	Halipilidae	Coleoptera	common
Anacaena limbata	Hydrophilidae	Coleoptera	common
Helochaeres lividus	Hydrophilidae	Coleoptera	common
Helophorus aequalis	Hydrophilidae	Coleoptera	common
Helophorus brevipalpis	Hydrophilidae	Coleoptera	common
Helophorus grandis	Hydrophilidae	Coleoptera	common
Helophorus minutus	Hydrophilidae	Coleoptera	common
Hydrobius fuscipes	Hydrophilidae	Coleoptera	common
Laccobius bipunctatus	Hydrophilidae	Coleoptera	common
Hygrobia hermanni	Hygrobiidae	Coleoptera	local
Kateretes rufilabris	Kateretidae	Coleoptera	common
Cartodere bifasciata	Latridiidae	Coleoptera	common
Cartodere nodifer	Latridiidae	Coleoptera	common
Corticaria impressa	Latridiidae	Coleoptera	common
Corticarina minuta	Latridiidae	Coleoptera	common
Cortinicara gibbosa	Latridiidae	Coleoptera	common
Monotoma picipes	Monotomidae	Coleoptera	common
Nanophyes marmoratus	Nanophyidae	Coleoptera	common
Epuraea melanocephala	Nitidulidae	Coleoptera	common
Anaspis fasciata	Scraptiidae	Coleoptera	common
Anaspis maculata	Scraptiidae	Coleoptera	common

Anaspis regimbarti	Scraptiidae	Coleoptera	common
Alianta incana	Staphylinidae	Coleoptera	common
Cypha longicornis	Staphylinidae	Coleoptera	common
Paederus riparius	Staphylinidae	Coleoptera	common
Stenus cicindeloides	Staphylinidae	Coleoptera	common
Stenus comma	Staphylinidae	Coleoptera	common
Stenus juno	Staphylinidae	Coleoptera	common
Sunius propinquus	Staphylinidae	Coleoptera	common
Tachyporus chrysomelinus	Staphylinidae	Coleoptera	common
Xantholinus linearis	Staphylinidae	Coleoptera	common
Leptogaster cylindrica	Asilidae	Diptera	common
Bibio marci	Bibionidae	Diptera	common
Dilophus febrilis	Bibionidae	Diptera	common
Lucilia caesar	Calliphoridae	Diptera	common
Iteomyia major	Cecidomyiidae	Diptera	common
Thaumatomyia notata	Chloropidae	Diptera	common
Dolichopus pennatus	Dolichopodidae	Diptera	common
Lonchoptera lutea	Lonchopteridae	Diptera	common
Epistrophe eligans	Syrphidae	Diptera	common
Episyrphus balteatus	Syrphidae	Diptera	common
Eristalis arbustorum	Syrphidae	Diptera	common
Eristalis pertinax	Syrphidae	Diptera	common
Eristalis tenax	Syrphidae	Diptera	common
Eupeodes corollae	Syrphidae	Diptera	common
Helophilus pendulus	Syrphidae	Diptera	common
Melanostoma mellinum	Syrphidae	Diptera	common
Melanostoma scalare	Syrphidae	Diptera	common
Gymnocheta viridis	Tachinidae	Diptera	common
Tipula oleracea	Tipulidae	Diptera	common
Tipula paludosa	Tipulidae	Diptera	common
Cloeon dipterum	Baetidae	Ephemeroptera	common
Acanthosoma haemorrhoidale	Acanthosomatidae	Hemiptera	common
Anthocoris confusus	Anthocoridae	Hemiptera	common
Aphrodes makarovi	Cicadellidae	Hemiptera	common
Cicadula quadrinotata	Cicadellidae	Hemiptera	common
Iassus lanius	Cicadellidae	Hemiptera	common
Limotettix striola	Cicadellidae	Hemiptera	local
Coreus marginatus	Coreidae	Hemiptera	common
Gonocerus acuteangulatus	Coreidae	Hemiptera	common
Corixa panzeri	Corixidae	Hemiptera	common
Corixa punctata	Corixidae	Hemiptera	common
Hesperocorixa sahlbergi	Corixidae	Hemiptera	common
Sigara (Pseudovermicorixa) nigrolineata	Corixidae	Hemiptera	common
Sigara (Sigara) dorsalis	Corixidae	Hemiptera	common



