

Redhouse Reservoir SNCI Survey

Spelthorne Borough Council



Author	Isobel Girvan BSc (Hons) MCIEEM - Principal Ecologist	Date	05/02/19
Approver	Claire Gibbs BSc (Hons) MSc MCIEEM - Senior Ecologist	Date	05/02/19
Project number		3245	
Report and version number		4.0	
Survey Date		20/09/2018	

The contents of this report were correct at the time of the site visit. The report is provided for the sole use of the named client and is confidential.

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, or stored in any retrieval system of any nature, without our written permission. Its content and format are for the exclusive use of the addressee in dealing with this. It may not be sold, lent, hired out or divulged to any third party not directly involved in this situation without our written consent.

SWT Ecology Services is a wholly owned subsidiary of Surrey Wildlife Trust, registered in England no: 11034197. VAT no: 791 3799 78.

© SWT Ecology Services

Contents

1	Summary	1
2	Introduction.....	4
2.2	Scope of work.....	4
2.3	Survey area	5
2.4	Ownership	5
2.5	Methodology.....	5
2.6	Limitations	6
3	Baseline Conditions	7
3.1	Desk study results	7
3.2	Extended Phase 1 habitat survey results.....	9
4	Site Evaluation	11
5	Site Management Recommendations.....	11
6	References and Bibliography	14
7	Appendix 1: Vascular plant species recorded during Phase 1 habitat survey.....	16
8	Appendix 2: Additional vascular plant species of interest recorded on the site in previous surveys 19	
9	Appendix 3: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – Habitat Guidelines.....	21
10	Appendix 4: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – Species Guidelines	28
11	Appendix 5: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – General Guidelines	32

Figures

Figure 1: Redhouse Reservoir - Phase 1 habitat survey results	2
Figure 2: Site photographs.....	3

Tables

Table 1: Statutory and non-statutory designated sites desk study results	8
Table 2: Phase 1 habitat survey results.....	10

1 Summary

- 1.1.1 Surrey Wildlife Trust (SWT) Ecology Services was commissioned on 14th May 2018 by Spelthorne Borough Council to undertake a Site of Nature Conservation Importance (SNCI) survey of Redhouse Reservoir (also known as Kempton Reservoir). This is part of one of four SNCI surveys, which are being undertaken by SWT Ecology Services this year.
- 1.1.2 The SNCI survey is required in order to:
- Gather evidence to help determine whether the site meets the Guidance for the Selection of SNCIs (Surrey Wildlife Trust, 2008)
 - If the site still meets the criteria for selection, determine whether the boundary of the SNCI continues to be appropriate
 - Identify opportunities for positive management to improve the condition of the SNCI.
- 1.1.3 The SNCI survey included an extended Phase 1 habitat survey to assess the habitats present within the survey area. During the survey an assessment of the boundaries of the site was undertaken.
- 1.1.4 The survey visit was undertaken on 20th September 2018.
- 1.1.5 The following five Phase I habitat types were recorded during the field survey:
- Broad-leaved semi-natural woodland
 - Dense scrub
 - Tall ruderal
 - Running water
 - Dry ditch
- 1.1.6 The site was reselected in 2010 as it represents an important protective buffer to the Redhouse Reservoir which is part of the Kempton Park Reservoirs SSSI and South West London Waterbodies SPA/Ramsar. Under this criteria the woodland to the south (surveyed in 2018) and the woodland strip to the west of the reservoir (not surveyed in 2018) does still act as a protective buffer zone and therefore still supports the features for which it was originally selected.
- 1.1.6 The site may meet the SNCI selection guidelines under the following criteria;
- 1.1.7 21) Birds c) Supports a breeding bird assemblage or wintering waterbird assemblage of county importance.
- 1.1.8 Under the general guidelines based on the Ratcliffe Criteria (Ratcliffe, 1977), the site is particularly important as part of a network of similar sites in the area.
- 1.1.9 Given that the site is known for important population of birds, additional bird information is required to enable the site to be assessed fully against the SNCI selection guidelines.
- 1.1.7 No changes to the SNCI boundary are recommended.
- 1.1.8 Management recommendations to enhance the biodiversity value of the site are given in section 5.
- 1.1.9 The information within this report will be provided to the Local Sites Partnership (LSP) who will make recommendations to Spelthorne Borough Council for any changes to the SNCI network as a result of this evaluation.

