Valley Park Woodlands Local Nature Reserve Management Plan

2011 - 2021

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TEST VALLEY
BOROUGH COUNCIL

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1. Background Information

1.1 Location (See Map 1)

Valley Park Woodlands are located north of Chilworth and east of Chandlers Ford in the south of the Borough of Test Valley. Flexford Road borders the site in the north, Great Covert to the east, Knightwood Road to the west and Castle Lane to the south. The five separate woods surround a large housing development built on former agricultural land.

OS Map 1:50 000 Sheet 185 Grid Reference centred on SU416209

Parish:	Valley Park
County:	Hampshire
Local Planning Authority:	Test Valley Borough Council

1.2 Description of Valley Park Woodlands

The site lies on a gently sloping south-facing plateau of mainly acidic soils over Bracklesham Beds. The area contains a rich flora and fauna despite being surrounded by extensive housing development. The site consists of six stands in five separate blocks of woodland: Zionshill Copse, Tredgoulds Copse, Clothiers Copse & Knightwood, Sky's Wood and Little Covert (See Map 2).

The most prominent habitats are oak and ash high forest, neglected hazel coppice with oak/ash standards, alder Carr and small areas of heathland. Beech and yew are less frequent and mainly confined to the north of the site on inroads of alluvial soils. Birch is also present in the canopy where bare ground has allowed colonisation. The majority of the stands are of a limited age range and suffer from sycamore or robinia invasion.

An area of Zionshill Copse was cleared in the late 1980's and the ground flora now includes heather (*Calluna vulgaris*), heath speedwell, sedges (*Carex pilulifera, C. ovalis, C. binervis*), heath bedstraw and blinks. The woodland species include common solomon's-seal, bracken, wood-sorrel, wood anemone, bluebells, common figwort, yellow archangel, stitchwort, violets, cowslips and lower plants such as the mosses *Leucobryum glaucum.* There are orchids within the north-east corner of Zionshill Copse and include early purple (*Orchis mascula*), and common spotted (*Dactylorhiza fuchsii*).

The site is possibly derived from woodland pasture from the historic Baddesley Common complex and therefore has many similar characteristics with other woodland pastures. The closest surviving remnant of this type of woodland in Hampshire is the New Forest. The site also contains an above average number of Woodland Indicator Species for woodlands of their size.

Five of the woodlands are on the English Nature Register of Ancient Woodland in Hampshire.

1.3 The Planning History of the Site

The development at Chandlers Ford is one of five principal growth sectors in south Hampshire. The policy history originated in October 1988 with the Extension to Valley Park Planning Brief (Draft) published and land for 1500 dwellings identified. The development was designed to meet housing requirements by concentrating development to minimise the impact on the countryside and not overload existing town facilities. The allocation of about 900 dwellings in this area was a requirement of the South Hampshire Structure Plan: First Alteration for the period to 1996, with an outline consent for a further 550 dwellings given in March 1997. The development around the woodlands was described in the Test Valley Borough Local Plan in 1992 as "...the option least damaging to the wider landscape, countryside gaps and ecological interests is to allocate land to the west of the existing growth sector (Chandlers Ford)".

1.4 Past land use

The existence of possible Bronze Age (1700 to 600 BC) and Iron Age (600 BC to 43 AD) features within the woods suggests that the site was farmed by extended families and the resulting landscape would typically have been areas of woodland with large clearings for arable crops. These field systems have been disturbed by Roman ploughing after the invasion of Britain in 43 AD. Intensive farming systems introduced, coupled with technical advances in agriculture (eg curved blade of plough), led to widespread woodland clearance over all of Britain. This intensive agricultural system and close proximity to the Roman road to the east of Zionshill suggests that the majority of the site was historically agricultural and not woodland.

By 1588, Ralph Treswell's map of Hursley shows the area of Valley Park as being part of Baddesley Common - an expanse of rough grassland and heathland (See Map 9). By 1802 the First Ordnance Survey map shows the woodland boundaries as seen today, but by 1826 a survey of Thomas Chamberlayne estates which included Valley Park, showed the woodland boundaries of Tredgoulds Copse, Sky's Wood, Clothiers Copse and Zionshill Copse.

The 1867 Enclosure map and 1872 Ordnance Survey map show changes had occurred since 1826, the most noticeable being that Clothiers Copse and Knightwood had been established on an area of former pasture.

As the woods were part of the Baddesley common complex, they were probably used as woodland pasture for foraging pigs and the like until the two former farms on site (Zionshill and Knightwood), claimed the area for themselves during the enclosures.
Historic woodland activities are also in evidence including hazel coppice in Zionshill Copse, Knightwood and Clothiers Copse and alder coppice in Tredgoulds Copse and Little Covert. More recent activity can be seen from the stumps of felled mature oaks throughout the site, probably carried out during the Second World War (1939 - 1945) as the demand for home produced war materials rapidly increased with the threat of blockade by German U-boats.

There was more recently a sporting interest in the area, and remnants of this can be seen in some of the woodlands with release pens, areas cleared for game crops and shooting

rides. In 1988, an area of 0.8 hectares of Zionshill Copse was cleared of mature oaks (supposedly with the aim of increasing the sporting potential of the wood), and is now regenerating with heather which could be a historic link to when the area was part of the Baddesley Common complex.

Further details of past land use can be seen in the accompanying Valley Park Archaeological Earthwork Recording Survey –Appendix IX.

1.5 Past management for conservation

There has been no specific management for conservation within Valley Park Woodlands until Test Valley Borough Council adopted the area from developers in 1998. The areas cleared for game in the past have been incidentally beneficial to some species; noticeably woodland butterflies that thrive in dappled shade conditions.

1.6 Conservation status of site

The site is recognised by Hampshire County Council as being as a Site of Importance for Nature Conservation (SINC). SINC's are identified in the Local Plan with a policy constraining any damaging operations to the site. The woodlands are a Local Nature Reserve.

No other conservation status has been assigned to date, but it has been suggested that the archaeological structures found within the woodlands be registered with English Heritage / Hampshire County Council.

1.7 Land Tenure

The woodlands are to be managed by Test Valley Borough Council's Leisure & Wellbeing Service, primarily for conservation and education with informal recreation for local residents.

Type of holding:	Public Open Space
Total woodland area:	42.5 hectares (104.9 acres)
Total Meadow area:	0.72 hectares (1.77 acres)
Total open water area:	5.17 hectares (12.77 acres)
Boundaries:	See Map 2
Owner :	Test Valley Borough Council
Address:	Leisure & Wellbeing Service, Beech Hurst, Weyhill Road, Andover, Hampshire SP10 3AJ
Telephone:	(01264) 368000

1.7.1 Map Coverage

OS Map	1:50 000	(Landranger) Sheet Number 185
	1:25 000	(Explorer) Sheet Number 132
Geological Map	1:50 000	Sheet Number 315

1.7.2 Photographic Coverage

Table 1. Aerial Photographic Coverage of Site

Date	Copyright	Repository	Film ref.	Frame	Scale	Type
1996	HCC	HCC	Run 13	123	1 : 20 000	Colour
1991	NRS	HCC	Run 28	44	1 : 10 000	Colour
1984	-	HCC	Run 28	147	1 : 10 000	Black/white
1971	-	HCC	Run 25	72	1 : 10 000	Black/white

1.8 Access

There are two Public Rights of Way within the woodlands (See Map 3). The first path in the north of the site enters Knightwood from Knightwood Road at SU421211, runs west and exits between the southern end of Sky's Wood and the northern tip of Tredgoulds at SU414209. The second footpath does not enter the site, but runs north from Castle Lane at SU415196, along the west side of Little Covert, continuing north to Zionshill Copse before turning west at SU414204 to travel past Great Covert.

Various permissive waymarked paths exist in the woods and it is proposed that these will link up to create a circular route.

Table 2. Permissive Paths

Name of Wood	Map Number
Zionshill Copse	4
Tredgoulds Copse	5
Sky's Wood	5
Little Covert	6
Clothiers Copse	7
Knightwood	7

There is no permitted vehicular access on site apart from that necessary for management purposes.

Table 3. Vehicular Access

Name of Wood	Grid Reference	Map Number
Zionshill Copse	SU415203 and SU418204	4
Tredgoulds Copse	SU414209	5
Sky's Wood	SU415214	5
Little Covert	SU416200	6
Clothiers Copse	SU417214 and SU418216	7
Knightwood	SU417214	7

2. Woodland Information

2.1 Hydrology

The site is low-lying with poorly draining soils. The average precipitation is around 800 millimetres a year leading to water logging after heavy rainfall. There are seasonal ponds in the north of Skys Wood and in the west of Clothiers Copse. Through Little Covert a small stream flows which originates in the north-west of Great Covert, which leads to the waterlogged soil and the alder Carr habitat to be found within Little Covert. Alder Carr also exists in the south of Tredgoulds Copse. To the east and north of Zionshill Copse there are three balancing ponds to collect storm water from the new housing development and the surrounding roads, which first passes through interceptors.

2.2 Geology and soils

The geology of Valley Park Woodlands is Bracklesham Beds (glauconitic sand and clay), overlaying Upper Chalk (soft chalk with flint nodules), with inroads of alluvium to the north of the site. In the south of the site the soils are acidic to neutral clay (pH 5.0 - 6.0), which is poorly to well drained. To the north east of the site the soils are more typically of a poorly drained Wickham 3 profile, which are slowly permeable seasonally waterlogged fine loams over clay and coarser clay soils (pH 5.5 - 6.5).

2.3 Size

Table 4. Breakdown of Woodlands by Area

Name of Wood	Area in Hectares (ha)
Little Covert	1.7
Knightwood & Clothiers Copse	11.6
Zionshill Copse Local Nature Reserve	16.4*
Sky's Wood	9.4
Tredgoulds Copse	3.3**
Total	42.54
* 2A & 2B	5.4 & 11
**Open area to be taken away from total	0.14

Other Areas	Area in Hectares (ha)
Meadows	5.17
Open Water	0.72
Linking strips	1.71
Total	7.60

2.4 Flora

Flora records for the woodlands date back to 1975 with the mosr recent survey carried out in 2005. Full floral listings found within the woodlands and the floral surveys carried out in 2005 can be seen in Appendix II. A summary of the main National Vegetation Classification for each woodland is summarised as follows.

a) **Tredgoulds Copse** (see Appendix II for survey card)

3.3 hectares of ASNW dominated by oak and alder

Peterken stand types present within Tredgoulds Copse:
7Ab: Valley alder on mineral soil
3Aa: Acid pedunculate oak-hazel-ash on heavy soil form
6Cc: Lowland sessile oak wood
6Dc: Lowland hazel-pedunculate oak wood

NVC: W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosa* woodland
Typical sub-community

This is a stand of mainly oaks (*Quercus robur & Q. petraea*) with north-east corner cleared in the past and now an area of bracken invasion. New oak plantings under old Woodland Grant Scheme failed as lack of after care and protective tubes placed the wrong way up. Centre of stand occupied by pheasant release pen and cleared game ride. Rhododendron and Austrian pines occasionally present, especially in the north and west of the stand. Hazel coppice stools locally abundant. The south of the stand is comprised of mainly late pole stage alder coppice. Field layer consists of giant horsetail, nettles, bluebells, bracken and rush. 33 species of Ancient Woodland Indicator species were recorded in this stand.

b) **Skys Wood** (see Appendix II for survey card)

9.4 hectares of woodland, with 6 hectares described as ASNW dominated by oak and ash.

Peterken stand types present within Skys Wood:
3Aa: Acid pedunculate oak-hazel-ash wood with heavy soil form
6Cc: Lowland sessile oak wood
6Dc: Lowland hazel-pedunculate oak wood

NVC: W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosa* woodland
Typical sub-community

The stand is mainly of ASNW, with secondary woodland comprised of sycamore and some birch to the north between the prominent woodland bank and Flexford Road. Sycamore saplings make up the shrub layer in the north-west corner of the stand. Hazel coppice occurs in the north-east of the stand, with a field layer of bracken, bluebells, ivy, wood sedge, herb robert and bramble. A seasonal pond occurs in the north of the stand in

the stretch of secondary woodland. An area cleared for game, comprising a ride of north to south alignment and open area for the rearing of pheasants, exists in the centre of the stand. Aspen occurs along the side of the ride, with a large number of dead ash and sycamore, some of which shows evidence of squirrel damage. To the east there is a large open area which has now been planted with local provenance planting. The track which separates this open space and the woodland boundary consists of sycamore invasion, occasional mature oaks and ash regeneration with a field layer of twayblade, primrose, bugle, yellow pimpernel, enchanters nightshade, bedstraw and woodsedge. Another track exists to the south of the stand with coppiced hazel, bramble and wild flowers along the side. To the west the stand consists of ash, birch and sycamore with a field layer of broad leafed twayblade, hawthorn, hazel, holly and guelder rose.

The woodland contains 33 ASNW Indicators species.

c) Clothiers Copse (see Appendix II for survey card)

4.8 hectares of ASNW dominated by oak and birch.

Peterken stand types present within Clothiers Copse:
3Aa: Acid pedunculate oak-hazel-ash wood with heavy soil form
6Db: Lowland birch-pedunculate oak wood
6Dc: Lowland hazel-pedunculate oak wood
8b: Acid pedunculate oak-beech wood

NVC: **W10** *Quercus robur - Pteridium aquilinum - Rubus fruticosa* woodland
Typical sub-community

Oak dominated stand with occasional beech and chestnut. Various tracks within stand used for feeding game in the past. To the east of access road to Knightwood Farm hazel coppice under oak and ash. Seasonal pond and open glades exist. To west of access road the stand is dominated by oak standards over neglected hazel coppice with early pole stage birch and high density of robinia invasion. North of stand consists of mainly sycamore and robinia between bank and Flexford Road. Occasional conifer. Field layer of bramble, ivy, honeysuckle, wood violet, slender false broom, barren strawberry, woodruff, yellow archangel, germander speedwell, bugle, butcher's broom and yellow pimpernel.

35 ASNW Indicator species found within Clothiers Copse and Knightwood.

d) Knightwood (see Appendix II for survey card)

6.8 hectares of ASNW dominated by oak and beech.

Peterken stand types present within Knightwood:
3Aa: Acid pedunculate oak-hazel-ash wood with heavy soil form
8b: Acid pedunculate oak-beech wood

NVC: **W14** *Fagus sylvatica-Rubus fruticosa* woodland

Dominated by oak and beech on alluvial soils, with a large beech to the north-west. Cleared area of oaks with failed replanting in the central eastern part of the wood; again suffering from protective tubes in place the wrong way up and lack of aftercare. Occasional Portuguese laurel present along with bracken invasion. Crown damage to existing trees from wind disturbance. Hazel coppice locally abundant, especially in the north and over possible Pre-historic bank running east/west through stand. Yews in the south of the stand adjacent to Public Right of Way. South of stand contains high density of sycamore invasion and dense holly. To the east there is a small cleared area for game with a ride and keepers shed. Field layer comprises bramble, hawthorn, cherry, nettle, speedwell spp., foxglove, figwort, rye grass, yellow pimpernel, ivy, bugle, butchers broom, greater stitchwort, red campion and enchanters nightshade.

e) Zionshill Copse (see Appendix II for survey card)

16.4 hectares of woodland dominated by oak, of which 15 hectares are classed as ASNW.

Peterken stand types found within Zionshill Copse:
3Aa: Acid pedunculate oak-hazel-ash wood with heavy soil form

NVC: **W10** *Quercus robur-Pteridium aquilinum-Rubus fruticosa* woodland
Typical sub-community

Predominately oak (*Quercus robur* & *Q. petraea*) woodland with hazel under story in north-west, central south and north-east. Large game ride of east / west alignment exists in centre of stand. Sky's Wood Road dissects wood in half. Sycamore trees nominal over whole stand, frequent sycamore saplings in field layer. Occasional larch found in north of stand. Ash (coppice and maidens) dominant in east of stands over hazel and sycamore. A pre-historic settlement was confirmed in 1999 lying under oaks to central south-east of stand with birch in canopy. Occasional rhododendron, crab apple and holly. Field layer comprises common Solomon's-seal, bramble, bracken, wood sorrel, blue bells, foxglove, ivy, *mentha*, stitchwort, wood anemone, yellow archangel, figwort, St. johns-wort, honey suckle, lords and ladies and violet spp.

2.5 Areas and features

The varied habit mix within the woodland can be broadly subdivided into the following areas

(i) Ancient Semi-natural Woodland (ASNW

See Map 8 for Valley Park inventory of ASNW.
Sky's Wood, Tredgoulds Copse, Zionshill Copse, Knightwood and Clothiers Copse have been classed as areas of Ancient Semi-natural Woodland.

(ii) Secondary woodland

There are four main areas of secondary woodland on site: Little Covert, bottom of Zionshill Copse, the piece of woodland connecting Clothiers Copse to Knightwood and the narrow strips between the north of the boundary bank and Flexford Road of Sky's Wood and Clothiers Copse. Apart from Little Covert that comprises alder coppice, the main species to be found within the secondary woodland are sycamore, robinia and silver birch. The ground flora of these areas are poor resulting from shading and intense competition.

(iii) Alder Carr

Two areas of alder exist within the Valley Park Woodlands complex; Little Covert which is of a typical streamside alder habitat, and the southern section of Tredgoulds Copse. This alder was historically coppiced on a short rotation of about 15-20 years to provide material for a number of uses including gunpowder, charcoal (very high calorific value), and clog making. The stools are now being coppiced on a 15 – 20 year rotation, although old stools are still standing and may be subject to wind throw and decay. Many species of lower and higher plants are associated with these wetland habitats and are of great importance, such as yellow flag iris. The damp nature of the stand also means that it is a haven for entomology. 16 Ancient Woodland Indicator species were found within Little Covert along with various meadow species. The north of Little Covert is drier than the south, and has fewer old stools with some maidens and regeneration present. To the north east alder becomes less frequent and ash, hazel and hawthorn become dominant.

(iv) Open rides / glades

There are three game rides -Zionshill Copse, Tredgoulds Copse and Skys Wood. The ride within Zionshill Copse is of east / west alignment and very wide (15 - 20 metres across). The vegetation is rank with locally abundant *Deschampsia flexuosa* and ragwort. Birch regeneration is encroaching on the open ground that is seasonally waterlogged. Violets and primroses are evident with small amounts of bramble along the ride sides. The boundary between the tall oak woodland on either side is distinct and abrupt with few younger trees or vegetation creating the edge effect so desired by many species.

The remaining two rides are of north / south alignment which are deemed as less beneficial to wildlife.

(v) Hazel coppice

The remaining stools are neglected and of poor vigour resulting from shading and lack of competition deriving from a low stool density. There are seven areas of existing coppice-with-standards within Zionshill Copse, Clothiers Copse and Tredgoulds and a further two areas of planned reinstatement of coppice in Zionshill Copse and Clothiers Copse. Coppicing will allow light demanding wild flowers to thrive as the canopy is reduced periodically. This will benefit invertebrate species associated with food plants, such as butterflies. Increasing stool density will be aided by the process of layering (known as plashing in Hampshire).
Two coppice coupes have been reinstated in compartments 10a and 14a.

(vi) Heathland

This is a cleared area of mature oaks for game with a failed replanting scheme of oak in protective tubes placed the wrong way up within Zionshill Copse. The area of heathland regeneration comprises locally abundant ling heather (*Calluna vulgaris*).
Holly has become dense with birch regeneration occurring on open ground over the heather and *sphagnum spp.* Bracken has invaded the compartment and is threatening the regeneration of the heather through shading and competition. The trees around the edge have become crown damaged from exposure to wind.
Current management has seen a reduction in the bracken cover and a substantial increase in heather regeneration. The cutting of bracken twice yearly should be carried out for the foreseeable future to increase the stands of heather throughout the heathland area.

Glades such as in Sky's Wood should be maintained by the continuation of coppicing of trees around edge to create layered effect, and cutting of grass on rotation. Refer to management prescriptions for frequency

(vii) Seasonal woodland ponds

These are present within Clothiers Copse, Sky's Wood and Little Covert and their presence in woodland greatly increases the site's diversity. Work has been carried out at Little covert to reduce shading and removal of silt .The ponds in the remaining areas have become overshadowed by the surrounding trees and as with all woodland ponds, are in danger of silting up.

(viii) Dead wood

Old, dead and dying trees known as (standing deadwood) provide habitat for a wide range of species of invertebrates, birds and bats. Lichens, mosses and fungi are also abundant on this habitat. Any dead wood on site will be left in place, preferably in shade so as not to dry out. A constant supply of dead wood differing in size and state must be maintained throughout the site.

(ix) Ponds

The three balancing ponds have been maintained as areas of open water. The marginal plantings have been created to encourage wildlife including dragonfly's. Surveys of the ponds have been carried out by Countryside Officers and Dr Richard Osmond. See Appendix X for results and recommendations for future management.

(x) Ditches

The ditches that surround many of the woodlands must be maintained to ensure that the risk of flooding is reduced. Marginal vegetation should be managed to increase the diversity and habitat for invertebrates.

(xi) Meadows

The areas of grassland around the three balancing ponds and the wet meadow between Sky's Wood and Tredgoulds will be cut twice yearly and arisings removed off site to lower available nutrients.

(xii) Linking strips

These areas of newly created woodland were planted to act as a visual buffer zone of the developments surrounding the woodland and to provide 'wildlife corridors' between the existing woodlands. These are now reaching a semi-mature stage and a thinning regime will be put in place with selective thinning operations carried out on a rotational basis to encourage best forestry practice.

(xiii) Hedges

Hedges are important habitats for birds and invertebrates alike and allow movement between areas, any boundary hedges will be laid in the traditional midland style where appropriate

2.6 Fauna

2.6.1 Birds

The nature of the site means a wide range of birdlife uses the woodland. A bird survey has been undertaken for the whole site. Local residents and interested parties continue to assist the Officer in this project. Because of the number of mature trees in the woods available for supporting natural nest holes, bird boxes are not seen as a priority, however boxes have been added to open areas and along the woodland edge
See Appendix III for listings.

2.6.2 Invertebrates

The close proximity of the balancing ponds to the woods, especially Zionshill Copse, provides excellent habitats for dragonflies and damselflies, as the newly emerged Tenerals (young individuals), need the protection of tree cover as soon as they leave areas of water. Transects will be carried out over the entire site to compile records. The ponds are used for pond dipping by local schools and information has been recorded on fresh water invertebrates.

A phase one survey was conducted in spring 2005 on all balancing ponds. See Appendix IV for survey information.

2.6.3 Butterflies

Butterfly transects are carried out at Zionshill Copse, further transects will be set up to cover the whole site.

See Appendix V for listings and transect route.

2.6.4 Mammals

Sightings of mammals by volunteers and Countryside Officers have been recorded. The most notable species seen have been Roe deer, foxes, squirrels and badgers. The woodlands are obviously a great habitat for such species; however, the continuing development will undoubtedly have an impact as disturbance pushes them further out of the area. Dog exercising has caused disturbance. This has been mitigated to an extent by the introduction of the council's dog traffic light system. Small mammal trapping could be carried out within the woodlands to compile records. This operation would be carried out by a Mammal Society trained and licensed operator. In 2006, a student from the University of Southampton carried out a small mammal trapping exercise. See Appendix VI for listings.

2.7 Archaeology

Extensive features of archaeological interest have been discovered within the woodlands of Valley Park. These were in-turn surveyed by Berkshire Archaeological Service's between December 1998 and January 1999. The findings of this survey can be seen in the accompanying Valley Park Archaeological Earthwork Recording Survey. See Appendix IX.

2.8 Management of Social and Cultural values

2.8.1 Working with the community

Relations with local residents and users of the woodlands should be maintained and increased through active publicity, especially before new projects commence in the close proximity of housing. This can be achieved by the use of newsletters and both permanent and temporary interpretation boards.

2.8.2 Volunteers

For smaller projects including coppicing, plashing, small scale planting and dead hedging, volunteer working days will be arranged for the large number of local residents who expressed an interest in practical tasks through the questionnaire sent out in the summer of 1998. Other interested volunteer parties such as BTCV, HWT, after-school groups (e.g. Duke of Edinburgh Award students from Mountbatten School), and Hampshire Conservation Volunteers will also be involved.
Problems with volunteers include Health and Safety aspects (Risk Assessments etc), sporadic attendance and different personal motivations.

Volunteers can also be involved in surveying work - butterfly / dragonfly transects, tree wardens etc. Officers of Test Valley Borough Council or interested conservation organisations could supply training for regular volunteers (e.g. BTCV Pioneer Scheme).

In 2001, 'The Friends of the Parks' group was inaugurated. This group is made up of local residents and assist in the planning and implementation of the Management Plan. They were originally set up in partnership with BTCV and are now a self sustaining group with a constitution. The co-ordinator as at December 2006 is Steve White.

Southampton University students are regular visitors to the site and TVBC has entered into a partnership with the University through Dr Malcolm Hudson. This has worked well and the practical work they assist in is compatible with the academic teaching they receive.

2.8.3 Access

The nature of the site with its close proximity to housing will result in heavy usage of the site. An open access policy could lead to a destruction of habitats, so restriction on access to parts of the site is envisaged. Monitoring of public use should highlight the need for a greater provision of access and visitor management in the future.

2.8.4 Paths

At present there are many informal paths through the woodlands. To cater for public access, a network of waymarked permissive paths have been created as part of a circular walk that will link up all woodlands. The paths are 1.2 metres wide in the woodland habitat increasing to a width of 2 metres in open areas. These paths must be kept clear at all times. Some residents, especially dog walkers who will be asked to keep dogs on leads in some areas, will not use these permissive paths and will walk where they wish. Zoning of the public with fencing may be appropriate.

2.8.5 Boardwalk

Raised boardwalks have been constructed through the alder Carr of Little Covert and to link up the two housing estates to the west of Knightwood Road in the south of the site. (see 1.1.7). A boardwalk has also been constructed through the Alder Carr in Tredgoulds Copse.

2.8.6 Interpretation

Interpretation boards have been placed at the main entrance points of Zionshill Copse and further boards are planned for the entrances of the other woodlands . Smaller information boards are to be designed and placed at each entrance point informing the public of the name of the wood and vital information. Temporary boards can be placed at focal points of interest around the woods, by coppice coupes or rides for example which explain the reasons why a certain technique is being used.

Interpretation of the archaeological features outline the history of the site in context with the woodlands.

2.9 Significant hazards constraints or threats

2.9.1 Operations Likely to Damage Site

- Further development of housing into woodland areas
- Destruction of ancient banks and field systems
- Use of pesticides and herbicides without proper guidance
- Use of heavy machinery leading to soil compaction
- Too many fire sites for burning brash
- Allowing ‘right to roam’ policy
- Use of ill equipped / advised forestry contractors
- Planting of non-native stock
- Allowing invasive species to out-compete native flora
- Use of fertilisers / manure or allowing dumping of garden waste which increases soil nutrient levels leading to higher levels of competition
- Dumping of any other substances damaging to flora
- Resumption of game management
- Change of soil structure and pH
- Construction or maintenance of pipelines / cables above or below ground
- Erection of permanent structures within woodland
- Removal of any flora by public
- Release of non native species of fauna and flora
- Construction of roads / tracks through woods
- Drainage of damp areas
- Change of water table levels
- In-filling of ancient ditches
- Extraction of minerals - including drilling
- Killing or removal of any animal from site

2.9.2 Health and Safety of Employees

Procedures will be followed as laid out by Test Valley Borough Councils Health and Safety Policy and through liaison with the Health and Safety Officer.

2.9.3 Legal Constraints

The council is obliged to seek permission from the Secretary of State to undertake work on trees covered by Tree Preservation Orders (TPO), which all of the trees in Valley Park are (Tree Preservation Order no. TPO TVBC 190 made in 1989). A felling licence is also required from the Forestry Commission as the amount of timber to be removed is more than the 5 m^3 per calendar quarter permitted without licensing.

3 Long term vision, objectives and strategy

3.1 Rationale for Proposed Management Options

The primary aim for Valley Park Woodlands is to conserve and enhance the ancient woodland characteristics that are deemed as being richer in species composition than woodlands that are less well established. Preventing succession climaxing to high forest by creating rides, glades, uneven-aged stands and coppice rotations allows an increased level of ecological diversity.

The creation of a conservation site is highly important in such a large area of new development. This is not only an important site locally, but also nationally as the woodland sites like Valley Park come under increasing pressure from intensified agricultural practices and development. The need for preservation of these sites for wildlife, and for the enjoyment of the local residents can not be overstated. Increasing the public awareness and the economic sustainability of the woodlands will increase the value of the site to the council.

To achieve this goal, the woodlands will be actively managed to benefit conservation and public recreation. Historic management has shaped the character of the woodland with techniques such as coppicing, which was a traditional method of woodland management that has its origins in prehistory. Coppicing is now seen as a major benefit to conservation because of the periodic cutting of the stool allowing light to reach the woodland floor and thereby encouraging light demanding wild flowers to grow.

Non-native species present in natural woodlands, particularly sycamore and rhododendron can enhance the floral diversity of a site. However, if the proportion of these non-native species becomes too great, then only through direct management of these alien species will the loss of the natural woodland state be prevented. Invasive species such as bracken and bramble, if left unmanaged, will grow to such an extent that they swamp other flora and shade out light demanding species leading to a loss of diversity

3.2 Identification of Operational Objectives

Long term aims for the site can be categorised into 4 Management Options:

A - Active Conservation Management
B - Monitoring and Research
C - Education and Access
D - Administration and Public Relations

Table 5. Conservation of Features

Feature / Habitat	Management Option	Outline Prescription
Ancient Semi-natural Woodland	A	Remove non-native species and thin to benefit best individuals
Secondary Woodland	A	As above
Alder Carr	A	Coppice neglected alder to prevent loss of stools - either sell as standing timber or use contractors
Open rides / glades	A	Cut grass at 3 differing sward heights along ride - cut in spring (before April) or autumn (before late September)
Hazel coppice	A	Coppice percentage of trees in winter in coupes throughout site to reinstate 8 year rotation
Heathland	A	Restore heath species (heather) by controlling bracken and removing trees and shrubs in compartment 13c
Butterflies	B	Involve and support local residents with butterfly transects on site to compile base line information. Send results to Butterfly Conservation
Dragonflies & Damselflies	B	Support transects of dragonflies on site to compile base line information. Involve British Dragonfly Society and other local naturalists
Feature / Habitat	Management Option	Outline Prescription
Birds	B	Conduct a Common Bird Census (CBC) with assistance from British Trust for Ornithology (BTO) members and local residents
Mammals	B	Record and note species seen by local residents and Officer to compile database
Other invertebrates	B	Survey area for

		invertebrates
Public access	C & D	Create permissive paths through site - circular route and leaflets of site
School involvement	C	Involve local children in projects on site
Interpretation of features	C & D	Commission interpretation boards for where required, especially coppice coupes, new planting and archaeological features
Control of invasive species	A	Control where appropriate or possible
Increase public awareness	D	Through interpretation boards, talks, local newsletters and work parties
Non-native species	A	Remove from site where possible. Leave sycamore in compartment 12a as established on archaeological features. Allow ash to regenerate and then remove sycamore

Management options provide a broad guide for the operational management of the site if used in conjunction with appropriate objectives. They also provide a standard reference for inter-site comparisons. Therefore, for Valley Park Woodlands the following categories have been chosen using the Management Option codes:

A3 *Active management* - create or maintain a defined habitat

B3 *Encouragement and Increase* - action required to increase the number of a species or group of species

C4 *Open Facilities & Public Access* - any request to carry out study/research will be granted and encouraged. Restricted Access policy with use of permissive paths and byelaws to protect sensitive areas

D3 *Active Publicity* - site to be used for education, locally publicised, interpretative materials such as booklets and displays to accompany nature trails produced.

4 Management precriptions/ Operations

4.1 Precriptions

This section describes the management objectives in detail and ascribes specific prescriptions to achieve them. The woodlands have been divided into compartments that largely relate to either habitats or areas requiring different management.

Clothiers Copse and Knightwood -See Map 10

Compartment 1a: *Oak/Beech dominated ASNW*

- Remove sycamore and treat stumps
- Gap up hedges with hazel and hawthorn along entrance road off of Flexford Road
- Sympathetic management over archaeological features. Leave existing trees, remove those only in danger of falling which could result in root disturbance to soil structure.

Compartment 1b*: Open Area- Remaining Beech and Oak Crown Damaged ASNW*

- Restock with local provenance oak (80%) and beech (20%) at 2 x 2 metre spacing in tubes. Reuse tubes from failed previous planting scheme
- Control bracken
- Remove sycamore and treat stumps

Compartment 1c*: Oak/beech Dominant ASNW*

- Remove sycamore and treat stumps in south west corner
- Thin oak and beech by 20% to favour best individual trees

Compartment 2a*: Ash/Birch Secondary Woodland and Oak/Beech ASNW*

- Area of Veteran Beech Tree – remove holly from base of tree
- Remove sycamore and treat stumps

Compartment 2b*:* *Ash/Birch Secondary Woodland with Open areas*

- Remove sycamore and treat stumps
- Replant with local provenance oak and beech at 2 x 2 metre spacing

Compartment 2c: *Cherry/Oak ASNW*

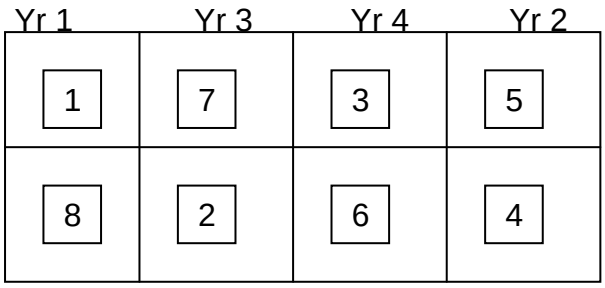
- Area with pond – remove sycamore around pond. Remove 60% of tree cover from around edge of pond
- Clear vegetation around pond on a rotational basis

Compartment 2d*:* *Ash/Oak ASNW*

- Restock open areas in 1.2 metre tubes with local provenance oak, ash, blackthorn, hazel, hawthorn and salix
- Conservation coppicing/plashing of hazel
- Minimal intervention
- Remove sycamore

Compartment 2e*:* *ASNW Invaded by Birch/Robinia*

- Selectively clear trees except oak - monitor robinia regrowth and control if necessary
- Fence whole area for rabbit and deer protection
- Coppice existing hazel and restock with hazel to 1200 stools per acre
- Stump back hazel in year 5 (cut all hazel to ground level)
- Create 8 coupes (therefore 8 year rotation), in chequer-board fashion



- After stumping back, commence rotation for coupe 1

Compartment 2f*:* *ASNW Strip between bank and Road, Invaded by Sycamore/Robinia*

- Remove robinia and sycamore and treat stumps
- 'Gap-up' where necessary with local provenance hawthorn, blackthorn, field maple and oak

Compartment 2g: *Mature Oak Dominated ASNW*

- Remove sycamore and treat stumps
- Remove any trees interfering with mature oak crowns under 30cm DBH

Skys Wood and Tredgoulds Copse - See Map 11

Compartment 3a: *Area of Semi-mature Oaks Outside of ASNW Boundary*

- Remove sycamore and treat stumps
- Maintain as high oak woodland through natural regeneration
- Thin around most favourable trees by removing 40% of those trees interfering with crowns of mature oaks

Compartment 3b: *Open Glade Area*

- Control bracken by cutting in mid June and late July and remove material. Repeat for 3-4 years or until under control. Spray with herbicide when plants green if needed (Asulox)
- Mow grasses and remove material. Cut grass at 3 different sward heights around glade: Divide the ride into roughly 3 parallel zones with scalloping along edges. Cut the central area to a short sward twice yearly– first cut in March with a second cut in October. Cut the second zone (2-3 metres), on a 4-year cycle; again at the same times as for the central zone. Cut the third zone (2-3 metres), on an 8-year cycle following the same time frame as above.
- Scallop edges of glade and coppice any hazel, oak or ash trees below 15cm DBH

Compartment 3c: *Secondary Woodland with High Density of Sycamore and Chestnut*

- Remove sycamore and control regrowth
- Encourage natural regeneration of native species
- Open clear trees around pond area leading to border shrub planting
- Gap up along road edge with hawthorn, blackthorn, oak and ash
- Coppice available hazel along ride edges
- Keep rides open for permissive paths and extraction

Compartment 3d: *Area of Previously Cleared Oak ASNW for Game Crops*

- Fence area using the chicken wire of the old pheasant release pen
- Replant with local provenance oak/ash mix
- Remove remnants of pheasant rearing equipment

Compartment 3e: *Oak/Ash Dominated ASNW with Open Rides*

- Treat as oak/ash high forest
- Remove sycamore and invasive species
- Allow natural regeneration
- Encourage stand of Aspen (*Populus tremula*), between 3e & 3f
- Coppice hazel as in compartment 2e on 8 year rotation.