Sigara (Subsigara) distincta	Corixidae	Hemiptera	common
Sigara (Vermicorixa) lateralis	Corixidae	Hemiptera	common
Conomelus anceps	Delphacidae	Hemiptera	common
Gerris (Gerris) lacustris	Gerridae	Hemiptera	common
Gerris (Gerris) odontogaster	Gerridae	Hemiptera	common
Gerris (Gerris) thoracicus	Gerridae	Hemiptera	common
Hydrometra stagnorum	Hydrometridae	Hemiptera	common
Chilacis typhae	Lygaeidae	Hemiptera	common
Cymus melanocephalus	Lygaeidae	Hemiptera	common
Heterogaster urticae	Lygaeidae	Hemiptera	common
Ischnodemus sabuleti	Lygaeidae	Hemiptera	common
Kleidocerys resedae	Lygaeidae	Hemiptera	common
Nysius senecionis	Lygaeidae	Hemiptera	common
Scolopostethus thomsoni	Lygaeidae	Hemiptera	common
Amblytylus nasutus	Miridae	Hemiptera	common
Asciodema obsoleta	Miridae	Hemiptera	common
Atractotomus mali	Miridae	Hemiptera	common
Capsus ater	Miridae	Hemiptera	common
Closterotomus norwegicus	Miridae	Hemiptera	common
Deraeocoris (Deraeocoris) flavilinea	Miridae	Hemiptera	common
Deraeocoris (Deraeocoris) ruber	Miridae	Hemiptera	common
Deraeocoris (Knightocapsus) lutescens	Miridae	Hemiptera	common
Dicyphus epilobii	Miridae	Hemiptera	common
Dicyphus stachydis	Miridae	Hemiptera	common
Leptopterna dolabrata	Miridae	Hemiptera	common
Lygocoris (Lygocoris) pabulinus	Miridae	Hemiptera	common
Neolygus viridis	Miridae	Hemiptera	common
Notostira elongata	Miridae	Hemiptera	common
Phylus (Phylus) melanocephalus	Miridae	Hemiptera	common
Plagiognathus arbustorum	Miridae	Hemiptera	common
Plagiognathus chrysanthemi	Miridae	Hemiptera	common
Psallus perrisi	Miridae	Hemiptera	common
Stenodema (Brachystira) calcarata	Miridae	Hemiptera	common
Stenodema laevigata	Miridae	Hemiptera	common
Himacerus mirmicoides	Nabidae	Hemiptera	common
Himacerus apterus	Nabidae	Hemiptera	common
Nabis flavomarginatus	Nabidae	Hemiptera	common
Nabis rugosus	Nabidae	Hemiptera	common
Ilyocoris cimicoides	Naucoridae	Hemiptera	common
Notonecta (Notonecta) glauca	Notonectidae	Hemiptera	common
Notonecta maculata	Notonectidae	Hemiptera	common
Notonecta viridis	Notonectidae	Hemiptera	common

<i>Aelia acuminata</i>	Pentatomidae	Hemiptera	common
<i>Dolycoris baccarum</i>	Pentatomidae	Hemiptera	common
<i>Palomena prasina</i>	Pentatomidae	Hemiptera	common
<i>Plea minutissima</i>	Pleidae	Hemiptera	common
<i>Cacopsylla peregrina</i>	Psyllidae	Hemiptera	common
<i>Livia juncorum</i>	Psyllidae	Hemiptera	common
<i>Stictopleurus abutilon</i>	Rhopalidae	Hemiptera	local
<i>Saldula saltatoria</i>	Saldidae	Hemiptera	common
<i>Eurygaster testudinaria</i>	Scutelleridae	Hemiptera	common
<i>Physatocheila dumetorum</i>	Tingidae	Hemiptera	common
<i>Tingis cardui</i>	Tingidae	Hemiptera	common
<i>Microvelia reticulata</i>	Veliidae	Hemiptera	common
<i>Velia caprai</i>	Veliidae	Hemiptera	common
<i>Galba truncatula</i>	Lymnaeidae	Hygrophila	common
<i>Lymnaea stagnalis</i>	Lymnaeidae	Hygrophila	common
<i>Radix balthica</i>	Lymnaeidae	Hygrophila	common
<i>Planorbarius corneus</i>	Planorbidae	Hygrophila	common
<i>Planorbis carinatus</i>	Planorbidae	Hygrophila	common
<i>Andrena haemorrhoa</i>	Andrenidae	Hymenoptera	common
<i>Bombus hypnorum</i>	Apidae	Hymenoptera	common
<i>Bombus lucorum sensu lato</i>	Apidae	Hymenoptera	common
<i>Bombus pascuorum</i>	Apidae	Hymenoptera	common
<i>Bombus terrestris</i>	Apidae	Hymenoptera	common
<i>Biorhiza pallida</i>	Cynipidae	Hymenoptera	common
<i>Lasius flavus</i>	Formicidae	Hymenoptera	common
<i>Lasius niger</i>	Formicidae	Hymenoptera	common
<i>Myrmica ruginodis</i>	Formicidae	Hymenoptera	common
<i>Athalia cordata</i>	Tenthredinidae	Hymenoptera	common
<i>Vespula vulgaris</i>	Vespidae	Hymenoptera	common
<i>Oniscus asellus</i>	Oniscidae	Isopoda	common
<i>Philoscia muscorum</i>	Philosciidae	Isopoda	common
<i>Porcellio scaber</i>	Porcellionidae	Isopoda	common
<i>Adela reaumurella</i>	Adelidae	Lepidoptera	common
<i>Agriphila straminella</i>	Crambidae	Lepidoptera	common
<i>Calamotropha paludella</i>	Crambidae	Lepidoptera	N:Nb
<i>Tyria jacobaeae</i>	Erebidae	Lepidoptera	Section 41 Priority Species - research only
<i>Opisthograptis luteolata</i>	Geometridae	Lepidoptera	common
<i>Parornix devoniella</i>	Gracillariidae	Lepidoptera	common
<i>Phyllonorycter coryli</i>	Gracillariidae	Lepidoptera	common
<i>Phyllonorycter nicellii</i>	Gracillariidae	Lepidoptera	common
<i>Thymelicus sylvestris</i>	Hesperiidae	Lepidoptera	common
<i>Euthrix potatoria</i>	Lasiocampidae	Lepidoptera	common
<i>Lycaena phlaeas</i>	Lycaenidae	Lepidoptera	common
<i>Micropterix calthella</i>	Micropterigidae	Lepidoptera	common