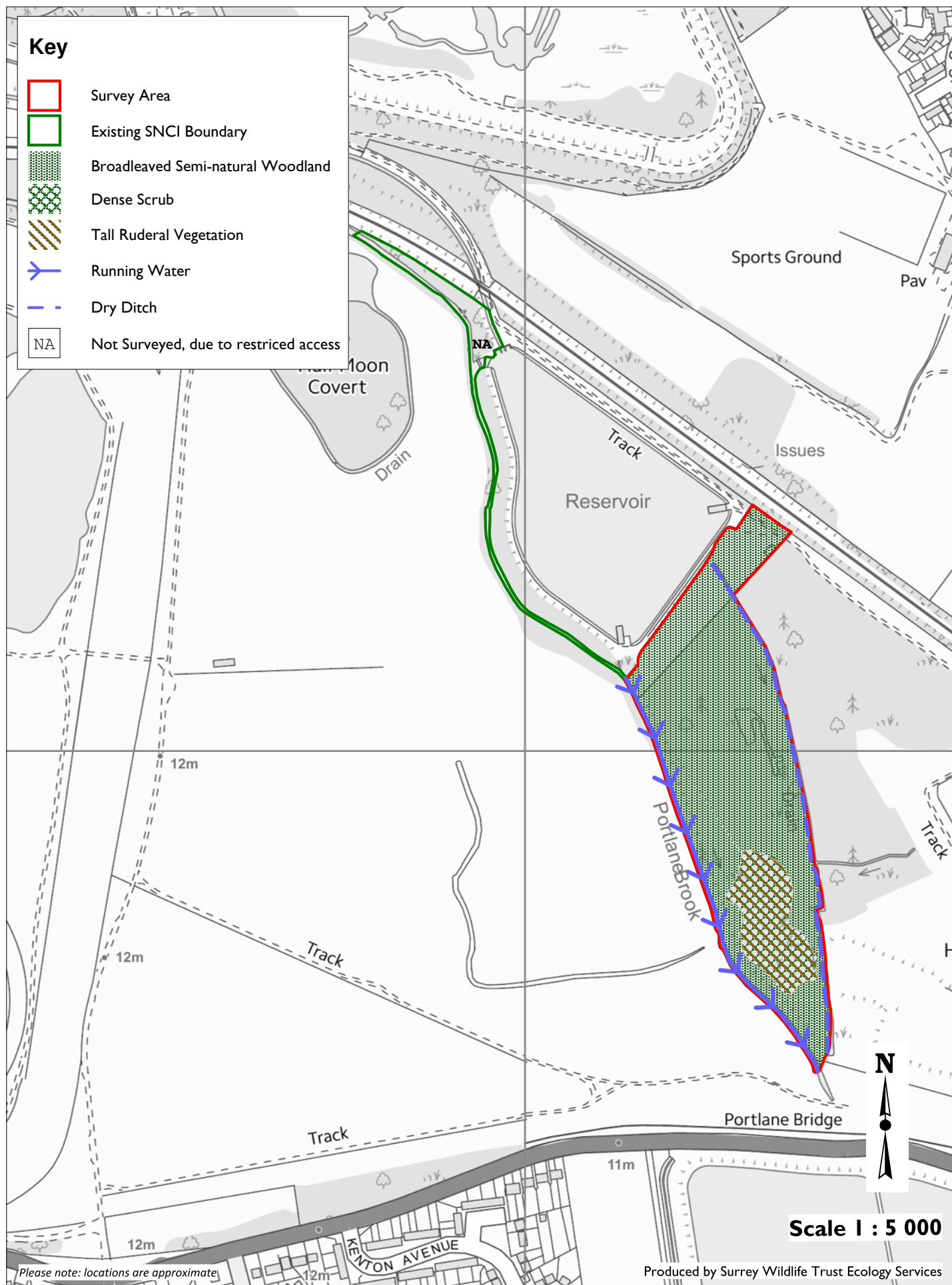


Figure 1
Redhouse Reservoir
Phase I Habitat Survey

Figure 2: Site photographs



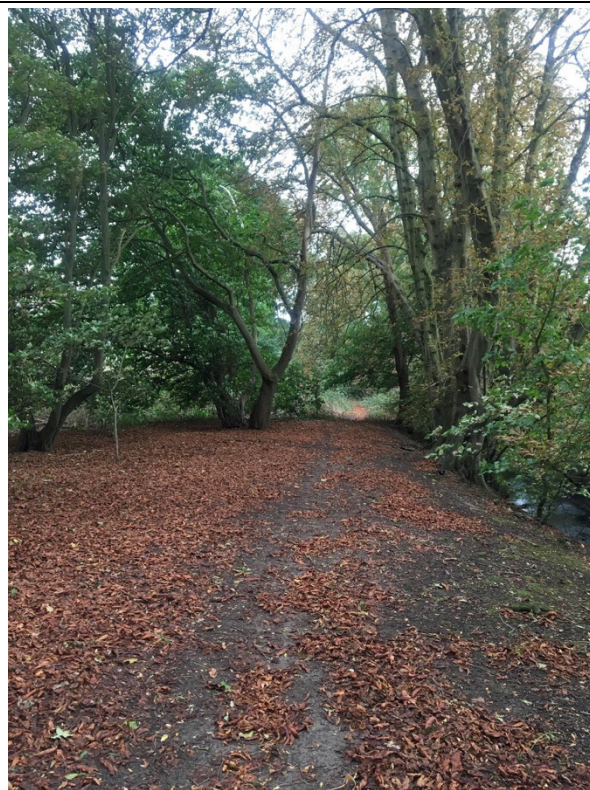
Photograph 1: Woodland with fallen decaying wood



Photograph 2: Mature Pedunculate Oak in woodland



Photograph 3: Woodland, steep bank and Purslane Brook



Photograph 4: Woodland and open avenue



Photograph 5: Open scrub and tall ruderal vegetation, Common Nettle



Photograph 6: Woodland with decaying standing wood

2 Introduction

2.1.1 Surrey Wildlife Trust (SWT) Ecology Services was commissioned on 14th May 2018 by Spelthorne Borough Council to undertake a Site of Nature Conservation Importance (SNCI) survey of Redhouse Reservoir (also known as Kempton Reservoir). This is one of four SNCI surveys, which are being undertaken by SWT Ecology Services this year.

2.2 Scope of work

2.2.1 The aim of this report is to:

- Gather evidence to help determine whether the site meets the Guidance for the Selection of SNCIs (Surrey Wildlife Trust, 2008)
- If the site still meets the criteria for selection, determine whether the boundary of the SNCI continues to be appropriate
- Identify opportunities for positive management to improve the condition of the SNCI.

2.2.2 The information within this report will be provided to the Local Sites Partnership (LSP) who will make recommendations to Spelthorne Borough Council for any changes to the SNCI network as a result of this evaluation.

2.2.3 The information and data provided have been prepared in accordance with current best-practice guidance (CIEEM 2017a) and British Standard Institution (2013). Our ecologists are bound by CIEEM's code of conduct (CIEEM 2017b).

2.3 Survey area

- 2.3.1 The survey area, presented in Figure 1, comprises land within the SNCI boundary, located at TQ1237000. The original SNCI area, including Redhouse Reservoir, was approximately 11ha. The area that the current SNCI covers is approximately 6.8ha and does not now include the reservoir as it is part of the Kempton Park Reservoirs SSSI. The area surveyed as part of this report was the woodland to the south of the reservoir, covering approximately 5.6ha. The woodland strip to the west of the reservoir was not surveyed and covers approximately 1.2ha.
- 2.3.2 The survey area to the south of the reservoir takes in secondary woodland, Portlane Brook a dry drainage ditch and a small area of dense scrub and tall ruderal vegetation. The site is bounded by contiguous secondary woodland to the east, Redhouse Reservoir waterbody to the north, agricultural fields to the west and recreational grounds and fields to the south and south east. Just to the north west is Half Moon Covert, part of the Kempton Lake and Half Moon Covert SNCI site. The survey area is located in the Borough of Spelthorne.

2.4 Ownership

- 2.4.1 The site is owned by Thames Water.