Compartment 3f*:* *North to South Alignment Open Ride - Previously ASNW*

- Cut grass using a tractor-drawn swipe or mower and the material removed for the benefit of butterflies and invertebrates. Divide the ride into roughly 3 parallel zones with scalloping along edges. Cut the central area to a short sward twice yearly– first cut in march with a second cut in October. Cut the second zone (2-3 metres), on a 4-year cycle; again at the same times as for the central zone. Cut the third zone (2-3 metres), on a 8 year cycle following the same time frame as above.
- Prevent brambles swamping ride
- Control bracken by cutting in mid June and late July and remove material. Repeat for 3-4 years or until under control. Spray with herbicide (Asulox), as directed if cutting not meeting required specifications
- Remove remnants of pheasant rearing equipment

Compartment 3g: *Dense Birch with Aspen and Oak ASNW*

- Remove sycamore and treat stumps
- Conservation coppicing of hazel on 8 year rotation and plashing to ‘gap up’
- Allow natural regeneration

Compartment 3h: *Woodland Edge ASNW*

- Keep grass areas open by mowing
- Cut brambles etc in scalloped areas on long term rotation so as to create ecotones along side of track
- Coppice any hazel 2 metres either side of track

Compartment 4a*:* *Late Pole Stage Alder Coppice with Semi-Mature Oak ASNW*

- Coppice alder (at a height of 6-9”), and recommence 20 year rotation. Count stools and divide by 20 to achieve yearly cut rate for 5 years of each management plan
- Remove sycamore and control regrowth
- Coppice derelict hazel stools
- Maintain Boardwalk replace when needed with locally sourced timber

Compartment 4b*:* *Open Spaced Oak ASNW*

- Remove non-native species and control regrowth
- Thin oaks by 20% to favour best individuals

Compartment 4c: *Oak ASNW Over Depleted Hazel*

- Remove sycamore, rhododendron and other non-native species and control regrowth
- Allow natural regeneration
- Leave remaining conifer trees

Compartment 4d: *Oak ASNW Cleared in the Past / Failed Replanting Scheme*

- Restock with local provenance oaks in 1.2m tubes to required density (2m x 2m spacing) and maintain

Compartment 4e*:* *Open Spaced Oak ASNW*

- Remove non-native species (rhododendron, sycamore) and control regrowth
- Allow natural regeneration which will shade out bracken
- Remove remnants of pheasant rearing fencing which could possible be used as a deer fence in other planting areas e.g. 4d

Compartment 4f*:* *Open Ride of North South Alignment*

- Maintain open space and create differing sward heights for butterflies following prescriptions as for compartment 3b
- Scallop woodland edge
- Remove non-native species and control regrowth
- Control bracken following bracken control prescriptions as for compartment 3b

Compartment 4g: *Area of Oak ASNW over Depleted Hazel*

- Coppice and plash remaining hazel
- Selectively fell 45% of birch to favour oak and hazel
- Remove sycamore and control regrowth

Zionshill Copse - See Map 12

Compartment 5a: *Oak Dominated ASNW with Hazel/Cherry*

- Mow grass along side of track to favour butterflies and invertebrates
- Rotational coppicing/plashing of hazel in north west corner of compartment, and maintain dead hedges to deter browsing deer
- Lay boundary hedge to north of compartment and gap up where necessary with hawthorn, hazel and blackthorn
- Remove sycamore and control regrowth

Compartment 5b: *Oak Dominated ASNW with Dense Holly Understory*

- Thin oak at 20% basal area (1 in 5)
- Reduce holly density by 40% select best trees for butterflies.
- Remove sycamore and control regrowth

Compartment 5c: *Oak/Ash Dominated ASNW with Hazel Understory*

- Selectively thin birch by 30%
- Remove sycamore and control regrowth
- Conservation coppicing and plashing of hazel
- Dead hedge to protect coppice using cut material
- Remove 30% of ash and oak to favour best trees
- Lay boundary hedge to north of compartment and gap-up where necessary with hawthorn, hazel and blackthorn

Compartment 5d: *Sycamore Dominated ASNW - Area of Archaeological Importance*

- Leave late pole stage and larger sycamore over archaeological features (possible Roman field systems), apart from those in danger of windblow.
- Prevent further spread of sycamore by pulling whips by hand and cut stump treatment
- Plant ash in 1.2 metre tubes at 2m x 2m spacing in groups of 5
- Thin sycamore by 50% each year to favour ash growth
- Allow ash natural regeneration under sycamore
- Remove sycamore when ash established and treat stumps

Compartment 5e: *Sycamore Dominated ASNW*

- Remove sycamore and treat stumps
- Allow oak/ash natural regeneration

Compartment 5f: *Semi-mature Oak Dominated ASNW*

- Selectively fell 5% oak and 40% birch to favour best individual oaks
- Remove sycamore and treat stumps
- Leave dead wood where possible

- Coppice hazel on northern boundary

Compartment 5g: *Small Glade on ASNW with Birch Colonisation*

- Remove birch in centre of glade allowing density of heather and wild flowers to increase
- Allow birch regeneration to reach glade sides to create less severe boundary
- Coppice woodland edge on long term rotation (12-15 years) so as to create woodland edge
- Remove any bracken by cutting in mid June and late July and removal material. Repeat for 3- 4 years or until under control. Spray with herbicide (Asulox) as directed if not meeting required specifications.

Compartment 5h*:* *Cleared Wide Game Ride of East to West Alignment*

- Mow grasses and remove material. Cut grass at 3 different sward heights. Divide ride into three parallel zones. Cut the central area to a short sward twice yearly– first cut in March second cut in October. Cut the second zone (2-3 metres), on an 4-year cycle; again at the same times as for the central zone. Cut the third zone (2-3 metres), on an 8 year cycle following the same time frame as above.
- Clear encroaching silver birch an a yearly cycle.

Compartment 5i: *Cleared Area of Oak ASNW with Heather Regeneration*

- Remove 80% holly leaving best individual trees for butterflies (e.g. holly blue), and as feed source for small birds
- Remove all birch/rhododendron and control regrowth
- Coppice suitable trees below 15cm DBH around edge of glade
- Control bracken by cutting in mid June and late July and remove material. Repeat for 3-4 years or until under control. Spray with herbicide (Asulox), as directed if cutting not meeting required specifications
- Allow heather to regenerate

Compartment 5j*:* *Oak Dominated ASNW*

- Remove sycamore and treat stumps
- Allow natural regeneration of oak
- Selectively thin birch by 20%
- Selectively thin 20% basal area of oaks
- Remove interfering trees from mature oak crowns to favour best individual trees

Compartment 5k: *Oak Dominant ASNW over Archaeological Features*

- Remains of prehistoric settlement
- Sensitive management required – remove trees which may be prone to wind-throw and therefore liable to destroy subsoil archaeological remains

Compartment 5l*:* *Oak/Ash Dominated ASNW with Low Density of Beech and Sycamore*

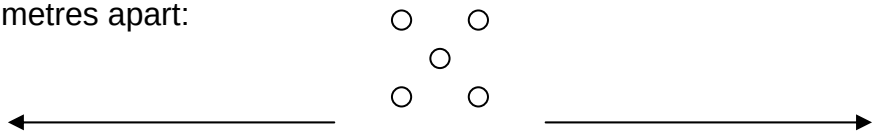
- Remove sycamore and treat stumps
- Thin by 20%
- Allow natural regeneration

Compartment 5m*:* *ASNW Invaded by High Density of Sycamore*

- Remove sycamore and control regrowth
- Allow natural regeneration of ash and oak
- Selectively coppice hazel where required i.e. over areas of tway blades and orchids to south-west of compartment

Compartment 5n: *Oak/Ash Dominated ASNW over Hazel Coppice*

- Remove sycamore and control regrowth
- Reinstate 8 year rotation of coppice
- Remove birch/ash over hazel while leaving oak
- Thin coppice hazel to maintain uneven aged understory
- Gap up hazel to required density
- Create dead hedge using cut material and sycamore poles cleared from cmpts 5l, 5m and 5n.
- Restock oak standards in 1.2 metre tubes in-groups of 5 as below. These groups to be spaced 16 metres apart:



- leave screen to track E

Little Covert - See Map 13

Compartment 6: *Neglected Alder Coppice Dominated Secondary Woodland*

- Random coppicing of alder to prevent loss of habitat - count stools and divide by 20 for each years cut. Continue for 5 years and into next management plan
- Reintroduce 20 year coppice rotation
- Remove sycamore and control regrowth
- Leave screen of oaks around compartment
- Clean out ponds and stream
- Selectively thin 60% of trees around ponds
- Fence around woodland
- Maintain boardwalk

Compartment 14d: *Rank grassland/meadow area*

- Cut meadow twice yearly and remove arisings.

Compartment 14e & f: *Balancing ponds*

- Removal of encroaching growth – one quarter of each pond to be done every year.
- Remove 90% of nearby trees
- Removal of parrot feather weed on a yearly basis

Linking strips

- Thin trees by 10% on a yearly basis

Further coppicing

Any other areas of hazel will be coppiced where appropriate.

4.2 Project Register and Group

A - Administration
R - Records
M - Management

Table 6. Summary of Management Projects

PROJECT	COMPARTMENTS	GROUP
Reinstate hazel coppice	2e, 5n	M
Continuation of coppicing and plashing	2d, 3g, 4g, 5c, 5f, 5m, 5n	M
Coppicing of Alder	4a, 6	M
Remove sycamore and treat stumps	Whole site (apart from 5d)	M
Remove litter	Whole site	M & A
Other new plantings	1b, 2b, 2d, 2f, 3d, 4d, 5d, 5h, 5n	M
Lay and gap-up hedges	1a, 3c, 5c	M
Waymark permissive paths	Whole site	M & A
Ride management	3b, 3f, 3h, 4f, 5a, 5h	M & A
Maintain glades	3b,	M
Regeneration of heather	5g, 5i	M
Control bracken	3b, 3f, 4f, 5g	M & R
Construct deer and rabbit fence	2e, 3d	M
Remove other non-native species	Whole site	M
Thin to favour best individuals	Whole site	M
Construct boardwalk	6	M
Interpretation boards	Whole site	A
Sympathetic management over major archaeological features	1a, 1b, 5d, 5k	M,R, A
Clear ponds / stream	2c, 3c, 6	M
Thin oaks stands by 20%	5b, 5i, 5j	M
Education	Whole site	A & R

Table 7. Summary of Monitoring Projects

PROJECT	COMPARTMENT	GROUP
Monitor vegetation change after coppicing	2d, 3g, 4g, 5c, 5f, 5m,	R
Survey birds	Whole site	R
Survey dragonflies / damselflies	Whole site	R
Survey lower plants (lichens)	Whole site	R
Survey invertebrates	Whole site	R
Monitor public use	Whole sites	R
Monitor dog exercising / fouling	Whole site	R
Survey grass species on mown rides	3b, 3f, 3h, 4f, 5b, 5h	R
Monitor school usage	Whole site	A, R
Monitor mammal species	Whole site	R
Regular fixed point photography	2d, 3b, 3f, 3g, 3h, 4a, 4f, 4g, 5b, 5c, 5f, 5g, 5h, 5i, 5m, 5n, 6	R

4.3 Survey Times for Habitats and Species

Table 8. Survey Times

HABITATS AND SPECIES	TIME TO SURVEY
Freshwater	May - September
Woodlands	March - July (spring vegetation: March - April)
Heathlands	June - September
Mosses & lichens	All year, but best after rain
Fungi	March - May, and September - November
Higher plants	April - November
Birds	March - June (breeding), October - March (overwintering)
Invertebrates	April - October (breeding), October - March (overwintering)
Bats	April - October (breeding), October - March (overwintering)

4.4 Work Schedule

Table 9. 10 Year Work Schedule

OBJECTIVE	PRESCRIPTION	COMPARTMENT	YEAR									
			1	2	3	4	5	6	7	8	9	10
Reinstate 8 year rotation hazel coppice with standards	Selectively fell existing trees and restock with hazel at required density with standards at 16 metres spacing	2e (1/4 ever year)		*	*	*	*					
		3e	*	*	*	*	*					
Coppice existing hazel and create dead hedges around coupes	Cut stools to ground level between October and February. Gap up where required by plashing	2d	*								*	
		3g		*								*
		4g	*								*	
		5c			*							
		5f	*								*	
		5a	*								*	
		5m				*						
Coppice alder	Count stools and divide by 20 to achieve yearly cut rate between October and February	4a	*	*	*	*	*	*	*	*	*	*
Coppice alder	Count stools and divide by 20 to achieve yearly cut rate	6	*	*	*	*	*	*	*	*	*	*
Retain archaeological features	Sympathetic management of trees + monitor	1a, 5d ,5k	*	*	*	*	*	*	*	*	*	*

Remove sycamore	Cut trees between October and January. Treat stumps with herbicides	Whole site (apart from 5d)	*	*	*	*	*	*	*	*	*	*
OBJECTIVE	**PRESCRIPTION**	**COMPARTMENT**	**YEAR**									
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Remove litter	Regular litter picking - use of byelaws and regulations for non-conformity	Whole site	*	*	*	*	*	*	*	*	*	*
Way marking	Continuation of waymarking posts and creation of nature trail	Whole site	*	*	*	*	*					*
Remove birch	Remove birch in centre of glade on 5 year rotation	5g		*					*			
Maintain planting	Control bramble and cut grass	3d	*	*	*	*	*	*	*	*	*	*
Remove holly	Cut trees between October and January + monitor regrowth	2a, 5b ,5i		*		*		*		*		*

Maintain glade	Cut grass at 3 differing sward heights around glade. Remove material. Cut central area twice yearly. Cut second area on 4 year cycle and third on 8 year cycle. First cut after April and second before late September	3b	*	*	*	*	*	*	*	*	*	*
New plantings	Prepare ground in September for February to March and October to November planting. Maintain for 3 years post planting	1b			*	*	*					
		2b		*	*	*	*					
		2d			*	*	*					
		2f		*	*	*						
		4d		*	*	*						
		5d		*	*	*						
OBJECTIVE	**PRESCRIPTION**	**COMPARTMENT**	**YEAR**									
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Lay boundary hedges and gap up where required	Lay existing hedges between October and February. Plant appropriate species to gap up	1a			*							*
		3c		*							*	
		5c				*						
Ride management	Divide ride into 3 parallel zones. Cut central ride twice yearly, second zone every 4 years and third zone every 8	3h				*	*				*	*
		3f				*	*				*	*
		3b				*	*				*	*

	years. All cutting to be done before April and before late September. Material to be removed and cut to add sinuosity to path. Scalloping of trees along ride edge	4f				*	*				*	*
		5a	*	*	*	*	*	*	*	*	*	*
		5h	*	*	*	*	*	*	*	*	*	*
Control bracken	Cut in mid June and late July and remove material. Continue for 3-4 years or until under control. Spray with Asulox/Asulam as directed if cutting not meeting required objective	3f	*	*	*	*	*		*			*
		3b	*	*	*	*	*		*			*
		4f	*	*	*	*	*		*			*
		5g 5i	* *	*	* *	*	* *		* *		* *	*

OBJECTIVE	**PRESCRIPTION**	**COMPARTMENT**	**YEAR**									
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Erect fence around new plantings	Erect deer and rabbit proof fence before planting. Erect in September-December. Maybe use old pheasant release pen wire	2e		*								

Thin birch	Selectivly fell 40% birch to favour oaks stands	5f		*					*			
Non-native species	Remove non-natives from site by cutting and treating stumps	Whole site	*	*	*	*	*	*	*	*	*	*
Thin oak stands	Selectively thin oak stands by 20%. Remove those trees of bad form, diseased or in danger of wind-throw first. Carry out operation between October and January	5b		*					*			
		5f & j			*					*		
		5i				*					*	
Thin birch	Selectively thin by 45% and monitoring new planting under neath	4g		*		*		*		*		*
Thin to favour best form trees	Selectively thin around trees of best form to encourage crown growth and to allow light to woodland floor. Between October and January	Whole site	*	*	*	*	*	*	*	*	*	*
Construct boardwalk	Construct after alder coppiced. Carry out between April and September-maintain	6 & 4a			*		*					*
Clear ponds	Remove trees around pond to allow light to penetrate. Remove any fly-tipped rubbish	2c				*					*	
		3c				*					*	
		6	*					*				
OBJECTIVE	**PRESCRIPTION**	**COMPARTMENT**	**YEAR**									
			1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

Linking strips	Thin to favour best trees and increase light to floor	All	*	*	*	*	*		*			*
Meadows	Cut twice yearly and remove arisings	All	*	*	*	*	*		*			*
Ponds	Cut ¼ of grass areas yearly	All	*	*	*	*	*		*			*

4.5 Monitoring and Review

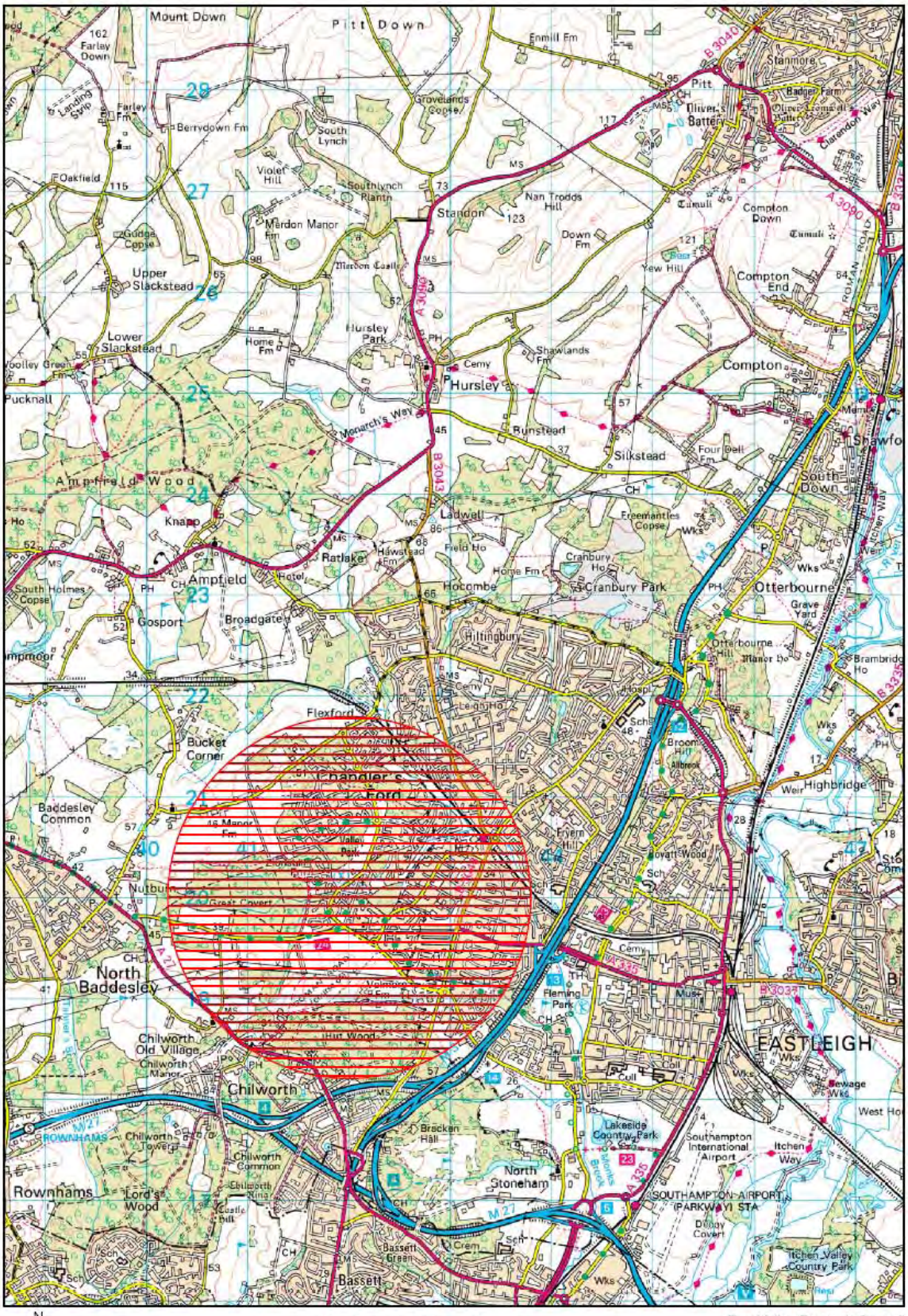
A management plan is not a rigid strategy that has to be strictly adhered to. Flexibility to implement new or revised ideas should be encouraged. The management plan should be reviewed every 5 years and the opportunity taken to revise any of the objectives or prescriptions previously stated if they are deemed to be unsuitable.

4.6 Monitoring and Progress

Changes in vegetation occurring from management should be monitored and recorded, especially in areas of coppice, through surveying flora before and after the operation. Any changes in management of the woodlands will affect associated species such as butterflies, birds, mammals, dragonflies and other invertebrates. Regular surveying of these species by the use of transects, will create a database of baseline information allowing any changes to be monitored.

The use of aerial and fixed-point photography is recommended for monitoring the long-term changes in vegetation. Aerial photos are available from Hampshire County Council who commissions these surveys on a regular basis. Markers (either painted tantalised posts or magnetic ‘Filo’ markers), and compass bearings will be used to insure accurate fixed-point photographic information of ground flora - see Appendix VIII for records.

Appendix I



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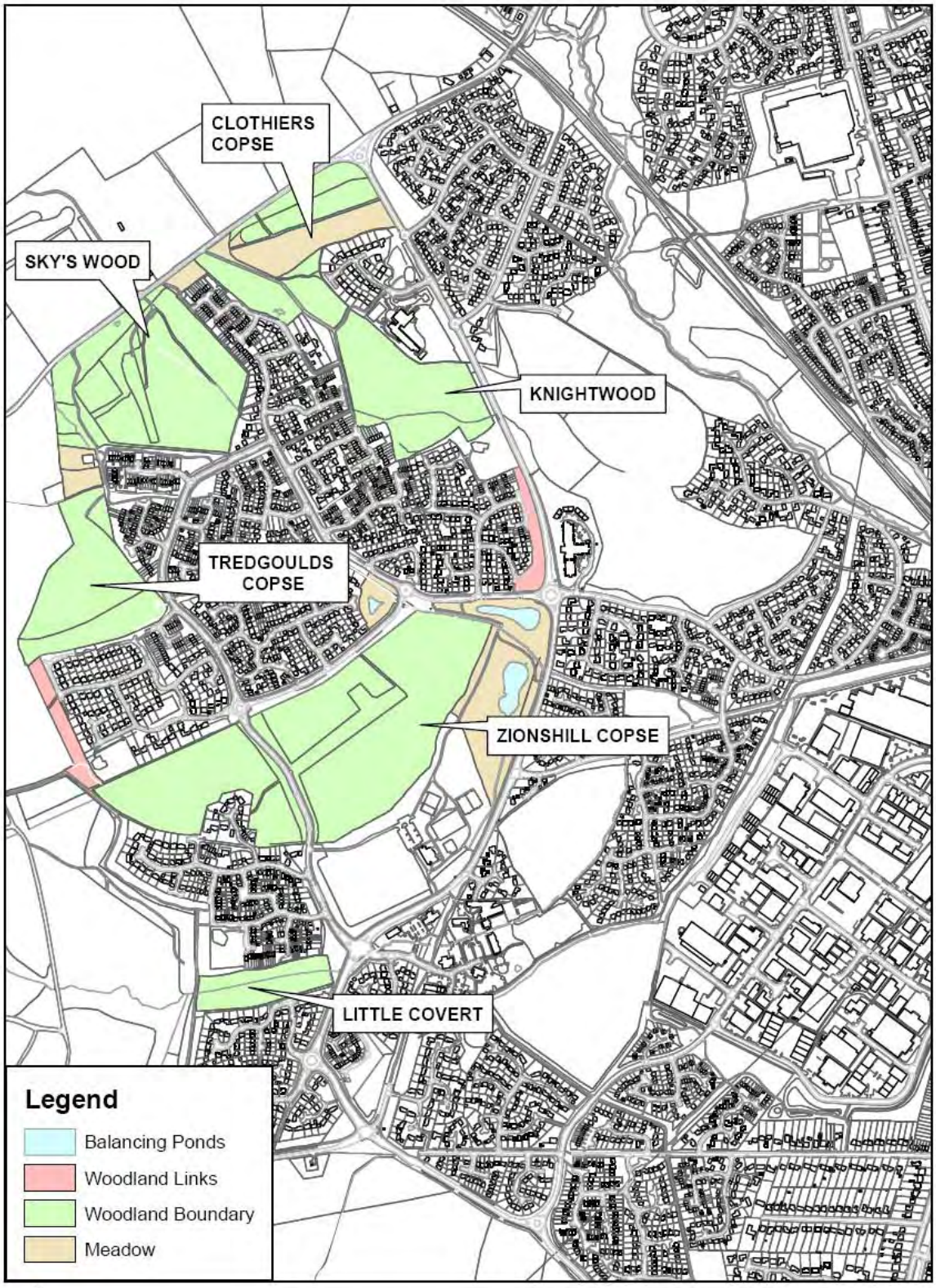
1:50,000

Leisure Services
Valley Park Management Plan
Map 1. Location Plan

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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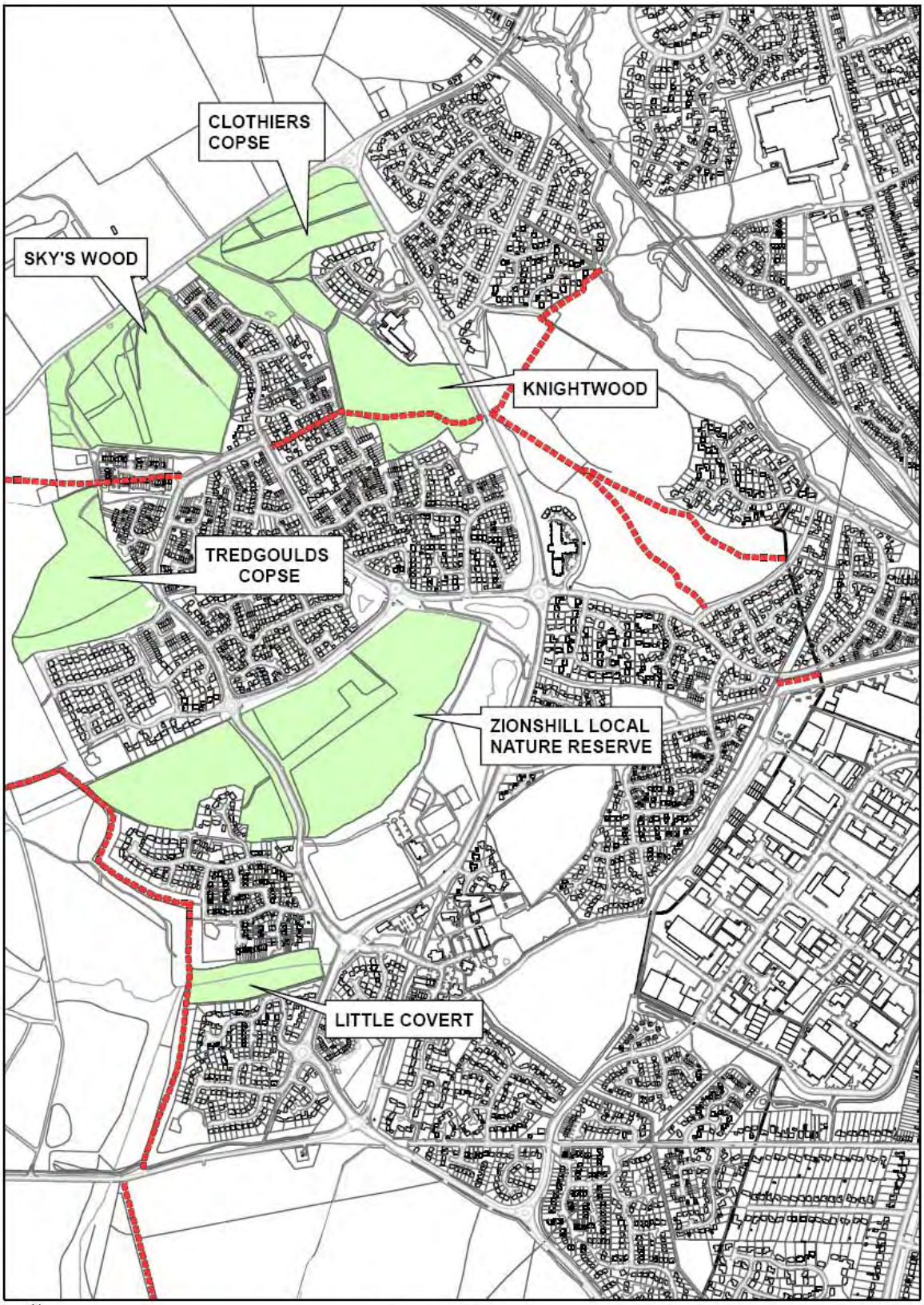
Valley Park Woodland Local Nature Reserve

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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1:10,000

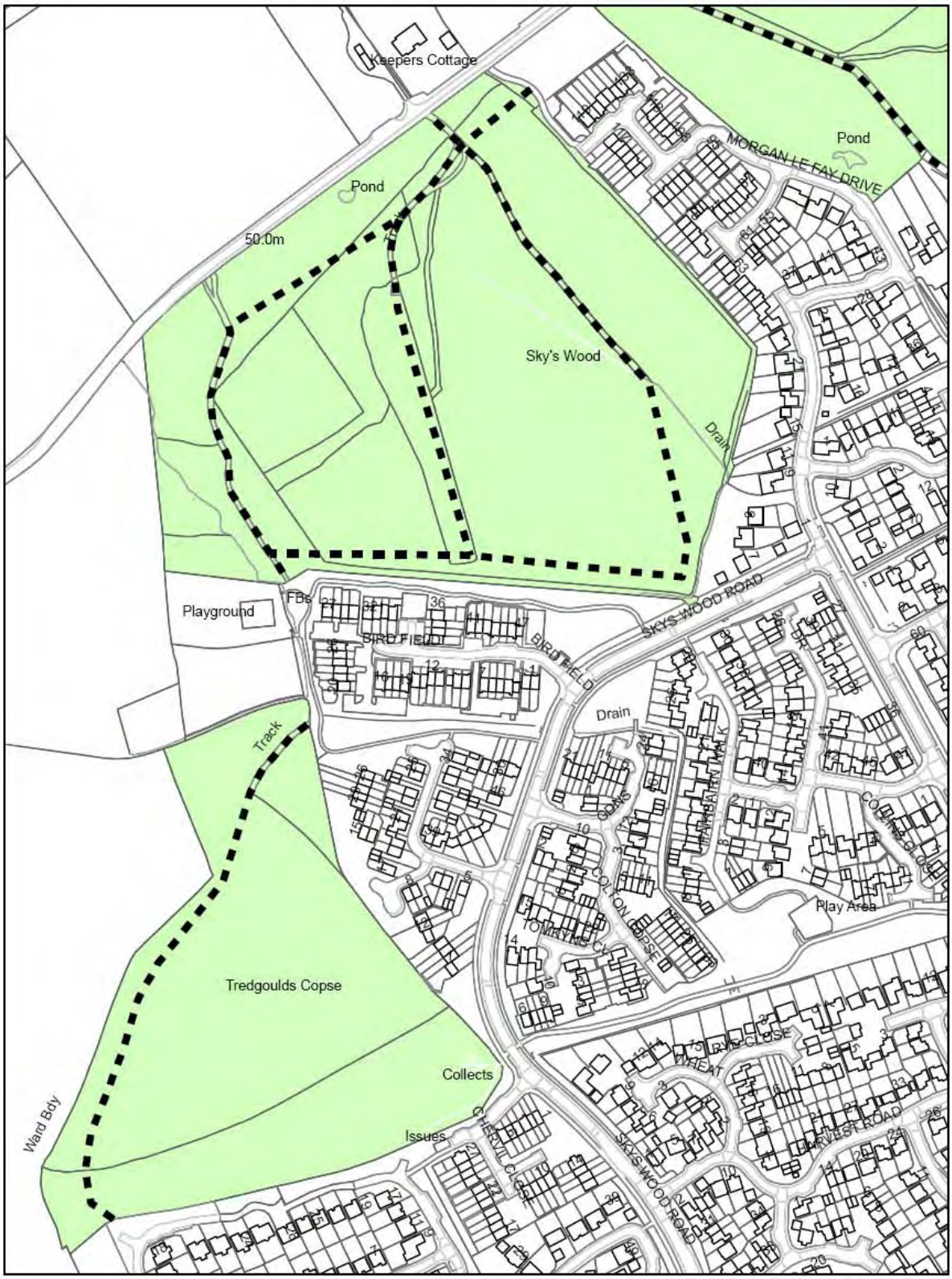
Leisure Services
Valley Park Management Plan
Map 3. Existing Public Rights of Way

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799

Scale: not to scale
Date: Jan 2009
Drawn: Boyce Jeffery
Dept: Leisure Services

Leisure Services Valley Park Management Plan
Map 4 Permissive Paths
Zionshill Copse

TEST VALLEY BOROUGH COUNCIL



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Not To Scale

Leisure Services
Valley Park Management Plan
Map 5. Sky's Wood & Tredgoulds Copse
Permissive Paths and Vehicular Access

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799

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Not To Scale

Leisure Services Valley Park Management Plan
Map 6 Little Covert Permisssive Paths and Vehicular Access

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 366000
Fax. 01264 368799

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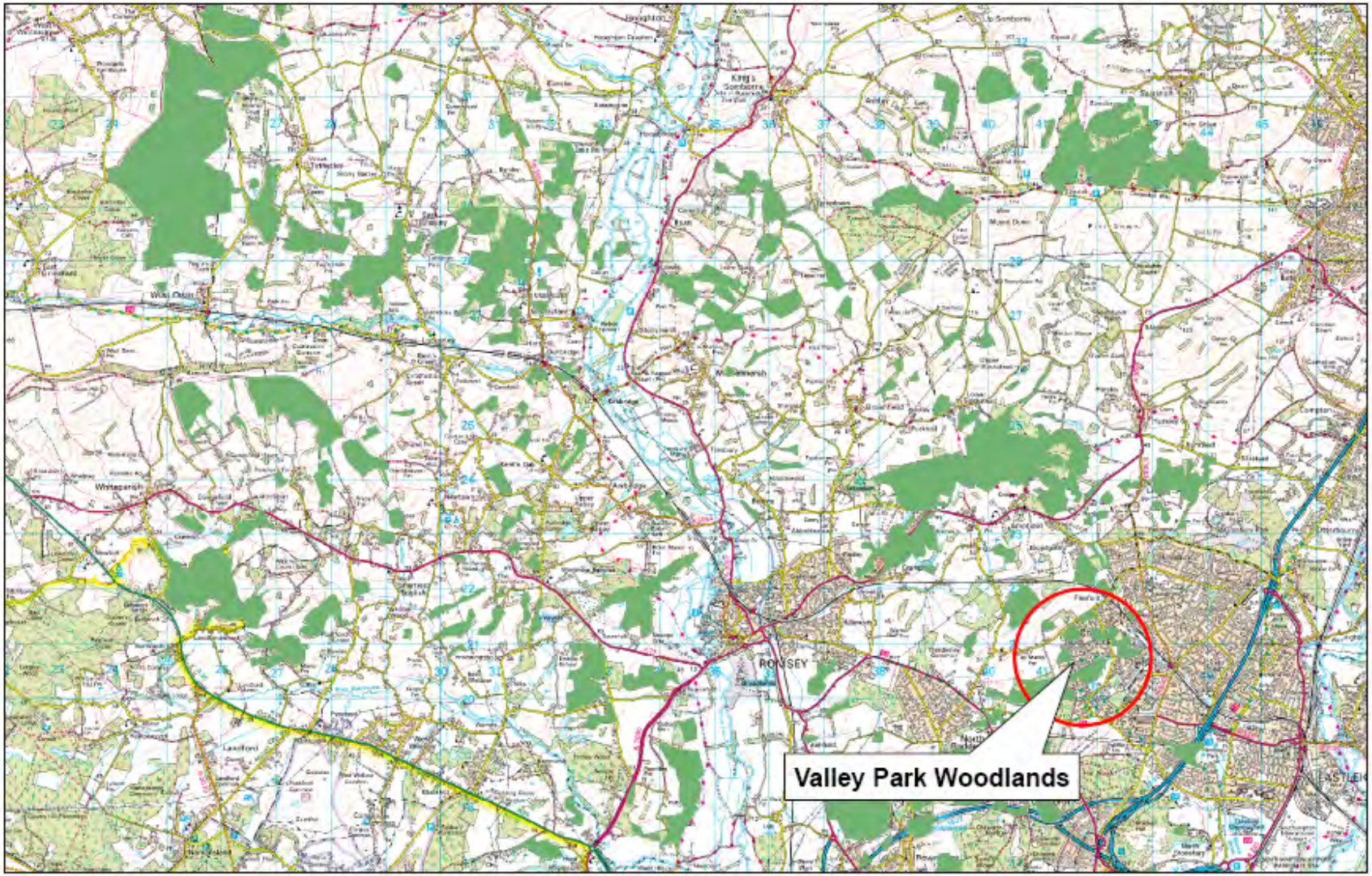
Not To Scale

Leisure Services Valley Park Management Plan
Map 7 Clothiers Copse and Knightwood
Permisssive Paths and Vehicular Access

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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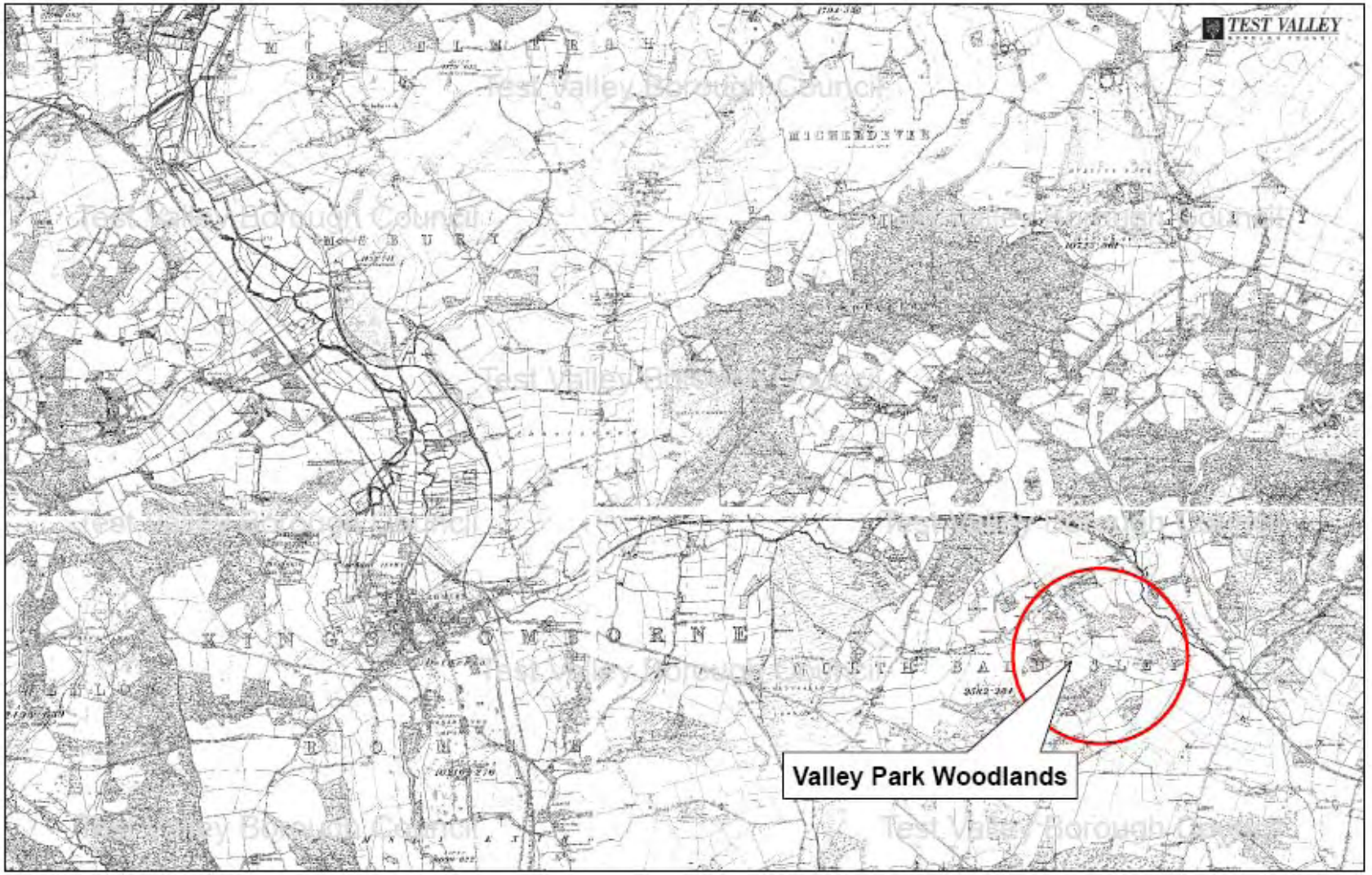
Not To Scale