Stigmella aceris	Nepticulidae	Lepidoptera	common
Stigmella crataegella	Nepticulidae	Lepidoptera	common
Stigmella floslactella	Nepticulidae	Lepidoptera	common
Stigmella microtheriella	Nepticulidae	Lepidoptera	common
Stigmella oxyacanthella	Nepticulidae	Lepidoptera	common
Stigmella perpygmaeella	Nepticulidae	Lepidoptera	common
Nonagria typhae	Noctuidae	Lepidoptera	common
Aglais io	Nymphalidae	Lepidoptera	common
Aphantopus hyperantus	Nymphalidae	Lepidoptera	common
Maniola jurtina	Nymphalidae	Lepidoptera	common
Melanargia galathea	Nymphalidae	Lepidoptera	common
Gonepteryx rhamni	Pieridae	Lepidoptera	common
Anthocharis cardamines	Pieridae	Lepidoptera	common
Pieris brassicae	Pieridae	Lepidoptera	common
Pieris rapae	Pieridae	Lepidoptera	common
Acrobasis advenella	Pyrilidae	Lepidoptera	common
Ditula angustiorana	Tortricidae	Lepidoptera	common
Aeshna cyanea	Aeshnidae	Odonata	common
Aeshna grandis	Aeshnidae	Odonata	common
Aeshna mixta	Aeshnidae	Odonata	common
Anax imperator	Aeshnidae	Odonata	common
Enallagma cyathigerum	Coenagrionidae	Odonata	common
Pyrrhosoma nymphula	Coenagrionidae	Odonata	common
Libellula depressa	Libellulidae	Odonata	common
Sympetrum striolatum	Libellulidae	Odonata	common
Conocephalus dorsalis	Conocephalidae	Orthoptera	common
Conocephalus fuscus	Conocephalidae	Orthoptera	common
Tetrix subulata	Tetrigidae	Orthoptera	common
Metrioptera roeselii	Tettigoniidae	Orthoptera	common
Valenzuela flavidus	Caeciliusidae	Psocoptera	common
Arion (Mesarion) subfuscus	Arionidae	Pulmonata	common
Zonitoides (Zonitoides) nitidus	Gastrodontidae	Pulmonata	common
Tandonia budapestensis	Milacidae	Pulmonata	common
Succinea putris	Succineidae	Pulmonata	common
Helobdella stagnalis	Glossiphoniidae	Rhynchobdellida	common
Limnephilus rhombicus	Limnephilidae	Trichoptera	common

### Appendix 3. Status categories for rare and Notable species

#### Red Data Book Category 1 (RDB 1) – Endangered

##### Definition.

Taxa in danger of extinction in *Great Britain* and whose survival is unlikely if the causal factors continue operating.

Included are those taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are *some* taxa that are *possibly* extinct.

**Criteria.**

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

Species which only occur in habitats known to be especially vulnerable.

Species which have shown a rapid or continuous decline over the last twenty years and are now *estimated* to exist in five or fewer 10 km squares.

Species which are *possibly* extinct *but have been recorded this century* and if rediscovered would need protection.

**Red Data Book Category 2 (RDB 2) - Vulnerable**

**Definition.**

Taxa *believed* likely to move into the endangered category in the near future if the causal factors continue operating.

Included are taxa of which most or all of the populations are decreasing because of *over-exploitation*, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

**Criteria.**

Species declining throughout their range.

Species in vulnerable habitats.