2.5 Methodology

Desk Study

- 2.5.1 The following information was reviewed prior to visiting the site:

- The reasons for selection of the SNCI
- Previous surveys on the site
- Defra MAGIC Maps
- Surrey ancient woodland inventory
- Biodiversity Opportunity Areas map

Phase 1 habitat survey

- 2.5.2 The Phase 1 habitat survey was undertaken within the survey area. Survey methods followed best-practice guidance (JNCC 2010). Phase 1 habitat survey is a standardised system for classifying and mapping habitats within the UK. The survey comprised a systematic search of the survey area, during which surveyors recorded habitat types and mapped their boundaries. Habitat types were defined as per the Phase 1 habitat survey criteria.
- 2.5.3 Within each habitat type a record of the vascular plant species was made and an assessment of their abundance recorded. Abundances of each vascular plant species within each habitat type are based on the DAFOR scale, presented below.
- D - Dominant
 - A - Abundant
 - F - Frequent
 - O - Occasional
 - R - Rare
- 2.5.4 Nomenclature of vascular plants followed Stace (2010). Common names are presented in the text, with scientific names detailed in Appendix 1.

- 2.5.5 A record was also made of any fauna that was incidentally recorded.
- 2.5.6 The presence of any non-native invasive species was noted, and their location and distribution mapped.
- 2.5.7 Notable observations were recorded during the survey as target notes.
- 2.5.8 The survey visit was undertaken on 20th September 2018 by Isobel Girvan BSc (Hons) MCIEEM - Principal Ecologist .

Evaluation of the site

- 2.5.9 The information collected during the information review and Phase 1 habitat survey was used to assess whether the site meets the Guidance for the Selection of SNCIs (Surrey Wildlife Trust, 2008) and whether the boundary of the SNCI continues to be appropriate.
- 2.5.10 Opportunities for positive management to improve the condition of the SNCI were identified.

2.6 Limitations

- 2.6.1 Phase 1 habitat surveys can be undertaken at any time of year, with the optimal season being between March and September, when most plant species are visible. Where feasible, all efforts were made to schedule the survey in optimal weather conditions and time of year. Nevertheless, field surveys usually fail to record all species present for various reasons, including the seasonal absence of some species, and short survey duration. Rare or cryptic species are often missed in short surveys.
- 2.6.2 Permission for the northern section and Portlane Brook to the west of the reservoir was not given.
- 2.6.3 The part of the Portlane Brook in the survey area has steep sides and access was not possible on health and safety grounds.
- 2.6.4 The survey was undertaken in dry, warm weather conditions, which were not a limitation to the surveys.
- 2.6.5 The September survey for woodland is not the optimum time (a late spring survey is often better), but enough of the woodland species identification was made and notes of the habitat to ensure that this did not affect the results adversely.
- 2.6.6 Based on the above, a full appraisal of the plant species and habitats present could be undertaken at the time of the survey.
- 2.6.7 As the primary purpose of the investigation was to assess the habitats present and whether the site meets the Guidance for the Selection of SNCIs, the information review, combined with the field survey, were sufficient to complete this aspect of the assessment.
- 2.6.8 The Defra Guidance on Local Wildlife Sites (Defra, 2006) recommends that sites are reviewed regularly. It is recommended that habitats, such as woodland, should be monitored every 10 years while less stable habitats, such as grassland and heathland, should be monitored every five years.

3 Baseline Conditions

3.1 Desk study results

Previous reason for selection

- 3.1.1 The site was reselected in 2010 as *'it represents an important protective buffer to the Redhouse Reservoir which is part of the Kempton Park Reservoirs SSSI and South West London Waterbodies SPA/Ramsar'*.

Previous surveys on the site

- 3.1.2 The following surveys have been undertaken on the site in the past;

- 16 June 1995 Samantha Walters
- 10 September 2010 Sue Cooper

Statutory and non-statutory designated sites in the local area

- 3.1.3 Four Surrey statutory designated sites were recorded, including one Special Protection Areas (SPA) one Sites of Special Scientific Interest (SSSI) and two Local Nature Reserves (LNR).
- 3.1.4 Three non-statutory designated sites, comprising Sites of Nature Conservation Importance (SNCI), were recorded within 1km of the survey area.
- 3.1.5 The distance of these Surrey statutory and non-statutory designated sites from the survey area is presented in Table 1.

Table 1: Statutory and non-statutory designated sites desk study results

Site name	Brief description	Distance from survey area (m)
Statutory designated sites		
South West London Waterbodies SPA (inc. Ramsar Site)	A complex of reservoirs and restored sand & gravel pits important for overwintering wildfowl (esp. Gadwall and Shoveler). Immediately to the north.	0m
Kempton Park Reservoirs SSSI	Complex of reservoirs, important for birds. Immediately to the north.	0m
Kempton Nature Reserves LNR	Waterbody supporting important bird populations, lying to the north of this SNCI.	320m
Oat Avenue Hampton LNR	Local Nature Reserve located to the north of this SNCI.	750m
Non-statutory designated sites		
Kempton Lake and Half Moon Covert SNCI	Waterbodies supporting important bird populations, lying to the north west of this SNCI.	310m
River Thames SNCI	River and associated habitat, located to the south of this SNCI.	560m
Molesey Reserve SNCI	Old gravel pits, waterbodies present, located to the south of this SNCI.	680m

Ancient woodland

- 3.1.6 Woodland within the SNCI is not classified as ancient semi-natural woodland (Davies, 2011)
- 3.1.7 No parcels of ancient woodland were identified within 1km of the survey area.

Biodiversity Opportunity Areas

- 3.1.8 The survey area is not located within a Biodiversity Opportunity Area (BOA).

3.2 Extended Phase 1 habitat survey results

- 3.2.1 Five habitats were recorded during the Phase 1 habitat survey. The location of these is presented in Figure 1 and photographs are presented in Figure 2. A summary of each habitat is provided below.
- 3.2.2 A total of 35 vascular plants were recorded during the survey. This is a fairly low but corresponds with the size of the survey area, the habitats present and the time of year. None are 'Species typical of grassland of conservation interest in Surrey' (as listed in Guidance for the Selection of SNCIs in Surrey, May 2008). There are two ancient woodland indicator plants for the south-east, (Kirby, 2004) present, which is a very low number and not significant. None are notable plant species as listed on the Draft Surrey Rare Plant Register (Sankey, 2018).
- 3.2.3 There is only one invasive plant species recorded and no non-native invasive plant species recorded. Sycamore is abundant throughout the woodland and is on the Surrey Non-native Invasive Species List (SWT, 2012).
- 3.2.4 A list of vascular plant species recorded within each habitat type and their abundance and status is provided in Appendix 1.