Leisure Services Valley Park Management Plan
Map 8 Ancient Semi - Natural Woodlands

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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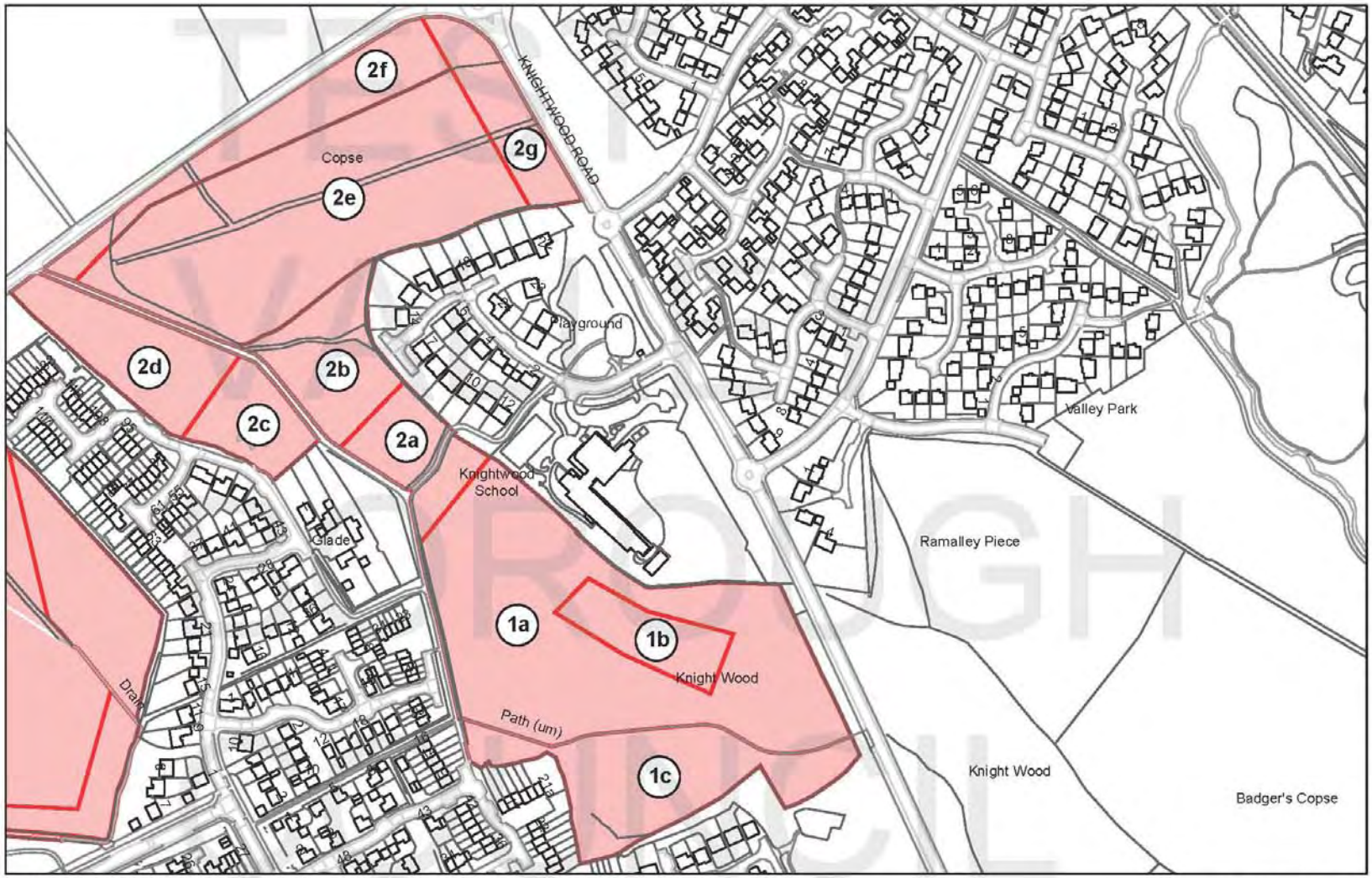
Not To Scale

Leisure Services Valley Park Management Plan
Map 9 1865 Historical Map Showing Valley Park

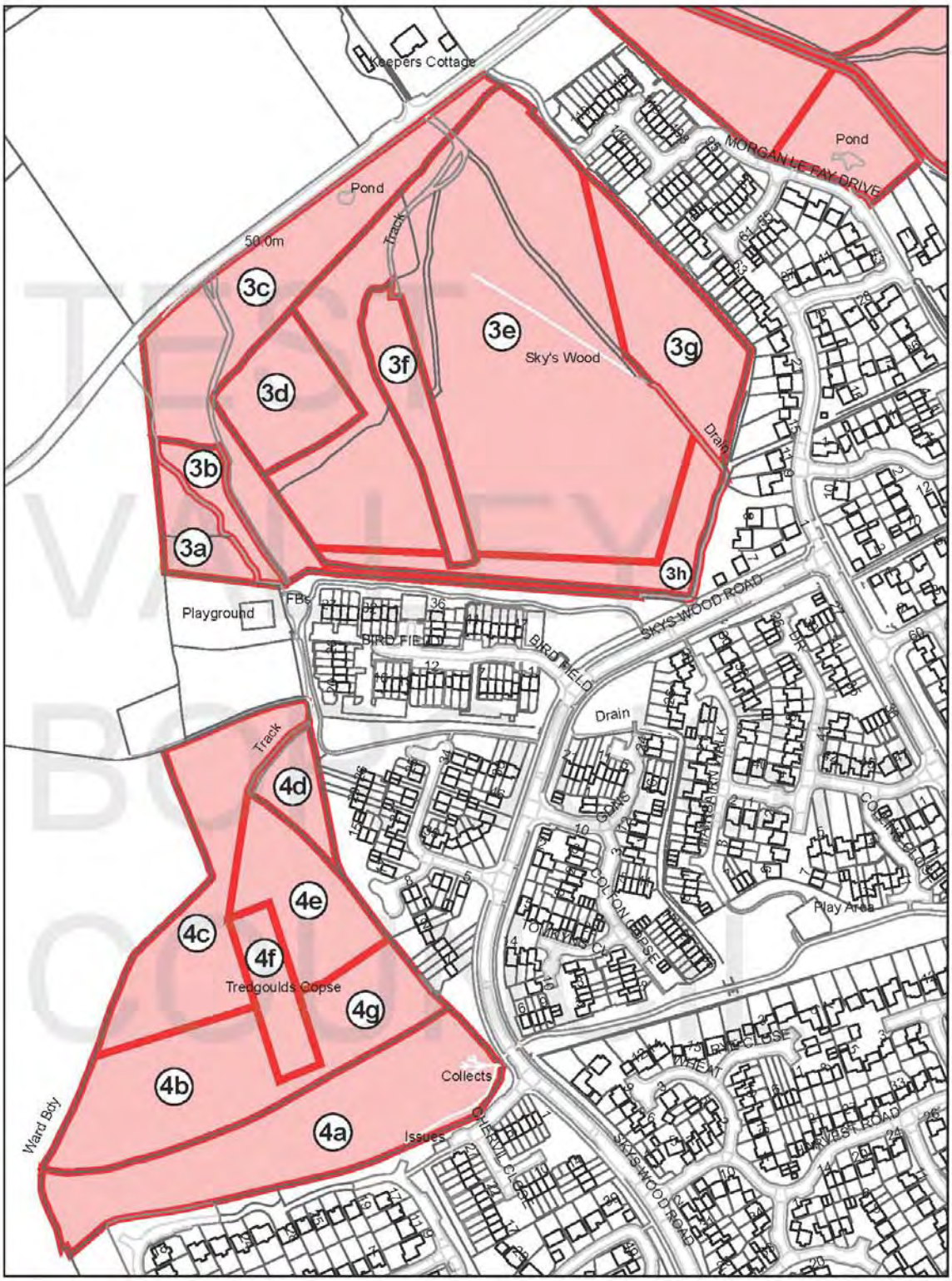
Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



Not To Scale

Leisure Services Valley Park Management Plan
Map 10 Clothiers Copse and Knightwood
Management Compartments

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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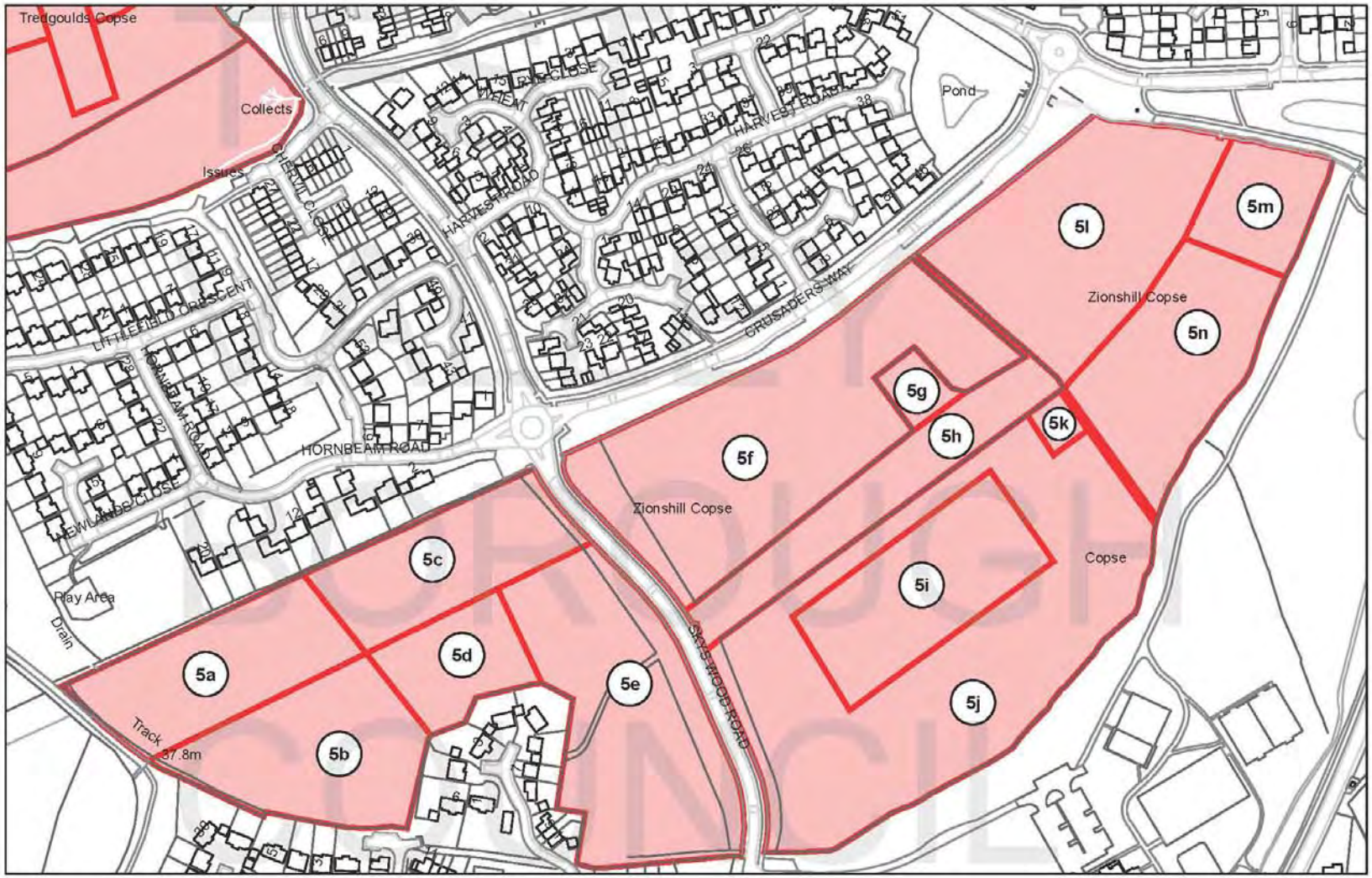
Not To Scale

Leisure Services
Valley Park Management Plan
Map 11. Sky's Wood & Tredgoulds Copse
Management Compartments

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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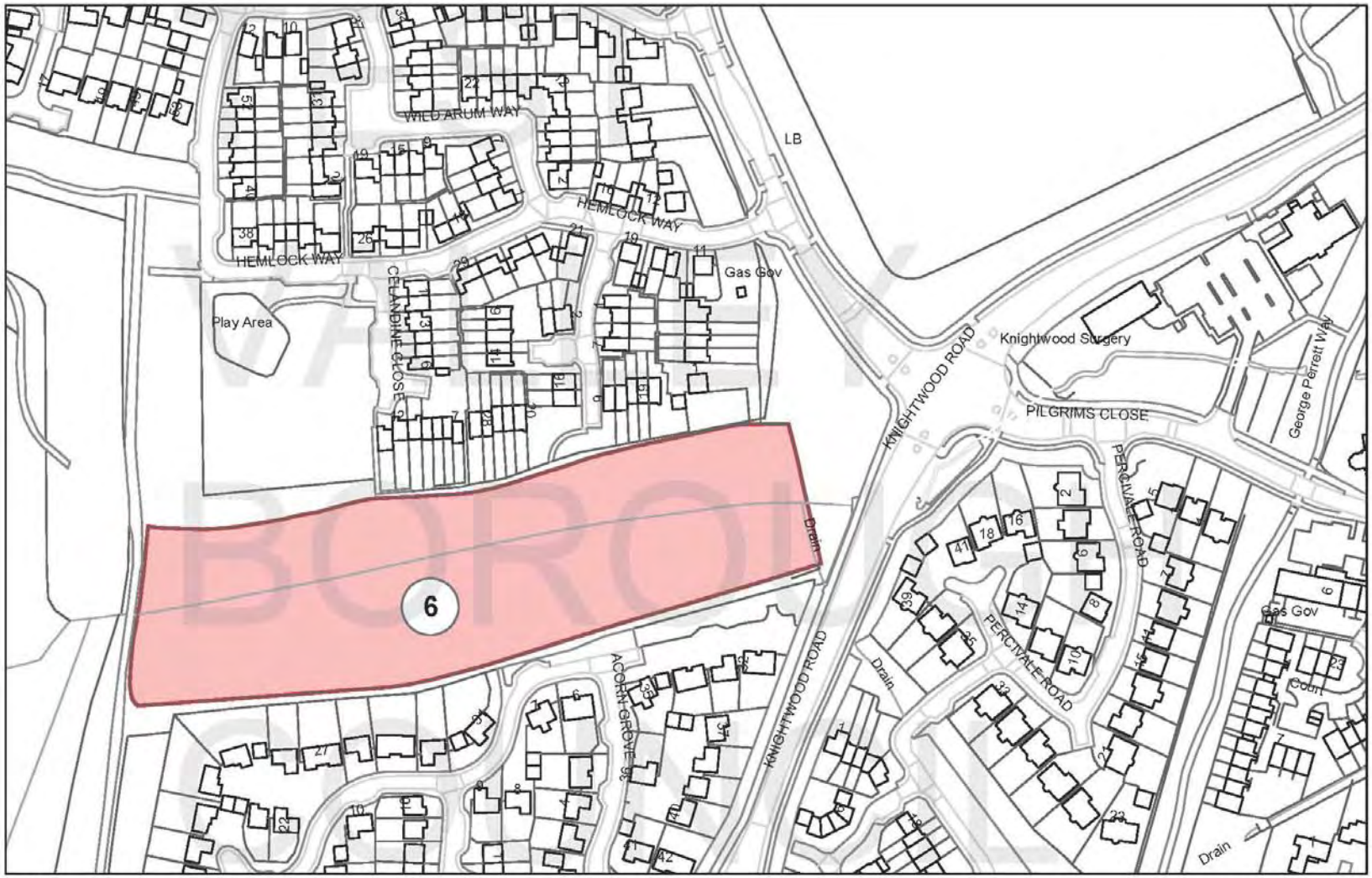
Not To Scale

Leisure Services Valley Park Management Plan
Map 12. Zionshill Management Compartments

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799



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Not To Scale

Leisure Services Valley Park Management Plan
Map 13 Little Covert management Compartments

Test Valley Borough Council
Beech Hurst, Weyhill Road,
Andover, Hants. SP10 3JF.
Tel. 01264 368000
Fax. 01264 368799

Appendix II Floral Survey Data

1. **Zionshill Copse** - East

Visited 5.4.2005

The very large fly was a female *Volucella bombylans*

* Ancient woodland indicators

Higher Plants

	Acer pseudoplatanus	Sycamore
	Agrostis capillaris	Common Bent-grass
	Ajuga reptans	Bugle
*	*Anemone nemorosa*	Wood Anemone
	Arum maculatum	Lords and Ladies
	Betula pubescens	Downy Birch
	Brachypodium sylvaticum	Slender False Brome
	Calluna vulgaris	Ling
	Carex binervis	Green-ribbed Sedge
	Carex flacca	Glaucous Sedge
*	*Carex pendula*	Pendulous Sedge
*	*Carex remota*	Remote Sedge
*	*Carex sylvatica*	Wood Sedge
	Castanea sativa	Sweet Chestnut
	Centaurea nigra	Common Knapweed
	Cirsium arvense	Creeping Thistle
	Cirsium palustre	Marsh Thistle
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Cytisus scoparius	Broom
	Deschampsia cespitosa	Tufted Hair-grass
	Deschampsia flexuosa	Wavy Hair-grass
	Digitalis purpurea	Foxglove
	Dryopteris dilatata	Broad Bucker Fern
	Dryopteris filix mas	Common Male Fern
	Epilobium hirsutum	Great Hairy Willowherb
	Fagus sylvatica	Beech
	Fraxinus excelsior	Ash
	Galium aparine	Goosegrass
	Galium saxatile	Heath Bedstraw
	Geum urbanum	Wood Avens
	Hedera helix	Ivy
	Holcus lanatus	Yorkshire Fog
	Hyacinthoides hispanicus	Spanish Bluebell (Rare)
*	*Hyacinthoides non scriptus*	Bluebell
*	*Hypericum pulchrum*	Elegant St John’swort
	Hypochaeris radicata	Common Cat’sear

*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
	Juncus inflexus	Hard Rush
	Listera ovata	Common Twayblade
	Lonicera periclymenum	Honeysuckle
	Luzula multiflora	Heath Woodrush
*	*Luzula pilosa*	Hairy Woodrush
	Lychnis flos cuculi	Ragged Robin – Very rare – one plant by ride
*	*Lysimachia nemorum*	Yellow Pimpernel
*	*Melica uniflora*	Wood Melick
*	*Orchis mascula*	Early Purple Orchid
*	*Oxalis acetosella*	Wood Sorrel
*	*Polygonatum multiflorum*	Solomon's Seal
*	*Potentilla sterilis*	Barren Strawberry
*	*Primula vulgaris*	Primrose
	Prunella vulgaris	Self-heal
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
*	*Quercus petraea*	Sessile Oak – Acorns present and hybrid leaves at least in the leaf litter.
	Quercus robur	Pedunculate Oak
	Ranunculus ficaria	Lesser celandine
	Rhododendron ponticum	Rhododendron
	Rubus fruticosus agg	Bramble
	Rumex obtusifolius	Broad-leaved Dock
	Salix cinerea	Grey Willow
	Scrophularia nodosa	Figwort
	Senecio jacobaea	Common Ragwort
	Sorbus aucuparia	Rowan
*	*Stachys officinalis*	Betony (One plant)
	Stachys sylvatica	Hedge Woundwort
	Stellaria uliginosa	Marsh Stitchwort
	Taraxacum officinale agg	Dandelion
	Taxus baccata	Yew
	Tripleurospermum inodorum	Scentless Mayweed
	Teucrium scorodonia	Wood Sage
	Ulex europaeus	Gorse
	Urtica dioica	Stinging Nettle
	Veronica chamaedrys	Germander Speedwell
*	*Veronica montana*	Wood Speedwell
	Veronica officinalis	Heath Speedwell
*	*Viola reichenbachiana*	Wood Dog Violet
	Viola riviniana	Common Dog Violet

Bryophytes – Liverworts

On beech

Frullania dilatata
Metzgeria furcata

On lignum

Lophocolea heterophylla

On oak

Microlejeunea ulicina

On soil

Calypogeia arguta
Calypogeia muellerana
Diplophyllum albicans
Lophocolea bidentata

Bryophytes – Mosses

On ash

* *Isothecium alopecuroides*

On lignum

Brachythecium rutabulum
Campylopus fragilis
Dicranum scoparium
Eurhynchium praelongum
Hypnum cupressiforme
Orthodontium lineare

On oak

Dicranoweisia cirrata
Eurhynchium praelongum

	Hypnum andoi	
	Hypnum cupressiforme	
*	*Isothecium myosuroides*	
	Orthotrichum affine	Twigs and branches

On soil

	Atrichum undulatum	
	Brachythecium rutabulum	
	Dicranella heteromalla	
	Eurhynchium praelongum	
*	*Eurhynchium striatum*	
	Eurhynchium swartzii	
	Hypnum jutlandicum	
*	*Leucobryum glaucum*	
	Mnium hornum	
	Plagiomnium undulatum	
	Pleurozium schreberi	Rare
	Pohlia nutans	Very rare
	Polytrichum formosum	
	Rhytidiadelphus squarrosus	
	Scleropodium purum	
*	*Thamnobryum alopecurum*	Rare
	Thuidium tamariscinum	Very locally frequent

Lichens

*	NIEC species
**	RIEC species

On ash

	Arthonia spadicea	
	Dimerella pineti	
	Graphis scripta	
	Lecanactis abietina	
	Lecanora chlarotera	
	Lepraria lobificans	
	Pertusaria hymenea	
	Phlyctis argena	
**	*Porina leptalea*	
** *	*Thelotrema lepadinum*	

On beech

	Pertusaria leioplaca	
**	*Porina leptalea*	

On hazel

	Arthonia didyma	
	Graphis scripta	
	Lepraria lobificans	
	Opegrapha vulgata	
	Pertusaria leioplaca	
*	*Phaeographis dendritica*	
** *	*Thelotrema lepadinum*	

On lignum

	Cladonia coniocraea	
	Cladonia polydactyla	

On oak

	Arthonia punctiformis	On twigs
	Arthonia spadicea	
	Candelariella reflexa	On twigs
	Cladonia chlorophaea	
	Cliostomum griffithii	
	Dimerella pineti	
**	*Enterographa crassa*	
	Evernia prunastri	
	Flavoparmelia caperata	
	Graphis elegans	
	Graphis scripta	
	Hypogymnia physodes	On fallen upper branches
	Lecanactis abietina	
	Hypotrachyna revoluta	
	Lecanora albella	
	Lecanora expallens	
	Lecanora intumescens	Very rare. One thallus on one tree
	Lepraria lobificans	
	Melanelia fuliginosa ssp *glabratula*	
	Melanelia subaurifera	
	Micarea prasina	
	Opegrapha sorediifera	

	Parmelia sulcata	On twigs
	Parmotrema perlatum	On branches
	Pertusaria pertusa	
	Phlyctis argena	
	Physcia tenella	On twigs
	Punctelia ulophylla	
	Pyrrhospora quernea	
	Ramalina farinacea	
*	*Schismatomma niveum*	Abundant on one oak
* **	*Thelotrema lepadinum*	
	Usnea cornuta	Fallen from the canopy
	Xanthoria candelaria	
	Xanthoria parietina	

On soil

	Cladonia furcata	
	Cladonia humilis	
	Cladonia pyxidata	
	Peltigera hymenina	

2. **<u>Zionshill Copse</u>** – West

Visited 6.04.2005

\+ Species not seen in the eastern half

Higher Plants

	Acer pseudoplatanus	Sycamore
	Ajuga reptans	Bugle
*	*Anemone nemorosa*	Wood Anemone
+	*Angelica sylvestris*	Wild Angelica
	Betula pubescens	Downy Birch
+*	*Blechnum spicant*	Hard Fern
+	*Cardamine flexuosa*	Wavy Bittercress
*	*Carex remota*	Remote Sedge
	Cirsium arvense	Creeping Buttercup
+	*Cerastium fontanum*	Common Mouse-ear
	Chamerion angustifolium	Rosebay
	Cirsium palustre	Marsh Thistle
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Cytisus scoparius	Broom
	Digitalis purpurea	Foxglove
	Dryopteris dilatata	Broad Buckler Fern
	Dryopteris filix mas	Common Male Fern

	Galium aparine	Goose-grass
	Geum urbanum	Wood Avens
	Hedera helix	Ivy
+	*Heracleum sphondylium*	Hogweed
*	*Hyacinthoides non scriptus*	Bluebell
*	*Hypericum pulchrum*	Elegant St John’swort
*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
+	*Lapsana communis*	Nipplewort
	Lonicera periclymenum	Honeysuckle
	Luzula multiflora	Heath Woodrush
*	*Luzula pilosa*	Hairy Woodrush
*	*Lysimachia nemorum*	Yellow Pimpernel
*	*Melica uniflora*	
+	*Mercurialis perennis*	Dog’s Mercury
+*	*Moerhingia trinervia*	Three-nerved Sandwort
*	*Oxalis acetosella*	Wood Sorrel
	Quercus robur	Pedunculate Oak
*	*Polygonatum multiflorum*	Solomon’s Seal
+	*Potentilla anglica*	Trailing Tormentil
+	*Potentilla anserina*	Silverweed
*	*Potentilla sterilis*	Barren Strawberry
*	*Primula vulgaris*	Primrose
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
	Ranunculus ficaria	Lesser Celandine
+	*Ranunculus repens*	Creeping Buttercup
	Rubus fruticosus agg	Bramble
+	*Rumex crispus*	Curled Dock
	Rumex obtusifolius	Broad-leaved Dock
	Salix cinerea	Grey Willow
+	*Sambucus nigra*	Elder
+	*Solanum dulcamara*	Bittersweet
	Stachys sylvatica	Hedge Woundwort
+	*Stellaria holostea*	Greater Stitchwort
+	*Stellaria media*	Common Chickweed
	Stellaria uliginosa	Bog Stitchwort
	Taraxacum officinale agg	Dandelion
	Teucrium scorodonia	Wood-sage
+	*Trifolium repens*	Dutch Clover
	Urtica dioica	Stinging Nettle
*	*Veronica montana*	Wood Speedwell
	Viola riviniana	Common Dog Violet

<u>Bryophytes</u> – Liverworts

On hazel

NS *Cololejeunea minutissima*

On oak

Frullania dilatata
Lophocolea heterophylla
Microlejeunea ulicina

Bryophytes – Mosses

On ash

Isothecium alopecuroides

On elder

\+ *Amblystegium serpens*
\+ *Zygodon viridissimus*

On lignum

Brachythecium rutabulum
Campylopus introflexus
Dicranum scoparium
Mnium hornum

On oak

* *Isothecium myosuroides*
Orthotrichum affine

On soil

Atrichum undulatum
Brachythecium rutabulum
Dicranella heteromalla
Eurhynchium praelongum
Eurhynchium swartzii
Mnium hornum
Polytrichum formosum
Rhytidiadelphus squarrosus
Scleropodium purum
Thuidium tamariscinum

Lichens

On ash

Cliostomum griffithii
Lecanora chlarotera
Pertusaria hymenea
Porina aenea
Pyrrhospora quernea

On birch

Evernia prunastri
Hypogymnia physodes
Melanelia subaurifera
Parmelia sulcata
Punctelia subrudecta
Ramalina farinacea

On hazel

Arthonia didyma
Pertusaria leioplaca
* *Phaeographis dendritica*
\+ *Porina aenea*

On lignum

Cladonia coniocraea

On oak

+	*Amandinea punctata*	Rare. On twigs
	Candelariella reflexa	
	Chrysothrix candelaris	
	Cliostomum griffithii	
	Dimerella pineti	
**	*Enterographa crassa*	
	Evernia prunastri	
	Flavoparmelia caperata	
+	*Flavoparmelia soredians*	
	Graphis elegans	
	Graphis scripta	

Hypotrachyna revoluta
Lecanactis abietina
Lecanora expallens
Lepraria incana
Lepraria lobificans
Melanelia fuliginosa ssp *glabratula*
\+ *Mycoporum quercus*
Parmelia sulcata
Parmotrema perlatum
\+ *Pertusaria amara*
Pertusaria leioplaca
Pertusaria pertusa
Phlyctis argena
Physcia tenella
\+ *Punctelia subrudecta*
Pyrrhospora quernea
\+ *Scoliciosporum chlorococcum*
** * *Thelotrema lepadinum*
Xanthoria candelaria
Xanthoria parietina

Zionshill Copse – Species recorded in the Valley Park Woodlands Management Plan and not seen currently. These should act as a challenge.

Agrimonia eupatoria
Alnus glutinosa
Anagallis arvensis
Arum italicum
* *Carex laevigata*
Carex pallescens
Carex pilulifera
Cornus sanguinea
* *Corydalis claviculata*
Dactylorhiza fuchsii
Echium vulgare
* *Epipactis helleborine*
* *Euphorbia amygdaloides*
* *Frangula alnus*
* *Lamiastrum galeobdolon*
Larix decidua
* *Lathyrus linifolius*
* *Malus sylvestris*
* *Narcissus pseudonarcissus*
Poa annua
Poa trivialis
* *Populus tremula*
* *Rosa arvensis*
Rosa canina

* *Ruscus aculeatus*
Salix caprea
* *Solidago virgaurae*
* *Tamus communis*
* *Viburnum opulus*

Bryophytes

The following were seen in the Eastern Section during the 1999 survey, and not currently:-

Plagiothecium denticulatum
Pseudotaxiphyllum elegans
* *Zygodon rupestris*

Lichens

The following were seen in the Eastern Section during the 1999 survey, and not currently:-

Chrysothrix flavovirens
Hypocenomyce scalaris
Lecanora conizaeoides
Parmelia saxatilis
Scoliciosporum pruinosum

The following species were seen in the Western Section during the 1999 survey, and not currently:-

Lecidella elaeochroma
Phaeophyscia orbicularis
Physcia caesia
Physcia adscendens

3. **Sky's Wood** – Visited 12.04.2005

Higher Plants

Acer pseudoplatanus	Sycamore
Aesculus hippocastanus	Horse Chestnut
Ajuga reptans	Bugle
Alliaria petiolata	Hedge Garlic
* *Anemone nemorosa*	Wood Anemone
Anthriscus sylvestris	Cow Parsley
Arum maculatum	Lords and Ladies
Betula pendula	Silver Birch
Brachypodium sylvaticum	Slender False Brome
Callitriche stagnalis agg	Water Starwort
Cardamine flexuosa	Wavy Bittercress

	Carex binervis	Green-ribbed Sedge
*	*Carex remota*	Remote Sedge
*	*Carex sylvatica*	Wood Sedge
	Circaea lutetiana	Enchanter's Nightshade
	Cirsium arvense	Creeping Thistle
	Cirsium palustre	Marsh Thistle
*	*Conopodium majus*	Pignut
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Fraxinus excelsior	Ash
	Dactylis glomerata	Cock'sfoot Grass
	Digitalis purpurea	Foxglove
	Dryopteris dilatata	Broad Buckler Fern
	Dryopteris filix mas	Common Male fern
	Galium aparine	Goose-grass
	Geranium robertianum	Herb Robert
	Geum urbanum	Wood Avens
	Glechoma hederacea	Ground Ivy
	Euonymus europaeus	Spindle
*	*Euphorbia amygdaloides*	Wood Spurge
	Fagus sylvatica	Beech
	Hedera helix	Ivy
	Heracleum sphondylium	Hogweed
	Holcus lanatus	Yorkshire Fog
*	*Hyacinthoides non scriptus*	Bluebell
*	*Hypericum pulchrum*	Elegant St John'swort
*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
*	*Lamiastrum galeobdolon*	Yellow Archangel
	Lapsana communis	Nipplewort
	Listera ovata	Twayblade
	Lonicera periclymenum	Honeysuckle
*	*Luzula pilosa*	Hairy Woodrush
*	*Lysimachia nemorum*	Yellow Pimpernel
	Mercurialis perennis	Dog's Mercury
*	*Milium effusum*	Wood Millet
*	*Moerhingia trinervia*	Three-nerved Sandwort
*	*Narcissus pseudonarcissus*	Wild Daffodil
	Oenanthe crocata	Hemlock Water Dropwort
*	*Oxalis acetosella*	Wood Sorrel
	Quercus robur	Pedunculate Oak
*	*Potentilla sterilis*	Barren Strawberry
*	*Primula vulgaris*	Common Primrose
	Prunella vulgaris	Self-heal
*	*Prunus avium*	Wild Cherry
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
	Ranunculus ficaria	Lesser Celandine
	Ranunculus repens	Creeping Buttercup

*	*Rosa arvensis*	Field Rose
	Rubus fruticosus agg	Bramble
	Rumex obtusifolius	Broad-leaved Dock
	Salix caprea	Goat Willow
	Salix cinerea	Grey Willow
	Sambucus nigra	Elder
	Stachys sylvatica	Hedge Woundwort
	Stellaria holostea	Greater Stitchwort
	Taraxacum officinale agg	Dandelion
	Taxus baccata	Yew
	Teucrium scorodonia	Wood-sage
	Urtica dioica	Stinging Nettle
	Veronica beccabunga	Brooklime
	Veronica chamaedrys	Germander Speedwell
	Veronica hederifolia	Ivy-leaved Speedwell
*	*Veronica montana*	Wood Speedwell
*	*Viburnum opulus*	Guelder Rose
*	*Viola reichenbachiana*	Wood Dog Violet
	Viola riviniana	Common Dog Vioelt

Bryophytes – Liverworts

On ash

NS *Cololejeunea minutissima*
Frullania dilatata
Microlejeunea ulicina

On beech

Metzgeria fruticulosa

On oak

Metzgeria furcata
Microlejeunea ulicina

Bryophytes – Mosses

On ash

* *Isothecium alopecuroides*

On lignum

Brachythecium rutabulum
Eurhynchium praelongum
Mnium hornum

On oak

	Dicranoweisia cirrata	
	Hypnum cupressiforme	
	Hypnum andoi	
*	*Isothecium myosuroides*	
	Orthotrichum affine	

On soil

	Atrichum undulatum	
	Brachythecium plumulosum	Rare in stream
	Brachythecium rutabulum	
	Eurhynchium praelongum	
*	*Eurhynchium striatum*	
	Fissidens taxifolius	
	Mnium hornum	
	Pleurozium schreberi	Occasional
	Polytrichum formosum	
	Thuidium tamariscinum	

Lichens

On ash

	Anisomeridium biforme	
	Candelaria concolor	
	Cladonia chlorophaea	
	Cliostomum griffithii	
	Evernia prunastri	
	Lecanora albella	
	Lecanora chlarotera	
	Lecanora expallens	
	Hypotrachyna revoluta	
* **	*Pachyphiale carneola*	Very rare on one tree
	Parmotrema perlatum	
	Pertusaria amara	
	Pertusaria hymenea	
*	*Phaeographis dendritica*	
	Punctelia subrudecta	
	Pyrrhospora quernea	
	Punctelia ulophylla	
* **	*Thelotrema lepadinum*	

On hawthorn – dead twigs

Physcia tenella
Ramalina farinacea
Xanthoria candelaria

On hazel

Arthonia didyma
Arthonia spadicea
Graphis scripta
Lecanactis abietina
Lepraria incana
Lepraria lobificans
* *Phaeographis dendritica*
* ** *Thelotrema lepadinum*

On lignum

Cladonia coniocraea

On oak

	Cladonia coniocraea	
	Cladonia ramulosa	
	Cliostomum griffithii	
* **	*Cresponea premnea*	Locally abundant on one oak
	Dimerella pineti	
**	*Enterographa crassa*	
	Flavoparmelia caperata	
	Lecanora chlarotera	
	Lecanora expallens	
	Pertusaria amara	
	Pertusaria pertusa	
	Phlyctis argena	
	Rimelia reticulata	Rare – one thallus on very large oak
	Schismatomma decolorans	
* **	*Schismatomma quercicola*	Abundant on one oak
* **	*Thelotrema lepadinum*	

On sycamore

Candelariella reflexa
Evernia prunastri
Flavoparmelia caperata
Melanelia subaurifera
Hypogymnia tubulosa
Hypotrachyna revoluta

Parmelia sulcata	
Physcia tenella	
Punctelia ulophylla	
Ramalina canariensis	Very rare – one thallus on a single twig
Ramalina farinacea	
Scoliciosporum chlorococcum	
Xanthoria parietina	

Species recorded in Sky's Wood previously, and not seen currently

Higher Plants

* *Acer campestre*
Agrostis capillaris
Agrostis stolonifera
Alopecurus geniculatus
Angelica sylvatica
Arctium minus
Betula pubescens
* *Blechnum spicant*
* *Bromopsis ramosa*
Bromus lepidus
Carex ovalis
Castanea sativa
Cornus sanguinea
Deschampsia flexuosa
* *Dryopteris carthusiana*
* *Epipactis helleborine*
Festuca rubra
Filago germanica
* *Frangula alnus*
Galeopsis tetrahit
Galium palustre
* *Holcus mollis*
Humulus lupulus
Juncus conglomeratus
Juncus tenuis
Lamium album
Lolium perenne
Lotus pedunculatus
Luzula campestris
Mentha aquatica
Persicaria hydropiper
Poa annua
* *Poa nemoralis*
Poa trivialis
* *Populus tremula*
Potentilla erecta

* *Quercus petraea*
Rumex sanguineus
* *Ruscus aculeatus*
Sagina subulata
Scrophularia nodosa
Senecio jacobaea
Silene longifolia
Solanum dulcamara
* *Stachys officinalis*
Stellaria media
Stellaria uliginosa
* *Tamus communis*
Trifolium repens
Veronica officinalis
Veronica serpyllifolia

Bryophytes – Liverworts

Calypogeia arguta
Calypogeia fissa
Calypogeia muellerana
Lophocolea heterophylla
Pellia epiphylls

Bryophytes – Mosses

Amblystegium serpens
Campylopus introflexus
Cirriphyllum piliferum
Fissidens adiantoides
* *Homalia trichomanoides*
Mnium affine
Plagiomnium undulatum
* *Thamnobryum alopecurum*
Tortula laevipila

Lichens

* *Anisomeridium ranunculosporum*
Arthonia radiata
Arthopyrenia analepta
Chrysothrix candelaris
* *Cladonia parasitica*
Hypogymnia physodes
Melanelia fuliginosa ssp *glabratula*
Ochrolechia subviridis
Parmelia saxatilis
Pertusaria leioplaca
Usnea subfloridana

4. **Tregoulds Wood**

Visited 14th April 2005

Higher Plants

*	*Acer campestre*	Field Maple
	Acer pseudoplatanus	Sycamore
*	*Adoxa moschatellina*	Moschatel (locally abundant)
	Ajuga reptans	Bugle
	Alliaria petiolata	Hedge Garlic
	Alnus glutinosa	Alder
*	*Anemone nemorosa*	Wood Anemone
	Angelica sylvestris	Wood Angelica
	Arum maculatum	Lords and Ladies
	Athyrium filix femina	Lady Fern (Rare)
	Betula pendula	Silver Birch
	Betula pubescens	Downy Birch
	Brachythecium sylvaticum	Slender False Brome
*	*Bromopsis ramosa*	Hairy Brome-grass
	Cardamine flexuosa	Wavy Bittercress
	Carex binervis	Green-ribbed Sedge
*	cf *Carex laevigata*	Smooth-stalked Sedge
*	*Carex remota*	Remote Sedge
*	*Carex strigosa*	Thin-spiked Wood Sedge (Very rare, one plant found)
*	*Carex sylvatica*	Wood Sedge
	Circaea lutetiana	Enchanter's Nightshade
*	*Conopodium majus*	Pignut
*	*Convallaria majalis*	Lily of the Valley
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Digitalis purpurea	Foxglove
	Dryopteris filix mas	Common Male Fern
	Epilobium hirsutum	Great Hairy Willowherb
	Equisetum telmateia	Great Horsetail
	Fagus sylvatica	Beech
	Fraxinus excelsior	Ash
	Filipendula ulmaria	Meadowsweet
	Galium aparine	Goose-grass
	Galium palustre	Marsh Bedstraw
	Geranium robertianum	Herb Robert
	Geum urbanum	Wood Avens
	Glechoma hederacea	Ground Ivy
	Hedera helix	Ivy
	Holcus lanatus	Yorkshire Fog
	Hyacinthoides hispanicus	Spanish Bluebell (rare)
*	*Hyacinthoides non scriptus*	Bluebell

*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
*	*Lamiastrum galeobdolon*	Yellow Archangel
	Larix decidua	Larch
	Lonicera periclymenum	Honeysuckle
*	*Lysimachia nemorum*	Yellow Pimpernel
	Mercurialis perennis	Dog's Mercury
*	*Milium effusum*	Wood Millet
*	*Moerhingia trinervia*	Three-nerved Sandwort
*	*Narcissus pseudonarcissus*	Wild Daffodil
*	*Oxalis acetosella*	Wood Sorrel
*	*Polygonatum multiflorum*	Solomon's Seal
*	*Potentilla sterilis*	Barren Strawberry
*	*Primula vulgaris*	Common Primrose
*	*Prunus avium*	Wild Cherry
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
	Quercus robur	Pedunculate Oak
	Ranunculus ficaria	Lesser Celandine
	Ranunculus repens	Creeping Buttercup
	Rhododendron ponticum	Rhoodendron
	Rhododendron species	1 bush
*	*Ribes rubrum*	Wild Currant
	Rubus fruticosus agg	Bramble
	Rumex crispus	Curled Dock
	Rumex obtusifolius	Broad-leaved Dock
	Salix cinerea	Grey Willow
	Sambucus nigra	Elder
	Scrophularia nodosa	Figwort
	Senecio jacobaea	Ragwort
	Solanum dulcamara	Bittersweet
	Sorbus aucuparia	Rowan
	Stachys sylvatica	Hedge Woundwort
	Stellaria holostea	Greater Stitchwort
	Taraxacum officinale agg	Dandelion
	Urtica dioica	Stinging Nettle
	Veronica beccabunga	Brooklime
	Veronica chamaedrys	Germander Speedwell
*	*Veronica montana*	Wood Speedwell
*	*Viola* x *bavarica*	Wood X Common Dog Violet↑
	Viola riviniana	Common Dog Violet

↑ No pure *Viola reichenbachiana* was recorded in the wood, even after a considerable search. The hybrid was locally frequent in one small area.