**Red Data Book Category 3 (RDB 3) – Rare**

**Definition.**

Taxa with small populations *in Great Britain* that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

**Criterion.**

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

**Nationally Scarce Category A - Notable A (Na)**



**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

**Nationally Scarce Category B - Notable B (Nb)****Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

**Nationally Scarce - Notable (N)****Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

**Summary of the IUCN categories and criteria.**

- **REGIONALLY EXTINCT (RE)**

A taxon is Extinct when there is no reasonable doubt that the last individual has died. In this review the last date for a record is set at fifty years before publication.

- **CRITICALLY ENDANGERED (CR)**

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered.

- **ENDANGERED (EN)**

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered.

- **VULNERABLE (VU)**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable.

- **NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- **LEAST CONCERN (LC)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

- **DATA DEFICIENT (DD)**

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

- **NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

## **GB Rarity Status categories and criteria**

- **Nationally Rare (NR)**

Native species which have not been recorded from more than 15 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species which are probably extinct.

- **Nationally Scarce (NS)**

Native species which are not regarded as Nationally Rare AND which have not been recorded from more than 100 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

## **Other species status terminology.**

- **Local.** Species that are restricted in distribution either geographically or by habitat. Also used for species that are widespread but infrequently encountered, e.g. encountered in no more than 300 10km squares of the national Ordnance Survey grid since 1970. Or those species listed as such, based upon modern geographical data, by ISIS (2010) and/or relevant recording schemes.
- **Widely Scattered.** Generally distributed but at low densities.
- **Southern.** Mainly or completely confined to southern England and/or its westerly or easterly regions – as indicated.
- **Common.** Generally widespread throughout the UK.
- **Unknown.** Usually indicates a lack of available data for difficult taxa but may also imply recent taxonomic confusion.

## **APPENDIX 8b**

### **Discovery Day results 2019**

## **Abbotswood Wildlife Discovery Day Results 2019**

Abbotswood Wildlife Discovery Day 2019 took place on Saturday 25<sup>th</sup> May, during which the two attenuation basins outside of the Area for Nature Conservation (ponds 8 and 9) were surveyed using sweep netting. The following species list was compiled from the event:

- Greater water boatman
- Lesser water boatman
- Smooth newt
- Darter dragonfly nymph
- Hawker dragonfly nymph
- Fish leech
- Water stick insect
- Swimming mayfly nymph
- Whirligig beetle
- Amber snail
- Pond snail
- Stick cased caddisfly larvae
- Diving beetle
- Pond skater
- Damselfly nymph
- Blood worm
- Freshwater shrimp

## **APPENDIX 8c**

### **Pre-development invertebrate survey**

The following survey was conducted by EPR ecological consultancy as part of the pre-development ecological report.



Appendix 4: Invertebrate Species List

Group / species	English name if available	National status	Ecological associations and comments etc
<b>COLEOPTERA</b>			
<b>Apionidae</b>			
<i>Apion frumentarium</i>	a weevil		broad-leaved docks
<i>Malvapion malvae</i>			Malvaceae – especially <i>Malva sylvestris</i>
<b>Byturidae</b>			
<i>Byturus tomentosus</i>	the raspberry beetle		Brambles and raspberries
<b>Carabidae</b>			
<i>Amara communis</i>			phytophagous species of open sites, hiding under leaf rosettes, stones, etc
<i>Amara familiaris</i>			Phytophagous species of gardens and other open, dry and sunny habitats
<i>Harpalus rufipes</i>			ubiquitous
<i>Nebria brevicollis</i>			ubiquitous late summer and autumn species
<i>Notiophilus biguttatus</i>	a ground beetle		most open ground habitats
<i>Pterostichus melanarius</i>	a ground beetle		ubiquitous
<b>Chrysomelidae</b>			
<i>Altica lythri</i>	a leaf beetle		widespread on many plant species
<i>Lochmaea crataegi</i>	a leaf beetle		Hawthorn - larvae mine the berries
<i>Longitarsus luridus</i>	a flea beetle		feeds on many plant species
<i>Phaedon cochleariae</i>			various Cruciferae
<i>Phyllotreta atra</i>	a leaf beetle		various Cruciferae
<i>Phyllotreta undulata</i>	a leaf beetle		various Cruciferae
<b>Coccinellidae</b>			
<i>Adalia 2-punctata</i>	2-spot ladybird		predatory on other insects
<i>Coccinella 7-punctata</i>	7-spot ladybird		predatory on other insects
<i>Halyzia 16-guttata</i>	Orange ladybird		predatory on other insects
<i>Propylea 14-punctata</i>	14-spot ladybird		predatory on other insects
<i>Rhyzobius litura</i>			predatory on other insects