Table 2: Phase 1 habitat survey results

Phase 1 habitat	Photo No.	Description
Broad-leaved semi-natural woodland	1-4 & 6	This woodland, covering the majority of the site, comprises secondary woodland with mature established open grown trees towards the central and southern areas, whilst a younger woodland has developed in the north. In the northern part of the woodland close to the reservoir Sycamore has invaded the canopy and is prevalent in the understorey as well as young spindly trees. This is casting a heavy shade on the woodland floor. Other mature trees are however present in the canopy, such as occasional Pedunculate Oak, they too are present in the understorey. Holly is a rare shrub. There is very little in the field layer with rare Male Fern and Ash saplings. Decaying wood is plentiful both as standing and lying wood. Where there are gaps some Common Nettle and Ash seedlings and saplings are present. Woodland on the edge of Portlane Brook includes damp loving species such as Crack Willow and Alder as well as other such as Ash and the ubiquitous Sycamore. It was accompanied by dense Bramble, Common Nettle, young Ash, Elder in the north, where a little more light was able to get in. However the canopy soon turned more shaded and the field layer was generally scant. Along the south western edge of the site there were several mature and maturing open-grown trees, perhaps as an original avenue of planted trees including Pedunculate Oak, Hornbeam and Horse Chestnut. Maps show a pond in the woodland, however during the site visit this was a dry hollow. There was no damp-loving vegetation around, therefore it is thought that this pond is now defunct.
Dense scrub & tall ruderal vegetation	5	Towards the southern end of the site it opens out slightly, which has allowed scrub and ruderal vegetation to dominate such as patchy Rusty Willow and Elder with abundant Common Nettle and occasional Wild Teasel and rare Rosebay Willowherb.
Running water	3	The Portlane Brook runs along the western boundary of the site, it is very steep sided and access was difficult. It was approximately 2-4m wide and appeared 30-40cm deep with clear water. There was little marginal or emergent vegetation due to the dense woodland canopy, only Common Ivy was able to complete with the shading.
Dry ditch		Along the eastern boundary there is an old drainage ditch. At the time of the site visit the ditch was dry. It has moderately gentle slopes, wide at approximately 2m and deep in places and heavily shaded by the surrounding woodland. Some Male Fern is present on the sides.

4 Site Evaluation

Does the site still support the features for which it was selected?

- 4.1.1 The site was reselected in 2010 as it represents an important protective buffer to the Redhouse Reservoir which is part of the Kempton Park Reservoirs SSSI and South West London Waterbodies SPA/Ramsar. Under this criteria the woodland to the south (surveyed in 2018) and the woodland strip to the west of the reservoir (not surveyed in 2018) does still act as a protective buffer zone and therefore still supports the features for which it was originally selected. A large heronry is recorded in both the 1995 and 2010 SNCI surveys, but this was not seen during the 2018 site visit.

Does the site meet the SNCI selection guidelines as revised in 2008?

- 4.1.2 The site **may meet** the SNCI selection guidelines for the following criteria:
- 4.1.3 21) Birds c) Supports a breeding bird assemblage or wintering waterbird assemblage of county importance.
- 4.1.4 Under the general guidelines based on the Ratcliffe Criteria (Ratcliffe, 1977), the site is particularly important as part of a network of similar sites in the area

See appendices 3 & 4 for the full assessment of the site against all criteria.

Signs of damage

- 4.1.5 No signs of damage were found.

Site condition (surveyor's opinion)

- 4.1.6 Unfavourable Declining – It would appear from the on-ground evidence that this site would in the recent past have been more actively managed with open grown planted trees, avenues and regularly walked. However, it has now been largely abandoned. The result is that the mature and maturing trees are being swamped by tall, thin trees, especially Sycamore. It was also appear that the site is drying out somewhat, through the evidence of dry ditches and a dry hollow former pond. Given that this site is now not open to the public, it seems unlikely that a new habitat management scheme would be implemented.

Boundaries

- 4.1.7 No boundary changes are recommended.

Additional information or surveys required

- 4.1.8 It is recommended further bird surveys are undertaken to ascertain whether or not the bird species outlined in the original SNCI reasons for selection are still present in the SNCI.

5 Site Management Recommendations

- 5.1.1 No management of the site is currently undertaken.
- 5.1.2 Specific management for the site in order to improve the overall biodiversity would include thinning of Sycamore, especially around the mature and maturing trees, around the ditch and along the Purslane Brook. The scrub patch in itself is not particularly unusual, but does add a bit of diversity to the site and therefore should be retained, but managed, with periodic strimming. Other areas of scrub and undercanopy should be

encouraged where possible. The following information can be used as a guide but is not exhaustive:

Woodland

In order to maximise the biodiversity of a woodland, it is important to create a diverse structure. This will include a canopy of mature trees, a shrub layer and a proportion of open space. Trees should be of a range of ages and species.

In order to maintain this diverse structure it is likely that some felling, thinning or coppicing will need to take place. Felling and coppicing will create temporary areas of open space. In addition permanent rides and glades are of benefit to a range of invertebrates and flora. These may require management in order to keep them open. Areas of open space should be of a sufficient size so that sunny conditions prevail for most of the day.

Note that any thinning or felling operations greater than 5m³ will require a felling licence from the Forestry Commission.

The presence of decaying wood within woodland is very important for a range of species, particularly fungi, invertebrates and mammals such as bats. A mixture of standing and fallen deadwood is important as they provide different conditions and support different species. Only fell dead trees where necessary for health and safety reasons and if possible only remove the dangerous branches rather than the whole tree.

Non-native species can cause problems within woodland and may need control. Sycamore can be a problem in woodlands as it comes into leaf early, shading spring-flowering plants. Its leaf litter rots slowly and does not provide a good environment for ground flora. In addition it supports a lower diversity of insects than native trees. Consider thinning this species if it is becoming abundant (also see invasive species below).