Bryophytes – Liverworts

On oak

Microlejeunea ulicina

On willow

NS	*Cololejeunea minutissima*	Locally abundant on one tree
	Frullania dilatata	
	Metzgeria furcata	
*	*Radula complanata*	Very rare

Bryophytes – Mosses

On ash

Hypnum cupressiforme

On soil

Atrichum undulatum
Campylopus introflexus
Fissidens taxifolius
Mnium hornum
Polytrichum formosum
Pseudotaxiphyllum elegans

On oak

Eurhynchium praelongum
Hypnum andoi
Hypnum cupressiforme
* *Isothecium alopecuroides*
* *Isothecium myosuroides*
* *Thamnobryum alopecurum*

On willow

Brachythecium rutabulum
Dicranoweisia cirrata
Eurhynchium praelongum
Hypnum cupressiforme
Orthotrichum affine

Lichens

On alder

Lecanora symmicta (on twig)

On ash

Candelariella reflexa
Cliostomum griffithii
Evernia prunastri
Graphis elegans
Hyperphyscia adglutinata
Lecanora chlarotera
Lecanora expallens
Opegrapha vulgata
Parmelia sulcata
Phlyctis argena
Physcia adscendens
Ramalina farinacea
Xanthoria parietina

On elder

Lecania cyrtella
Macentina stigonemoides - fertile

On hazel

Graphis scripta
Hypotrachyna revoluta
Lecanora chlarotera
Lepraria lobificans
Pertusaria hymenea
Phlyctis argena

On lignum

Lepraria incana
Placynthiella icmalea

On oak

Amandinea punctata
Arthonia radiata
Arthonia spadicea
* ** *Arthonia vinosa*
Candelariella reflexa
Chrysothrix flavovirens
Cladonia coniocraea
Cliostomum griffithii

Dimerella pineti
** *Enterographa crassa*
Evernia prunastri
Flavoparmelia caperata
Hypogymnia physodes
Lecanactis abietina
Lecanora carpinea
Lecanora symmicta
Lecidella elaeochroma
Lepraria lobificans
Melanelia fuliginosa ssp *glabratula*
Melanelia subaurifera
Parmelia sulcata
Parmotrema perlatum
Pertusaria hymenea
Pertusaria leioplaca
* *Phaeographis dendritica*
Physcia aipolia
Physcia tenella
Punctelia subrudecta
Punctelia ulophylla
Pyrrhospora quernea
Rimelia reticulat
Schismatomma decolorans
** * *Thelotrema lepadinum*
Usnea cornuta (Very rare on fallen branch)
Xanthoria candelaria
Xanthoria parietina
Xanthoria polycarpa

<u>On soil</u>

Psilolechia lucida

<u>Species recorded in Tregoulds Wood previously, and not seen currently</u>

	Agrostis capillaris	Common Bent-grass
	Agrostis stolonifera	Creeping Bent-grass
	Apium inundatum++	This is not Fool's Watercress
	Apium nodiflorum	Fool's Water-cress
	Arctium minus	Lesser Burdock
	Caltha palustris	Marsh Marigold
*	*Carex pallescens*	Pale Sedge
*	*Carex pendula*	Pendulous Sedge
	Cerastium fontanum	Common Mouse-ear
*	*Ceratocapnos claviculata*	Creeping Corydalis
	Chamerion angustifolium	Rosebay
	Cirsium arvense	Creeping Thistle
	Cirsium palustre	Marsh Thistle

	Cirsium vulgare	Spear Thistle
	Cytisus scoparius	Broom
	Dactylis glomerata	Cock’sfoot Grass
	Deschampsia cespitosa	Tufted Hair-grass
*	*Dryopteris carthusiana*	Narrow Buckler-fern
	Euonymus europaeus	Spindle
	Eupatorium cannabinum	Hemp Agrimony
	Fallopia japonica	Japanese Knotweed
*	*Frangula alnus*	Alder Buckthorn
	Galeopsis tetrahit	Common Hempnettle
*	*Holcus mollis*	Creeping Soft-grass
*	*Hypericum pulchrum*	Elegant St John’swort
*	*Luzula pilosa*	Hairy Woodrush
	Lamium album	White Dead-nettle
		NB searched for, but could not be found
	Lycopus europaeus	Gipsywort
*	*Melica uniflora*	Wood Melick
	Mentha aquatica	Water Mint
	Molinia coerulea	Purple Moor-grass
	Pinus nigra	Black Pine
	Pinus sylvestris	Scots Pine
	Plantago majus	Rat’stail Plantain
	Poa annua	Annual Meadow-grass
	Poa trivialis	Rough-stalked Meadow-grass
	Polygala vulgaris	Common Milkwort
*	*Polystichum setiferum*	Soft Shield-fern
*	*Primula vulgaris*	Common Primrose
*	*Quercus petraea*	Sessile Oak
	Ribes nigrum	Black Currant
	Rumex acetosella	Sheep’s Sorrel
	Rumex sanguineus	Red-veined Dock
*	*Ruscus aculeatus*	Butcher’s Broom
	Salix caprea	Goat Willow
	Scutellaria galericulata	Scullcap
	Silene dioica	Red Campion
	Stachys arvensis++	Field Woundwort
*	*Stachys officinalis*	Betony
	Stellaria media	Common Chickweed
	Stellaria uliginosa	Bog Stitchwort
*	*Tamus communis*	Black Bryony
	Teucrium scorodonia	Wood-sage
	Veronica officinalis	Heath Speedwell
*	*Viburnum opulus*	Guelder Rose
	Vicia cracca	Tufted Vetch

++ Mistakes in the list

	Apium inundatum	Lesser Marshwort Very local. Occurs in New Forest ponds

Stachys arvensis This is a cornfield weed and most unlikely

Bryophytes

Dicranella heteromalla
* *Leucobryum glaucum*
Plagiothecium nemorale

Lichens

Chaenotheca ferruginea
Cladonia chlorophaea
* *Cladonia parasitica*
Diploicia canescens
Hypogymnia physodes
Lecanora conizaeoides
Ochrolechia subviridis
Parmelia saxatilis

Clothier's Wood

Fieldwork undertaken on 20th April

Higher Plants

*****	*Acer campestre*	Field Maple
	Acer pseudoplatanus	Sycamore
	Alliaria petiolata	Hedge Garlic
	Alnus glutinosa	Alder
*	*Anemone nemorosa*	Wood Anemone
	Anthriscus sylvestris	Cow Parsley
	Arum maculatum	Lords and Ladies
	Bellis perennis	Common Daisy
	Betula pendula	Silver Birch
	Brachypodium sylvaticum	Slender False Brome
*	*Carex pendula*	Pendulous Sedge
*	*Carex remota*	Remote Sedge
*	*Carex sylvatica*	Wood Sedge
	Castanea sativa	Sweet Chestnut
	Cerastium fontanum	Common Mouse-ear
	Circaea lutetiana	Enchanter's Nightshade
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Crocosmia x *crocosmiiflora*	Montbretia

	Digitalis purpurea	Foxglove
*	*Dryopteris affinis*	Scaly Male Fern
	Dryopteris dilatata	Broad Buckler-fern
	Dryopteris filix mas	Common Male Fern
	Epilobium montanum	Common Willowherb
	Euonymus europaeus	Spindle
*	*Euphorbia amygdaloides*	Wood Spurge
	Fagus sylvatica	Beech
	Galega officinalis	Goat's Rue
	Galium aparine	Cleavers
*	*Galium odoratum*	Woodruff
	Geranium robertianum	Herb Robert
	Hedera helix	Ivy
	Forsythia x *intermedia*	Forsythia
	Fraxinus excelsior	Ash
	Geum urbanum	Wood Avens
	Glechoma hederacea	Ground Ivy
	Heracleum sphondylium	Hogweed
	Holcus lanatus	Yorkshire Fog
	Hyacinthoides hispanicus	Spanish Bluebell
*	*Hyacinthoides non scriptus*	Bluebell
*	*Hypericum androsaemum*	Tutsan
*	*Hypericum pulchrum*	Elegant St John'swort
	Hypochaeris radicata	Common Cat'sear
*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
*	*Lamiastrum galeobdolon*	Yellow Archangel
	Lonicera periclymenum	Honeysuckle
*	*Luzula pilosa*	Hairy Wood-rush
*	*Melica uniflora*	Wood Melick
*	*Moerhingia trinervia*	Three-nerved Sandwort
	Narcissus cultivar	Garden Daffodil
*	*Narcissus pseudonarcissus*	Wild Doffodil
*	*Oxalis acetosella*	Wood Sorrel
	Picris echioides	Prickly Ox-tongue
	Plantago lanceolata	Ribwort Plantain
	Poa annua	Common Meadow-grass
*	*Polygonatum multiflorum*	Solomon's Seal
*	*Potentilla sterilis*	Barren Strawberry
*	*Primula vulgaris*	Common Primrose
	Primula x *polyantha*	Garden Polyanthus
	Prunella vulgaris	Self-heal
*	*Prunus avium*	Wild Cherry
	Prunus x *fruticans*	Hybrid Blackthorn
	Prunus laurocerasus	Cherry Laurel
	Pteridium aquilinum	Bracken
	Quercus robur	Pedunculate Oak
	Ranunculus ficaria	Lesser Celandine
	Ranunculus repens	Creeping Buttercup

	Rhododendron ponticum	Rhododendron
	Ribes uva-crispa	Gooseberry
*	*Rosa arvensis*	Field Rose
	Rosa canina	Dog Rose
	Rubus fruticosus agg	Bramble
	Rumex obtusifolius	Broad-leaved Dock
*	*Ruscus aculeatus*	Butcher's Broom
	Salix cinerea	Grey Willow
	Sambucus nigra	Elder
	Silene dioica	Red Campion
	Solanum dulcamara	Bittersweet
	Sorbus aucuparia	Rowan
	Stachys sylvatica	Hedge Woundwort
	Stellaria holostea	Greater Stitchwort
	Symphoricarpos albus	Snowberry
	Taraxacum officinale	Dandelion
	Taxus baccata	Yew
	Teucrium scorodonia	Wood-sage
	Trifolium pratense	Red Clover
	Ulex europaeus	Gorse
	Urtica dioica	Stinging Nettle
	Veronica chamaedrys	Germander Speedwell
	Veronica hederifolia	Ivy-leaved Speedwell
*	*Veronica montana*	Wood Speedwell
	Veronica officinalis	Heath Speedwell
*	*Viburnum opulus*	Guelder Rose
	Vicia sativa	Common Vetch
*	*Vicia sepium*	Bush Vetch
	Viola riviniana	Common Dog Violet

Bryophytes – Liverworts

On ash

Frullania dilatata
Metzgeria furcata

On elder

Metzgeria fruticulosa

On hazel

Metzgeria furcata

On lignum

Lophocolea heterophylla

On oak

Microlejeunea ulicina

Bryophytes – Mosses

On ash

Hypnum andoi

On birch

Hypnum cupressiforme

On elder

Orthotrichum affine

On lignum

Brachythecium rutabulum
Hypnum cupressiforme

On oak

Brachythecium rutabulum
Hypnum andoi
* *Isothecium myosuroides*

On soil

Atrichum undulatum
Ceratodon purpureus
Dicranum scoparium
Eurhynchium praelongum
Hypnum jutlandicum
Orthodontium lineare
Plagiothecium nemorale
Polytrichum formosum
Thuidium tamariscinum

Lichens

On ash

Arthonia spadicea
Pertusaria pertusa

On birch

Lepraria incana

On hawthorn

Parmelia sulcata
Physcia adscendens
Physcia tenella
Xanthoria parietina

On hazel

** *Enterographa crassa*
Graphis scripta
Opegrapha vulgata

On lignum

Cladonia coniocraea

On oak

Arthonia spadicea
Dimerella pineti
Flavoparmelia caperata
Hypogymnia physodes
Lecanactis abietina
Lecanora chlarotera
Lepraria lobificans
Melanelia subaurifera
Mnium hornum
Parmotrema perlatum
Phlyctis argena
Physcia adscendens
Physcia tenella
Punctelia subrudecta
** * *Thelotrema lepadinum*
Xanthoria candelaria
Xanthoria parietina

On yew

Hypotrachyna revoluta

Knight Wood

Surveyed 22.04

Higher Plants

	Acer pseudoplatanus	Sycamore
	Alliaria petiolata	Hedge Garlic
	Alnus glutinosa	Alder
*	*Anemone nemorosa*	Wood Anemone
	Arum maculatum	Lords and Ladies
	Betula pubescens	Downy Birch
	Cardamine flexuosa	Wavy Bittercress
*	*Carex remota*	Remote Sedge
*	*Carex sylvatica*	Wood Sedge
	Chamerion angustifolium	Rosebay
	Circaea lutetiana	Enchanter's Nightshade
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Crocosmia x *crocosmiiflora*	Montbretia
	Dactylis glomerata	Cock'sfoot Grass
	Digitalis purpurea	Foxglove
*	*Dryopteris carthusiana*	Narrow Bucker Fern
	Dryopteris dilatata	Broad Buckler Fern
	Dryopteris filix mas	Common Male Fern
	Fagus sylvatica	Beech
	Fraxinus excelsior	Ash
	Galium aparine	Goosegrass
	Geranium robertianum	Herb Robert
	Geum urbanum	Wood Avens
	Glechoma hederacea	Ground Ivy
	Hedera helix	Ivy
	Heracleum sphondylium	Hogweed
	Holcus lanatus	Yorkshire Fog
*	*Hyacinthoides non scriptus*	Bluebell
*	*Ilex aquifolium*	Holly
	Juncus effusus	Soft Rush
*	*Lamiastrum galeobdolon*	Yellow Archangel
	Lonicera periclymenum	Honeysuckle
*	*Lysimachia nemorum*	Yellow Pimpernel
*	*Melica uniflora*	Wood Melick
*	*Moerhingia trinervia*	Three-nerved Sandwort
*	*Polygonatum multiflorum*	Solomon's Seal
*	*Prunus avium*	Wild Cherry (1 dead)
	Prunus laurocerasus	Cherry Laurel
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
	Quercus robur	Pedunculate Oak
	Ranunculus ficaria	Lesser Celandine

	Rubus fruticosus agg	Bramble
	Rumex crispus	Curled Dock
	Rumex obtusifolius	Broad-leaved Dock
*	*Ruscus aculeatus*	Butcher's Broom
	Sambucus nigra	Elder
	Sorbus aucuparia	Rowan
	Stachys sylvatica	Hedge Woundwort
	Stellaria holostea	Greater Stitchwort
	Taraxacum officinale agg	Dandelion
	Taxus baccata	Yew
	Urtica dioica	Stinging Nettle
	Veronica hederifolia	Ivy-leaved Speedwell
*	*Veronica montana*	Wood Speedwell
*	*Viola reichenbachiana*	Wood Dog Violet
	Viola riviniana	Common Dog Violet

Bryophytes – Liverworts

On ash

Frullania dilatata

On hazel

Metzgeria furcata

On oak

Microlejeunea ulicina

On soil

Lophocolea heterophylla

Bryophytes – Mosses

On elder

Orthotrichum affine

On lignum

Campylopus introflexus
Dicranella heteromalla
Mnium hornum

On oak

Hypnum cupressiforme

* *Isothecium myosuroides*

On soil

Atrichum undulatum
Brachythecium rutabulum
Eurhynchium praelongum
Fissidens taxifolius
Plagiothecium denticulatum
Polytrichum formosum

Lichens

On beech

Graphis elegans
Physcia tenella
** *Porina leptalea*

On elder

Hyperphyscia adglutinata

On hazel

Candelariella reflexa
Graphis scripta
Hypogymnia physodes
Xanthoria parietina

On holly

** * *Stenocybe septata*

On oak

Arthonia radiata
Arthonia spadicea
Dimerella pineti
** *Enterographa crassa*
Graphis scripta
Lecanactis abietina
Lecanora chlarotera
Lepraria incana
Lepraria lobificans
* *Phaeographis dendritica*
Physcia tenella
Pyrrhospora quernea

Schismatomma decolorans
** * *Thelotrema lepadinum*

Species recorded previously in Knight Wood and/Clothier's Wood, but not seen currently

Higher Plants

*	*Adoxa moschatellina*	Moschatel
	Agrostis capillaris	Common Bent-grass
	Ajuga reptans	Bugle
	Arrhenatherum elatius	Oat-grass
	Betula pendula	Silver Birch
*	*Bromopsis ramosa*	Hairy Brome-grass
	Bromus lepidus	Slender Brome
	Cirsium palustre	Marsh Thistle
	Deschampsia cespitosa	Tufted Hair-grass
	Deschampsia flexuosa	Wavy Hair-grass
	Galeopsis tetrahit	Common Hempnettle
	Holcus mollis	Creeping Soft-grass
	Poa trivialis	Rough-stalked Meadow-grass
	Persicaria hydropiper	Water-pepper
	Persicaria maculosa	Red-leg
	Pinus nigra	Black Pine
	Potentilla erecta	Tormentil
	Prunus lusitanica	
*	*Quercus petraea*	Sessile Oak
	Robinia pseudacacia	Robinia
	Rumex sanguineus	Red-veined Dock
	Scrophularia nodosa	Figwort
	Salix caprea	Goat Willow
	Stellaria media	Common Chickweed
*	*Tamus communis*	Black Bryony

Bryophytes – Mosses

Pseudotaxiphyllum elegans

Lichens

Lecanora conizaeoides
Parmelia saxatilis

Little Covert

Fieldwork Undertaken 21st April 2005

Higher Plants

*	*Adoxa moschatellina*	Moschatel
	Ajuga reptans	Bugle
	Alliaria petiolata	Hedge Garlic
	Alnus glutinosa	Alder
*	*Anemone nemorosa*	Wood Anemone
	Arum maculatum	Lords and Ladies
	Athyrium filix femina	Lady Fern
	Betula pubescens	Downy Birch
*	*Blechnum spicant*	Hard Fern
	Brachypodium sylvaticum	Slender False Brome
	Callitriche stagnalis agg	Water Starwort
	Caltha palustris	Marsh Marigold
	Cardamine flexuosa	Wavy Bittercress
	Cardamine pratensis	Cuckoo Flower
	Carex paniculata	Greater Tussock Sedge
*	*Carex remota*	Remote Sedge
*	*Chrysosplenium oppositifolium*	Opposite-leaved Golden Saxifrage
	Circaea lutetiana	Enchanter's Nightshade
	Cirsium palustre	Marsh Thistle
	Corylus avellana	Hazel
	Crataegus monogyna	Common Hawthorn
	Dactylis glomerata	Cock'sfoot Grass
	Deschampsia cespitosa	Tufted Hair-grass
	Digitalis purpurea	Foxglove
	Dryopteris dilatata	Broad Bucker Fern
	Dryopteris filix mas	Common Buckler Fern
	Equisetum arvense	Common Horsetail
	Filipendula ulmaria	Meadowsweet
	Fraxinus excelsior	Ash
	Galium aparine	Goosegrass
	Galium palustre	Marsh Bedstraw
	Geranium robertianum	Herb Robert
	Geum urbanum	Wood Avens
	Glechoma hederacea	Ground Ivy
	Hedera helix	Ivy
	Heracleum sphondylium	Hogweed
	Holcus lanatus	Yorkshire Fog
*	*Hyacinthoides non scriptus*	Bluebell
*	*Ilex aquifolium*	Holly
	Iris pseudacorus	Yellow Flag Iris
	Juncus effusus	Soft Rush
*	*Lamiastrum galeobdolon*	Yellow Archangel
	Lapsana communis	Nipplewort

	Lemna minor	Common Duckweed
	Lonicera periclymenum	Honeysuckle
	Lychnis flos cuculi	Ragged Robin
*	*Lysimachia nemorum*	Yellow Pimpernel
*	*Melica uniflora*	Wood Melick
	Mercurialis perennis	Dog's Mercury
*	*Milium effusum*	Wood Millet
*	*Moerhingia trinervia*	Three-nerved Sandwort
*	*Oxalis acetosella*	Wood Sorrel
*	*Polygonatum multiflorum*	Solomon's Seal
	Potamogeton natans	Broad-leaved Pondweed
*	*Primula vulgaris*	Common Primrose
	Prunus x *fruticans*	Hybrid Blackthorn
	Pteridium aquilinum	Bracken
	Quercus robur	Pedunculate Oak
*	*Ribes rubrum*	Red Currant
	Rumex crispus	Curled Dock
	Rumex obtusifolius	Broad-leaved Dock
	Ranunculus flammula	Lesser Spearwort
	Ranunculus ficaria	Lesser Celandine
	Ranunculus repens	Creeping Buttercup
	Rubus fruticosus agg	Bramble
	Salix cinerea	Grey Willow
	Sambucus nigra	Elder
	Scrophularia auriculata	Water Betony
	Solanum dulcamara	Bittersweet
	Sorbus aucuparia	Rowan
	Stachys sylvatica	Hedge Woundwort
	Stellaria holostea	Greater Stitchwort
	Stellaria uliginosa	Bog Stitchwort
	Ulex europaeus	Gorse
	Ulmus procera	English Elm
	Urtica dioica	Stinging Nettle
	Valeriana officinalis	Common Valerian
	Veronica chamaedrys	Germander Speedwell
	Veronica hederifolia	Ivy-leaved Speedwell
*	*Veronica montana*	Wood Speedwell

Bryophytes – Liverworts

On soil

Conocephalum conicum
Pellia epiphylla

On willow

Frullania dilatata
Metzgeria furcata

Microlejeunea ulicina

Bryophytes – Mosses

On ash

* *Isothecium myosuroides*

On elder

Brachythecium rutabulum
Dicranoweisia cirrata
Orthotrichum affine

On oak

Hypnum andoi

On soil

Atrichum undulatum
Calliergonella cuspidata
Fissidens adiantoides
Fissidens taxifolius
Mnium hornum
Plagiothecium nemorale

On willow

Brachythecium rutabulum
Eurhynchium praelongum
Hypnum cupressiforme
Orthotrichum affine

Lichens

On elder

Arthonia radiata
Physcia adscendens
Xanthoria candelaria
Xanthoria parietina

On oak

Cliostomum griffithii
Flavoparmelia caperata
Lecanora expallens
Phlyctis argena

Pyrrhospora quernea

On willow

Candelariella reflexa
Cladonia coniocraea
Evernia prunastri
Flavoparmelia soredians
Hypogymnia physodes
Hypotrachyna revoluta
Lepraria incana
Lepraria lobificans
Melanelia subaurifera
Micarea prasina
Parmelia sulcata
Parmotrema perlatum
Physcia tenella
Punctelia ulophylla
Ramalina farinacea

Species recorded previously, but not seen currently

	Arctium minus	Lesser Burdock
	Betula pendula	Silver Birch
*	*Bromopsis ramosa*	Hairy Brome-grass
	Carex panicea	Carnation Grass
*	*Dryopteris affinis* (= *pseudomas.*)	Scaly Male Fern
	Dryopteris carthusiana	Narrow Buckler Fern
	Galeopsis tetrahit	Common Hempnettle
*	*Holcus mollis*	Creeping Soft-grass
	Humulus lupulus	Hop
	Lycopus europaeus	Gipsywort
	Poa trivialis	Rough-stemmed Meadow-grass
*	*Prunus avium*	Wild Cherry
*	*Quercus petraea*	Sessile Oak
	Rumex sanguineus	Red-veined Dock
	Stellaria graminea	Lesser Stitchwort
*	*Tamus communis*	Black Bryony

NB *Dryopteris aust = Dryopteris dilatata*

Bryophytes – Liverworts

Lophocolea heterophylla

Bryophytes – Mosses

Campylopus paradoxus
Campylopus introflexus
Cryphaea heteromalla
Hypnum jutlandicum

Lichens

Dimerella pineti
Hypogymnia tubulosa
Lecanora conizaeoides

Melanelia fuliginosa ssp *glabratula*

Ochrolechia subviridis
Platismatia glauca
Punctelia subrudecta

Punctelia ulophylla could be this. It was not known at the time of the previous survey as it is a recent split.

Usnea subfloridana

Statistics

Zionshill Copse

Zionshill Copse - East

Higher Plants	79
Ancient Woodland Species	19

Zionshill Copse – West

Higher Plants	61
Ancient Woodland Species	15

Zionshill Copse – Whole Wood

Higher Plants	96
Ancient Woodland Species	21

Zionshill Copse – Previous Totals

Higher Plants	82
Ancient Woodland Indicators	36

Zionshill Copse – Overall Totals

Higher Plants	125
	36

Appendix III Bird Survey Data

Valley Park list 1994 -2004

76 Species

Little Grebe	Cormorant
Grey Heron	Mute Swan
Ruddy Duck	Sparrowhawk
Common Buzzard	Kestrel
Hobby	Peregrine
Pheasant	Moorhen
Coot	Lapwing
Snipe	Woodcock
Black Headed Gull	Herring Gull
Coal Tit	Blue Tit
Great Tit	Treecreeper
Nuthatch	Jay
Magpie	Jackdaw
Rook	Carrion Crow
Starling	House Sparrow
Canada Goose	Mallard
Tufted Duck	Woodpigeon
Collared Dove	Cuckoo
Ring-necked Parakeet	Barn Owl *(only recorded in 1994)*
Tawny Owl	Nightjar
Swift	Kingfisher
Green Woodpecker	Great Spotted Woodpecker
Lesser Spotted Woodpecker	Sand Martin
Swallow	House Martin
Meadow Pipit	Pied Wagtail
Wren	Dunnock
Robin	Stonechat
Blackbird	Fieldfare
Song Thrush	Redwing
Mistle Thrush	Sedge Warbler
Reed Warbler	Whitethroat
Blackcap	Chiffchaff
Willow Warbler	Goldcrest
Long-tailed Tit	Willow Tit
Chaffinch	Greenfinch
Goldfinch	Siskin
Linnet	Bullfinch
Yellowhammer	Reed Bunting

Richard Jacobs & Brian Larkin
June 2004

Appendix IV Invertebrate & Macroinvertebrate Survey

Valley Park Balancing Ponds

MACROINVERTEBRATE SURVEY

For
TEST VALLEY
BOROUGH COUNCIL

Council Offices
Beech Hurst, Weyhill Road
Andover, Hants SP10 3AJ

Richard Osmond BSc Hons (Wales) PhD
Roslyne Ecological
20 Crofton Avenue
Lee-on-the-Solent
Hants PO13 9NJ

April 2005

VALLEY PARK BALANCING PONDS
CHANDLERS FORD
HAMPSHIRE

MACROINVERTEBRATE SURVEY

INTRODUCTION AND TERMS OF REFERENCE

Valley Park is a modern housing development on the western side of Chandlers Ford, a dormitory area for Southampton and Winchester. The developed area was fitted into the landscape in a way that avoided the existing blocks of woodland and so left a considerable area of amenity countryside to be managed by Test Valley Borough Council. Part of the open space was used to create three balancing ponds: Zionshill, Skyswood Road and Crusaders Way.

This survey was undertaken by Dr. Richard Osmond of Roslyne Ecological, assisted in the field by Boyce Jeffery of Test Valley Borough Council. The aim of the survey was to assess the status of the macroinvertebrate populations in each of the three ponds. This data would then be used to assist with the preparation of a management plan for the ponds and to provide a baseline against which the effects of the management could be measured.

SCOPE OF REPORT AND METHODOLOGY

The surveys were carried out using the method developed by the Ponds Conservation Trust. This is the core of both the data collection for the National Pond Survey and the Predictive System for Multimetrics (PSYM). The PSYM methodology directly parallels the approach defined in the EU Water Framework Directive.
The collection of invertebrates is based on a 3 minute "net in the water" sample that aims to gather a representative sample from throughout the pond.

PSYM is a waterbody quality assessment methodology which essentially combines the predictive approach of RIVPACS with multimetric-based methods. A range of variables (metrics) each related to degradation is used to assess water quality giving a broad-based assessment of quality. The values from individual metrics are combined to give a single measure which aims to represent the overall ecological quality of the waterbody. Combining this with predictive techniques gives a powerful method for comparing waterbodies of any type with their undegraded counterpart.

Whereas the full PSYM method includes an assessment of both plants and macroinvertebrates, it is possible to use either group alone. Due to the time of the year at which the survey was carried out, end of March - beginning of April, the plant growth was not sufficiently developed, and so was not included in the assessment.

Data required by the PSYM model includes physical environmental parameters such as pond area, pH, pond base, and presence or absence of an inflow. A sketch plan was also prepared to assist with the evaluation of the percentage of emergent plant cover and the percentage area overhung by trees and shrubs.

The macroinvertebrates sampling was carried out in such a way as to collect animals from all of the different mesohabitats present in the pond. The 3 minutes of total sampling time was divided equally between the mesohabitats and also spread evenly over the area of the pond occupied by each mesohabitat. There was an additional 1 minute searching time for animals that might be missed by the net sampling.
Fish and adult amphibians caught during the sampling were recorded and returned immediately to the pond. The entire net sample was placed in a labeled bucket and taken to the laboratory to be sorted. This sorting had to be carried out as soon as possible and while the animals were still alive.

Three biometrics were calculated from the data. :
Average score per taxon (ASPT)
Number of dragonfly (Odonata) and alderfly (Megaloptera) families (F_OM)
Number of beetle (Coleoptera) families (F_COL)

These data were sent to the Ponds Conservation Trust along with the physical environmental parameters for entry into the PSYM model. A percentage value for each pond was calculated by the model. This value represents the closeness of a pond to a hypothetical undegraded pond of the same type in the same location.

POND DESCRIPTIONS

The three ponds are believed to have been constructed in 1996. They are scrapes which were first lined with butyl and then backfilled with clay and gravel. The maximum depth at the time of the survey was in the region of 1 - 1.5 metres.

Valley Park

This is the largest of the three balancing ponds with an estimated area of 4000 m^2. It is surrounded by amenity grassland and shrub plantings that are mixture of native and ornamental species. A particular feature of this pond's surroundings is the large stand of Butterbur (*Petasites hybridus)*. The pond margins are dominated by stands of Great Pond Sedge (*Carex riparia*) and Reedmace (*Typha latifolia*). There small inclusions of rush (*Juncus sp*) and Flag Iris (*Iris psedacorus*) with scattered plants of Kingcup (*Caltha palustris*) and Purple Loosestrife (*Lythrum salicaria*). Water lillies (*Nymphaea sp.*) were known to be present and although not visible through the turbid water, they were located with the net showing early season leaf growth. There is very little submerged weed growth.

This pond is known to support a large population of fish which includes Goldfish and probably Rudd or Roach or their hybrids. No survey of the fish has been undertaken to date.

This pond is unfenced.

Skyswood Road

This is a large pond with an area of approximately 2825 m^2. It is in a fenced-off area with unmown grassy vegetation and a mixed shrub planting. The pond is completely fringed by stands of Common Reed (*Phragmites australis*), Great Pond Sedge (*Carex riparia*), Rush (*Juncus sp.*) and Flag Iris (*Iris pseudacoris*). Some Willow bushes (*Salix sp.*) are growing at the pond edge and shade the pond to a small extent (approx 1 - 2%). The *Phragmites* has grown across the entire width of the pond in the central section although at present it is still quite sparse in the centre. Parrot Feather Weed (*Myriophyllum aquaticum*) has established itself in at least two areas. No other submerged plant species were found. There is at least one patch of Water lillies (*Nymphaea sp.*). Reed Mace (*Typha latifolia*) occurs sporadically at the eastern end of the pond and Purple Loosestrife (*Lythrum salicaria*) is also present. Cuckoo Flower (*Cardamine pratensis*) was in bloom to the south of the pond.

The outlet for this pond is a vertical pipe located in the wider section of the pond towards the eastern end. This has fractured and is approximately 30 cm lower than its designed height. Consequently, the maximum water level is correspondingly lower than it has been in the past giving rise to a very wide fringe of emergent vegetation that will rapidly be displaced by species of plant that favour drier conditions.

Crusaders Way

The smallest of the three ponds with an estimated area of 437 m^2. This pond occupies a triangular section of land bordered on two sides by roads and on the third by housing. The surrounding grassland is mown periodically.

The pond is triangular in outline and has a light, discontinuous fringe of birch and willow bushes on all three sides. A young birch tree in the south west corner is leaning out over the pond. In total, the shading of the pond amounts to approximately 30%.

The pond margin is narrowly fringed with emergent plants. The dominant stands are of *Phragmites* and *Juncus*. Flag Iris is also present. A considerable amount of plant debris, the result of pond clearance work during the previous autumn/winter is piled on the bank in the south west corner and along the south side. This appears to contain large amounts of Reed Mace and Parrot Feather Weed. Small amounts of Parrot Feather Weed were found growing near the banks of the pond in two places and some drifting strands were also seen further out.

SUMMARY OF MACROINVERTEBRATE POPULATIONS

The invertebrate animals found were identified to family level in all cases and to sub-family level or lower in some cases. A record was also made of vertebrates caught or observed during the sampling.

The full list of animal groups is shown in Appendix Table I.

Despite their close proximity, similar age and method of construction, these three ponds display differences in the composition of their fauna. Crusaders Way is the most diverse with regard to insect families but had only one family of Mollusca and no Crustoeans. Skyswood was similarly restricted in its molluscs, but did have both Gammaridae and Asellidae. Zionshill had four families of mollusc present, Gammaridae in large numbers but no Asellidae. Of further interest here is the species of Gammaridae: the Gammaridae present in Zionshill were all of the species *Crangonyx pseudogracilis*. This is an introduced species now widespread in midland and southern England. In Skyswood Road pond, however, there was a mixed population of both *C. pseudogracilis* and *Gammarus pulex*, the most widespread of our native freshwater shrimp species. It is uncommon for these species to coexist as *C. pseudogracilis* has a tolerance of much lower levels of oxygen.

The family data obscures an underlying paucity in species diversity. Many of the family records are due to the occurrence of one or two species or in some cases to a single individual. This should be borne in mind when considering the result of the PSYM analysis.

The PSYM analysis is shown in Appendix Table 2. This shows that all three ponds can be rated as "good" with regard to their macroinvertebrate diversity. The Index of Biotic Integrity reflects the level of degradation: 100% represents a pond which shows no degradation. On this parameter, Crusaders Way scores 100% and both Zionshill and Skyswood are high at 78% and 89% respectively.