Group / species	English name if available	National status	Ecological associations and comments etc
<i>Sitona lineatus</i>	a weevil		various legumes
<b>Elateridae</b>			
<i>Kibunea (Cidnopus) minuta</i>			a species of dry grasslands
<b>Kateretidae</b>			
<i>Brachypterus glaber</i>			Nettles
<i>Brachypterus urticae</i>			Nettles
<b>Latridiidae</b>			
<i>Aridius nodifer</i>			litter, compost, tussocks etc – more or less ubiquitous
<b>Nitidulidae</b>			
<i>Meligethes aeneus</i>	a pollen beetle		various flowers
<b>Staphylinidae</b>			
<i>Aloconota gregaria</i>			plant litter – ubiquitous
<i>Anotylus sculpturatus</i>			grass tussocks, litter, dung etc
<i>Atheta (Mocyta) fungi</i>			a detritus-feeding rove beetle
<i>Drusilla canaliculata</i>			litter, moss, under stones etc – a predator of ants
<b>CRUSTACEA</b>			
<b>Armadillidiidae</b>			
<i>Armadillidium vulgare</i>	the pill bug		under stones etc
<b>Oniscidae</b>			
<i>Oniscus asellus</i>	a woodlouse		damp, but not wet, habitats everywhere
<b>DERMAPTERA</b>			
<b>Forficulidae</b>			
<i>Forficula auricularia</i>	common earwig		generalist species
<b>DIPTERA</b>			
<b>Agromyzidae</b>			
<i>Chromatomyia horticola</i>			mines the leaves of various plants
<b>Cecidomyiidae</b>			
<i>Dasineura crataegi</i>			forms galls on hawthorn
<i>Dasineura urticae</i>			forms galls on nettles
<i>Putoniella marsupialis</i>			forms galls on blackthorn
<b>Chloropidae</b>			
<i>Oscinella frit</i>			biology unknown - probably feeds inside grass stems

Group / species	English name if available	National status	Ecological associations and comments etc
<b>Culicidae</b>			
<i>Culex pipiens</i>	common mosquito		freshwater to breed; adult bites birds and mammals including humans
<b>Sarcophagidae</b>			
<i>Sarcophaga carnaria</i>			larvae feed on carrion
<i>Scathophaga decipiens</i>			
<i>Scathophaga furcata</i>			animal dung
<i>Scathophaga stercoraria</i>	a dung fly		larvae in cattle dung
<b>Sepsidae</b>			
<i>Nemopoda nitidula</i>			shade-loving species, in woods and damp meadows
<i>Sepsis cynipsea</i>			Larvae feed in animal dung
<i>Sepsis flavimana</i>			larvae feed in dung, especially of cattle
<i>Sepsis fulgens</i>			the most ubiquitous member of this group
<i>Sepsis punctum</i>			widespread in various habitats
<i>Sepsis thoracica</i>			larvae feed in dung
<i>Sepsis violacea</i>			usually a meadowland species
<b>Stratiomyidae</b>			
<i>Chloromyia formosa</i>			ubiquitous
<i>Sargus bipunctatus</i>			an autumn-flying species
<b>Syrphidae</b>			
<i>Episyrphus balteatus</i>			ubiquitous species, partly immigrant, and a predator of aphids
<i>Eristalis pertinax</i>			Larvae require damp habitats but adults are more or less ubiquitous
<i>Eupeodes corollae</i>			Grassland
<i>Eupeodes luniger</i>			Grassland
<i>Helophilus pendulus</i>			Larvae require damp habitats but adults are more or less ubiquitous
<i>Melanostoma mellinum</i>			Grassland
<i>Melanostoma scalare</i>			Grassland
<i>Neoascia tenur</i>			reed beds and similar emergent

Group / species	English name if available	National status	Ecological associations and comments etc
			vegetation
<i>Platycheirus albimanus</i>			ubiquitous - larvae prey on aphids
<i>Rhingia campestris</i>			Cow dung
<i>Sphaerophoria scripta</i>			Grassland
<i>Syrpitta pipiens</i>			larvae in decaying vegetation; adults at flowers
<i>Syrphus vitripennis</i>			larvae are aphid predators on trees and bushes
<b>Tabanidae</b>			
<i>Haematopota pluvialis</i>			damp habitats - adult females are blood sucking horseflies
<b>Tephritidae</b>			
<i>Euleia heraclei</i>	a picture-winged fly		white-flowering Umbelliferae
<i>Terellia ruficauda</i>	a picture-winged fly		larvae gall the flowers of thistles
<i>Urophora cardui</i>	a picture-winged fly		larvae gall the flowers of thistles
<i>Xyphosia miliaria</i>	a picture-winged fly		larvae gall the flowers of thistles; ubiquitous
<b>Tipulidae</b>			
<i>Tipula paludosa</i>	one of two common daddy long legs		ubiquitous
<b>HETEROPTERA</b>			
<b>Anthocoridae</b>			
<i>Anthocoris nemorum</i>			low vegetation
<b>Coreidae</b>			
<i>Coriomeris denticulatus</i>			various legumes
<b>Lygaeidae</b>			
<i>Heterogaster urticae</i>			Nettles
<i>Kleidocerys resedae</i>			trees and shrubs generally
<i>Scolopostethus thomsoni</i>			usually on nettles
<b>Miridae</b>			
<i>Calocoris norvegicus</i>			polyphagous
<i>Capsus ater</i>			Grassland
<i>Cylloceria histrionica</i>			associated with oak