When carrying out work in woodlands it is best to avoid the bird nesting season (March-August) and to avoid carrying out work when the ground is particularly soft to avoid damaging the soil. Protection from deer or rabbits may be necessary particularly of recently cut coppice stools. Wherever possible avoid planting as natural regeneration of woodland is most beneficial to the local ecology.

Much semi-natural woodland of this type traditionally existed primarily to supply timber, firewood and coppice products. The resumption of sustainable active management, possibly supported by grant aid, could provide a modest economic return for the landowner whilst simultaneously increasing the biodiversity of the woodland by creating a more diverse structure.

Scrub

Scrub is often a component of other habitats and is often viewed as a negative element that needs to be controlled. However it supports a wide range of species and the transitional zone between scrub and other habitats is particularly important for many species including invertebrates, breeding birds and reptiles.

When managing scrub, it is important to maintain structural diversity and a range of age classes. Rotational cutting can help achieve this. Cutting the scrub back in some places can

create a mosaic of scrub and grassland. Grazing also has a similar effect as long as the grazing pressure is not too high.

6 References and Bibliography

- 6.1.1 CIEEM (2011) Professional Guidance Series 10: Guidance on metadata Standards: Reporting, sharing and archiving ecological data. Chartered Institute of Ecology and Environmental Management, Winchester
- 6.1.2 CIEEM (2015) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester
- 6.1.3 CIEEM (2017) Code of Professional Conduct. Chartered Institute of Ecology and Environmental Management, Winchester.
- 6.1.4 Davies R. et al, (2011) A revision of the Ancient Woodland Inventory for Surrey. Surrey Biodiversity Information Centre.
- 6.1.5 JNCC (2010) Handbook for Phase 1 habitat survey: A technique for environmental audit. JNCC, Peterborough
- 6.1.6 Kirby, K (2004) *Table of Ancient Woodland Indicator Plants (AWIs)*. English Nature
- 6.1.7 Lawes Agricultural Trust (1983) *Soil Survey of England and Wales*. Rothamsted Experimental Station.
- 6.1.8 Plantlife (2010) Plantlife, Here today, here tomorrow? Horizon scanning for invasive non-native plants, Plantlife.
- 6.1.9 Poland J. and Clement C. (2009) *The Vegetative Key to the British Flora*. Botanical Society of the British Isles.
- 6.1.10 Ratcliffe, D (1977) *A Nature Conservation Review*. Cambridge University Press.
- 6.1.11 Rodwell J. S. (Ed) (1991) *British Plant Communities Volume 1 Woodlands and Scrub*. Cambridge University Press.
- 6.1.12 Rodwell J. S. (Ed) (1991) *British Plant Communities Volume 2 Mires and heaths*. Cambridge University Press.
- 6.1.13 Rodwell J. S. (Ed) (1992) *British Plant Communities Volume 3 Grasslands and montane communities*. Cambridge University Press.
- 6.1.14 Rodwell J. S. (Ed) (1995) *British Plant Communities Volume 4 Aquatic communities, swamps and tall-herb fens*. Cambridge University Press.
- 6.1.15 Rodwell J. S. (Ed) (2000) *British Plant Communities Volume 5 Maritime communities and vegetation of open habitats*. Cambridge University Press.
- 6.1.16 Rose F. (2006) *The Wild Flower Key*. Penguin Books Ltd.
- 6.1.17 Sankey, A., (Ed). 2018 (In Press); *Surrey Rare Plant Register*, Surrey Wildlife Trust, Pirbright, *October 2018 Draft*.
- 6.1.18 Stace C.A. (2010) *New Flora of the British Isles* (3rd edition). Cambridge University Press.
- 6.1.19 Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor I. (2014) *A Vascular Plant Red List for England*. Botanical Society of Britain and Ireland, Bristol.
- 6.1.20 Surrey Wildlife Trust (2008) *Guidance for the Selection of Sites of Nature Conservation Importance (SNCIs) in Surrey*. Surrey Wildlife Trust.

- 6.1.21 Surrey Biodiversity Partnership (2010) Biodiversity & Planning in Surrey. Surrey Wildlife Trust, Pirbright
- 6.1.22 Surrey County Council, English Nature, Surrey Wildlife Trust (1991) *Surrey Phase 1 Habitat Survey Report*.
- 6.1.23 Surrey Wildlife Trust (2012) Surrey non-native invasive species list.
- 6.1.24 Waite, M (2017) State of Surrey's Nature, produced by Surrey Wildlife Trust on behalf of the Surrey Nature Partnership

7 Appendix 1: Vascular plant species recorded during Phase 1 habitat survey

Scientific name	Common name	Site abundance (DAFOR)	*Indicator Species	**AWIs	***County Notable	****Invasive species
<i>Acer pseudoplatanus</i>	Sycamore	A				SWT, 2012
<i>Quercus robur</i>	Pedunculate Oak	F				
<i>Ilex aquifolium</i>	Holly	O		*		
<i>Dryopteris dilatata</i>	Broad Buckler-fern	LF				
<i>Aesculus hippocastanum</i>	Horse-chestnut	O				
<i>Acer plantanoides</i>	Norway Maple	R				
<i>Pinus sylvestris</i>	Scots Pine	LF				
<i>Rubus fruticosus</i> agg.	Bramble	LF				
<i>Fraxinus excelsior</i>	Ash	LF				
<i>Salix fragilis</i>	Crack Willow	LF				
<i>Betula pendula</i>	Silver Birch	LF				
<i>Sambucus nigra</i>	Elder	R				
<i>Pteridium aquilinum</i>	Bracken	R				
<i>Galium aparine</i>	Cleavers	O				
<i>Urtica dioica</i>	Common Nettle	LA				
<i>Glechoma hederacea</i>	Ground-ivy	R				
<i>Alnus glutinosa</i>	Alder	R				

