



## **Ecological Assessment: Gosden Meadow & Woodland, Shalford**



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## 1.0 Introduction

- 1.1 Surrey Wildlife Trust (SWT) Consultancy was commissioned by The Wey and Arun Canal Trust (WACT), to undertake an ecological assessment at Gosden Meadow and Woodland Strip, Shalford, Surrey (Central Grid Reference TQ000461). See **Figure 1**.
- 1.2 The assessment is required as WACT approached Community Realm CIC in 2009 to undertake a feasibility study for an environmental enhancement and public access scheme along the route of the Cranleigh Waters between Shalford and Bramley. WACT wishes to engage with the local community and prepare the landscape for their longer term aspiration to restore the link between the Wey Navigation and restored sections of the Wey and Arun Canal. The scheme includes a series of public access and interpretation opportunities which aim to celebrate heritage, wildlife and landscape values of the valley corridor of the Cranleigh Waters.
- 1.3 The aims of the ecological assessment are:
  - to provide an overall picture of the botanical habitats within the site
  - to assess the potential for the site to support protected species
  - to provide appropriate and realistic brief management recommendations
  - and outline future survey and monitoring work.
- 1.4 A site visit was made on the 5<sup>th</sup> May 2010 by Isobel Girvan BSc (Hons) MIEEM, Principal Ecologist for SWT Consultancy.
- 1.5 The site visit was made prior to the commencement of the initial site preparation works. The ecologist recommendations are based on the existing ecology, determined from the site visit date.
- 1.6 The protected species assessment can only give a preliminary view of the site and whilst every effort has gone into providing a comprehensive description, it should be noted that it is only valid at the time when the assessment was carried out.
- 1.7 A data search has been completed by the Surrey Biodiversity Information Centre (SBIC) and is included as Appendix 1.

## 2.0 Description of Site

- 2.1 Surrey County Council (SCC) operates two special schools at Bramley. Wey House School (Grid Reference TQ001458) and Gosden House School (GR TQ003456) located between the A281 and the Cranleigh Waters. SCC and WACT have begun negotiations to enable the trust to develop and manage a small area of land at the northern extent of the schools site (referred to in this report as Gosden Meadow) (GR TQ000461), and a strip of land adjacent to the water (known as Gosden Woodland Strip in this report) (GR TQ002460), see **Figure 1**.
- 2.2 The entire site covers approximately 3.7 hectares (ha) (9.3 acres) which has been broken down by habitat in **Table 1** below.

**Table 1 – Coverage of site habitats**

Area name	Habitat type	Hectares	Acres
Gosden Meadow (inc. dry & wet woodland)	Wet Meadow	0.6	1.6
	Alder/Willow Carr & flush	0.6	1.6
	West Woodland	0.4	0.9
Gosden Woodland Strip (inc. Cranleigh Waters)	Woodland & Cranleigh Waters	2.1	5.2
<b>Total</b>		3.7	9.3

- 2.3 The approximate length of Cranleigh Waters within the defined site is 500m and the length of the disused railway line/path is approximately 430m. This path is part of a National Trail and a Traffic Free Cycle route and appears to be regularly used by local walkers and dog owners.
- 2.4 The surrounding land comprises school playing grounds to the south (Wey House and Gosden House Schools); a disused tip (Stonebridge Depot) to the west beyond the Horsham Road (A281) now grassed over; woodland and fields to the north and west of the site.
- 2.5 Wet woodlands, more than other woodland types, tend to be recent in origin and, being on relatively inaccessible ground, have been lightly managed. The Rocque map of 1768 does show Stonebrige and The Wey navigation with Gosden Meadow as an open field, but no woodland is indicated.
- 2.6 The site is not covered by any statutory or non-statutory designations. However, in order to present a picture of the wider landscape context the following information has been included. The nearest Site of Nature Conservation Importance (SNCI) non-statutory site is on the other side of the Horsham Road opposite the north corner of the site, known as **Shalford Common and Shalford Green SNCI**, known for a Surrey Rare plant and variety of habitats. Just beyond this is the statutory Site of Special Scientific Interest (SSSI) called the **Wey Valley Meadows SSSI**, see **Figure 2**, known for its varied, uncommon mosaic of wet grassland meadows with botanical interest.

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The site has been identified as a Biodiversity Opportunity Area (BOA) known as **RO4 River Wey (plus tributaries)**, see **Figure 2**. These are areas identified on the South East Biodiversity Strategy website. The BOA map depicts the regional priority area of opportunity for restoration and creation of Biodiversity Action plan (BAP) habitats. This is a spatial representation of the BAP targets and are areas of opportunity, not constraint. These BOAs will complement the work of regional and local organisations working to restore and create areas rich in biodiversity. Delivering BAP targets and actions through this agreed area based approach will result in a landscape scale approach to conservation, making our wildlife more robust to changing climate and socio-economic pressures.

The BOAs cover a variety of habitats allowing for an ecosystem approach to conservation to be embedded across the region. By working with larger, more dynamic ecosystems, it will be possible to create a wider range of habitat niches, which will in turn increase the ability of the landscape to support species.