Caution should be applied to the interpretation of these results as the underlying model is based on samples taken during June, July and August, whereas this data was collected in March and April. Also, because there is no plant data, this result gives only part of the overall status.

As all these ponds are less than 10 years old, it might be expected that they would be limited in their variety of animal types. Although this limitation is apparent within families, the results of the PSYM analysis shows that it is not reflected at the family level. It is interesting, though, to see the variation between the ponds, given that they are all within 250 metres of each other and of a similar construction. It is also interesting that the smallest pond, Crusaders Way, has the highest diversity and the highest average score per taxon: ASPT = 5.00.
Much of the diversity found in Crusaders Way may be due to the presence of the parrot feather weed. Until it was cleared in the winter of 2004/5, this submerged weed offered a habitat opportunity that is substantially lacking in the other two ponds.

RECOMMENDATIONS

Encroaching vegetation

With all shallow ponds of this type the bankside fringe of emergent plants will encroach rapidly on the open water. This process is well advanced at Skyswood Road, enhanced by the lowered water level. Removal of this encroaching growth is best done in sections, with approximately one quarter to one fifth of the pond cleared each year. This will ensure a range of successional stages are present in the pond and help to maintain and enhance diversity of animal and plant life. With large ponds the area to be cleared can be divided into smaller blocks, thereby creating a "patchwork" effect of habitat variation.

Zionshill has a proportionally narrower fringe at present but should have some clearance work done now in order to establish the range of succession over the next four to five years.
Skyswood Road is in urgent need of some clearance work, and the priority area should be the *Phragmites* that is closing off the centre section of the pond, removing either the north or the south side this winter, along with the sparse growth in the centre and leaving the opposite bank to be cleared in the winter of 2007/8.
Cusaders Way has just undergone a large scale clearance and may not need any further work this winter. The encroachment of the willow and birch needs to be cut back to reduce the shading and the detrimental effect of excessive leaf fall leading to reduced oxygen levels.

Skyswood Road outlet pipe

This should be repaired to its original height so that the pond can regain its intended level. This will reduce the rate at which emergent plants can colonise the open water.

Submerged plants

Parrot Feather weed.
All traces of parrot feather weed should be removed as soon as they are seen. Careful pulling can usually remove much of the trailing stem system where it is rooted into a clay or silt substrate. Three or four visits to the ponds should be planned for each year to carry out this work until it has been eradicated. Any plants removed should be composted in the vicinity of the pond to avoid translocation of this invasive alien species.

Introduction of alternative species.
The introduction of submerged plant species such as hornwort or water milfoil will increase the diversity of the habitat. This may need protecting in the early stages from fish and birds and so could be planted in cages of plastic mesh. These should then act as centres of colonisation. They should only be sited in parts of the ponds that are known to be free of parrot feather weed.

Fish population

A survey of the fish population needs to be undertaken. Electrofishing will quickly provide evidence of the species present in the ponds, although it does not always give a clear estimate of quantities. A decision would then need to be taken as to whether the fish should be removed or not. Zionshill is such a large pond that it can probably

sustain a fish population as well as a reasonably diverse invertebrate population. Skyswood, and Crusaders Way are probably better as fish free ponds in which amphibians can breed. Their larvae will then provide food for beetle, dragonfly and bug predators that can feed without competition from and predation by fish. Periodic electrofishing of Skyswood Road and Crusaders Way would be necessary to remove unwanted introductions and natural transfers of fish from Zionshill or other nearby ponds.

Allowing fish to exist in one of the ponds will increase the overall diversity of the Valley Park system as it will offer opportunities to fish eating predators such as heron and cormorant or possibly great crested grebe.

Future monitoring

It is clear that these ponds are at an early stage in their successional development. Further changes will occur with or without management intervention, but a lack of action will see the two smaller ponds suffering rapid encroachment and elimination of free water. From a species diversity perspective, sequential removal of plant growth is preferable to large scale clearance as a single event. The effect of this strategy should be monitored on a regular basis and adjustments made to the regime if appropriate.
The aquatic plant diversity appears to be poor, and a full survey in the summer of 2006 would ascertain if this is an accurate impression. Unless there is a pressing need to enhance this aspect of the biodiversity at Valley Park, it would be more interesting to see which species arrive by natural distribution methods.

References:

A guide to monitoring the ecological quality of ponds and canals using PSYM. Pond Conservation Trust, Oxford Brookes University. 2002

A guide to the methods of the National Pond Survey. Ponds Conservation Trust, Oxford Brookes University. 1998

Appendices

Table 1 - Results of Surveys:
Numbers of individuals by family.

Table 2 - Results of PSYM analysis.

Survey Field Sheets:
Zionshill
Crusaders Way
Skyswood Road

Photographs:
Zionshill
Crusaders Way
Skyswood Road

Appendix Table 1
Results of Surveys: Numbers of individuals by family

Major Group	Family	Zionshill	Crusaders Way	Skyswood
Platyhelminthes	Planariidae		2	1
Annelida	Lumbriculidae	7	27	
	Tubificidae	1		
	Glossiphonia	7		
	Erpobdellidae	8		
Mollusca	Physidae	2	43	1
	Lymnaeidae	2		
	Planorbidae	2		
	Sphaeriidae	2		
Crustacea	Aselidae			8
	Gammaridae	537		112
Odonata	Aeshnidae		1	1
	Libellulidae	1	4	
	Coenagrionidae	54	64	89
Plecoptera	Nemouridae		71	
Ephemeroptera	Baetidae	15	27	143
Hemiptera	Corixidae	9	2	3
	Nepidae	1		
	Naucoridae		5	4
	Notonectidae		2	
	Velidae		8	
	Pleidae		36	2
	Gerridae			10
Trichoptera	Limnephilidae	94	26	31
Megaloptera	Sialidae		1	
Diptera	Syrphidae	1	1	
	Chironomidae	291	157	95
	Dixidae	92	1	14
	Tipulidae	2	6	8
	Chaoboridae		22	1
	Culicidae		6	1
	Ceratopogonidae		33	
	Psychodidae		2	
	Stratiomyidae			1
Coleoptera	Gyrinidae		1	1
	Dytiscidae	2	28	56
	Hydroporinae		21	
	Hydrophilidae	2	46	2
	Haliplidae			15
	Helodidae		36	13
Number of individuals in sample		1132	679	612

Appendix Table 2
Results of PSYM Analysis

Site 1				
Zionshill				
29/03/05				
SU422206				
Metric	Observed	Predicted	EQI	EB
Plants				
No. of submerged + marginal plant species				
Number of uncommon plant species				
Trophic Ranking Score				
Invertebrates				
ASPT	4.39	5.066770707	0.866429577	3
Odonata+Megaloptera (OM) families	2	3.026417399	0.660847377	2
Coleoptera families	2	3.715891393	0.538228863	2
Sum of individual metrics				7
Index of Biotic Integrity (%)				78%
Site 2				
Crusaders Way				
30/03/05				
SU419207				
Metric	Observed	Predicted	EQI	EB
Plants				
No. of submerged + marginal plant species				
Number of uncommon plant species				
Trophic Ranking Score				
Invertebrates				
ASPT	5	5.087979816	0.982743388	3
Odonata+Megaloptera (OM) families	4	3.300683461	1.211870229	3
Coleoptera families	3	3.731046374	0.804063981	3
Sum of individual metrics				9
Index of Biotic Integrity (%)				100%
Site 3				
Skywood Road				
27/04/05				
SU422207				
Metric	Observed	Predicted	EQI	EB
Plants				
No. of submerged + marginal plant species				
Number of uncommon plant species				
Trophic Ranking Score				
Invertebrates				
ASPT	4.94	5.032683929	0.98158945	3
Odonata+Megaloptera (OM) families	2	2.933794141	0.681710189	2
Coleoptera families	4	3.689685701	1.084103116	3
Sum of individual metrics				8

Pond PSYM Fieldsheet

Site and sample details

Site name: Tiverhill Code No. Grid ref: (SU) 422 206

Location: Valley Park, Chandlers Ford, Hants

Site access details: Test Valley Borough Council

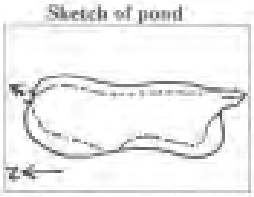
Survey date: 29/3/05 Surveyor: J. R. Osmond

Notes: Due to the size of the pond, a boat was used to survey away from the bank.

Environmental data

Altitude (m)	28	pH	7.0
Shade: % pond overhung	0	% emergent plant cover	30
Inflow (absent = 0, present = 1)	0	Pond area (m²)	4000
% of pond margin grazed	0		

Sketch of pond



Pond base: categorise into one of three groups: 1=0%-32%, 2=33%-66%, 3=67%-100%

Clay/silt	3	Sand, gravel, cobbles		Bed rock	
Peat		Other			

MACROINVERTEBRATE LIST

Pond PSYM Fieldsheet

Site and sample details

Site name: Crusaders Way Code No: _____ Grid ref (SU) 419 207
Recording format: (N.) 000 000 or (E) 000 000

Location: Valley Park, Chandlers Ford, Hants

Site access details: Test Valley Borough Council

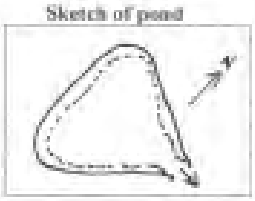
Survey date: 30/3/05 Surveyor: J. R. Ormrod

Notes: _____

Environmental data

Altitude (m)	28	pH	6.5
Shade: % pond overhung	30	% emergent plant cover	20
Inflow (absent = 0, present = 1)	0	Pond area (m²)	437
% of pond margin grazed	0		

Sketch of pond



Pond base: categorise into one of three groups: 1=0%-32%, 2=33%-66%, 3=67%-100%

Clay/silt	3	Sand, gravel, cobbles		Bed rock	
Peat		Other			

MACROINVERTEBRATE LIST

Pond PSYM Fieldsheet

Site and sample details

Site name: Skyswood Rd. Code No. _____ Grid ref. (SU) 422 207

Location: Valley Park, Chandlers Ford, Hants

Site access details: Test Valley Borough Council

Survey date: 27/4/05 Surveyor: J.R. Ormond

Notes: _____

Environmental data

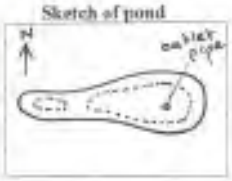
Altitude (m): 28 pH: 7.0

Shade: % pond overhang: 2 % emergent plant cover: 45

Inflow (absent = 0, present = 1): 0 Pond area (m^2): 2825

% of pond margin grazed: 0

Sketch of pond



Pond base: categorise into one of three groups: 1=0%-32%, 2=33%-66%, 3=67%-100%

Clay/silt: 2 Sand, gravel, cobbles: 2 Bed rock: _____

Peat: _____ Other: _____

MACROINVERTEBRATE LIST

Zionshill Balancing Pond 29/03/05

Zionshill - Photo 1
View from the north

Zionshill - Photo 2
View from the north west

Zionshill - Photo 3
Sampling from boat

Zionshill - Photo 4
Butterbur on the north west bank

Crusaders Way Balancing Pond 30/03/05

Crusaders Way - Photo 1
View from the south

Crusaders Way - Photo 2
Plant debris at SW corner

Crusaders Way - Photo 3
View of NW bank

Skyswood Road Balancing Pond 27/04/05

Skyswood Road - Photo 1
View from east end

Skyswood Road - Photo 2
View of the west end from south bank

Skyswood Road - Photo 3
View of east end from south bank

Skyswood Road - Photo 4
Great Pond Sedge in flower

Roslyne Ecological

Valley Park Balancing Ponds

MACROINVERTEBRATE SURVEY

For
TEST VALLEY
BOROUGH COUNCIL

Council Offices
Beech Hurst ,Weyhill Road
Andover, Hants SP10 3AJ

Richard Osmond BSc Hons (Wales) PhD
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April 2010

05

VALLEY PARK BALANCING PONDS
CHANDLERS FORD
HAMPSHIRE

MACROINVERTEBRATE SURVEY

INTRODUCTION AND TERMS OF REFERENCE

Valley Park is a modern housing development on the western side of Chandlers Ford, a dormitory area for Southampton and Winchester. The developed area was fitted into the landscape in a way that avoided the existing blocks of woodland and so left a considerable area of amenity countryside to be managed by Test Valley Borough Council. Part of the open space was used to create three balancing ponds: Zionshill, Skyswood Road and Crusaders Way.

This survey was undertaken by Dr. Richard Osmond of Roslyne Ecological, assisted in the field by Boyce Jeffery of Test Valley Borough Council. The aim of the survey was to re-assess the status of the macroinvertebrate populations in each of the three ponds following on from the similar survey of April 2005 that was also carried out by Roslyne Ecological. This data will be used to assess the effects of management operations that have been carried out over the intervening 5 years

SCOPE OF REPORT AND METHODOLOGY

The surveys were carried out using the method developed by the Ponds Conservation Trust. This is the core of both the data collection for the National Pond Survey and the Predictive System for Multimetrics (PSYM). The PSYM methodology directly parallels the approach defined in the EU Water Framework Directive.
The collection of invertebrates is based on a 3 minute "net in the water" sample that aims to gather a representative sample from throughout the pond.

PSYM is a waterbody quality assessment methodology which essentially combines the predictive approach of RIVPACS with multimetric-based methods. A range of variables (metrics) each related to degradation is used to assess water quality giving a broad-based assessment of quality. The values from individual metrics are combined to give a single measure which aims to represent the overall ecological quality of the waterbody. Combining this with predictive techniques gives a powerful method for comparing waterbodies of any type with their undegraded counterpart.

Whereas the full PSYM method includes an assessment of both plants and macroinvertebrates, it is possible to use either group alone. Due to the time of the year at which the survey was carried out, towards the end of April, the plant growth was not sufficiently developed, and so was not included in the assessment.

Data required by the PSYM model includes physical environmental parameters such as pond area, pH, pond base, and presence or absence of an inflow. A sketch plan was also prepared to assist with the evaluation of the percentage of emergent plant cover and the percentage area overhung by trees and shrubs.

The macroinvertebrates sampling was carried out in such a way as to collect animals from all of the different mesohabitats present in the pond. The 3 minutes of total sampling time was divided equally between the mesohabitats and also spread evenly over the area of the pond occupied by each mesohabitat. There was an additional 1 minute searching time for animals that might be missed by the net sampling.
Fish and adult amphibians caught during the sampling were recorded and returned immediately to the pond. The entire net sample was placed in a labelled bucket and taken to the laboratory to be sorted. This sorting had to be carried out as soon as possible and while the animals were still alive.

Three biometrics were calculated from the data.:
Average score per taxon (ASPT)
Number of dragonfly (Odonata) and alderfly (Megaloptera) families (F_OM)
Number of beetle (Coleoptera) families (F_COL)

These data were sent to the Ponds Conservation Trust along with the physical environmental parameters for entry into the PSYM model. A percentage value for each pond was calculated by the model. This value represents the closeness of a pond to a hypothetical undegraded pond of the same type in the same location.

CURRENT STATE OF THE PONDS

The three ponds are believed to have been constructed in 1996. They are scrapes which were first lined with butyl and then backfilled with clay and gravel. The maximum depth at the time of the 2005 survey was in the region of 1 - 1.5 metres.

Valley Park

This is the largest of the three balancing ponds with an estimated area of 4000 m^2. It is surrounded by amenity grassland and shrub plantings that are mixture of native and ornamental species. A particular feature of this pond's surroundings is the large stand of Butterbur (*Petasites hybridus).* The pond margins are dominated by stands of Great Pond Sedge (*Carex riparia*) and Reedmace (*Typha latifolia*). There are small inclusions of rush (*Juncus sp*) and an increasing presence of Flag Iris (*Iris psedacorus*) with scattered plants of Kingcup (*Caltha palustris*) and Purple Loosetstrife (*Lythrum salicaria*). The total area of emergent vegetation has increased from 30% to 37% since 2005. There was a large drawdown zone exposed at the time of the survey although there was a considerable flow through the main outlet grid. The higher water level may be caused by the accumulation of debris against the metal screen of the outlet. Removal of this could have resulted in the lowering of the level to the point recorded in this survey. Water lillies (*Nymphaea sp.*) have also increased significantly, but only small early leaves indicated their presence at this time. There is very little submerged weed growth. An attempt to introduce submerged plants in baskets has been thwarted by vandalism.

This pond is known to support a large population of fish. Electro-fishing has been carried out on several occasions but large fish of the carp family were frequently observed during the survey.

This pond is unfenced and receives a lot of disturbance from dogs swimming, ducks being fed and unofficial fishing activities.

Skyswood Road

This is a large pond with an area of approximately 2825 m^2. It is in a fenced-off area with unmown grassy vegetation and a mixed tree and shrub planting. The pond is completely fringed by stands of Common Reed (*Phragmites australis*), Great Pond Sedge (*Carex riparia*), Rush (*Juncus sp.*) and Flag Iris (*Iris pseudacoris*). Willow bushes (*Salix sp.*) growing at the pond edge have increased the shading of the pond to a small extent (from 2% to 7%). The *Phragmites* has been cut back on a regular basis so that there is now open water continuously from one end of the pond to the other. Parrot Feather Weed (*Myriophyllum aquaticum*) is still present but of limited extent. No other submerged plant species were found. There is at least one patch of Water lillies (*Nymphaea sp.*). Reed Mace (*Typha latifolia*) occurs sporadically at the eastern end of the pond and Purple Loosestrife (*Lythrum salicaria*) is also present.

The outlet for this pond is a vertical pipe located in the wider section of the pond towards the eastern end. This has been repaired since 2005 and so the water level is maintained at a higher level than that which was recorded in 2005.

Crusaders Way

The smallest of the three ponds with an estimated area of 437 m^2. This pond occupies a triangular section of land bordered on two sides by roads and on the third by housing. The surrounding grassland is mown periodically.
Out of the three pods in this survey, the appearance of this pond has altered least . The fringe of birch and willow bushes on all three sides has matured and so the shading of the pond has increased from 30% to 36%.
The pond margin is narrowly fringed with emergent plants:*Phragmites, Juncus and Typha.* Flag Iris is also present. Management work has contained the spread of these plants into deeper water and removal of the parrot feather weed has limited this to one point on the margin.

SUMMARY OF MACROINVERTEBRATE POPULATIONS

The invertebrate animals found were identified to family level in all cases and to sub-family level or lower in some cases. A record was also made of vertebrates caught or observed during the sampling.

The full list of animal groups is shown in Appendix Table I.

The survey has revealed changes in the state of the biodiversity of the three ponds. The most significant of these is the deterioration of invertebrate populations in Zionshill pond. Changes in the other two ponds have been less dramatic.

Zionshill

The Index of Biotic Integrity for this pond has fallen from 78% to 56% so that it is now rated as "moderate". This is due to the loss of 8 invertebrate families while only three new ones were gained. No molluscan families were present, (a loss of 4 families from 2005,) and also no beetles (a loss of 2 families). The numbers of all invertebrates in the sample was down from 1132 individuals to 145. The ASPT has increased from 4.39 to 4.8. The most reasonable conclusion to draw from this evidence is that the predation by fish has seriously depleted the invertebrate populations. Water quality is less likely to be the main cause as the more sensitive families of Odonata and Trichoptera are still present.

Skyswood

The status of this pond remains at "good" but the Index of Biotic Integrity has fallen from 89% to 78%. There have been balanced gains and losses in the families recorded and the number of individuals in the sample was slightly increased.

Crusaders Way

The Crusaders Way pond remains as the one of the three with the highest status: its Index of Biotic Integrity is 100%. There have been changes to the invertebrate fauna, particularly in there being fewer beetles and stoneflies but other animals have been recorded for the first time. The bladder snail, *Physa fontinalis*, was absent from this survey: in 2005 there were 43 individuals in the sample. This disappearance can not be blamed on fish as they were not recorded as being present.

RECOMMENDATIONS

Encroaching vegetation

Maintain the regime of containing the encroachment of the marginal vegetation. The margins are rather similar around the whole of Skyswood pond. Creating more variety would be desirable.
Zionshill has increased the width of the vegetated fringe and this should be maintained at this extent. An opportunity exists to try and create some small ponds within this fringe. These ponds could then be kept free of fish.

For all three ponds the overhanging trees and the subsequent shading and leaf fall needs to be kept in check.

Submerged plants
Parrot Feather weed.
All traces of parrot feather weed should continue to be removed as soon as they are seen. Careful pulling can usually remove much of the trailing stem system where it is rooted into a clay or silt substrate. Three or four visits to the ponds should be planned for each year to carry out this work until it has been eradicated. Any plants removed should be composted in the vicinity of the pond to avoid translocation of this invasive alien species.

Introduction of alternative species.
Although the attempt at introduction of submerged plant species such as hornwort or water milfoil to Zionshill pond has failed, this strategy should not be abandoned. A more robust method of planting is needed and the use of submerged "cages" as suggested in the previous report could be attempted. Both Skyswood and Crusaders way should be included in the scheme as the observed changes since 2005 could be due to the removal of parrot-feather weed without replacing an alternative form of submerged vegetation.

Fish population
The fish population of Zionshill is still a major problem. The electro-fishing program has highlighted the extent of this problem. The pond is large enough to hold a fish population and maintain invertebrate biodiversity but not with the current structure of the vegetation. There is now also the aggravation of unofficial fishing activity leading to littering, cutting back of bankside vegetation, and the threat of injury to wildlife and visitors from discarded fishing line and other tackle.
Elimination of the fish is unlikely to be achieved and the electro-fishing does not appear to be making an effective reduction of the population. Changes to the fish community and the age structure of the fish population may, in time, bring about a reduction in the number of smaller fish that are able to get in amongst the emergent vegetation and predate the invertebrates. Obtaining more detailed information from the electro-fishing operations would provide useful evidence.

Formalising the use of the pond by anglers should be considered. Regular patrolling by a bailiff will help to reduce the instances of bad practice and a compulsory system of reporting fish catches will also provide information about the fish populations. There will need to be strict observance of rules concerning the use of ground bait and the anglers will have to tolerate the presence of fish predators such as heron and cormorant.

Periodic electro-fishing of Skyswood Road and Crusaders Way will be necessary to remove unwanted introductions and natural transfers of fish from Zionshill or other nearby ponds.

Future monitoring
The information gained from school visits during the summer of each year offers a snapshot of the fauna living in Zionshill pond and, hopefully this will continue. If a serious attempt is to be made at improving the biodiversity of this large and important

pond, then the effectiveness of any management changes should be measured on a regular basis. Gathering more data on the fish population and checking for changes to some key invertebrate groups would be extremely useful.

The relative stability of Skyswood and Crusaders Way ponds would suggest that a further survey in 2015 would be appropriate to check their status.

References:

A guide to monitoring the ecological quality of ponds and canals using PSYM. Pond Conservation Trust, Oxford Brookes University. 2002

A guide to the methods of the National Pond Survey. Ponds Conservation Trust, Oxford Brookes University. 1998

Appendices

Table 1 - Results of Surveys:
Numbers of individuals by family.

Table 2 - Results of PSYM analysis.

Survey Field Sheets:
Zionshill
Crusaders Way
Skyswood Road

Photographs:
Zionshill
Crusaders Way
Skyswood Road

Appendix Table 1: Results of Surveys: Numbers of individuals by family

Major Group	Family	Zionshill		Crsaders Way		Skyswood	
		2010	(2005)	2010	(2005)	2010	(2005)
Platyhelminthes	Planariidae			1	2		1
Annelida	Lumbriculidae		7	2	27	18	
	Tubificidae		1				
	Glossiphoniidae	2	7			2	
	Erpobdellidae	7	8	9			
Mollusca	Physidae		2		43	2	1
	Lymnaeidae		2				
	Planorbidae		2				
	Sphaeridae		2				
Crustacea	Asellidae	33		64		32	8
	Gammaridae	38	537			272	112
	Mites			100			
Odonata	Aeshnidae	4		4	1		1
	Libellulidae		1		4		
	Coenagrionidae	22	54	19	64	50	89
Plecoptera	Nemouridae			1	71		
Ephemeroptera	Baetidae	1	15	96	27	44	143
	Caenidae					1	
Hemiptera	Corixidae	4	9	6	2	7	3
	Nepidae		1	2			
	Naucoridae			7	5		4
	Notonectidae			2	2		
	Mesovelidae	1		4	8		
	Pleidae				36		2
	Gerridae			present			10
Trichoptera	Polycentropidae					2	
	Phrygaenidae					1	
	Limnephillidae	2	94	18	26	36	31
Megaoptera	Sialidae			1	1		
Diptera	Syrphidae		1		1		
	Chironomidae	26	291	35	157	34	95
	Dixidae	1	92		1	2	14
	Tipulidae	1	2	1	6	6	8
	Chaoboridae				22		1
	Culicidae			10	6		1
	Ceratopogonidae	3		12	33	3	
	Psychodidae				2		
	Stratiomyidae						1
Coleoptera	Gyrinidae				1		1
	Dytiscidae		2	44	28	12	56
	Hydroporinae			1	21		
	Hydrophillidae		2		46	2	2
	Haliplidae			5		1	15
	Hygrobiidae					1	
	Helodidae			20	36		13
		145	1132	463	679	528	612

Appendix Table 2
Results of PSYM Analysis

Site name	Crusaders Way	Skyswood	Zionshill
Survey date	01-Apr-10	20-Apr-10	28-Apr-10
Grid reference	(SU) 419 207	(SU) 422 207	(SU) 477 206
Invertebrates metrics			
ASPT	5	5	5
Odonata + Megaloptera (OM) families	3	1	2
Coleoptera families	3	4	0
Env. variables			
Altitude (m)	28	28	28
Easting	4419	4422	4477
Northing	1207	1207	1206
Shade (%)	36	7	3
Inflow (0/1)	0	0	0
Grazing (%)	0	0	0
pH	7	7	8
Emergent plant cover (%)	20	40	37
Base clay (1-3)	3	2	3
Base sand, gravel, cobbles (1-3)	1	2	1
Base peat (1-3)	0	0	0
Base rock (1-3)	0	0	0
Area (m2)	437	2850	4000
Results			
ASPT			
Predicted (ASPT)	5.1	5.09	5.11
EQI (ASPT)	0.95	0.97	0.93
IBI (ASPT)	3	3	3
Odonata + Megaloptera (OM) families			
Predicted (OM)	3.48	3.23	3.23
EQI (OM)	0.86	0.31	0.62
IBI (OM)	3	1	2
Coleoptera families			
Predicted (CO)	3.75	3.75	3.77
EQI (CO)	0.8	1.07	0
IBI (CO)	3	3	0
Sum of Individual Metrics	9	7	5
Index of Biotic Integrity (%)	100%	78%	56%
PSYM quality category (IBI >75%=Good, 51-75%= Moderate, 25-50%=Poor, <25%=V Poor)	Good	Good	Moderate

Pond PSYM Datasheet (Long)

SITE AND SAMPLE DETAILS

Site name	Zionshill	Code no.	
Location	Valley Park, Chandlers Ford, Hants	Grid ref.	(SU) 477 206
Surveyor	Dr. J. R. Osmond	Survey date	28-Apr-10
Site access details	Owned by Test Valley B.C. Open public access as part of local nature reserve.		

One of a series of 3 balancing ponds created in association with housing development in 1996

Altitude (m)	28	pH	7.5
Shade: % pond overhung	3	% emergent plant cover	37
Inflow: absent=0, present=1	0	Pond area (m^2)	4000
% of pond margin grazed	0		

Pond base: categorise into one of three groups: 1 = 0% - 32%, 2 = 33% - 66%, 3 = 67% - 100%

Clay / silt	3	Sand, gravel, cobbles	1	Bed rock	
Peat		Other			

MACROINVERTEBRATE LIST: Enter 1 if group is present; remember to fill in ASPT, OM and Cole boxes

Group 1 taxa (BMWP: 10)	ASPT	OM	Cole.
Siphlonuridae			
Heptageniidae			
Leptophlebiidae			
Ephemerellidae			
Potamanthidae			
Ephemeridae			
Taeniopterygidae			
Leuctridae			
Capniidae			
Perlodidae			
Perlidae			
Chloroperlidae			
Aphelocheiridae			
Phryganeidae			
Molannidae			
Beraeidae			
Odontoceridae			
Leptoceridae			
Goeridae			
Lepidostomatidae			
Brachycentridae			
Sericostomatidae			
No. of taxa	0		

Group 2 taxa (BMWP: 8)			
Astacidae			
Lestidae			
Calopterygidae (Agriidae)			
Gomphidae			
Cordulegasteridae			
Aeshnidae	1	1	
Corduliidae			
Libellulidae			
Philopotamidae			
Psychomyiidae			
No. of taxa	1	1	

Group 3 taxa (BMWP: 7)	ASPT	OM	Cole.
Caenidae			
Nemouridae			
Rhyacophilidae (Glossomatidae)			
Polycentropodidae			
Limnephilidae	1		
No. of taxa	1		

Group 4 taxa (BMWP: 6)			
Neritidae			
Viviparidae			
Ancylidae (Acroloxidae)			
Hydroptilidae			
Unionidae			
Corophiidae			
Gammaridae (Crangonyctidae)	1		
Platycnemididae			
Coenagriidae	1	1	
No. of taxa	2	1	

Group 5 taxa (BMWP: 5)			
Planariidae (Dugesiidae)			
Dendrocoelidae			
Mesovelidae	1		
Hydrometridae			
Gerridae			
Nepidae			
Naucoridae			
Notonectidae			
Pleidae			
Corixidae	1		
Haliplidae			
Hygrobiidae			
Dytiscidae (Noteridae)			
Gyrinidae			
Hydrophilidae (Hydraenidae)			
Dryopidae			
Elmidae			
Hydropsychidae			
Tipulidae	1		
Simuliidae			
No. of taxa	3		0

Group 6 taxa (BMWP: 4)	ASPT	OM	Cole.
Baetidae	1		
Sialidae			
Piscicolidae			
No. of taxa	1	0	

Group 7 taxa (BMWP: 3)			
Valvatidae			
Hydrobiidae (Bithyniidae)			
Lymnaeidae			
Physidae			
Planorbidae			
Sphaeriidae			
Glossiphoniidae	1		
Hirudinidae			
Erpobdellidae	1		
Asellidae	1		
No. of taxa	3		

Group 8 taxa (BMWP: 2)			
Chironomidae	1		
No. of taxa	1		

Group 9 taxa (BMWP: 1)			
Oligochaeta			
No. of taxa	0		

TOTAL NO. OF TAXA	12		
TOTAL BMWP SCORE	57		
ASPT	4.8		
NO. OF OM TAXA		2	
NO. COLEOPT. TAXA			0

Pond PSYM Datasheet (Long)

SITE AND SAMPLE DETAILS

Site name	Skyswood	Code no.	
Location	Valley Park, Chandlers Ford, Hants	Grid ref.	(SU) 422 207
Surveyor	Dr. J. R. Osmond	Survey date	20-Apr-10
Site access details	Owned by Test Valley B.C. In a fenced off area with no official public access		

One of a series of 3 balancing ponds created in association with housing development in 1996

Altitude (m)	28	pH	7
Shade: % pond overhung	7	% emergent plant cover	40
Inflow: absent=0, present=1	0	Pond area (m^2)	2850
% of pond margin grazed	0		

Pond base: categorise into one of three groups: 1 = 0% - 32%, 2 = 33% - 66%, 3 = 67% - 100%

Clay / silt	2	Sand, gravel, cobbles	2	Bed rock	
Peat		Other			

MACROINVERTEBRATE LIST: Enter 1 if group is present; remember to fill in ASPT, OM and Cole boxes

Group 1 taxa (BMWP: 10)	ASPT	OM	Cole.
Siphlonuridae			
Heptageniidae			
Leptophlebiidae			
Ephemerellidae			
Potamanthidae			
Ephemeridae			
Taeniopterygidae			
Leuctridae			
Capniidae			
Perlodidae			
Perlidae			
Chloroperlidae			
Aphelocheiridae			
Phryganeidae	1		
Molannidae			
Beraeidae			
Odontoceridae			
Leptoceridae			
Goeridae			
Lepidostomatidae			
Brachycentridae			
Sericostomatidae			
No. of taxa	1		

Group 2 taxa (BMWP: 8)			
Astacidae			
Lestidae			
Calopterygidae (Agriidae)			
Gomphidae			
Cordulegasteridae			
Aeshnidae			
Corduliidae			
Libellulidae			
Philopotamidae			
Psychomyiidae			
No. of taxa	0	0	

Group 3 taxa (BMWP: 7)	ASPT	OM	Cole.
Caenidae	1		
Nemouridae			
Rhyacophilidae (Glossomatidae)			
Polycentropodidae	1		
Limnephilidae	1		
No. of taxa	3		

Group 4 taxa (BMWP: 6)			
Neritidae			
Viviparidae			
Ancylidae (Acroloxidae)			
Hydroptilidae			
Unionidae			
Corophiidae			
Gammaridae (Crangonyctidae)	1		
Platycnemididae			
Coenagriidae	1	1	
No. of taxa	2	1	

Group 5 taxa (BMWP: 5)			
Planariidae (Dugesiidae)			
Dendrocoelidae			
Mesovelidae			
Hydrometridae			
Gerridae	1		
Nepidae			
Naucoridae			
Notonectidae			
Pleidae			
Corixidae	1		
Haliplidae	1		1
Hygrobiidae	1		1
Dytiscidae (Noteridae)	1		1
Gyrinidae			
Hydrophilidae (Hydraenidae)	1		1
Dryopidae			
Elmidae			
Hydropsychidae			
Tipulidae	1		
Simuliidae			
No. of taxa	7		4

Group 6 taxa (BMWP: 4)	ASPT	OM	Cole.
Baetidae	1		
Sialidae			
Piscicolidae			
No. of taxa	1	0	

Group 7 taxa (BMWP: 3)			
Valvatidae			
Hydrobiidae (Bithyniidae)			
Lymnaeidae			
Physidae	1		
Planorbidae			
Sphaeriidae			
Glossiphoniidae	1		
Hirudinidae			
Erpobdellidae			
Asellidae	1		
No. of taxa	3		

Group 8 taxa (BMWP: 2)			
Chironomidae	1		
No. of taxa	1		

Group 9 taxa (BMWP: 1)			
Oligochaeta	1		
No. of taxa	1		

TOTAL NO. OF TAXA	19		
TOTAL BMWP SCORE	94		
ASPT	4.9		
NO. OF OM TAXA		1	
NO. COLEOPT. TAXA			4

Pond PSYM Datasheet (Long)

SITE AND SAMPLE DETAILS

Site name	Crusaders Way	Code no.	
Location	Valley Park, Chandlers Ford, Hants	Grid ref.	(SU) 419 207
Surveyor	Dr. J. R. Osmond	Survey date	20-Apr-10
Site access details	Owned by Test Valley B.C. Fenced off, but gate not locked.		

One of a series of 3 balancing ponds created in association with housing development in 1996

Altitude (m)	28	pH	6.5
Shade: % pond overhung	36	% emergent plant cover	20
Inflow: absent=0, present=1	0	Pond area (m^2)	437
% of pond margin grazed	0		

Pond base: categorise into one of three groups: 1 = 0% - 32%, 2 = 33% - 66%, 3 = 67% - 100%

Clay / silt	3	Sand, gravel, cobbles	1	Bed rock	
Peat		Other			

MACROINVERTEBRATE LIST: Enter 1 if group is present; remember to fill in ASPT, OM and Cole boxes

Group 1 taxa (BMWP: 10)	ASPT	OM	Cole.
Siphlonuridae			
Heptageniidae			
Leptophlebiidae			
Ephemerellidae			
Potamanthidae			
Ephemeridae			
Taeniopterygidae			
Leuctridae			
Capniidae			
Perlodidae			
Perlidae			
Chloroperlidae			
Aphelocheiridae			
Phryganeidae			
Molannidae			
Beraeidae			
Odontoceridae			
Leptoceridae			
Goeridae			
Lepidostomatidae			
Brachycentridae			
Sericostomatidae			
No. of taxa	0		

Group 2 taxa (BMWP: 8)			
Astacidae			
Lestidae			
Calopterygidae (Agriidae)			
Gomphidae			
Cordulegasteridae			
Aeshnidae	1	1	
Corduliidae			
Libellulidae			
Philopotamidae			
Psychomyiidae			
No. of taxa	1	1	

Group 3 taxa (BMWP: 7)	ASPT	OM	Cole.
Caenidae			
Nemouridae	1		
Rhyacophilidae (Glossomatidae)			
Polycentropodidae	1		
Limnephilidae	1		
No. of taxa	3		

Group 4 taxa (BMWP: 6)			
Neritidae			
Viviparidae			
Ancylidae (Acroloxidae)			
Hydroptilidae			
Unionidae			
Corophiidae			
Gammaridae (Crangonyctidae)			
Platycnemididae			
Coenagriidae	1	1	
No. of taxa	1	1	

Group 5 taxa (BMWP: 5)			
Planariidae (Dugesiidae)	1		
Dendrocoelidae			
Mesovelidae	1		
Hydrometridae			
Gerridae	1		
Nepidae	1		
Naucoridae	1		
Notonectidae	1		
Pleidae			
Corixidae	1		
Haliplidae	1		1
Hygrobiidae			
Dytiscidae (Noteridae)	1		1
Gyrinidae			
Hydrophilidae (Hydraenidae)	1		1
Dryopidae			
Elmidae			
Hydropsychidae			
Tipulidae	1		
Simuliidae			
No. of taxa	11		3

Group 6 taxa (BMWP: 4)	ASPT	OM	Cole.
Baetidae	1		
Sialidae	1	1	
Piscicolidae			
No. of taxa	2	1	

Group 7 taxa (BMWP: 3)			
Valvatidae			
Hydrobiidae (Bithyniidae)			
Lymnaeidae			
Physidae			
Planorbidae			
Sphaeriidae			
Glossiphoniidae			
Hirudinidae			
Erpobdellidae	1		
Asellidae	1		
No. of taxa	2		

Group 8 taxa (BMWP: 2)			
Chironomidae	1		
No. of taxa	1		

Group 9 taxa (BMWP: 1)			
Oligochaeta	1		
No. of taxa	1		

TOTAL NO. OF TAXA	22		
TOTAL BMWP SCORE	107		
ASPT	4.9		
NO. OF OM TAXA		3	
NO. COLEOPT. TAXA			3

Zionshill Balancing Pond 29/03/05

Zionshill - Photo 1
View from the south-west

Zionshill - Photo 2
The east bank looking south

Zionshill - Photo 3
Encroachment from west bank

Zionshill - Photo 4
Vegetation along the east bank

Crusaders Way Balancing Pond 30/03/05

Crusaders Way - Photo 1
View from the south

Crusaders Way - Photo 2
Plant debris at SW corner

Crusaders Way - Photo 3
View of SW corner

Skyswood Road Balancing Pond 27/04/05

Skyswood Road - Photo 1
View from the east end

Skyswood Road - Photo 2
View of the west end from the boat

Skyswood Road - Photo 3
View of east end from the boat

Skyswood Road - Photo 4
Mid-section viewed from the N

Appendix V Butterfly & Moth Survey

LEPIDOPTERA OF CLOTHIER'S COPSE AND IMMEDIATE AREA NOTED BETWEEN JAN. 1999 & DEC. 2004. (INCLUDING A SUPPLEMENT FOR 2005).