Scientific name	Common name	Site abundance (DAFOR)	*Indicator Species	**AWIs	***County Notable	****Invasive species
<i>Hedera helix</i> ssp. <i>helix</i>	Common Ivy	LA				
<i>Ribes uva-crispa</i>	Gooseberry	R				
<i>Carpinus betulus</i>	Hornbeam	R		*		
<i>Ulmus procera</i>	English Elm	R				
<i>Cirsium arvense</i>	Creeping Thistle	R				
<i>Dipsacus fullonum</i>	Wild Teasel	R				
<i>Crataegus monogyna</i>	Hawthorn	R				
<i>Holcus lanatus</i>	Yorkshire-fog	R				
<i>Lapsana communis</i> ssp. <i>communis</i>	Nipplewort	R				
<i>Epilobium parviflorum</i>	Hoary Willowherb	R				
<i>Corylus avellana</i>	Hazel	R				
<i>Salix cineria</i> ssp. <i>oleifolia</i>	Rusty Willow	R				
<i>Lamium album</i>	White Dead-nettle	R				
<i>Calystegia sepium</i>	Hedge Bindweed	R				
<i>Chamaenerion angustifolium</i>	Rosebay Willowherb	R				
<i>Epilobium montanum</i>	Broad-leaved Willowherb	R				
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	Thyme-leaved Speedwell	R				
<i>Poa annua</i>	Annual Meadow-grass	R				

Scientific name	Common name	Site abundance (DAFOR)	*Indicator Species	**AWIs	***County Notable	****Invasive species
Total		35	0	2	0	1

*Species typical of grassland of conservation interest in Surrey as listed in Guidance for the Selection of SNCIs in Surrey (SWT, 2008). The number of bold species within this list should also be noted separately.

**Ancient Woodland Indicator species (as listed for the Nature Conservancy Council South-East Region, see Rose 2006)

***Species that are Rare, Scarce or of Conservation Interest in Surrey (as listed on the Surrey Rare Plant Register (Sankey, 2018))

****Invasive species;

- Schedule 9: Species as listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended),
- Plantlife, 2010: Species identified as Critical, Urgent or Moderate risk within Horizon Scanning for Invasive non-native plants (Plantlife , 2010),
- SWT, 2012: Species listed within Surrey Non-native Invasive Species List (SWT, 2012).

8 Appendix 2: Additional vascular plant species of interest recorded on the site in previous surveys

Scientific name	Common name	*Indicator Species	** AWIs	*** County Notable	**** Invasive species	Date of record / Recorder
<i>Acer campestre</i>	Field Maple		*			Sue Cooper, 10/9/10 / S Walters, 16/06/95
<i>Carex pendula</i>	Pendulous Sedge		*			Sue Cooper, 10/9/10
<i>Carex remota</i>	Remote Sedge		*			Sue Cooper, 10/9/10
<i>Festuca ovina</i>	Sheep's Fescue	*				Sue Cooper, 10/9/10
<i>Galium verum</i>	Lady's Bedstraw	*				Sue Cooper, 10/9/10
<i>Prunus avium</i>	Wild Cherry		*			Sue Cooper, 10/9/10
<i>Rosa arvensis</i>	Field Rose		*			Sue Cooper, 10/9/10
<i>Rumex acetosa</i>	Common Sorrel	*				Sue Cooper, 10/9/10 / S Walters, 16/06/95
<i>Sedum acre</i>	Biting Stonecrop	*				Sue Cooper, 10/9/10 / S Walters, 16/06/95
<i>Verbascum Thapsus</i>	Great Mullein	*				Sue Cooper, 10/9/10
<i>Verbena officinalis</i>	Vervain	*				Sue Cooper, 10/9/10
<i>Veronica montana</i>	Wood Speedwell		*			Sue Cooper, 10/9/10 / S Walters, 16/06/95
<i>Alisma plantago-aquatica</i>	Water-plantain	*				S Walters, 16/06/95
<i>Arenaria serpyllifolia</i>	Thyme-leaved Sandwort	*				S Walters, 16/06/95

Scientific name	Common name	*Indicator Species	**AWIs	***County Notable	****Invasive species	Date of record / Recorder
<i>Carpinus betulus</i>	Hornbeam		*			S Walters, 16/06/95
<i>Epilobium tetragonum</i>	Square-stalked Willowherb	*				S Walters, 16/06/95
<i>Hyacinthoides non-scripta</i>	Bluebell		*			S Walters, 16/06/95
<i>Impatiens glandulifera</i>	Himalayan Balsam				Schedule 9	S Walters, 16/06/95
<i>Leucanthemum vulgare</i>	Oxeye Daisy	*				S Walters, 16/06/95
<i>Lotus pedunculatus</i>	Large Bird's-foot Trefoil	*				S Walters, 16/06/95
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	*				S Walters, 16/06/95
<i>Scutellaria galericulata</i>	Skullcap	*				S Walters, 16/06/95
		Total: 13 No. of bold: 1	8	0	1	

*Species typical of grassland of conservation interest in Surrey (as listed in Guidance for the Selection of SNCIs in Surrey, May 2008). The number of bold species within this list should also be noted separately.

**Ancient Woodland Indicator species (as listed for the Nature Conservancy Council South-East Region, see Rose 2006)

***Species that are Rare, Scarce or of Conservation Interest in Surrey (as listed on the Surrey Rare Plant Register (Sankey, 2018))

****Invasive species;

- Schedule 9: Species as listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended),
- Plantlife, 2010: Species identified as Critical, Urgent or Moderate risk within Horizon Scanning for Invasive non-native plants (Plantlife, 2010),
- SWT, 2012: Species listed within Surrey Non-native Invasive Species List (SWT, 2012)

9 Appendix 3: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – Habitat Guidelines

Habitat	Notes	Result
1) Woodland		
a) All sites containing over 5ha of ancient semi-natural woodland (ASNW).	The woodland on the site is not selected as Ancient woodland.	Criteria not met.
b) Other ancient woodland including plantations on ancient woodland sites where there is a significant element of the original semi-natural woodland surviving.	See above.	Criteria not met.
c) Areas of woodland which are not themselves ancient but which are immediately adjacent to ancient woodland sites should also be considered for selection.	There is no ancient woodland immediately adjacent to the site.	Criteria not met.
d) Other semi-natural woodland comprising important community types of restricted distribution in the county. This will include;		
e) Wet woodland falling within NVC types; W1, W2, W4c, W5, W6 and W7	No wet woodland is present.	Criteria not met.
f) Lowland Beech, Yew and Box Woodland falling within NVC types; W12, W13, W14 and W15	This type of woodland is not present.	Criteria not met.
g) Wealden gill woodland	This type of woodland is not present.	Criteria not met.
h) Sites supporting a significant population of a species as discussed in the species guidance.	See Appendix 2	
2) Wood Pasture, Parkland and Veteran Trees		