Group / species	English name if available	National status	Ecological associations and comments etc
<i>Dicyphus epilobii</i>			Epilobium hirsutum
<i>Heterotoma meriopterum</i>			edge habitats - especially in association with nettles
<i>Leptoterna dolabrata</i>			found in a wide range of grassland habitats
<i>Liocoris tripustulatus</i>			stinging nettle
<i>Notostira elongata</i>			grasslands
<i>Plagiognathus albipennis</i>			Mugwort - probably wherever this grows
<i>Plagiognathus arbustorum</i>			polyphagous, but usually associated with stinging nettles
<i>Stenodema laevigatum</i>			grasslands
<b>Pentatomidae</b>			
<i>Aelia acuminata</i>			Thistles
<i>Dolycoris baccarum</i>			polyphagous species of dry habitats
<i>Eurydema oleracea</i>			feeds on cruciferous plants
<i>Eysarcoris fabricii</i>			probably polyphagous
<i>Palomena prasina</i>			trees and shrubs
<b>HOMOPTERA</b>			
<b>Membracidae</b>			
<i>Centrotus cornutus</i>	a froghopper	Local	oak, aspen and other sapling trees
<b>HYMENOPTERA: ACULEATA</b>			
<b>Formicidae</b>			
<i>Lasius niger</i>	common black ant.		generalist species
<i>Myrmica rubra</i>	a red ant		ubiquitous
<b>Vespidae</b>			
<i>Vespula germanica</i>	a common social wasp		ubiquitous
<b>LEPIDOPTERA: BUTTERFLIES</b>			
<b>Nymphalidae</b>			
<i>Vanessa atalanta</i>	Red admiral		most often recorded as an immigrant from overseas
<b>LEPIDOPTERA: MOTHS</b>			



Group / species	English name if available	National status	Ecological associations and comments etc
<b>Arctiidae</b>			
<i>Tyria jacobaeae</i>	Cinnabar		Ragwort
<b>Pyralidae</b>			
<i>Agriphila tristella</i>			grasses
<b>Tortricidae</b>			
<i>Endothenia gentianaeana</i>			teasels - in the seed heads
<b>Zygaenidae</b>			
<i>Zygaena lonicerae</i>	Narrow-bordered 5-Spot Burnet		Lotus, Lathyrus, Trifolium
<b>MYRIOPODA: CHILOPODA</b>			
<b>Lithobiidae</b>			
<i>Lithobius forficatus</i>	the common centipede		many habitats
<i>Lithobius variegatus</i>	a centipede		amongst litter
<b>MYRIOPODA: DIPLOPODA</b>			
<b>Glomeridae</b>			
<i>Glomerus marginata</i>			detritivorous
<b>Julidae</b>			
<i>Tachypodoiulus niger</i>	a snake millipede		many habitats - often synanthropic
<b>Polydesmidae</b>			
<i>Polydesmus inconstans</i>			ubiquitous. Has been found in moles' nests
<b>NEUROPTERA</b>			
<b>Chrysopidae</b>			
<i>Chrysoperla carnea</i>			aphid predator of trees and bushes
<b>Hemerobiidae</b>			
<i>Micromus paganus</i>			ubiquitous, but usually in association with wood or scrub
<b>ORTHOPTERA</b>			
<b>Acrididae</b>			
<i>Chorthippus brunneus</i>	Field grasshopper		grassland
<b>Tettigoniidae</b>			
<i>Conocephalus dorsalis</i>	Short-winged		formerly at damp coastal sites it

Group / species	English name if available	National status	Ecological associations and comments etc
	Cone-head		is now found in a variety of inland habitats
<i>Metrioptera roeselii</i>	Roesel's Bush-cricket	Nb	long grassland

#### Explanation of National Status Codes Used in the Species List

**NATIONALLY RARE** species are those falling within the Status categories defined in the *British Red Data Books* (Bratton, 1991; Shirt, 1987). These are internationally recognised species listed in the various *Red Data Books* published by, or under the auspices of, the International Union for the Conservation of Nature (IUCN). Species included may not be informally removed or transferred between categories. There are four categories as follows:

**RDB 1 – “Endangered”** Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. These include Species known from only a single locality since 1970, species restricted to habitats which are especially vulnerable species which have shown a rapid and continuous decline in the last twenty years and are now estimated to exist in five or fewer localities and species believed extinct but which would need protection if re-discovered.