Brian Elliott,
18, BELLFLOWER WAY,
CHANDLER'S FORD,
HANTS. SO53 4HN.

LIST OF LEPIDOPTERA NOTED IN THE GARDEN AND IMMEDIATE AREA INCLUDING THE ADJACENT CLOTHIERS COPSE FROM JAN. 1999 TO DEC. 2004. (A five year survey.)

Brian Elliott.....18, Bellflower Way, Chandler's ford, HANTS. SO53 4HN.

Micropterygidae.

1. 3. M. aureatella. Sev. to m.v.l. annually 5/6.
2. 5. M. calthella Occ. in garden, very common in the Copse, 5/6.

Eriocraniidae.

3. 6. E. subpurpurella Often abundant to m.v.l., annually. 4/5.
4. 13. E. semipurpurella Sev. to m.v.l., annually.

Hepialidae.

5. 14. H. humuli Occ. To m.v.l., Sev. to BTCV field meeting in the Copse 4/7/00
6. 16. H. hecta. Sev. to BTCV field meeting in the copse, 4/7/00.
7. 17. H. lupulina A few each year.

Nepticulidae.

8. 20. E. decentella Occ. to M.V., e.g.,one on 8/8/04.
9. 25. E. intimella Mines noted on S. caprea in garden, 10/03 & 11/04.
10. 29. E. atricollis Mines in the Copse noted, late9/04.
11. 34. E. occultella Mines appeared on Prunus 9/01 after planting a blackthorn.
12. 36. E. quinquella Occ. noted annually in fallen leaves, 11/02 onwards.
13. 38. E. subbimaculella Mines common in fallen leaves annually.
14. 39. E. heringi Mines noted annually.
15. 46. T. immundella A frequent annual visitor. There is no Sarrothamnus nearby.
16.
17. 50. S. aurella Mines v. common in garden and adjoining Copse On Rubus agg.
18. 83. S. atricapitella Imagines to m.v.l., annually. Common.
19. 84. S. ruficapitella Imagines to m.v.l.,annually.
20. 89. S. basiguttella Empty mines found in fallen leaves, 11/04.
21. 92. S. anomalella Occ. mines found on Rosa cultivars 11/03 in garden.
22. 100 S. oxyacanthella Mines common on Crataegus. Annually.
23. 111. S. microthericlla Imagines common to m.v.l., annually.
24. 116. S. lapponica Empty mines found most years when they become obvious in June.

Tischeriidae.

25. 123. T. ekebladella Mines common on Quercus. Common to m.v.l.
26. 124. T. dodonaca. One mine found in fallen leaf, 28/11/04.
27. 125. T. marginea Mines very common in the Copse.

Incurvariidae.

28. 128. P. histrigella. A few every year to m.v.l. in May.
29. 129. I. pectinea Occasionally in garden early 5. in sunshine.
30. 138. L. fisceatella At least one imagine every year since 2002. Early 5. e.g. 4/5/04.
31. 140. N swammerdammella Gen. common to m.v.l.
32. 141. N. schwarziellus Gen. common.
33. 142. N. degeerella Gen. common.
34. 150. A. cuprella Swarms in 5/6 in sunshine.
35. 152. A. rufimitrella Seen occasionally in the Copse

Heliozelidae.

36. 154. H. sericiella Occasionally in garden. In wood about low oak branches.

Cossidae.

37.	161.	Z. pyrina	Occasional to m.v.l., annually.
Limacodidae.			
38.	173.	A. limacodes	One on 29/6/04.
Psychidae.			
39.	180.	D. herminata	One case found on compost heap. Moth bred 26/4/03.
40.	181.	T. tubulosa	Cases common in the wood on trunks and fences.
41.	186.	P. casta.	Cases frequent about the garden and in the copse.
Tineidae.			
42.	196.	M. chorangella.	Occ. to m.v.l.. One on BTCV Meeting 4/7/00
43.	216.	N. cloacella	Bred, Piptoporus on Betula. From the Copse.
44.	217.	N. wolffiella	Sev. to m.v.l., 7/00. Not since.
45.	219.	N. ruricolella.	2. Sev. bred from dead sticks etc. in the Copse .
7/03. (Det gen.)			
46.	220.	N. clematella.	Frequent to m.v.l. Larval evidence seen in
Diatrype disciformiis			
47.	224.	T. parasitella	Noted commonly assembling in the Copse. 6/00.
48.	225.	T. fulvimitrella	One to m.v.l. 7/6/00. Occ. since.
49.	227.	M. laevigella	Frquent every year.
50.	228.	M. weaverella.	Gen. Common.
51.	229.	M. obviell	One on 21/10/02.
52.	237.	N. fuscella	Frequent annually in house and garden shed.
53.	238.	N. striolella	One on 26/6/01/ (Gen. Det.)
54.	239.	T. columbariella	Bred commonly from sheltered bird's nest 7/03.
55.	240.	T. pellionella.	Common on detritus in garden shed and sheltered
birds nest.			
56.	246.	T. semifulvella	Frequent to m.v.l., annually.
57.	247.	T. trinotella	Common annually.
Lyonetiidae.			
58.	254.	L. laburnella.	Sev. to m.v.l., 5-6 & 9/00.
59.	263.	L. clerckella.	Gen. Common. Noted particularly as mines.
Bucculatricidae.			
60.	266.	B. nigricomella	One on 16/6/03.
61.	270.	B. frangulella	One to m.v.l. 6/9/04.
62.	274.	B. ulmella	Gen. Common.
63.	276.	B. demaryella.	Sev. to m.v.l.. 5/00
Gracillariidae.			
64.	282.	C. elongella	Sev. annually , usually the autumn gen.e.g., one on 6/10/02
65.	283.	C. betulicola	Sev. each year.
66.	285.	C. azaleella	Sev. to m.v.l. Larval cones noted on Azaleas in garden.
67.	286.	C. alchimiella	Gen. common.
68.	287.	C. robustella.	Gen. common.
69.	288.	C. stigmatella	Frequent. Larval cones in garden on S. caprea.
70.	290.	C. semifascia	One on 15/4/03.
71.	292.	C. leucapennella	One imagine on 4/10/02.
72.	293.	C. syringella	Gen. common in garden on Fraxinus and
Syringa.			
73.	294.	A. uringipennella	Occasional to m.v.l. Larvae noted once.
74.	296.	C. phasianipennella	One to m.v.l. 7/7/00.
75.	297.	C. auroguttella	Sev. to m.v.l. 7/00. Not since.
76.	304.	P. devoniella	To m.v.l., and larval cones in the copse on
Corylus.			
77.	308.	P. finitimella	Occ. to m.v.l.Gen. det. (No torquilella found.)
78.	313.	A. brongniardella	Sev. to m.v.l. in 00 & 01. Not since.

79.	315.	P. harrisella	Gen. common to m.v.l.
80.	317.	P. hecgeriella	Gen. common.
81.	318.	P. quercifoliella	Gen. common.
82.	321.	P. messaniella	Gen. common.
83.	323.	P. oxyacanthae	Gen. common
84.	326.	P. blancardella	Common in the copse on Malus. Moths bred.
85.	332.	P. corylifoliella.	Gen. common.
86.	342.	P. coryli	V. common some years in the wood.
87.	351.	P. lautella	Mines noted on seedling Quercus in Oct. 03.
88.	354.	P. emberizaepennella	Mines noted most years in the Copse.
89.	359.	P. nicelli	Mines very common in the Copse.
90.	361.	P. trifasciella	Mines noted in the Copse.

Choreutidae.

91.	385.	A. fabriciana	(Occ. in garden. (Nearest Urtica is hundreds of yds. away.)

Yponomeutidae.

92.	410.	A. brockeella	Frequent in the garden.
93.	411.	A. goedartella	Abundant in the garden to m.v.l.
94.	412.	A. pygmaeella	A few have appeared in garden since planting

Salix caprea.

95.	415.	A. retinella	Frequent in garden.
96.	416.	A. glaucinella	A few to m.v.l. yearly. Imagines found at rest on

oak trunks.

			Early 7.
97.	417.	A. spinosella	Frequent to m.v.l. Early to late 6.
98.	420.	A. pruniella	Occ. to m.v.l.
99.	421.	A. bonnetella	Common to m.v.l.
100.	422.	A. albistria	Frequent to m.v.l.

3.

101.	423.	A. semitestacella	Imagines noted in the copse on Fagus trunks, 25/8/02.
102.	424.	Y. evonymella	Two to m.v.l. 27/703.
103.	425.	Y. padella	Imagines and larval webs noted annually.
104.	427.	Y. cagnagella	Several to m.v.l., 7/03.
105.	431.	Y. sedella	Several to m.v.l., yearly, e.g. 2 on 6/8/04.
106.	435.	Z. hepariella	Frequent to m.v.l., Larvae noted in the Copse.
107.	436.	P. combinella	One to m.v.l., 8/5/00.
108.	437.	S. caesiella	Sev. to m.v.l., annually.
109.	438.	S. pyrella	Sev. to m.v.l., annually.
110.	439.	P. albicapitella	One to m.v.l., 20/7/99.
111.	441.	P. luteurea	Frequent to m.v.l.
112.	447.	R. cruciella	Common to m.v.l.
113.	449.	P. fraxinella	Common as imagine and larvae in the Copse. Both forms

occur.

114.	450.	S. crataegella	Sev. annually. Larval webs noted.
115.	451.	Y. mucronella	Occ. to m.v.l., annually.
116.	452.	Y. nemorella	Frequent to m.v.l., annually.
117.	453.	Y. dentella	Frequent to m.v.l., annually.
118.	455.	Y. scabrella	Occ. to m.v.l., annually.
119.	458.	Y. alpella	Frequent to m.v.l., annually.
120.	459.	Y. sylvella	Frequent to m.v.l., annually.
121.	460.	Y. padella	Frequent to m.v.l., annually.
122.	461.	Y. ustella	Frequent to m.v.l., annually.
123.	462.	Y. sequella	Frequent to m.v.l., annually.
124	465.	P. xylostella	Seen annually. Occ. v. common.
125.	470.	O. sparganella	One on 11/8/03.
126.	476.	A. autumnitella	Occasional to m.v.l.

Epermeniidae.

127.	481.	E. falciformis	One to m.v.l., 22/8/04.
128.	483.	E. chaerophilella	Larvae noted on Heracleum 9/99.

Coleophoridae.

129.	490.	C. lutipennella	V. common to m.v.l., (Gen. det.)
130.	491.	C. gryphipennella	Cases and larval evidence in the Copse 5/99.
131.	492.	C. flavipennella	V. common to m.v.l., (Gen. det.)
132.	493.	C. serratella	Common to m.v.l. Cases seen. (Gen. det.)
133.	495.	C. spinella	One to m/v/l., (Gen. det.)
134.	504.	C. lusciniaepennella	One to m.v.l., 7/02. (Gen. det.)
135.	515.	C. albitarsella	Annually to m.v.l., Larval evidence in the copse.
136.	535.	C. ibipennella	Occ. to m.v.l., Cases seen and gen. det on some.
137.	544.	C. albicosta	Frequent in S. to m.v.l.
138.	547.	C. discordella	Cases common in 2001 and 2002. Imagines occ. since.
139.	560.	C. paripennella	One to m.v.l. 7/00. (Gen. det.)
140.	565.	C. saxicolella	One to m.v.l. 16/8/02. (Gen. det.)
141.	566.	C. sternipennella	Occ. to m.v.l. e.g., 3/8/00.
142.	568.	C. versurella	Occ. to m.v.l., e.g., 14/6/01.
143.	582.	C. glaucicolella	Occ. to m.v.l. (Gen. det.)
144.	584.	C. alticolella	Occ. to m.v.l., (Gen. det.)

Elachistidae.

145.	590.	P. obscurepunctella	Sev. to m.v.l., 5/00. One on 18/4/03.
146.	596.	E. poae	One to m.v.l., 14/7/01 (Gen. det.)
147.	607.	E. canapennella	Occ. to m.v.l., e.g. 25/8/99.
148.	608.	E. rufocinerea	Occ. to m.v.l. Most years in spring.
149.	610.	E. argentella	Occ. to m.v.l., most years.
150.	631.	C. freyerella	Frequent to m.v.l., (Gen. det.)

Oecophoridae.

151.	640.	B. lunaris	Frequent to m.v.l.
152.	642.	B. unitella	Common to m.v.l.
153.	644.	B. fuscescens	Sev. each year in gdn. shed and house.
154.	647.	H. pseudospretella	Gen. common.
155.	648.	E. sarcitrella	Very common.
156.	658.	C. quercana	Common.
157.	660.	P. josephinae	Occ. Most years. (Gen. det. conf.J.R.L.)
159.	663.	D. flagella	Common.
160.	664.	D. phryganella	Frequent in Oct. during day in Copse.
161.	668.	E. lobella	Occ. to m.v.l., e.g. 25/6/99. Larvae seen on Prunus. 4.
162.	670.	D. daucella	Occur mostly as hibernators.
163.	672.	D. pastinacella	Occ. to m.v.l.
164.	674.	D. badiella	One to m.v.l., 12/9/99.
165.	688.	A. heracliana	Frequent to m.v.l. and as hibernators.
166.	689.	A. ciliella	Occ. to m.v.l., e.g., 8/8/04. (Gen. det.)
167.	695.	A. alstromeriana	Occ. to m.v.l., annually.
168.	697.	A. arenella	Frequent to m.v.l.., larvae on Arctium once in the Copse
169.	701.	A. ocellana	Occ. to m.v.l. annually.
170.	702.	A. assimilella	One to m.v.l., 8/7/02.
171.	710.	A. conterminella	About one annually e.g., 20/7/00.
172.	713.	A. angelicella	Occ. to m.v.l.

Gelechiidae.

173.	724.	M. lappella	Sev. in 7/00. Not since.
174.	728.	P. cytisella	One or two annually. Mid July onwards.
175.	730.	A. bifractella	Frequent to m.v.l.
176.	731.	E. atrella	Frequent to m.v.l.
177.	735.	M. tenebrella	One to m.v.l., 11/9/99.
178.	746.	C. drurella	Bred from garden Chenopodium.1/8/99.
179.	747.	C. sexguttella	Bred from garden Chenopodium. 8/ 03
180.	748.	P. paupella	Frequent to m.v.l.

181.	752. A. ericinella	Two to m.v.l., e.g. 7/00. (Gen. det. Conf. J.R.L.)
182.	755. S. gemmella	Fairly common to m.v.l. in7.
183.	756. P. albiceps	Common to m.v.l.
184.	758. R. leucatella	Five in 7/01. None since.
185.	760. E. dodecella	One on 2/6/00.
186.	762. A. mouffetella	Sev. annually.
187.	764. P. scalella	First rec. 28/5/03. Sev. in 04.
188.	765. T. vulgella	Frequent to m.v.l., annually.
189.	768. T. notatella	Occ. to m.v.l.
190.	770. T. proximella	Occ. to m.v.l.
191.	773. T. paripunctella	Occ. to m.v.l.
192.	774. T. luculella	Frequent to m.v.l.
193.	776. T. diffinis	Occ. to m.v.l. (Det. gen. J.R.L.)
194.	779. B. affinis	Frequent to m.v.l. (Det. gen.)
195.	782. B. senectella	Occ. to m.v.l. (Det. gen. J.R.L.)
196.	787. B. terrella	V. common. (Det. gen.)
197.	789. B. domestica	V. common.
198.	792. M. mulinella	Occ. to m.v.l. Annually
199.	797. N. ericetella	Occ. to m.v.l. (? From Emer Bog.)
200.	802a. C. sororculella	One on 1/8/00.
201.	808. P. subcinerea	One hibernated imagine, 24/1/01.
202.	809. P. malvella	Two on 19/7/01.
203.	819. S. costella	Occ. annually. Larvae in garden once in 03.
204.	822. S. acuminatella	Occ. annually . e.g. 29/5/01. (Gen. det. on some.)
205.	843. A. anthyllidella	Occ. to m.v.l., e.g. 23/9/00.
206.	847. S. tacniolella	One on 11/7/04.
207.	853. A. populella	Frequent to m.v.l.
208.	854. A. blattariella	Frequent to m.v.l.
209.	856. A. spartiella	One to m.v.l., 8/7/00.
210.	858. H. rhomboidella	Fairly common annually.
211.	859. P. gibbosella	Common to m.v.l.
212.	862. D. marginella	Occ. to m.v.l.. Certainly every year.
213.	866. B. blandella	Fairly common to m.v.l.. Annually.
214.	868. H. rufescens	Common annually to m.v.l.

Autostichidae.

215.	870. O. quadripuncta	Fairly common to m.v.l.., annually. (An earlier record of deaureatella in an earlier list should be re-assigned to this sp.) All gen. of this group are checked.

Blastobasidae.

216.	873. B. lignea	Common to m.v.l. annually. Increasing annually
217.	874. B. decolorella	Fairly common.

Momphidae.

218.	878.B. praeangusta	Occ. to m.v.l., e.g., 15/5/99.
219.	881. M. terminella	Occ. to m.v.l. Mines usually common in the Copse.
220.	855. M. conturbatella	several in 1999. Not since.
		5.
221.	886. M. ochraceella	Frequent.
222.	888. M. propinquella	Sev. annually to m.v.l., in August.
223.	892. M. subbistrigella	Frequent, particularly in spring after hibernation.

Cosmopterygidae.

224.	904. S. flavicaput	Noted abundantly in morning sunshine, 18/5/04
in gdn.		
225.	905. B. hellerella	Several to m.v.l., annually.

Tortricidae.

226.	921. T. inopiana	First rec. 7/7/01. Frequent since.

227.	925. P. rugosana	One, 19/6/04
228.	936. C. straminea	Sev. each year to m.v.l.
229.	937. A. hamana	Sev. to m.v.l., each year.
230.	938. A. zoegana	One on 11/7/03.
231.	939. A. tesserana	One to m.v.l., 11/6/00.
232.	945. A. cnicana	Sev. to m.v.l., each year.
233.	946. A. rubigana	Sev. to m.v.l., each year.
234.	947. A. smeathmanniana	Sev. to m.v.l., each year.
235.	948. E. angustana angustana	Sev. to m.v.l., each year.
236.	964. C. dubitana	Frequent to m.v.l., each year.
237.	965. C. hybridella	One to m.v.l., 30/7/99.
238.	966. C. atricapitana	Occ. to m.v.l.
239.	968. C. nana	One on 4/5/00. One on 6/5/04.
240.	969. P. corylana	Common.
241.	970. P. cerasana	V. common.
242.	971. P. cinnamoniana	Occ. to m.v.l.
243.	972. P. heparana	Fairly common.
244.	977. A. podana	Common.
245.	979. A. crataegana	Occasional.
246.	980. A. xylosteana	Sev. to m.v.l. annually.
247.	985. C. pronubana	Larvae often common in garden. Occ. to m.v.l.
248.	986. S. musculana	Frequent.
249.	987. P. aceriferanus.	One to m.v.l., 20/7/02.
250.	988. A. viburnana	One to m.v.l., on 3/7/03.
251.	994. C. consimilana	One on 20/6/04.
252.	998. E. postvittana	V. common throughout the year.
253.	1001. L. formosanus	One on 20/7/99. Annually since.
254.	1002. L. forsterana	Occ. Occurs most years.
255.	1006. E. grotiana	Very common to m.v.l.
256.	1007. C. vulgana	Frequent.
257.	1010. D. angustoriana	Common to m.v.l.
258.	1011. P. conwaygana	Frequent to m.v.l.
259.	1015. E. ministrana	A few each year.
260.	1018. C. communana	One to m.v.l., 5/6/00. and one 29/6/00.
261.	1020. C. stephensiana	Frequent to m.v.l.
262.	1021. C. asseclana	Frequent to m.v.l.
263.	1022. C. passiuana	One to m.v.l., 16/7/01.
264.	1024. C. incertana	One to m.v.l. on 1/7/99.
265.	1025. T. alternella	Common to m.v.l.. Early, e.g. 21/2/01.
266.	1027. N. nubilana	One to m.v.l., 28/6/00.
267.	1029 E. osseana	One to m.v.l., 33/7/03.
268.	1030. E. incanana	Frequent to m.v.l. Larvae seen in the Copse
269.	1032. A. loeflingana	V. common to m.v.l.
270.	1033. T. viridana	Common to m.v.l.. (Has declined from being abundant.)
271.	1034. S. bifasciana	Occasional, annually. E.g., 15/6/02.
272.	1036. C. forsskaleana	Frequent to m.v.l., late Aug.
273.	1037. C. holmiana	Singletons annually.
274.	1038. A. laterana	Common to m.v.l., late Aug.
275.	1041. A. spargana	Frequent to m.v.l., late Aug to early Sept.
276.	1042. A. rhombana	Frequent to m.v.l.
277.	1043. A. aspersana	Occasional to m.v.l.
278.	1044. A. ferrugana	Sev. each Autumn (Gen. det.)
279.	1045. A. notana	Common esp. in autumn. (gen. det.)
280.	1048. A. variegana	Fairly common.
281.	1050. A. kochiella	One on house wall, 4/7/00.
282.	1053. A. hastiana	Frequent to m.v.l.
283.	1054. A. cristana	Occ. e.g., 21/2/01. & 16/9/02.
284.	1061. A. literana	A few annually, usually in Feb. to m.v.l.
285.	1062. A. emargana	A few to m.v.l. annually.
		6.
286.	1013. O. schumacherana	A few to m.v.l. annually.
287.	1063. C. striana	Occ. to m.v.l..

288.	1076. O. lacunana	Common to m.v.l.
289.	1082. H. pruniana	Frequent to m.v.l.
290.	1083. H. dimidioalbu	Occ. to m.v.l.
291.	1087. O. undulana	Frequent to m.v.l.
292.	1092. A. turbidana	Common.
293.	1093. A. betuletana	V. common.
294.	1098. E. oblongana	One on 6/9/03.
295.	1099. E. marginana	One on 25/8/00.
296.	1102. E. nigricostana	Sev. annually.
297.	1106. L. reliquana	Sev. annually.
298.	1108. L. abscissana	Common in 1999. Sev. annually since.
299.	1110. B. furfurana	One on 6/8/01. Four late 8/02.
300.	1111. B. lanceolana	Fairly common to m.v.l.
301.	1113. E. profundana	Frequent to m.v.l.
302.	1115. A. achatana	Fairly common to m.v.l.
303.	1118. A. uncella	One on 28/5/01 (?from Emer Bog.)
304.	1120. A. mitterbacherana	Frequent to m.v.l.
305.	1121. A. upupana	First rec. One 16/5/ 02. Then, one 15/5/03 & One 6/6/04.
306.	1126. A. badiana	Frequent to m.v.l.
307.	1132. E. subocellana	Common to m.v.l.
308.	1133. E. bilunana	Frequent to m.v.l.
309.	1134. E. ramella	Common.
310.	1135. E. demarniana	Frequent to m.v.l.
311.	1136. E. immundana	Frequent to m.v.l.
312.	1137. E. tetraquetrana	Common.
313.	1138. E. nisella	Common.
314.	1139. E. tenerana	A few annually.
315.	1147. E. cruciana	Fairly common annually.
316.	1151. E. trigonella	Occ. to m.v.l. (?from Emer Bog.)
317.	1154. E. caprana	One on 13/8/01.
318.	1155. E. brunnichana	Fairly common..
319.	1156. E. solandriana	Fairly common..
320.	1159. R. naevana	Frequent.
321.	1165. Z. isertana	Fairly common.
322.	1169. G. dealbana	Sev. annually.
323.	1174. E. cynosbatella	Sev. annually.
324.	1175. E. udmanniana	Fairly common.
325.	1176. E. trimaculana	Sev. annually.
326.	1177. E. rosaecolana	Frequent to m.v.l.
327.	1178. E. roborana	Frequent to m.v.l.
328.	1187. E. costipunctana	Sev. annually.
329.	1197. E. campoliliana	Sev. annually.
330.	1206. E. hohenwartiana	One on 25/7/03.
331.	1204. T. citrana	One on 14/7/04.
332.	1205. S. ocellana	Occ. to m.v.l.
333.	1216. E. formosana	Occ. to m.v.l.
334.	1219. L. strigana	Occ. to m.v.l..
335.	1221. S. weirana	Occ. to m.v.l.
336.	1222. S. nitidana	Three in five years. Eg, 6/6/04.
337.	1228. P. argyrana	V. common 4/5 /99., none then until 4/04.
338.	1229. P. albuginana	Frequent some years.
339.	1233. P. aurita	One 5/9/01. One 6/9/01.
340.	1236. P. fasciana	Sev. annually.
341.	1236a P. herrichiana	one to m.v.l., 29/6/04.
342.	1237. P. germmana	One on 8/7/02. Sev. in 04.
343.	1247. C. funebrana	Occ. to m.v.l. (Larvae common locally.)
344.	1255. C. succedana	Occ. to m.v.l.
345.	1257. C. nigricana	A few annually
346.	1259. C. fagiglandana	One to m.v.l., 14/8/00.
347.	1260. C. splendana	V. common.
348.	1275. D. flavidorsana	One on 6/8/03.
349.	1261. C. pomonella	A few annually.

350.	1281. D. simpliciana	Sev. to m.v.l., annually (Gen. checked.)
351.	1285. D. plumbana	One to m.v.l., 18/5/04.(Gen. det.)
Alucitidae.		
352.	1288. A. hexadactyla	Common.
		7.
Pyralidae.		
353.	1292. C. paludella	One to m.v.l., 16/7/99.
354.	1293. C. culmella	Common.
355.	1294. C. pascuella	Occasional. 7/8.,e.g. 22/7/03.
356.	1301. C. lathoniellus	Common.
357.	1304. C. straminella	Common.
358.	1305. C. tristella	Common.
359.	1306. A. inquinatella	A few annually.
360.	1307. A. latistria	A few annually.
361.	1309. A. geniculea	V. common.
362.	1313. C. pinella	At least one each year.
363.	1316. C. falsella	A few each year.
364.	1329. S. forficella	One on 30/6/00. (Misidentification. by me. Down as
gigantella in		
		previous list. Det. by B. Goater.)
365.	1333. S. pyrulella	A few each year.
366.	1334. S. ambigualis	Common.
367.	1334a S. basistrigalis	A few annually.
368.	1338. D. lacustrata	Fairly common.
369.	1336. E. pallida	One on 125/6/02.
370.	1340. E. truncicolella	Fairly common.
371.	1342. E. angustea	A few annually.
372.	1344. E. mercurella	Fairly common.
373.	1345. N. nympheata	A few each year.
374.	1331. A ephemerella	Occ. then usually in abundance.
375.	1356. E. forficalis	Sev. each year.
376.	1362. P. purpuralis	Occ. to m.v.l. Breeds in garden.
377.	1375. O. nubilalis	One on 20/8/00.
378.	1376. E. hortulata	A few each year.
379.	1377. P. lanceolalis	A few each year.
380.	1378. P. coronata	A few each year.
381.	1385. E. crocealis	One on 2/7/01.
382.	1388. U. lutealis	One on 16/7/00.
383.	1390. U. prunalis	A few annually.
384.	1395. U. ferrugalis	A few annually. Sometimes common.
385.	1398. N. noctuella	Occurs most years.
386.	1405. P. ruralis	A few each year.
387.	1408. P. vitrealis	One on 29/10/00.
388.	1413. H. costalis	A few each year.
389.	1414. S. punctalis	One on 24/5/03. (A v. early date.)
390.	1415. O. glaucinalis	A few each year.
391.	1417. P. farinalis	A strong colony breeding in compost heap.
392.	1421. A. pinguinalis	One in garden shed, 17/7/03.
393.	1424. E. flammealis	Fairly common.
394.	1425. G. mellonella	At least one every year, occ. several.
395.	1426. A. grisella	One on 31/5/04.
396.	1428. A. sociella	A few each year.
397.	1433. C. histriga	A few each year. Common 30/6 – 15/7/00.
398.	1434. C. gnidiella	(Adventive.) One in house 6/11/03.
399.	1436. C. repandana	A few each year.
400.	1437. A. consociella	Frequent every year.
401.	1438. T. suavella	A few each year.
402.	1439. T. advenella	A few each year.
403.	1440. T. marmorea	One on 4/7/01.
404.	1449. M. similella	V. common 6-7/99. Two in 00. Occ. since.
405.	1451. P. fusca	One, 3/7/04.

406.	1452. P. roborella	V. common.
407.	1455. D. simpliciella	One on 13/8/01.
408.	1458. M. circumvoluta	Occasional.
409.	1465. N. angustella	One on 18/8/04.
410.	1486. E. bistriatella neophanes	One on 1/7/01.
411.	1470. E. pinguis	Sev. each year.
412.	1474. E. parasitella	Frequent.
413.	1481 E. sinuella	One on 20/7/94.
414.	1483. P. binaevella	A few each year.
415.	1484. P. saxicola	One on 23/7/00. One 19/7/04.
416.	1485. P. maritima	Three in 99. One on 10/8/02.

Pterophoridae.

417.	1498. A. punctidactyla	One on 16/8/04.

8.

418.	1501. P. gonodactyla	One, 6/00.
419.	1513. P. pentadactyla	One, 7/00/ One, 23/7/04.
420.	1519. E. carphodactyla	One, 17/7/04.
421.	1524. E. monodactyla	Frequent.

Hesperiidae.

422.	1526. T. sylvestris	Occasional. (Colony in grassy clearing in Copse.)
423.	1531. O. faunus	Occasional. As above.

Papilionidae.

424.	1545. C. croceus	Two passed through garden, 6/00.
425.	1546. G. rhamni	V. common.
426.	1549. P. brassicae	V. common.
426.	1550. P. rapae	V. common.
427.	1551. P. napi	V. common.
428.	1553. A. cardamines	Fairly common.
429.	1557. N. quercus	Frequent. (Often to m.v.l.)
430.	1561. L. phlaeas	Uncommon.
431.	1574. P. icarus	Frequent visitor to garden.
432.	1580. C. argiolus	Common. (Larvae seen on Hedera in garden.)
433.	1584. L. camilla	First rec. 22/7/01. Occ. annually since.
434.	1590. V. atalanta	Frequent, variable in numbers annually.
435.	1591. C. cardui	Frequent annually. One on 22/3/03!
436.	1593. A. urticae	One, 9/01. Not again until 16/ 9/04.
437.	1597. I. io	Occ. common. Variable in numbers.
438.	1598. P. c-album	Usually common.
439.	1608. A. paphia	First rec., 7/799. Currently increasing annually.
440.	1614 P. aegeria	Common.
441.	1615. L. megera	One in 5/01. Sev., in 5/02. None since.
442.	1620. M. galathea	One on 13/7/02. One on 4/7/04.
443.	1625. P. tithonus	Frequent.
444.	1626. M. jurtina	Fairly common.
445.	1627. C. pamphilus	Occasional visitor.
446.	1629. A. hyperantus	Uncommon.

Lasiocampidae.

447.	1631. P. populi	V. common in garden to m.v.l., 11/00.
448.	1634. M. neustria	Larval nest on Prunus noted, 5/00.
449.	1637. L. quercus	One on 30/7/04.
450.	1640. E. potatoria	One on 1/7/01.

Drepanidae.

451.	1645. F. lacertinaria	Frequent.
452.	1646. W. binaria	Common.
453.	1647. W. cultraria	Common.
454.	1648. D. falcataria	Frequent. Occurs most years.

455.	1651. C. glaucata	Occasional. Not every year.
456.	1652. T. bulis	Sev. annually.
457.	1653. H. pyritoides	Occasional. Not every year.
458.	1654. T. ocularis	Frequent. Annually.
459.	1655. T. or or	One, 6/00.
460.	1657. T. duplaris	Fairly common.
461.	1658. C. diluta diluta	Common.
462.	1659. A. flavicornis galbanus	Sev. every spring.
463.	1660. P. ridens	Fairly common.

Geometridae.

464.	1661. A. parthenias	A few every spring.
465.	1663. A. aescularia	Common.
466.	1666. G. papilonaria	A. few every year to m.v.l.
467.	1667. C. bajularia	Frequent.
468.	1669. H. aestivaria	A few every year.
469.	1673. H. chrysoprasaria	One on 25/6/03.
470.	1674. J. lactearia	Frequent flying around garden in evenings in May.
471.	1676. C. annularia	A few,not every year.
472.	1677. C. albipunctata	A few, not every year.
473.	1680. C. punctaria	Common.
474.	1682. T. comae	Sev. every year.
		9.
475.	1690. S. imitaria	One on 24/8/03.
476.	1693. S. floslactata	Sev. in 2001. One on 28/7/04.
477.	1702. I. bisetata	Frequent.
478.	1705. I. fuscovenosa	Occasional.
479.	1707. I. scriata	Fairly common.. Frequent about the house.
480.	1708. I. biselata	Frequent.
481.	1709. I. subsericiata	One on 13/8/03.
482.	1711. I. trigeminata	Frequent.
483.	1712. I. emarginata	One on 21/9/03.
484.	1713. I aversata	Common.
485.	1716. R. sacraria	Occasional. In numbers in 9/ 1999 and 31/8/00.
486.	1720. O. obstipata	Seen most years. In numbers in 8/03.
487.	1722. X. designata	Frequent.
488.	1724. X. spadicearia	Occasional.
489.	1725. X. ferrugata	Occasional.
490.	1727. X. montanata montanata	A few in 2001, none since.
491.	1728. X. fluctuata fluctuata	Frequent.
492.	1732. S. chenopodiata	Occasional, occurs most years.
493.	1739. E. alternata alternata	Fairly common.
494.	1742. C. bilineata	Occasional.
495.	1746. A. badiata	Common.
496.	1747. A. derivata	A few annually.
497.	1748. M. albicillata	Frequent. Occurs every year.
498.	1752. C. ocellara	Occasional. Not every year.
499.	1754. E. primata	One on 15/6/01.
500.	1755. E. testata	One on 24/8/04.
501.	1758. E. pyraliata	Occasional. Not every year.
502.	1757. E. mellinata	One 15/7/00.
503.	1759. E. silaceata	Occasional.
504.	1760. C. siterata	Common..
505.	1761. C. miata.	Several 9-10/99, none since.
506.	1764. C. truncata	V. common.
507.	1765. C. fulvata	Sev. 1999 & 2000. none since.
508.	1768. T. obeliscata	Occasional.
509.	1769. E. corylata	Frequent. Every year.
510.	1776. C. pectinataria	Frequent. Every year.
511.	1777. H. furcata	Common.
512.	1778. H. impluviata.	Occasional.
513.	1782. H. tersata	One on 7/7/04.

514.	1789. R. undulata	One, 7/00.
515.	1794. E. unangulata	Sev. each year
516.	1795. E. dilutata	Common to m.v.l. (Gen. Checked.)
517.	1796. E. chrystyi	One rec. amongst gen. checked 11/00.
518.	1797. E. autumnata	Three rec. amongst sample checked by gen..00.
519.	1799. O. brumata	Common.
520.	1800. O. fagata	One to house window, 11/00. None since.
521.	1803. P. alchemillata	Sev. annually. E.g., 7/7/00.
522.	1817. E. pulchellata	Sev. annually.
523.	1819. E. exiguata	Fairly common.
524.	1827. E. intricata arceutheata	One 6/99. one 26/5/04
525.	1830. E. absinthiata	Occasional.
526.	1834. E. vulgata	Fairly common.
527.	1835. E. tripunctaria	One 6/00. One 10/6/04.
528.	1837. E. subfuscata	Fairly common.
529.	1838. E. icterata subfulvata	One on 21/6/04.
530.	1846. E. nanata	One on 30/6/00.
531.	1852. E. abbreviata	V. common.
532.	1853. E. dodoneata	Fairly common.
533.	1858. C. v-ata	Occasional.
534.	1860. P. rectangulata	Fairly common.
535.	1862. G. rufifasciata	Fairly common.
536.	1867. A. plagiata	At least one every year.
537.	1868. A. efformata	One on 14/8/04.
538.	1874. E. nebulata	Sev. every year.
539.	1876. H. flammeolaria	Sev. every year.
540.	1879. L. halterata	One 6/99. One 29/5/04.
541.	1881. T. carpinata	Common.
542.	1882. P. sexalata	Frequent.
543.	1883. A. viretata	Occasional. Larvae seen on Hedera in garden. 10.
544.	1884. A. grossulariata	One 20/7/02.
545.	1887. L. marginata	Fairly common.
546.	1888 .L. adustata	Sev. every year.
547.	1889 .M. notata	Sev. every year.
548.	1890 .M. alternata.	Fairly common.
549.	1901 C. advenaria	Frequent.
550.	1902. P. chlorosata	Fairly common..
551.	1903. P. pulveraria	A few each year.
552.	1904 .P. dolabraria	Fairly common.
553.	1906 .O. luteolata	Frequent.
554.	1907 .E. repandaria	Sev. every year.
555.	1910. A. syringaria	Sev. every year.
556.	1912 .E. quercinaria	Fairly common.
557.	1913. E. alniaria	Common..
558.	1914. E. fuscantaria	Occasional.
559.	1915. E. crosaria	Fairly common..
560.	1917. S. dentaria	Common.
561.	1919. S. ferralunaria	Fairly common.
562.	1920. O. bidentata	Fairly common.
563.	1921. C. elinguaria	Fairly common.
564.	1922. O. sambucaria	A few annually
565.	1923. C. pennaria	Fairly common.
566.	1925. A. hispidaria	V. common.
567.	1926. P. pilosaria	Common.
568.	1930. B. strataria	Common.
569.	1931. B. betularia	Common. (Typical now uncommon.)
570.	1932. A. leucophaearia	V. common.
571.	1933. A. aurantiaria	Common.
572.	1934. A. marginaria	Common.
573.	1935. E. defoliaria	Common.
574.	1936. M. abruptaria	A few annually (All typical)

575.	1937. P. rhomboidaria	V. common.
576.	1940. D. ribeata	A few annually.
577.	1941. A. repandata repandata	Common.
578.	1943. H. roboraria	One on BTCV. Meeting, 5/7/01.
579.	1944. H. punctinalis	Fairly common.
580.	1947. E. bistortata	Fairly common.
581.	1948. E. crepuscularia	Fairly common.
582.	1949. P. consonaria	A few in 1999 & 2000. Only odd ones since.
583.	1950. P. similaria	Sev. 1999.None 2000. A few annually since.
584.	1951. A. punctulata	A few annually.
585.	1954. B. piniaria	One 6/99. One 7/03.
586.	1955. C. pusaria	A few annually.
587.	1956. C. exanthemata	Occasional. Not every year.
588.	1957. L. bimaculata	A few annually.
589.	1958. L. temerata	Two in 1999. Not again until 2003.
590.	1960.T. primaria	Common.
591.	1961.C. margaritata	Sev. annually.