Habitat	Notes	Result
a) Wood pasture and parkland over 2ha, which can demonstrate 3 or more of the features defined in the selection guidelines (Surrey Wildlife Trust, 2008) should be considered for selection.	Not present.	Criteria not met.
b) Groups of 3 or more ancient or veteran trees as defined in the selection guidelines (Surrey Wildlife Trust, 2008), within 0.25ha.	Not present.	Criteria not met.
c) Sites that support a significant population of a species as discussed in the species guidance.	See Appendix 2	
3) Traditional Orchards		
a) Traditionally managed orchards of biodiversity value, as defined in the selection guidelines (Surrey Wildlife Trust, 2008).	Not present.	Criteria not met.
b) Sites that support a significant population of a species as discussed in the species guidance.	See Appendix 2	
4) Neutral Grassland		
a) All sites supporting the following NVC communities; MG4, MG5 or MG8.	No grassland present.	Criteria not met.
b) Grassland sites which support a high diversity of species typical of grassland of conservation interest in Surrey. As a guideline, sites which support 15 or more of the species listed in Table 1 including at least 2 of the species in bold are likely to be of SNCI quality.	No grassland present and no grassland indicator species recorded on the site.	Criteria not met.
c) Sites which support a significant population of a species as discussed in the species guidance.	See Appendix 2	

Habitat	Notes		Result
5) Acidic Grassland			
a) All sites supporting the following NVC communities; U1, U2, U3, U4 or U20a.	Grassland not present.		Criteria not met.
b) Grassland sites which support a high diversity of species typical of grassland of conservation interest in Surrey. As a guideline, sites which support 15 or more of the species listed in Table 1 including at least 2 of the species in bold are likely to be of SNCI quality.	No grassland present and no grassland indicator species recorded on the site.		Criteria not met.
c) Sites which support a significant population of a species as discussed in the species guidance.	See Appendix 2		
6) Calcareous Grassland			
a) All sites supporting the following NVC communities: CG2, CG3, CG4, CG5, CG6 or CG7.	Grassland not present.		Criteria not met.
b) Grassland sites which support a high diversity of species typical of grassland of conservation interest in Surrey. As a guideline, sites which support 15 or more of the species listed in Table 1 including at least 2 of the species in bold are likely to be of SNCI quality.	No grassland present and no grassland indicator species recorded on the site.		Criteria not met.
c) Sites which support a significant population of a species as discussed in the species guidance.	See Appendix 2		
7) Heathland			

Habitat	Notes	Result
a) All areas of heathland vegetation; including matrices of dwarf shrub, bare ground, grassland, valley mires and scrub should be considered. Heathland over 2ha would automatically qualify.	Not present.	Criteria not met.
b) Areas of heathland which are heavily afforested or have succeeded to mature woodland with potential to be restored to heathland and either; - retain sufficient remnants of heathland or - are contiguous with, or form an integral part of an area of heathland.	Not present	Criteria not met.
c) Sites which support a significant population of a species as discussed in the species guidance.	See Appendix 2	
8) Standing open water		
a) Any lake classified by the UK Lakes HAP joint steering group as Tier 1 or Tier 2 where not already covered by other designations.	Not present.	Criteria not met.
b) Ponds that qualify under the criteria for UK BAP priority habitat.	Old pond marked on map, but dried out and defunct.	Criteria not met.
c) Water bodies or clusters of water bodies which support a significant population of a species as discussed in the species guidance.	See Appendix 2	
9) Wetlands		
a) All reedbeds over 2ha.	Reedbeds not present.	Criteria not met.
b) Reedbeds of between 0.25 and 2ha where they form part of a wider habitat mosaic.	Not present.	Criteria not met.

Habitat	Notes	Result
c) Fens, mires, swamps and marshes over 2ha with flora characteristic of the following NVC communities: M6, M21, M24, M25, M27, M29, S3, S4, S5, S6, S7, S8, S9, S10, S12, S13, S14, S15, S16, S19, S22, S23, S26, S27, S28.	Not present.	Criteria not met.
d) Fens, mires, swamps and marshes (NVC as above) of between 0.25 and 2ha where they form part of a wider habitat mosaic.	Not present.	Criteria not met.
e) Sites which support a significant population of a species as discussed in the species guidance.	See Appendix 2	
10) Floodplain Grazing Marsh		
a) All floodplain grazing marsh over 5ha that is not designated as SSSI.	Not present.	Criteria not met.
b) Floodplain grazing marsh of less than 5ha where it forms part of a wider habitat mosaic of water-dependent habitats, or where it links SSSIs.	Not present.	Criteria not met.
c) Sites that support a significant population of a species as discussed in the species guidance.	See Appendix 2	
11) Rivers, Canals and Streams		
a) Chalk stream.	Not present	Criteria not met.
b) River classed by the Environment Agency as Grade A within the GQA.	Not present.	Criteria not met.
c) River with a HMS of 0 (classified as "pristine" by RHS).	Not present.	Criteria not met.

Habitat	Notes	Result
d) River with a conservation evaluation of either "Critical" or "Important" within strategic RCS.	Not present.	Criteria not met.
e) River that supports viable populations or spawning sites of animals listed in guidelines.	Not present.	Criteria not met.
f) Sites that support a significant population of a species as discussed in the species guidance	See Appendix 2	
12) Open Mosaic Habitats on Previously Developed Land		
a) Open Mosaic habitat sites where; • 6 or more of the characteristic features are found • form part of a wider complex of similar areas, providing long term habitat opportunity • There is a significant invertebrate assemblage	Not present.	Criteria not met.
b) Sites that support a significant population of a species as discussed in the species guidelines.	See Appendix 2	
13) Arable		
a) Meets criteria for Important Arable Plant Areas and not covered by other designation.	Not present.	Criteria not met.
b) Supports a significant population of a species as discussed in the species guidance.	See Appendix 2	

Habitat	Notes	Result
14) Scrub Communities <i>When selecting sites based on other habitats all areas of associated scrub should be identified and included within the SNCI boundary.</i>		N/A
15) Community and access a) Sites that serve as Accessible Natural Greenspace within urban areas. <i>Sites that are close to but do not fully meet the habitat or species guidelines may be considered for selection if they meet this criteria.</i>	Not present, private land not accessible.	Criteria not met.
16) Geology and Geomorphology RIGS regarded as the geological equivalent of SNCIs.	Not selected as a RIGS site.	Criteria not met.