**RDB 2 “Vulnerable”.** Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating. These include species declining throughout their range, species in vulnerable habitats and species whose populations are low.

**RDB 3 “Rare”.** Taxa with small populations which are not at present endangered or vulnerable but which are at risk. These are species which are estimated to occur in fifteen or fewer localities.

**RDB K. “Unknown”** Taxa suspected to fall within the RDB categories but which are at present insufficiently known to enable placement.

**NATIONALLY SCARCE** species are those falling within the Nationally Notable categories introduced by Ball (1986). They are species which are estimated to occur within the range of 16 to 100 ten-kilometre squares of the British National Grid system since 1970. The specific categorisations of species have been revised since their inception for a number of taxa; those revisions are taken into account in the present report.

Notable species are subdivided as follows:

**Na:** species estimated to occur within the range of 16 to 30 10-kilometre squares of the National Grid System.

**Nb:** species estimated to occur within the range 31 to 100 10-kilometre squares of the National Grid System.

**NATIONALLY LOCAL** species are those which, whilst fairly common, are evidently less widespread than truly common species, but also not qualifying as Nationally Notable having been recorded from over one hundred, but less than three hundred, ten-kilometre squares of the UK National Grid.

Remaining species have either been formally declared “Common” or else are listed as “Unknown” where insufficient data is available to assign a species to any category.

## **APPENDIX 9:**

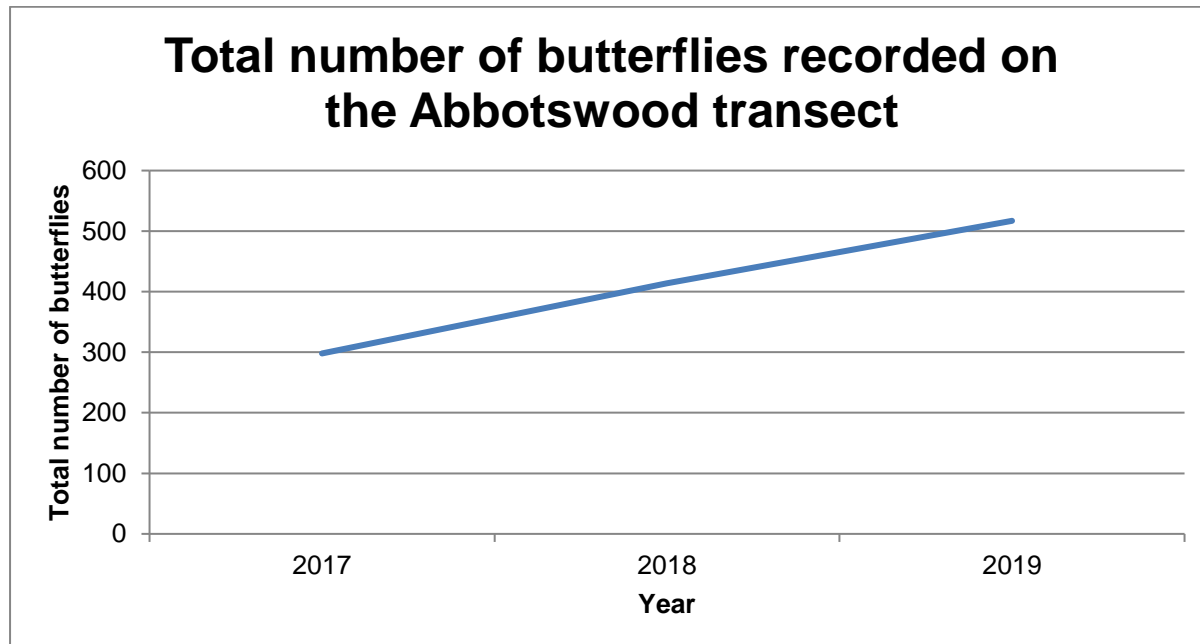
### **UK Butterfly Monitoring Scheme survey results**

## **Butterfly Monitoring scheme 2019**

A total of 22 butterfly species were recorded in 2019, an increase of 1 species from the previous year. Species recorded within 2019 are as follows:

- |                           |                            |
|---------------------------|----------------------------|
| • Small Skipper           | • Painted Lady             |
| • Large Skipper           | • Red Admiral              |
| • Brimstone               | • Peacock                  |
| • Large White             | • Comma                    |
| • Small White             | • Silver-washed Fritillary |
| • Green-veined White      | • Speckled Wood            |
| • White-letter Hairstreak | • Marbled White            |
| • Small Copper            | • Gatekeeper/Hedge Brown   |
| • Brown Argus             | • Meadow Brown             |
| • Common Blue             | • Small Heath              |
| • Holly Blue              | • Ringlet                  |