Sphingidae.

592.	1976. S. ligustri	Occasional. Not every year.
593.	1978. H. pinastri	One, 11/5/02.
594.	1979. M. tilae	A few every year.
595.	1980. S. ocellata	Occasional, not every year.
596.	1981. L. populi	A few every year.
597.	1984. M. stellatarum	Seen every year.
598.	1991. D. elpenor	A few annually.
599.	1992. D. porcellus	One, 6/03.

Notodontidae.

600.	1995. C. vinula	One 6/99. One 30/6/04.
601.	1997. F. furcula	A few annually.
602	2000. N. dromedarius	A few annually.
603.	2003. N. ziczac	A few annually.
604.	2006. P. gnoma	Fairly common.
605.	2007. P. tremula	Occasional. Not every year.
606.	2008. P. capucina	Not uncommon.
607.	2011. P. palpina	Sev. Annually.
		11.
608.	2014. D. dodonaea	A few annually.
609.	2015. D. ruficornis	Fairly common.
610.	2019. C. curtula	A few every year.
611.	1994. P. bucephala	A few every year. Larval nests frequent in garden.
612.	1999. S. fagi	Common.
613.	2005. A. anceps	Common.
614.	2020. caeruleocephala	A few each year..

Lymantriidae.

615.	2026. O. antiqua	Frequent flying over garden in the autumn.
616.	2028. D. pudibunda	Common.
617.	2029. E.chrysorrhoea	one 25/7/03.
618.	2030. E. similis	Sev. to m.v.l.annually, larvae seen in garden.
619.	2033. L. monacha	Fairly common.

Arctiidae.

620.	2037. M. miniata	Fairly common.
621.	2039. A. rubricollis	One,6/99. Two, 17/6/01. One, 3/7/03.
622.	2043. E. sororcula	Fairly common and increasing.
623.	2044. E. griscola	Fairly common.
624.	2047. E. complana	Fairly common.
625.	2049. E. depressa	Occasional, not every year.
626.	2050. E. luridcola	Common.

627.	2057. A. caja	One on 9/8/01.
628.	2060. S. lubricipeda	Occasional.
629.	2061. S. luteum	A few every year.
630.	2064. P. fuliginosa	Occasional.
631.	2068. C. dominula	One on 11/7/03.
632.	2069. T. jacobaeae.	Occ. seen overflying garden.

Nolidae.

633.	2077. N. cucullatella	Fairly common.
634.	2078. N. confusalis	Occasional, not every year.

Noctuidae.

635.	2082. E. nigricans	Sev. in 1999, none since.
636.	2087. A. segetum	Frequent.
637.	2088. A. clavis	A few annually.
638.	2089. A. exclamationis	Common.
639.	2091. A. ipsilon	Common in 1999 and several 2000. Odd ones since.
640.	2092. A. pula	Frequent. Occurs every year.
641.	2098. A. putris	Uncommon. Sev. annually.
642.	2102. O. plecta	Fairly common.
643.	2107. N. pronuba	V. common 1999. Declining since then.
644.	2109. N. comes	Common.
645.	2110. N. fimbriata	Sev. every year.
646.	2111. N. janthe	Fairly common.
647.	2112. N. interjecta	Frequent.
648.	2114. G. augur	One in 6/03.
649.	2118. L. porphyrea	Occasional to m.v.l..
650.	2119. P. saucia	Occasionally in numbers, both spring and autumn.
651.	2120. D. mendica	Fairly common.
652.	2123. D. rubi	Fairly common..
653.	2126. X. c-nigrum	Common.
654.	2127. X. ditrapezium	One on 26/7/01.
655.	2128. X. triangulum	Frequent.
656.	2133. X. sexstrigata	Occasional. Not every year.
657.	2134. X. xanthographa	Common.
658.	2136. N. typica	One on 5/7/01.
659.	2138. A. prasina	Sev. annually.
660.	2139. C. rubricosa	A few annually.
661.	2145. D. trifolii	A few 99 to 01, none since.
662.	2147. H. plebeja	Occasional. Not every year.
663.	2149. P. hepatica	A few in late 6/03. None since.
664.	2150. P. nebulosa	A few every year.
665.	2154. M. brassicae	Occasional. Not every year.
666.	2155. M. persicariae	Occasionl. Not every year.
667.	2157. L. w-latinum	One on 20/5/04.
668.	2158. L. thalassina	One in 02. & one in 03.
		12.
669.	2160. L. oleracea	A few 99 to 02. None since.
670.	2164. A. bicolorata	One on 20/6/99. One on 20/7/03.
671.	2170. H. compta	Larva found in garden on Dianthus in Aug. 03.
672.	2173. H. bicruris	A few in 99.
673.	2176. C. graminis	A few in 99 & 01.
674.	2177. T. cespitis	Sev. 99. One in 00.
675.	2178. T. decimalis	One on 28/8/03.
676.	2182. O. cruda	V. common.
677.	2187. O. cerasi	V. common.
678.	2188. O. incerta	V. common.
679.	2189. O. munda	Common.
680.	2190. O. gothica	V. common.
681.	2193. M. ferrago	A few in 99. One 7/03.
682.	2194. M. albipuncta	One to m.v.l., 23/8/04.
683.	2195. M. vitellina	Occasional during migrations. Occurs most years.

684.	2197. M. straminea	A few in 99. Odd ones since
685.	2198. M. impura	Fairly common.
686.	2199. M. pallens	Frequent.
687.	2202. M. l-album	One on 6/9/04.
688.	2205. M. comma	A few every year.
689.	2214. C. chamomillae	A few yearly 99 to 02. None since.
690.	2215. C. umbfatica	Sev. In 99, one in 03.
691.	2221. S. cucullia	One on 5/4/02.
692.	2225. B. viminalis	Sev. in 03 and 04.
693.	2227. B. sphinx	usually seen in small nos. to m.v.l. 10/11 annualy.
694.	2231. A. lutuleota	One on 21/9/03. Not uncommon 9/04.
695.	2232. A. nigra	A few every year.
696.	2235. L. semibrunnea	At least one every year. Occ. several.
697.	2236. L. hepatica	One in 00., One on 12/4/04.
698.	2237. L. ornitopus	A few every year. Often on house walls and fences.
699.	2240. L. leauteri	Common.. No foodplant in the vicinity.
700.	2243. X. arcola	Fairly common.
701.	2245. A. oxyacanthae.	Frequent.
702.	2247. D. aprilina	A few every year.
703.	2248. D. eremita	Frequent.
704.	2256. E. transversa	Fairly common.
705	2258. C. vaccinii	Fairly common.
706.	2259. C. ligula	Occasional. Not every year.
707.	2260. D. rubiginea	One on 15/3/04.
708.	2262. A. circellaris	One on 21/10/04.
709.	2263. A. lota	Fairly common.
710.	2264. A. macilenta	Common.
711.	2266. A. litura	Occasional. Not every year.
712.	2267. A. lychnidis	A few every year.
713.	2269. A. centrago	A few every year.
714.	2270. O. lunosa	Common.
715.	2271. X. citrago	One on 18/9/62.
716.	2272. X. aurago	Fairly common.
717.	2273. X. togata	Fairly common.
718.	2274. X. ieteritia	Common.
719.	2279. A. ucris	Sev. every year.
720.	2280. A. leporina	One on 4/7/04.
721.	2281. A. alni	Sev. every year.
722.	2283. A. tridens	A few annually. Gen. checked in 99.
723.	2284. A. psi	A few annually. Gen . checked in 99.
724.	2289. A. rumicis	Frequent.
725.	2291. C. ligustri	Singletons 99 & 00. Now increasing.
726.	2293. C. domestica.	A few annually. Now increasing
727.	2297. A. pyramidea.	V. common to garden sugar.
728.	2298. A. berbera svenssoni	V. common to sugar in garden.
729.	2299. A. tragopoginis	Occasional. Not every year.
730.	2300. M. maura	Occasional. Not every year. I.e., one on 4/7/01.
731.	2301. D. scabriuscula	A few annually.
732.	2302. R. ferruginea	Fairly common.
733.	2303. T. matura	A few in 99., singletons since.
734.	2305. E. lucipara	A few annually.
735.	2306. P. meticulosa	Frequent.
736.	2318. C. trapezina	Occasional.
737.	2319. C. pyralina	One on 17/7/99.
		13.
738.	2321. A. monoglypha	Common.
739.	2322. A. lithoxylea	Occasional. Not every year.
740.	2326. A. crenata	Fairly common.
741.	2327. A. epomidion	One on 23/6/02.
742.	2330. A. remissa	Fairly common.
743.	2331 A. unanimis	One on 9/6/04.
744.	2334. A. sordens	Occasional. Not every year.

745.	2335. A. scolopacina	Common in 1999. A few annually since.
746.	2337. O. strigilis	Fairly common.
747.	2339. O. latruncula	Fairly common.
748.	2340. O. fasciuncula	Fairly common.
749.	2343. M. secalis	? A few annually (gen. det. in 1999.)
750.	2343a. M. didyma	? A few annually(gen. det. in 1999.) (remmi has not been included as a good species. Probably a hybrid.)
751.	2345. P. minima	Several, 4&5/7/04.
752.	2350. C. pygmina	Fairly common.
753.	2352. E. ochroleuca	One, 8/1999.
754.	2353. L. testacea	Occasional, not every year.
755.	2360. A. oculea	A few 9/99 & 00. (gen. checked.) Not since.
756.	2361. H. micacea	one on 23/9/04.
757.	2364. G. flavago	Occasional, Most years.
758.	2375. R. lutosa	One in 1999. One on 14/10/04.
759.	2380. C. trigrammica	Frequent.
760.	2381. H. alsines	Frequent.
761.	2382. H. blanda	Frequent.
762.	2384. H. ambigua	Common.
763.	2385. S. exigua	Occasional.
764.	2387. C. morpheus	Fairly common.
765.	2389. C. clavipalpis	Fairly common.
766.	2403. H. peltigera	One on 23/6/02.
767.	2410. P. pygarga	Fairly common.
768.	2421. B. bicolorana	Occasional. Not every year.
769.	2422. P. prasinana	Occasional. Most years.
770.	2423. N. revayana	Occasional. Most years.
771.	2425. C. coryli	Fairly common.
772.	2432. T. ni	One, to garden m.v.l., 31/8/00.
773.	2433. T. orichalcea	One, to garden m.v.l., 14/10/01.
774.	2434. D. chrysitis	Frequent.
775.	2437. P. moneta	Sev. larvae seen on Delphinium in 5/02.
776.	2439. P. festucae	One to m.v.l., 6/8/04.
777.	2441. A. gamma	Occasionally common.
778.	2442. A. pulchrina	First records in 02 then every year thereafter.
779.	2443. A. jota	Occasional.
780.	2450. A. tripartita	Occasional.
781	2452. C. nupta	First record in 02. Every year since.
782.	2466. L. pastinum	One in 1999. One on 24/7/04.
783.	2469. S. libatrix	Occasional.
784.	2473. L. flexula	Frequent.
785.	2474. R. sericealis	Occasional.
786.	2475. P. fuliginaria	A few 1999., one in 2000. Frequent since, esp. 2004.
787.	2477. H. proboscidalis	Fairly common.
788.	2482. S. taenialis	Occasional, most years. E.g., 24/6/03.
789.	2484. S. costaestrigalis	Fairly common.
790.	2489. Z. tarsipennalis	Fairly common.
791.	2492. H. grisealis	Frequent.

Nomenclature: Checklist of Lepidoptera recorded From The British Isles . Sec. Ed.(Rev.) 2000.
Numeration: Bradley & Fletcher, 1979.

SUPPLEMENT TO THE LEPIDOPTERA OF CLOTHIER'S COPSE, CHANDLER'S FORD, HANTS. FOR 2005.

792	92	St. anomalella	Empty mines in garden.
793	143	N. metaxella	One on 31/5 & one on 6/6.
794	151	A. croesella	One on 4/6 & One on 14/6.
795	301	Par. Betulae	One (det. gen.) 6/6.
796	409a	A. bifasciata	One on 20/5 & one on 27/5.
797	518	C. mayrella	Sev in 04 & 005. Det. by keys.
798	519	C. deaureatella	One on 8/8/04. Det. by keys.
799	559.	C. peribenaderi	One on 26/6/04. Det. gen.
800	587	C. caespititiella	One on 20/5/04. Det. gen. conf. JRL.
801	641	B. lambdella	One on 22/7/05.
802	700	A. pallorella	One on 15/8/05.
803	729	I. striatella	One on 17/7.
804	771	T. alhumella	One on 2/7 & one on 20/7.
805	883	M. ruschkiella	One on 8/8.
806	1096	A. sauciana	One on 29/6/02. (Det. JRL.)
807	1208	B. posticana	One oon 23/6.
808	1271	C. gallicana	One on 44/8/04. (Det. gen.)
809	1276	D. plumbagana	One oou 17/6.
810	1303	A. selasella	One on 9/8. Common thereafter. Prob. overlooked previously
811	1462	P. diluta	One on 29/6
812	1497	A. acanthodactyla	One on 23/6.
813	1504	P. pallidactyla	One on 29/6.
814	1528	T. actaeon	One on 15/8
815	1771a	Th. cupressata	One un 7/11.
816	2412	E. uncula	One on 9/7.
817	2480	H. rostralis	One on 27/5

Appendix V

Butterfly Survey Data

Species seen at Valley Park Woodlands LNR

1. Clouded Yellow
2. Large White
3. Small White
4. Orange Tip
5. Small Blue
6. Common Blue
7. Holly Blue
8. Red Admiral
9. White Admiral
10. Painted Lady
11. Small Tortoiseshell
12. Peacock
13. Comma
14. Specklewood
15. Gatekeeper
16. Meadow Brown
17. Ringlet
18. Silver Washed Fritillary

Appendix VI – Mammal Survey Data To Follow

Appendix VII Ancient Woodland Indicator Species

Ancient Woodland Indicator Species (AWI)

These are 100 vascular plants drawn up for central southern England that have been deemed to be strongly associated with ancient woodlands. The number of these indicators increases with the size of wood, but this is not a linear relationship. The mean average number of ancient woodland indicators in all woodlands over Bracklesham Beds is 26 (taken from 81 comparable woodlands covering 886 hectares surveyed in 1990 by English Nature, Hampshire County Council and the Hampshire Wildlife Trust).

Table A
Ancient Woodland Indicators (AWI) in woodlands overlying Bracklesham Beds by size

Size of Woodland	**Number of Woodlands Surveyed**	**Mean AWI**	**Range AWI**
0-2 ha	23	17	2-30
2.5 - 5 ha	20	21	5-33
5.5-10 ha	16	24	5-37
10.5-20 ha	11	31	14-46
20.5-30 ha	5	31	20-49
30 ha	6	35	14-53

Data set as 1992

Table B
Number of Ancient Woodland Indicators found in Valley Park Woodlands

Name	**Approximate Area (hectares)**	**Number AWI Found**
Knightwood	17	35*
Tredgoulds Copse	5	33
Skys Wood	6	33
Zionshill Copse	16	38
Little Covert	1.7	16**

* This is a compilation of all records from 1975 since when Knightwood has been damaged form development of Chandlers Ford and dissected by Knightwood Road. The woodland to the east of this new road is managed by The Woodland Trust.
** Little Covert is secondary woodland and therefore is relatively poor in AWI

It should be noted that all the ASNW have a richer than average number of AWI's apart from Knightwood.

Table B information was collated from past survey work as indicated. More recent surveys by the Countryside Officer found certain AWI species lacking.

Appendix VIII Valley Park Woodlands Photographs

Timber extraction using heavy horses

Hedge Laying at Knightwood Road

Boardwalk construction with Friends of the Parks

Tredgoulds Copse in Spring

Appendix IX Archaeoloical Earthwork Survey

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LIST OF FIGURES

AN ARCHAEOLOGICAL RECORDING SURVEY OF EARTHWORKS IN VALLEY PARK WOODLANDS, CHANDLERS FORD, HAMPSHIRE

1 Introduction and Background

The recording survey was commissioned and funded by Test Valley Borough Council with the intention of providing a more detailed understanding of the distribution, character and significance of a range of earthworks surviving in old woodland. The survey area embraced five blocks of woodland in the vicinity of a major housing development, which had been the subject of an extensive archaeological field evaluation. That work had concentrated mostly in the open land directly affected by the development, and had produced features or finds of various dates from the prehistoric period through to the Medieval period (Hampshire Sites and Monument Records).

In contrast, only limited observations were made in adjacent woodlands and the majority of reported earthworks were boundary or drainage features. However, the discovery of a previously unrecorded round barrow in Zionshill Copse, and a large sub-rectangular enclosure a short distance to the north-east, further emphasised the important role that woodland plays in the preservation of vulnerable and sometimes rare archaeological sites.

Until relatively recent times the methods of managing and exploiting woodland resources have had little impact on the survival of archaeological sites, and in many instances the traditional practices have been the principal reason for their preservation (Darvill 1987). Outside these areas, widespread and often intensive arable farming has resulted in the wholesale destruction of archaeological sites. This has occurred throughout the country and is well illustrated in parts of Hampshire, where many of the more vulnerable archaeological features only survive as earthworks in woodland settings (Entwistle 1996a, 22-23).

2 The Survey Rationale and Method

The survey area consisted of five principal woods: Zionshill Copse, Tredgoulds Copse, Sky's Wood, Clothiers Copse and Knight Wood (Fig 1). Together, these measure some 32 hectares of mature broad-leaf woodland, enclosing a range of archaeological earthworks. Although some limited work had been carried out, no systematic survey had been undertaken to establish the extent, complexity and possible date range of these features. The recording survey was commissioned to address such issues, and provide a more comprehensive understanding of the archaeological resource, with a view to informing future management strategies.

The field work was carried out over a six day period during December 1998. For the most part conditions were favourable, although some areas were inaccessible owing to a cover of bracken or dense under-storey scrub. The areas mostly affected were south-eastern margins of Zionshill Copse, a stretch along the north-eastern edge of Tredgoulds Copse and the central portion of Sky's Wood.

The field strategy was essentially a prospection and mapping exercise, based on a methodology which combined extensive area coverage with more detailed recording in appropriate locations. In order to achieve this balance by the most efficient means, earthworks were surveyed using taped measurements and compass bearings.

For more complex features, such as the enclosure in Zionshill Copse East, a local grid of canes was established by measuring points from intersections on the Ordnance Survey grid. Using the local grid, measurements were taken at intervals by means of off-sets to salient points on the earthworks.

The resulting data from both levels of survey were transferred to overlays on the 1: 2500 scale Ordnance Survey maps. Where possible, relationships between individual earthworks were recorded with a view to clarifying their phasing. The mapping data were supplemented by a number of level profiles, which provide additional descriptive detail for selected features.

Although the recording system was sufficient to allow for an accurate mapping of the earthworks, it could not provide the analytical detail necessary to understand the more complex relationships. Where this affected earthworks of special archaeological significance, recommendations have been made for more detailed instrument survey.

3 THE SURVEY FINDINGS

The survey findings are presented and described by woodland survey area. Individual features referred to in the text are identified by consecutive numbers reproduced on the accompanying figures.

3.1 *Zionshill Copse West (Fig 2)*

This area originally formed part of a continuous block of woodland that is now bisected by a roadway. The woodland edge is defined by a ditch with an internal bank, which is particularly well preserved along the northern margin. To the south and south-east, the boundary earthwork is less well preserved, especially on the southern side where the encroachment of housing has destroyed a large stretch. Inside the woodland, along the northern margin, a second substantial ditch and bank (1) parallels the outermost boundary earthwork. This appears to be an earlier feature and unlike its counterpart it has the ditch on the woodland side of the bank.

Within the woodland, a rectilinear arrangement of small ditches (2, 3 and 4), with intermittent traces of accompanying banks, form part of a drainage system which appears to have been contemporary with the innermost woodland boundary ditch. Some traces of recutting along ditch 2 are almost certainly of recent origin. In the south-east corner of the wood, two sinuous ditches (5 and 6) sharing a similar alignment are also part of a drainage system feeding into the southern woodland boundary ditch.

An arrangement of lynchets towards the centre of the wood (7, 8 and 9) probably mark the position of fields pre-dating the woodland. It is impossible to assign these features to a specific period, and the only clear stratigraphic relationship is with a drainage ditch (2), which is a later feature cutting through the lynchet. Traces of another lynchet were identified during the excavation of a small round barrow in the

south-eastern corner of the wood (Entwistle 1996b), but no material evidence was found to

date the feature. It was demonstrably later than the barrow, which belonged to the middle Bronze Age, and as the lynchet was formed by arable farming, it must pre-date the foundation of the woodland. No further lynchets were discovered during the recording survey, although some additional elements may remain undiscovered in areas covered by dense bracken and evergreen scrub.

3.2 *Zionshill Copse East (Fig 3)*

The most notable feature recorded in Zionshill Copse East was a large sub-rectangular enclosure (10) close to the south-eastern woodland edge. The earthworks consist of a broad ditch flanked by an internal bank (Fig 4), which is well preserved on the southern-western side. The interior is approximately 0.4 hectares in extent and is crossed by the ditch and bank of a woodland boundary earthwork (11). To the north-west the boundary is interrupted by a woodland ride, beyond which it reappears (12) and continues to the edge of the wood. On the north-eastern side of the boundary (11), the enclosure earthworks are less well preserved. The bank has been levelled and all that remains of the ditch is a slight hollow, which is only visible around the eastern corner of the enclosure.

Although there is no material evidence for the date of the enclosure, the scale and form of the earthworks are strongly suggestive of a prehistoric site. Some support for this suggestion is provided by the nearby concentrations of burnt flint, which cluster around the eastern woodland margins (Hampshire Sites and Monuments Records). These are often found in association with settlements of various prehistoric dates, although the denser concentrations are most frequently found with settlements belonging to the middle Bronze Age and Iron Age periods. It is tempting to interpret the earthworks as a settlement associated with the nearby middle Bronze Age round barrow (Fig 1), but the scale would put it at the extreme end of the size range typifying enclosed settlements of that period. On the basis of their size, and to some extent their morphology, it is far more likely that the earthworks are those of an Iron Age enclosure, although this cannot be confirmed without further investigation.

A holloway skirts the enclosure ditch on the southern side. To the north-west this feature could not be traced beyond the woodland ride. To the south-east the holloway appeared to be truncated by the earthworks defining the edge of the wood, but any surviving detail of the relationship was obscured by under-storey vegetation. However, it is almost certain that the holloway belongs to an episode of land-use pre-dating the woodland, and clearly later than the enclosure.

The enclosure is sited at the edge of a low plateau, where it occupies the threshold between two later and distinct patterns of land-use. These have had a differential impact on the survival of the earthworks. On the south-western side, the well preserved ditch and bank show no signs of significant attrition, unlike the north-eastern part of the enclosure which has been significantly degraded. This can only have been caused by ploughing in the area to the north-east of the boundary ditch and bank (11/12) prior to the establishment of the present woodland. This boundary earthwork and its counterpart to the south-west (13) now form woodland sub-divisions, but the correspondence of 11/12 to the differential preservation of the enclosure earthworks suggests that it follows an earlier boundary, separating arable land from earlier woodland or pasture to the south-west.

The division of land-use marked by 11/12 is reflected in a change in topography, with lower land lying to the north-east of the enclosure. The majority of earthworks in this area are drainage ditches accompanied by slight and intermittent embankments. One of these (14) cuts through the silted-up ditch of the enclosure and feeds down slope to a main drain running along the northern woodland edge. Along its course, 14 cuts through two earlier ditches on a different alignment (15 and 16). The most northerly of these features (16) may have formed part of an early woodland boundary earthwork, possibly a continuation of 17 which itself is part of ditch 1 in Zionshill Copse West. Ditch 14 is paralleled by ditch 18, which has traces of a bank on alternate sides. The remaining features in this stretch of Zionshill Copse East are four slight drainage ditches (19-22). All are very indistinct and cannot be traced throughout their entire course. These may well be the earliest elements of the drainage system in the northern portion of the wood.

3.3 *Tredgoulds Copse (Fig 5)*

Despite the very wet conditions at the southern end of the wood, there is a notable lack of drainage ditches in Tredgoulds Copse. A single example, which appears to be recent in origin and was not recorded owing to the adverse conditions, follows the southern boundary a short distance inside the wood. The only other example is a 'Y' shaped arrangement of ditches (24) close to the north-eastern woodland edge, and positioned so as to drain the higher ground. The lower reach of the drainage ditch cuts through the embankment (25) and is therefore a later feature. Although there is a drain outside the lower wood edge, little effort seems to have been expended on draining the marshy area in the southern part of the copse. On the contrary, the creation of a steep artificial escarpment (23) at the south-western edge of the wood must have increased the susceptibility of the area to flooding by lowering the natural relief of the hill slope. The escarpment is butted by a slight embankment (25), which is situated on a low contour above the woodland floor and bounds the wet area along its northern margin. The correspondence of these somewhat anomalous features suggest

the deliberate creation and maintenance of wet conditions, possibly for the coppiced alder carr which occurs in this part of the woodland.

Few other features were recorded within the copse. A slight angular lynchet (27), just above the embankment delineating the marshy area, may be evidence of cultivation prior to the establishment of the wood, while a similarly shaped feature (28) to the north-east seems to be a holloway. Woodland boundary earthworks are visible along the eastern perimeter, and are joined by a ditch running along part of the northern woodland edge. No boundary earthworks remain on the western side of Tredgoulds Copse, where the wood appears to have been reduced by an expansion of arable land.

3.4 *Sky's Wood (Fig 6)*

Like Tredgoulds Copse, Sky's Wood has few drains. However, this is largely a reflection of the higher ground which dominates most of the wood. The principal topographic feature is a broad coombe running down to the south-eastern edge of the wood, served by a major drainage ditch (29). Another coombe along the south-western margin is similarly well drained.

The woodland boundary earthworks are prominent features of Sky's Wood, particularly along the north-western margin where they survive as substantial features. Within the woodland the only evidence for sub-division is a rather sinuous ditch and bank (30), which has been partly destroyed by the construction of a woodland ride. Just outside the woodland boundary to the south-west, a slight linear earthwork is probably the remains of an old field edge running alongside an area of quarrying. Both features occupy a narrow coombe running north-west to south-east.

Above the coombe, a low spread mound (approximately 1.0 metre high, with a maximum diameter of 26 metres) crossed by a path is almost certainly a previously unrecorded round barrow (31). Some old diggings on its northern flank probably indicate that the barrow has been opened at some time in the past. It is interesting to note that the barrow, which lacks any trace of a surrounding ditch, appears to have served as a sighting point for the alignment of the woodland boundary earthworks, which make an abrupt turn immediately alongside the mound.

3.5 *Clothiers Copse (Fig 7)*

A second unrecorded round barrow was found further along the same ridge in Clothiers Copse (32). Although this is much smaller than the Sky's Wood example, it is mostly well preserved with no sign of having been opened in the past. On the western side of the mound traces of a ditch are clearly visible, but to the east the woodland boundary earthworks have truncated the mound and ditch (Fig 8). Like its counterpart in Sky's Copse, this barrow seems also to have served as a marker for the later woodland boundary earthworks, which make a sweeping change in alignment as they cross the mound.

Within the wood, three slight lynchets (33, 34 and 35) probably mark the edges of former fields. Indeed, the two easterly examples align with the existing boundaries of a narrow field on the northern side of Flexford Road (Fig 1 and Fig 7). On the south-eastern edge of the wood, the trackway leading to Knightwood Cottages is bounded on either side by a ditch and bank (36). These merge with the existing trackway just beyond the southern corner of Clothiers Copse, only to reappear to the south of Knightwood Cottages.

The woodland boundary earthworks around Clothiers Copse show a number of features which probably indicate major changes in the scale and spatial organisation of the woodland. A short stretch of ditch and bank (37) running between the woodland boundary earthworks and Flexford Road is clearly an earlier boundary (Fig 8), presumably delineating a larger area of woodland that once extended further to the north-east. Along the south-eastern woodland margin, the boundary earthworks of Clothiers Copse (38) are interrupted by those of Knight Wood, suggesting that the latter is a more recently established wood.

3.6 Knight Wood (Figs 7 and 9)

The boundary earthworks of Knight Wood display a less coherent layout than those surrounding any of the other surveyed woodlands. Furthermore, those at the eastern and northern edge of the wood (40) differ from the earthworks surrounding Clothiers Copse in that the ditch is positioned on the inside. The southern boundary (41) also is unusual, and consists of a low bank which makes a series of abrupt changes in alignment. There is no obvious reason why the boundary should follow this erratic course, unless it was respecting pre-existing field boundaries.

Apart from a slight bank with traces of a ditch (39) running across the northern end of the wood (Fig 7), few features are visible in the woodland interior. However, the one exception is a large earthwork consisting of a broad ditch paralleled by a bank (42). This is a substantial feature (Fig 9, profile) measuring approximately 20 metres across and curving through the centre of the woodland on a south to north-west alignment. At its northern end, the earthwork is significantly smaller and is joined by a holloway (43) following the ditch. Beyond this point, a vestige of the earthwork makes a broad sweep to the west, and after crossing the track it fades out in the garden of Knightwood Cottages.

The sheer size of this earthwork sets it apart from any of the other banks and ditches recorded during the survey, and even in the absence of independent dating evidence it must be regarded as an important archaeological feature. Despite the dating deficiency, there is every reason to suppose that the earthwork belongs to a much earlier period than the woodland itself, and it is possible that it is a remnant of the prehistoric boundary earthworks collectively known as Wessex linear ditches (Bradley, Entwistle and Raymond 1994).

4 DOCUMENTARY RESEARCH

4.1 *Aerial Photographs*

A search through the aerial photographic collection held by Hampshire County Planning Department failed to reveal any additional information that might be relevant to this study. In particular, there was no trace on photographs, taken prior to the development south of Zionshill Copse, of any features that could be associated with the enclosure. Likewise, no trace could be detected in the surrounding open country of the large ditch and bank running through Knight Wood.

4.2 *Historic Maps*

All of the historic maps contained in this report are reproduced with the permission of the Hampshire Record Office. There is no Tithe Map available for North Baddesley, either because it has not been located, or because it was not commuted under the 1836 Act. No part of the 1867 Enclosure Map has been reproduced as it contributes no more detail than the 1872 Ordnance Survey 6 Inch Series.

The map search was more productive than the aerial photograph search, and in some instances gave support to interpretations based on the archaeological observations. The earliest topographically detailed maps date to the eighteenth century (Issac Taylor 1759 and William Faden 1791), and both show the land now occupied by Valley Park Woodlands to be substantially open, being composed mostly of farmland, common and heath. Faden's map of 1791 (Fig 10) may be the more reliable guide to the full distribution of woodland, for it depicts a number of minor woods and copses, although it may not record newly established plantations. Although this earlier map evidence needs to be used with caution, it appears that no mature woodland existed at Zionshill Copse, Tredgoulds Copse, Sky's Wood, Clothiers Copse and Knight Wood at the close of the eighteenth century.

Some nineteen years later, in 1810, the first edition of the Ordnance Survey One Inch Series shows that all five woods were established (Fig 11). There is no indication of the maturity of these woods by 1810. However, it is possible that they had been planted a few decades before Faden's time, but went unrecorded since they were not prominent landscape features.

Greenwood's map of 1826 (Fig 12) and the enclosure map of 1867 show little alteration in the overall distribution of woodland, although some localised changes are recorded. These have a bearing on certain observations made during the earthwork recording survey. Attention was drawn to the relationship between the boundary earthworks in Clothiers Copse and those of Knight Wood, which indicated that Knight Wood was a later plantation abutting the earlier woodland of Clothiers Copse. The 1810 map clearly depicts Knight Wood and Clothiers Copse as separate woods. By 1826, Greenwood's map shows that Knight Wood had been extended to the north and was joined to Clothiers Copse. While this still allows for the two woods to be contemporary in their original form, it does confirm that the interruption in the southern boundary earthworks of Clothiers Copse was the result of a later expansion of Knight Wood.

Other noticeable differences exist between the 1810 and 1826 maps. On the earlier map the extent of Sky's Wood resembles that of the present day, but by 1826 it appears to have been considerably smaller. If the detail of Greenwood's map is reliable, Sky's Wood in 1826 consisted of a narrow belt of woodland to the south, with a much smaller and separate wood in a formerly open area alongside the route of the modern Flexford Road.

Zionshill Copse appears to have changed little between 1810 and the 1826. The same is true of Tredgoulds Copse, although both maps show that it was much smaller than at present. However, by 1872 (Fig 13, Ordnance Survey 6 Inch Series) Tredgoulds Copse had assumed its modern size and shape. Significantly, there is no indication of a boundary earthwork on the eastern side of the copse, perhaps indicating that the conjectured arable expansion had already taken place by this time. Both the artificial escarpment in the south-western corner (Fig 5, 23) and the internal bank (Fig 5, 25) are recorded on the 1872 map.

The 1872 map shows some of the internal features of Zionshill Copse East that were recorded during the present survey. Two boundaries (Fig 3, 11 and 13) and the drain (Fig 3, 14) are clearly visible, but the enclosure is not shown. Other features have disappeared, apparently in recent times. One of these seems to have been an earthwork on the line of the woodland ride; the second, a similar feature, followed the course of the modern road corridor bisecting the woodland.

Two open areas in Sky's Wood appear in detail on the 1872 map. The south-western clearing was defined by the ditch and bank (Fig 6, 30) which has been partly destroyed by the woodland ride. This clearing, with its characteristic outline, is depicted on the two early nineteenth century maps (Figs 11 and 12), and some vestige still survives to the present day near to the round barrow (Fig 6, 31). The north-eastern clearing does not appear on the 1810 and 1826 maps.

Few changes appear to have taken place in Clothiers Copse between 1872 and the present day. The only exception is in the western corner, between Flexford Road and the track to Knightwood Cottages. In 1872 this seems to have been a small open area enclosing the round barrow (Fig 7, 32) and lying just outside the main woodland boundary earthworks. The map clearly shows the short stretch of an earlier boundary (Fig 7, 37) extending northwards to the road. Just as it does today, woodland occupied most of the area between the road and the main boundary earthworks.

The erratic course of the southern boundary earthworks in Knight Wood is explained by the 1872 map (Fig 13). The boundary is clearly shown respecting the edges of two large contiguous fields, along with a third which was once separated by a narrow belt of woodland connected with the southern part of Knight Wood. These features are barely discernible in the present landscape, but their influence is still echoed in the extent of the wood and the character of its boundary earthworks.

5 DISCUSSION

The majority of earthworks recorded during the course of the survey were woodland boundary and drainage features. These are perhaps amongst the more vulnerable and often overlooked archaeological features. Nonetheless, they are frequently the only evidence for the structure and development of woodland resources within the landscape, and often reflect earlier patterns of land-use, which have left little or no trace. Some evidence of this can be seen in Zionshill Copse East, where the woodland boundary crosses a prehistoric enclosure and appears to revive a pre-existing division between land-use patterns.

Changes in the shape and scale of some woods are clearly reflected in the re-definition of boundary earthworks, such as those marking the north-eastern edge of Zionshill Copse. While between Clothiers Copse and Knight Wood, the interaction of the boundary earthworks provides archaeological support for the change in scale recorded by the historic maps. There is other evidence which gives some insight into the specific character and exploitation of the woodland. This comes from Tredgoulds Copse, where the creation of a low-lying area in the southern part of the wood seems to have been undertaken to provide suitable conditions for coppiced alder wood. This was a valuable source of good quality charcoal, which was used extensively for the manufacture of gunpowder. Alder timber had a variety of uses in other rural industries and, because of its durability under water, was often used for submerged piles or supports.

The recording survey identified a number of archaeological features which pre-date the woods and almost certainly owe their survival to the woodland setting. Perhaps the most notable is the large earthwork enclosure in Zionshill Copse East. This is undoubtedly a prehistoric monument which, because of its rarity and level of preservation, merits further investigation and Scheduled Ancient Monument status. The previously unrecorded round barrows in Sky's Wood and Clothiers Copse are equally important. Both are well-preserved and both are worthy of scheduling. At each location the mounds have served as sighting points for the layout of the woodland boundary earthworks, which in itself adds to their importance as structural components of a relict landscape.

The large ditch and bank passing through Knight Wood seems likely to be prehistoric. A number of such ditches exist on a similar scale in adjoining counties, for example Grims Ditch in Berkshire and the Devils Ditch in Wiltshire. However, an early Medieval date is possible and has been claimed for earthworks on a similar scale alongside Hayling Wood in East Hampshire (Coffin 1976).

Minor lynchets or banks survive within Clothiers Copse, Tredgoulds Copse and Zionshill Copse West. Although these are difficult to interpret, they are probably vestiges of earlier arable episodes, and could range in date from the Roman period through to the post-Medieval period.

6 RECOMMENDATIONS

The threats to archaeological monuments and sites in woodland are well-documented, and once acknowledged it is possible to mitigate their impact through the design and implementation of sympathetic management plans. The guidelines published by the Forestry Commission highlight the main issues and outline working practices in areas where earthworks survive (Fowler 1995). Essentially, they emphasise the importance of avoiding all activities leading to ground disturbance on or immediately adjacent to extant archaeological sites. Major threats include planting trees and uprooting stumps on earthworks, carelessly positioned extraction routes and crossing sites with heavy machinery, especially in wet ground conditions. Timber stacking, processing, parking and burning should also take place away from earthworks.

At a general level, most of the recorded archaeological features in the Valley Park Woodlands are stable and are not exposed to irreversible threats. However, given the proximity of the housing development and the likelihood of increased public access, these conditions may change quite rapidly. In addition to the potential threats posed by increased public access, there is also the question of woodland management and how best to protect the archaeological features from potentially damaging forestry practices. Woodland rides in Zionshill Copse East and Sky's Wood illustrate the point; both are examples of schemes undertaken without archaeological advice which have been detrimental to archaeological features. In Zionshill Copse East, the woodland ride has encroached on the enclosure earthworks, obscuring part of the ditch, while in Sky's Wood the ride has destroyed a stretch of bank and ditch.