10 Appendix 4: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – Species Guidelines

Species	Notes	Result
17) Mammals		
Sites with known populations of:		
a) Dormouse	Some suitable habitat present, However the woodland does not feature high number of scrub or underscrub features and is relatively isolated making it less likely that they are present.	Unknown, but unlikely.
b) Water Vole	Thought to be functionally extinct in Surrey. Purtilane Brook provides sub-optimal habitat.	Unlikely.
c) Otter	Habitat is suitable and near to Portlane Brook for transient Otters to use. However very few Otters have been recorded in Surrey recently.	Unknown, but unlikely.
18) Mammals – Bats		
a) Contains a 'significant' bat breeding roost or hibernation site.	Suitable bat habitat present, but populations unknown.	Unknown.
b) Any breeding roost or hibernation site used by multiple bat species concurrently.	Suitable bat habitat present, but populations unknown.	Unknown.
c) Foraging sites with more than 5 species recorded or used by Annex II species.	Suitable bat habitat present, but populations unknown.	Unknown.
19) Amphibians		
a) Supports populations of Natterjack Toad.	Habitat not suitable.	Criteria not met.

Species	Notes	Result
b) Regularly record 'good' or 'exceptional' breeding populations of Great Crested Newt.	Sub-optimal habitat present and lack of waterbody.	Unknown.
c) Supports populations of four or more native amphibian species.	Sub-optimal habitat present and lack of waterbody.	Unknown.
d) 'Exceptional' populations of any amphibian species.	Sub-optimal habitat present and lack of waterbody.	Unknown.
e) 'Good' populations of 3 or more native amphibian species.	Sub-optimal habitat present and lack of waterbody.	Unknown.
20) Reptiles		
a) Supports populations of Smooth Snake or Sand Lizard.	Habitat not suitable.	Criteria not met.
b) Populations of 3 or more native reptile species.	Limited suitable habitat present.	Unknown.
c) 'Exceptional' population of a single reptile species or a 'good' population of Adders	Habitat not unsuitable.	Unlikely.
d) Assemblage of species scoring at least 4 points.	Limited suitable habitat present.	Unlikely.
21) Birds		
a) Holds more than 10% of Surrey's breeding or wintering population of a species.	No current data available.	Unknown, but unlikely.
b) Supports species on the conservation concern list for Surrey categories 1-3.	No current data available.	Unknown, but unlikely.
c) Supports a breeding bird assemblage or wintering waterbird assemblage of county importance.	No current data available.	Unknown, but unlikely.

Species	Notes	Result
22) Invertebrates		
a) Supports one or more nationally rare or declining species as listed in the latest national Red Data Books or lists.	The nature of the site and size would suggest that this criterion would not be met.	Unknown, unlikely.
b) Supports an important assemblage or population(s) of a BAP priority species.	The nature of the site and size would suggest that this criterion would not be met.	Unknown, unlikely.
c) Supports an important assemblage or population(s) of a nationally scarce species.	The nature of the site and size would suggest that this criterion would not be met.	Unknown, unlikely.
23) Additional Invertebrate Guidelines		
a) Meet the British Dragonfly Society criteria for Key Dragonfly Sites	The nature of the site and size would suggest that this criterion would not be met.	Unknown.
b) Supports a butterfly species within list A.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
c) Supports a locally notable population of four or more of the butterfly species within list B.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
d) Sites with a Species Quality Score of greater than 4 for Wasps, bees & Ants.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
24) Vascular Plants		
a) Supports one or more species included in the latest national Red Data List for plants.	None were recorded during the 2018 survey.	Criteria not met.
b) Supports an important assemblage or population(s) of a UK BAP priority species.	No UK BAP priority species have been recorded here.	Criteria not met.

Species	Notes	Result
c) Supports a nationally scarce species.	No Nationally Scarce species were recorded during the 2018 survey.	Criteria not met.
d) Supports species identified by Surrey Botanical Society as rare and notable within Surrey.	No County rare or notable species were recorded during the 2018 survey. Blue-fruited Water-starwort was recorded in 1995.	Criteria not met.
e) Sites selected as Important Plant Areas by Plantlife.	Not selected.	Criteria not met.
25) Lower Plants & Fungi		
a) Supports one or more nationally rare or declining species as listed in the national Red Data Books.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
b) Supports an important assemblage or population(s) of UK BAP priority species.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
c) Supports a nationally scarce species.	The nature of the site and size would suggest that this criterion would not be met.	Unlikely.
d) Sites classified as Important Fungus Areas by Plantlife.	Not selected.	Criteria not met.
e) Sites classified as Important Stonewort Areas by Plantlife.	Not selected.	Criteria not met.

11 Appendix 5: A review of the site against the Guidance for the Selection of SNCIs in Surrey (Surrey Wildlife Trust, 2008) – General Guidelines

11.1.1 Sites that are close to, but do not quite meet the detailed habitat and species guidelines later in the report may be considered for selection where they are judged as important using the general guidelines below. These general guidelines are based upon the Ratcliffe Criteria (1977), for assessing the nature conservation value of a proposed SNCI with the rationale based upon the findings of the survey.

Selection Criteria	Analysis of site against criteria
Rarity	No rare or scarce habitat types were recorded.
Diversity	The site is not exceptionally botanically or structurally diverse.
Size	The site is small.
Naturalness	Accidentally introduced invasive plant species are present and Sycamore is abundant throughout the site.
Typicalness	The habitat is fairly typical of the surrounding area.
Fragility	Purslane Brook is susceptible to pollution events and changing hydrology/fluctuating water levels. The pond feature has already succumbed to changing local hydrology.
Replacability	Whilst it is not irreplaceable, it would be take time to re-establish the biodiversity this site provides.
Position in ecological unit / Connectivity with the landscape	The woodland connects with woodland to the north of the site and beyond, mostly associated with the local reservoirs and lakes. Is the site within a BOA? – look on GIS...
Educational value and value for the appreciation of nature.	The site is on private land and there is no opportunity for it to be used for educational purposes.
Potential value	Improving the management could allow the site to have SNCI value.
Recorded history and cultural associations	It is known that in the past there has been some bird recording in the area.