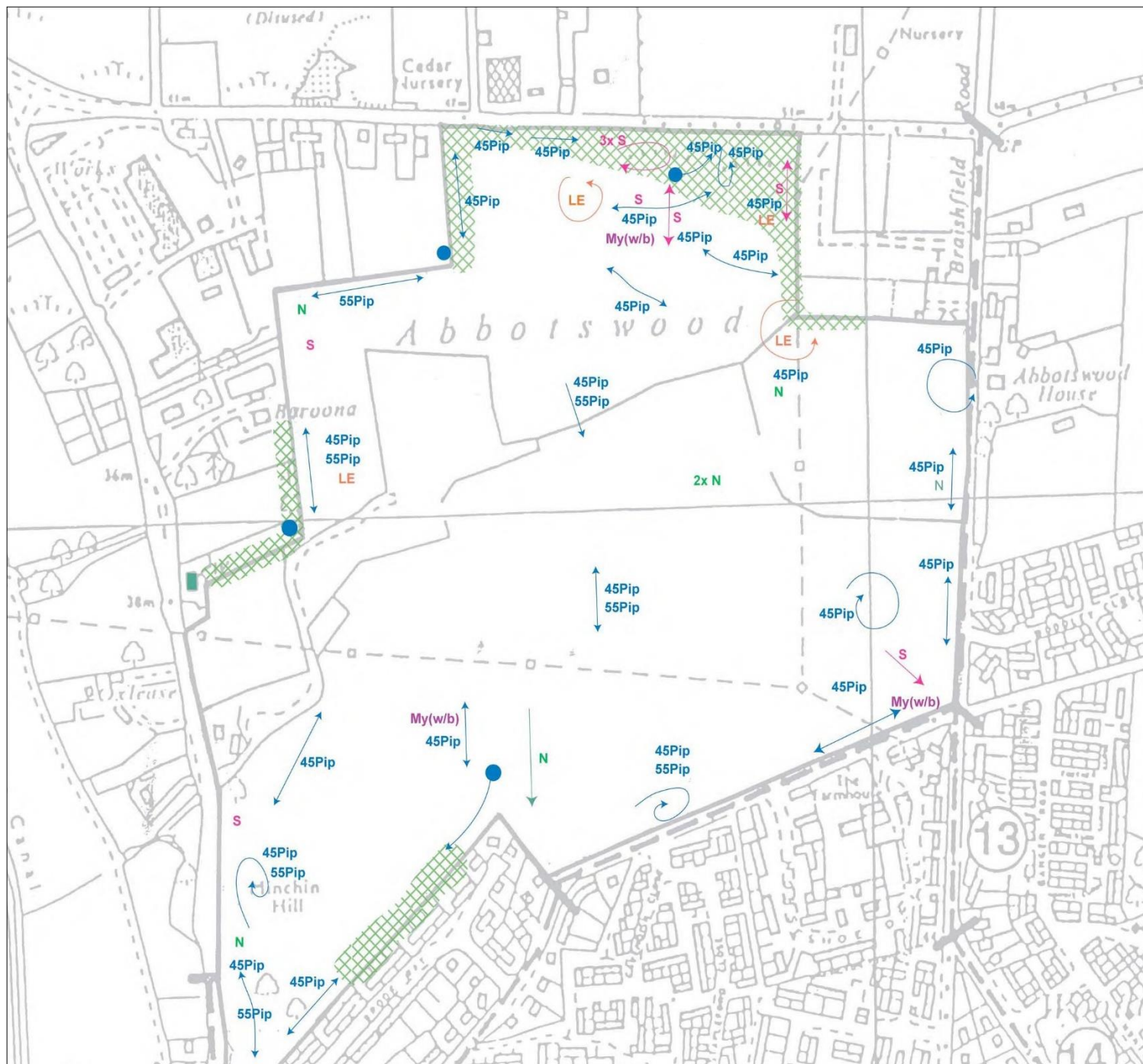
The total number of butterflies recorded from 2017-2019 can be seen on the graph below. 2017 was the first year Abbotswood was officially surveyed as part of the UK Butterfly Monitoring Scheme. These results contribute to the Hampshire wide, as well as the national database.





## **APPENDIX 10**

### **Bat survey results – Predevelopment survey**



- Pipistrelle bat roost
- Brown Long-eared roost
- 45Pip Common Pipistrelle
- 55Pip Soprano Pipistrelle
- S Serotine
- N Noctule
- MY(w/b) Whiskered/Brandt's
- LE Long-eared
- Foraging movement
- XXXX Area of trees with bat potential

**8.7** FIGURE  
Bat Survey TITLE I

nts. SCALE  
BRS.1438\_49-1a DWG. NO.