The measures recommended to redress the balance of woodland management in favour of archaeological sites include the clearance of specific areas. Obviously, the removal of mature trees for archaeological reasons will need to assessed against the importance of individual trees, some of which may be subject to a Preservation Order. Relics of coppicing are widespread throughout Valley Park Woodlands, and this contributes to the historic character of the woods. For that reason, any decision to remove coppiced trees from archaeological features will need to achieve a balance between ecological, historical and archaeological demands.

6.1 *Boundary Earthworks, Lynchets and Drains*

From the point of view of preservation, these widely distributed features present the greatest challenge since they are especially vulnerable to piecemeal, but accumulative damage over long periods. While the individual encroachments may seem insignificant, each makes further damage more likely and the total effect is to obscure features which preserve evidence for the organisation of the historic landscape.

An obvious measure to protect these features is to ensure that they are not crossed by heavy forestry machinery away from established tracks. Visibility can be an issue for some of the slighter earthworks, particularly where they are obscured by bracken or brambles. Unintentional damage could be minimised by clearing some of the more dense under-storey vegetation. The uprooting of trees can cause significant disturbance of archaeological features, and measures should be in place to prevent this from happening unnecessarily. Dead or diseased trees should be cut down to avoid damage by uprooting in high winds and the stumps left to rot in situ.

6.2 *The Zionshill Copse Enclosure (Fig 3, 10)*

The enclosure merits special attention, but at the present time there is no conclusive evidence for its date or function. For that reason, serious consideration should be given to small scale excavation which may produce the evidence needed to improve our understanding of the site. There are parts of the earthworks which have suffered serious damage in the past, and these could be targetted for excavation without causing further disfigurement of the site. Aside from their academic value, the results of such work could make a useful contribution to the public amenity and education value of the woodland.

Irrespective of whether or not the recommendation for excavation is approved, it is essential that the enclosure and its associated earthworks are more accurately surveyed. The present work has established the broad plan and character of the site, but to understand the full complexity it will be necessary to undertake a more detailed instrument survey.

However, even with the limited information currently available it is apparent that the enclosure represents a rare category of site, and may be nationally important. Its preservation would be best achieved through scheduling as an Ancient Monument in conjunction with the implementation of a sympathetic management strategy.

Mitigatory measures should include the removal of brambles encroaching on the south-western earthworks. Holly and other invasive woody species should be removed, and measures taken to suppress their regeneration. If possible, walkers and cyclists should be discouraged from using the pathway which has developed across the earthworks, as continued use will cause progressive erosion in the ditch and over the bank. The interior of the enclosure is particularly susceptible to further erosion. It is quite likely that sub-soil features such as pits, post holes and even stratified deposits survive within the enclosure, particularly in the well preserved southern part. Measures taken to protect the earthworks should apply to the interior, and the fragile nature of possible archaeological features or deposits will need to be taken into account. Any measures taken to protect the enclosure and its interior should be extended to include the holloway which bounds the site on the south side.

Tree throws on sites such as the Zionshill Copse enclosure can have a disastrous impact, since potentially they can destroy a larger portion of the surviving earthworks. Ideally, it would be desirable to thin the woodland and remove the bracken across the earthworks to create a clearing and encourage the establishment of turf. The stumps of felled trees should be treated with a herbicide and left to rot in situ. Clearance of this type would only affect a relatively small area and so any potential habitat damage should be limited. It may even provide a valuable micro-environment and contribute towards the diversity of the woodland.

6.3 *Round Barrows in Sky's Wood and Clothiers Copse (Figs 6, 31 and 7, 32)*

These are nationally important sites which should be scheduled, and both will require careful management to ensure that their condition does not deteriorate. At each location the barrows have an integral relationship with the woodland boundary earthworks, and this needs to be taken into account by management strategies. Where possible, consideration should be given to the removal of trees encroaching on the earthworks in order to avoid damage from tree throw. Invasive woody species, bracken and brambles should be removed and measures taken to prevent regeneration.

Apart from minimising the danger of tree throws, clearance would have the added advantage of securing the barrows from further root penetration, which is particularly detrimental. The action of roots can have a significant impact on features relating to barrow construction by disturbing secondary cremations, or leading to the mixing and contamination of buried soils sealed below the mound.

If clearance is felt to be a viable option, the extent of the area around the barrows requires careful consideration. Ideally the clearing should extend beyond the mound to take in any traces of the ditch. Quite often Bronze Age round barrows are associated with small cemeteries, usually consisting of in-urned cremations. These can be placed in the mound, in the top of the silted-up ditch or just beyond the barrow, most commonly on the southern side. The precise position and extent of such cemeteries is impossible to predict, but most are small and occupy an area within 20 metres of the edge of the mound. In the case of the Clothiers Copse barrow, the extended area should include the woodland boundary earthworks. The conjunction of these and the barrow is a good example of how early monuments can continue to exert an influence on the structural detail of much later land-use patterns.

6.4 *The Knight Wood Earthwork (Fig 9, 42)*

Like the barrows and the enclosure, this large and extensive feature is subject to damage by the uprooting of trees and by the encroachment of under-storey vegetation. Damaged and diseased trees should be cut down, while holly, ash and sycamore saplings will need to be removed and prevented from regenerating. The proximity of a new housing estate may also pose a threat. Substantial ditches and banks often attract trail-bike users and the occasional scramble bike, all of which can do immeasurable damage to the earthworks. Some form of monitoring would therefore be desirable to ensure that the site does not suffer from these destructive forms of recreation.

7 CONCLUSION

On a national scale, the importance of woodland as a potential archaeological resource cannot be over-stated, and the case is well-made by archaeological landscape studies in Hampshire and adjoining counties. Although intensive agriculture is the principal agent of widespread damage to archaeological sites, it is not the sole cause. Modern silviculture has played a prominent part in damaging or destroying sites that have lain undisturbed in woodland for centuries, and more recent aspects of woodland utilisation add new pressures. Trends such as the development of woodland for recreational purposes can have a significant impact unless the relevant archaeological issues are addressed fully at the planning stage.

The loss of woodland to development also poses an increasing threat to archaeological sites, though more often than not objections to this trend have focused more on the loss of ecological diversity, rather than on the archaeological impact. In some measure the fault rests with archaeologists, for it is still generally true that few large-scale or systematic surveys have been undertaken in woodland to evaluate the archaeological resource.

The present survey reinforces the general picture, both in terms of showing the range of archaeological remains that survive in woodland, and how vulnerable they are to damage from various sources. More specifically, the findings demonstrate that much additional information can be recovered through the use of basic survey techniques. This enhanced level of information is essential to the formulation of woodland management strategies, and can make a significant contribution to the public amenity and educational value of the woodlands.

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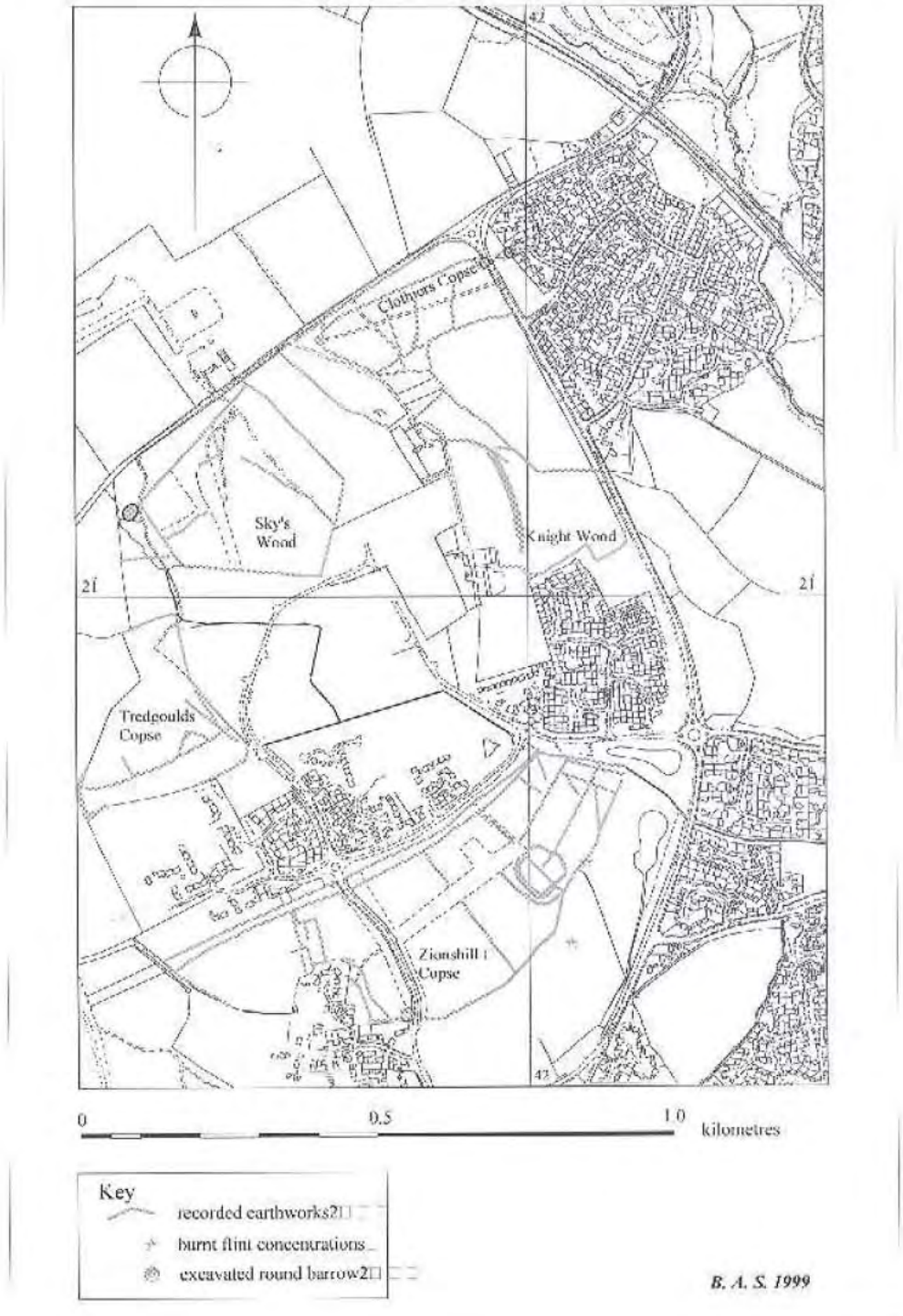

Fig 1: Location map showing the woodland survey areas and the distribution of recorded earthworks

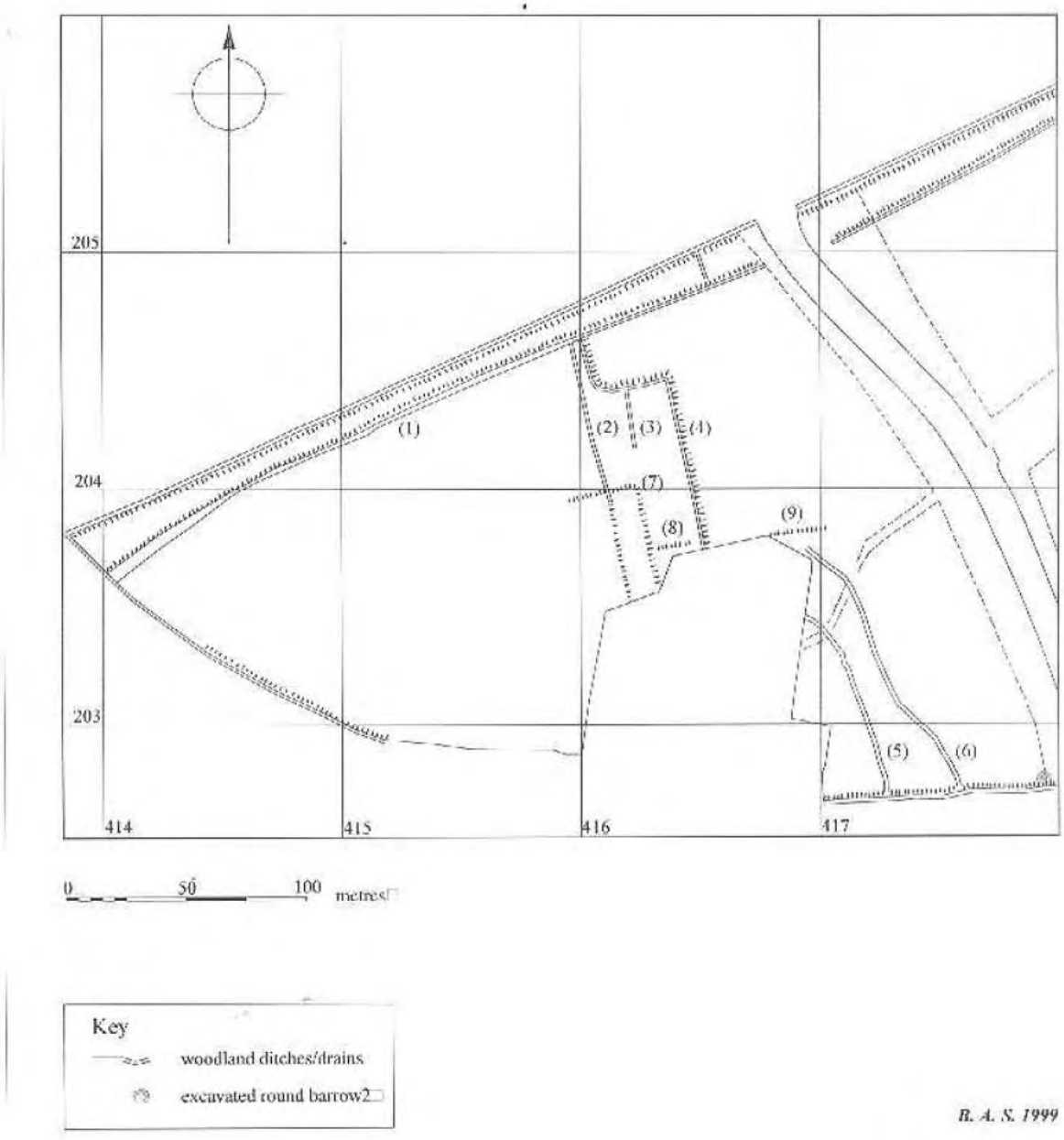

Fig 2: Recorded earthworks in Zionshill Copse West

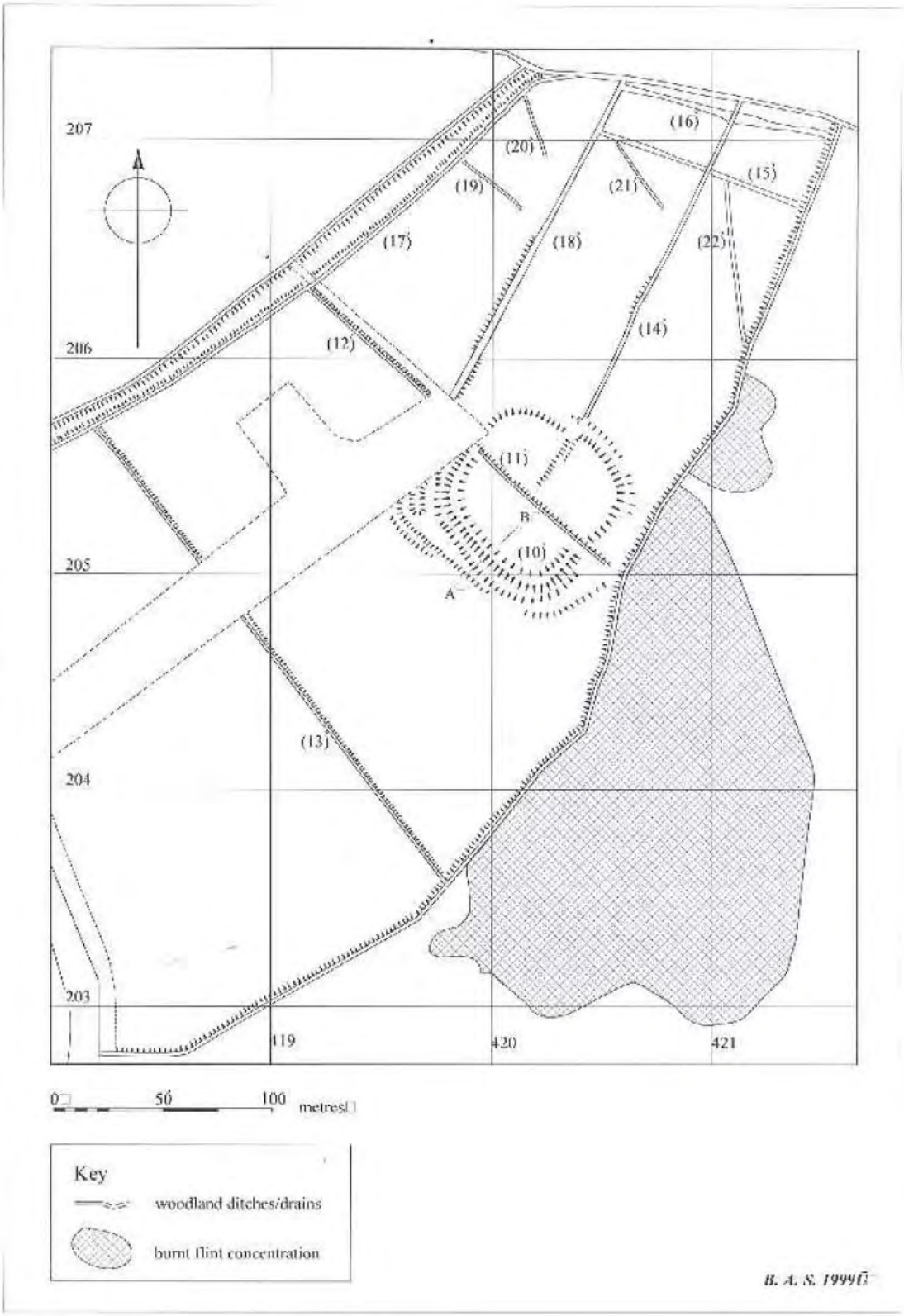

Fig 3: Recorded earthworks in Zionshill Copse East

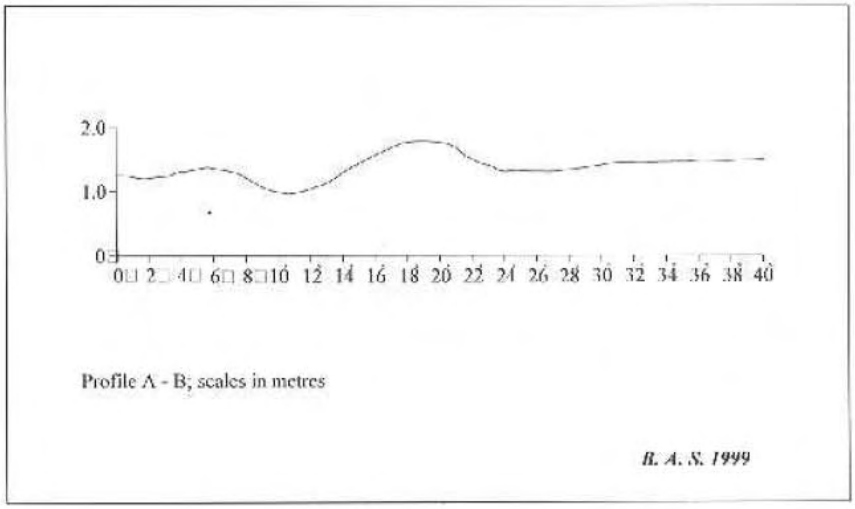

Fig 4: Profile across the enclosure earthworks in Zionshill Copse East

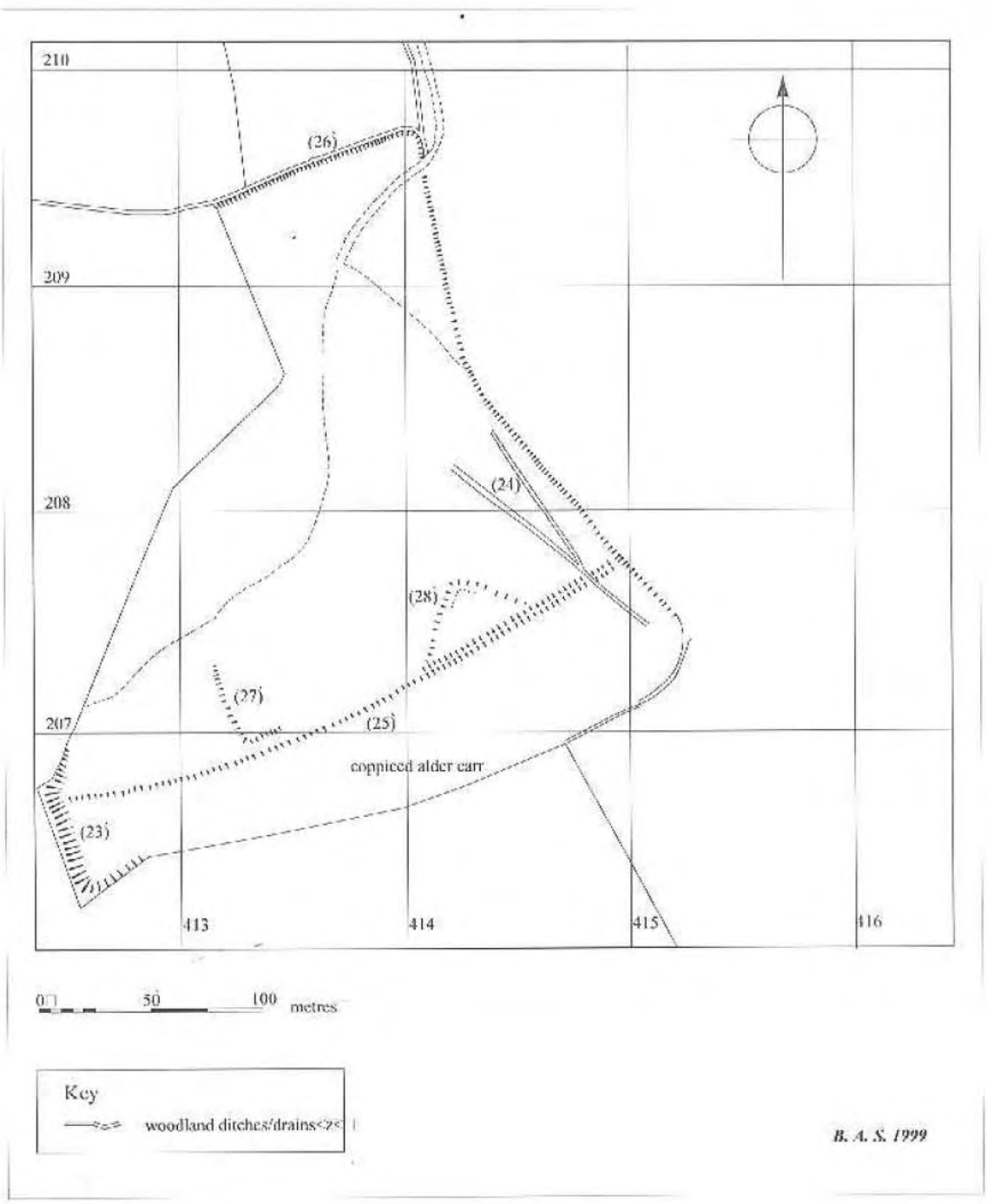

Fig 5: Recorded earthworks in Tredgoulds Copse

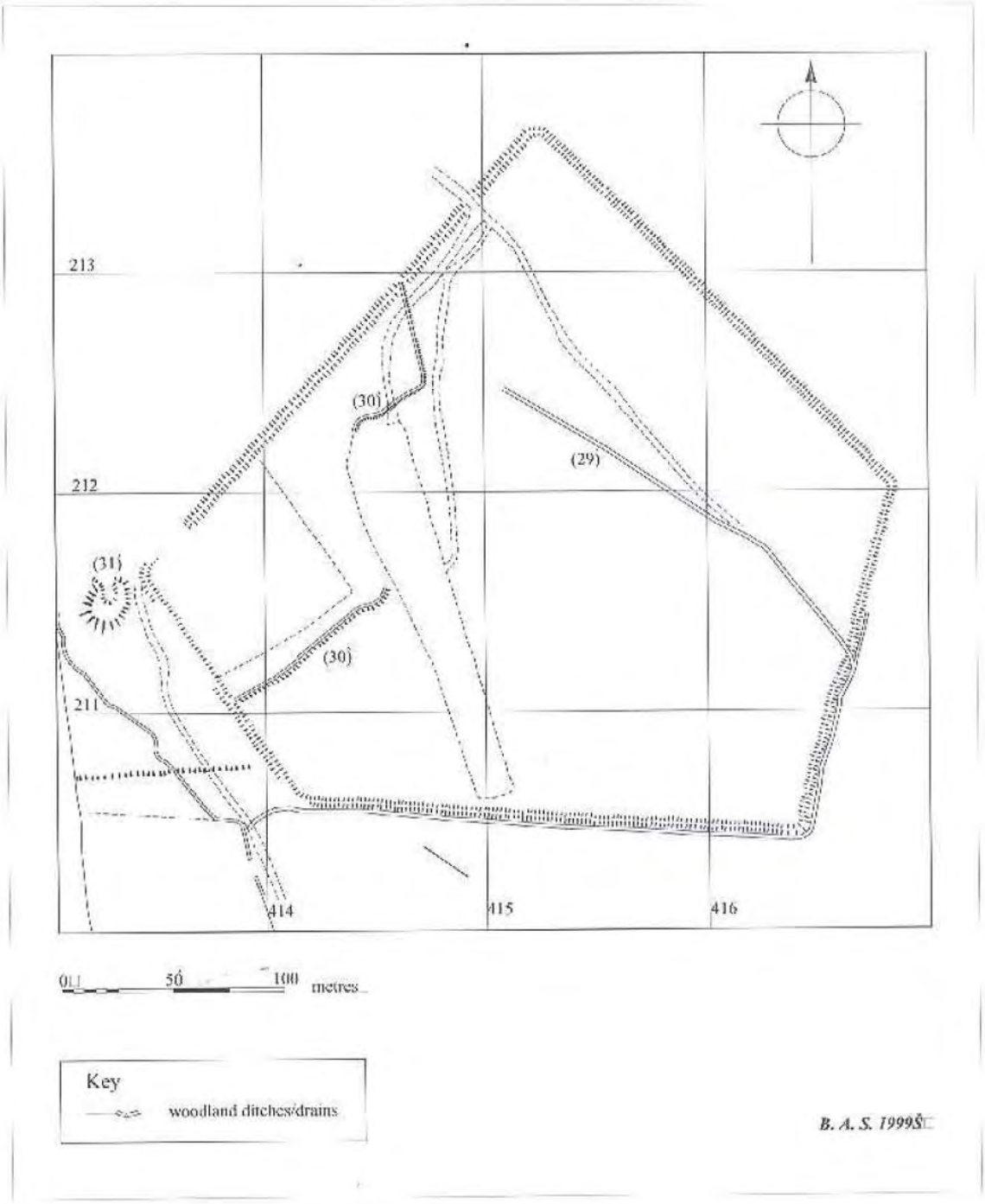

Fig 6: Recorded earthworks in Sky's Wood

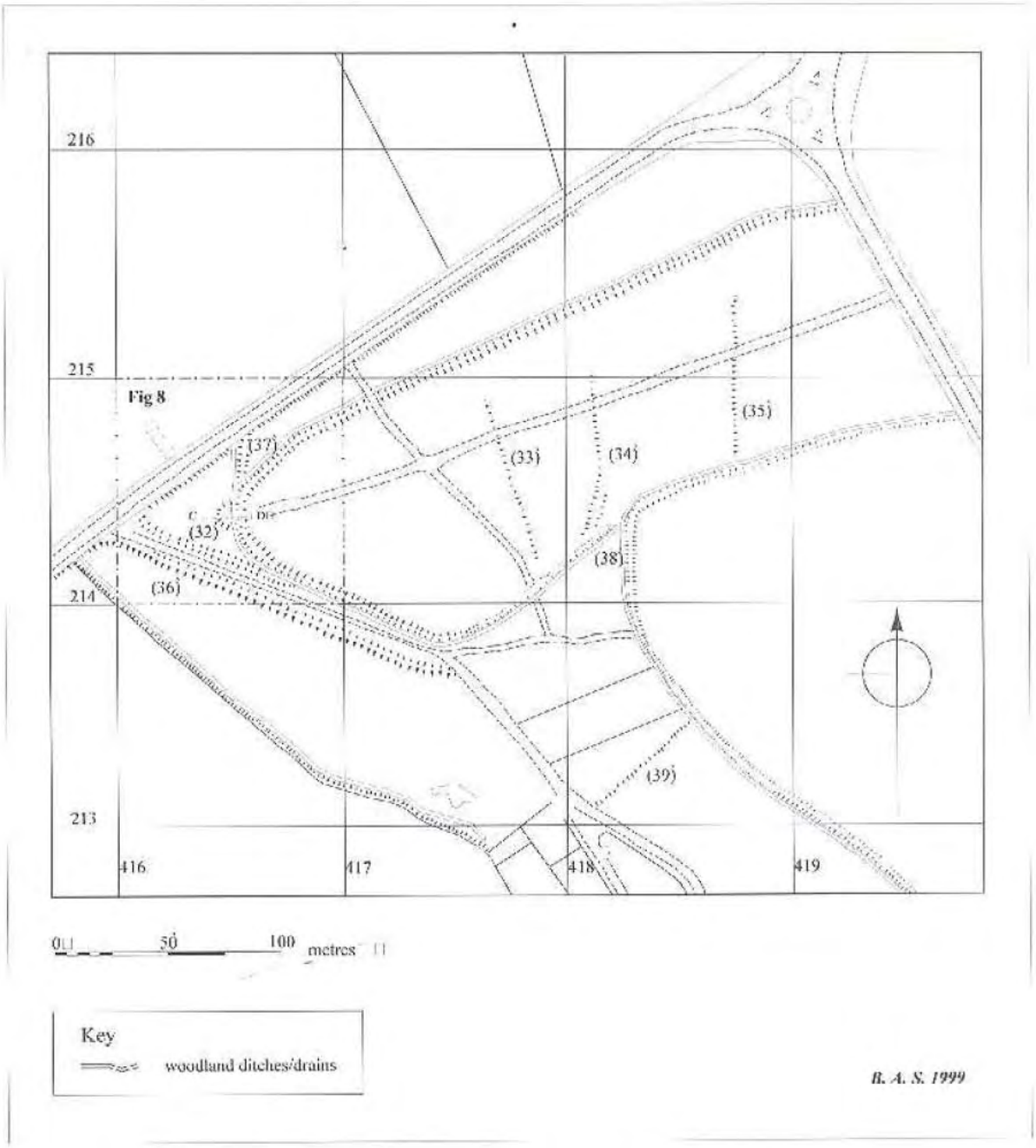

Fig 7: Recorded earthworks in Clothiers Copse and Knight Wood North

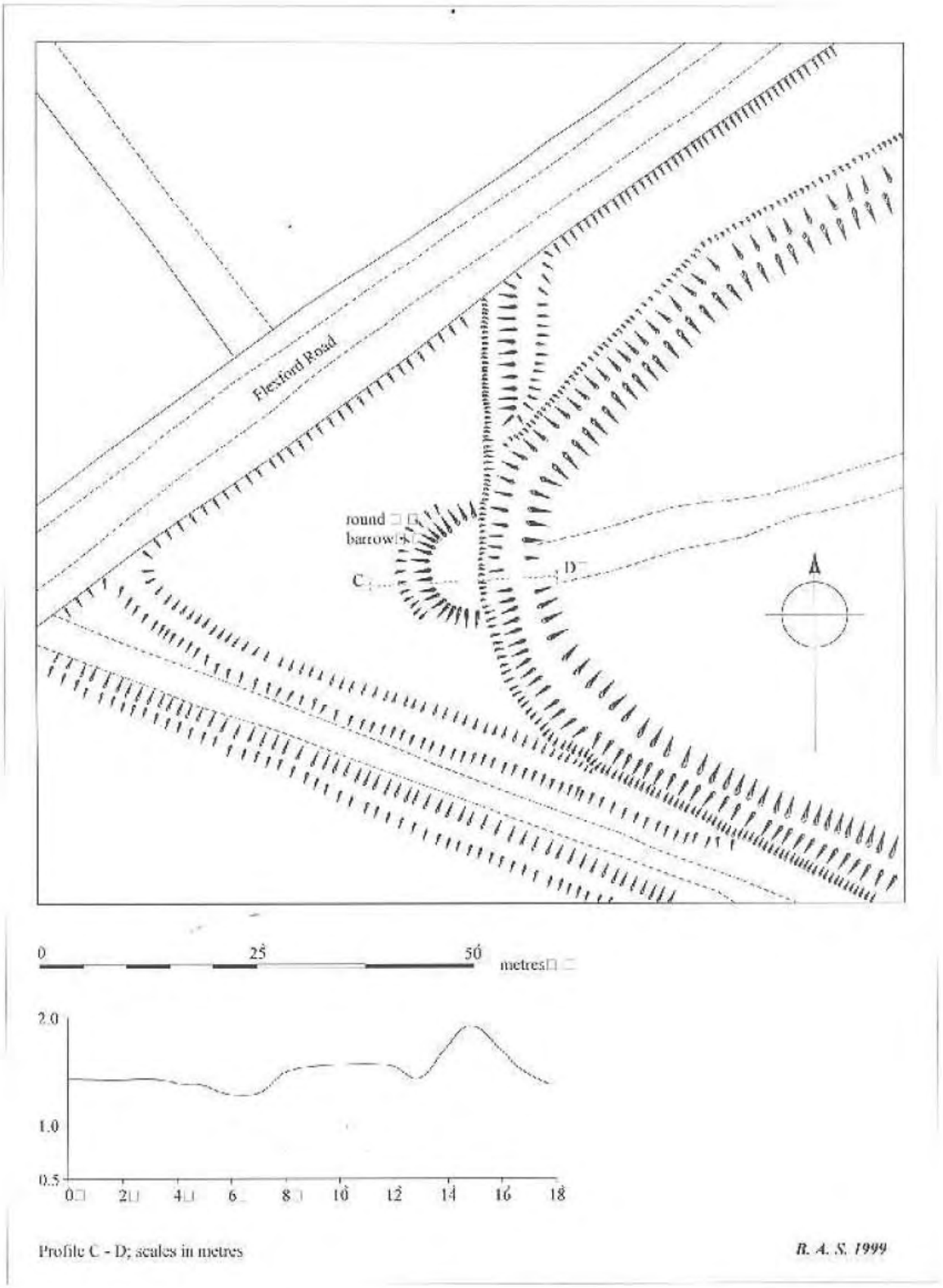

Fig 8: Detail of probable round barrow and boundary earthworks in Clothiers Copse (Inset Fig 7)ØмÏ<Ï<

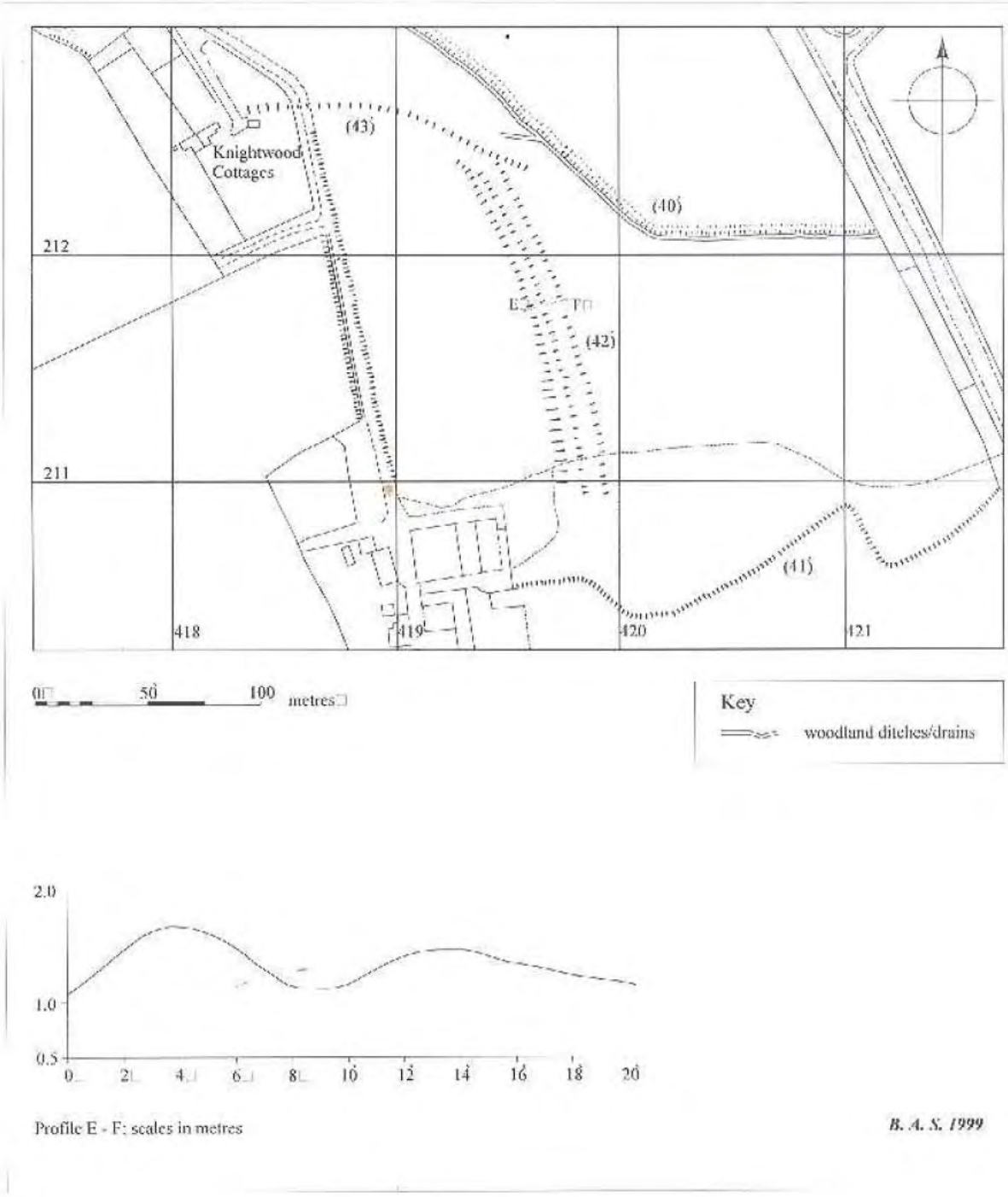

Fig 9: Recorded earthworks in Knight Wood South