## 3.0 Phase 1 Survey

### Methodology

- 3.1 The survey area is defined on **Figure 1** and includes the pathway (disused railway line), dry woodland, wet woodland Alder/Willow carr, wet meadow with flush and a section of the Cranleigh Waters.
- 3.2 Phase 1 survey is a standardised system for classifying and mapping semi-natural vegetation and wildlife habitats in Great Britain. Vegetation is mapped in terms of standard habitat types as defined in the JNCC Handbook for Phase 1 Habitat Survey (1990), with additional detailed target notes to describe each habitat. This methodology was extended to include an assessment of the suitability of the habitats recorded to support protected species.
- 3.3 The optimal time frame for conducting habitat surveys is April to September; although, these surveys can be conducted at any time of year.
- 3.4 Where the abundances of species are mentioned, these are based on the DAFOR scale and usually refer to the specific section of the site under discussion in the target notes. The DAFOR scale is a way of describing the abundance of a species using the following key:-

(Locally)      **D**ominant      **A**bundant      **F**requent      **O**ccasional      **R**are

Please note that plants described as “*rare*” means that they were not found often over this site or location and does not necessarily indicate a county or national rarity. Abundances given refer to that within a particular habitat area.

## Results

- 3.5 Descriptions of each habitat area on the site are given below, the approximate locations of which are given on the attached map (**Figure 3**). Species are referred to in the text by their common names and scientific names. The full list of vascular plants recorded at the site visit are given in **section 7.0**.

## Habitat Descriptions

### Gosden Meadow & Woodland

#### *Neutral wet meadow grassland with flush*

##### TN1a Wet meadow west

Seasonally inundated meadow, see Photograph 1. Grasses such as Yorkshire-fog (*Holcus lanatus*) are abundant with occasional Meadow Foxtail (*Alopecurus pratensis*). Broad-leaved herbs dominate with Meadowsweet (*Filipendula ulmaris*), Hemlock Water-dropwort (*Oenanthe crocata*), Common Sorrel (*Rumex acetosa*) and Lesser Celandine (*Ranunculus ficaria*) being frequent with occasional Wild Angelica (*Angelica sylvestris*), Common Knapweed (*Centaurea nigra*), Hogweed (*Heracleum sphondylium*), Germander Speedwell (*Veronica chamaedrys*), Creeping Thistle (*Cirsium arvense*), Creeping Buttercup (*Ranunculus repens*), Curled Dock (*Rumex crispus*). The invasive Himalayan Balsam (*Impatiens glandulifera*) is locally abundant around the edges. Common Nettle (*Urtica dioica*) and Cleavers (*Galium aparine*) are also locally abundant. Meadow Buttercup (*Ranunculus acris*), Silverweed (*Potentilla anserina*) and Crosswort (*Cruciata laevipes*) are rare in the sward.

##### TN1b Wet meadow east

The ground closest to the Cranleigh Waters is slightly higher and therefore slightly drier than the rest of the meadow, indicated by the greater coverage of grasses in the sward. Meadow Foxtail and Yorkshire-fog are abundant, whilst Giant Fescue (*Festuca gigantea*) is locally frequent. Herbs include abundant Cleavers, with occasional Common Nettle, Hogweed, Lesser Celandine, Lesser Stitchwort (*Stellaria graminea*), Germander Speedwell, Field Forget-me-not (*Myosotis arvensis*), Meadowsweet and Common Knapweed.

This then leads into a wetter area closer to the wet flush (TN2) and Alder/Willow Carr (TN3). It is dominated by Reed Canary-grass (*Phalaris arundinacea*) with abundant Common Nettle and Hemlock Water-dropwort. Curled Dock and Lesser Celandine are frequent. Less commonly are Cuckoo-flower

(*Cardamine pratensis*), Gipsywort (*Lycopus europaeus*), Water Horsetail (*Equisetum fluviatile*), Hoary Willowherb (*Epilobium parviflorum*) and Water Forget-me-not (*Myosotis scorpiodes*). Himalayan Balsam is locally abundant.

TN2 Wet flush

A small wet flush leading towards the Cranleigh Waters, it is lined with a scattered canopy of multi-stemmed Alder (*Alnus glutinosa*). In the flush itself there is a dominance of Reed Canary-grass with abundant Water Forget-me-not and occasional Water Mint (*Mentha aquatica*), Yellow Iris (*Iris pseudocorus*) and Water Horsetail. Less commonly but worthy of note is the Surrey Rarity Large Bittercress (*Cardamine arara*), as well as Marsh Marigold (*Caltha palustris*) and Water Plantain (*Alisma plantago-aquatica*), see Photograph 2.

*Broad-leaved semi-natural woodland*

TN3 *Alder/Willow Carr*

An Alder/Goat Willow Carr, see Photograph 3. Alder is a frequent in the canopy, with tall and scrub like Goat Willow (*Salix caprea* var. *caprea*). There is often very little under the canopy, which was still water logged at the beginning of summer. Where there is a field layer it comprises frequent Hemlock Water-dropwort, Common Nettle, Broad-leaved Dock (*Rumex obtusifolius*) and Creeping Bent (*Agrostis capillaris*). More occasionally are Cleavers (*Galium aparine*), Bramble (*Rubus fruticosus*), Hogweed and Dandelion (*Taraxacum officinale*). Closer to the flush and Cranleigh Waters there is non-native Bird Cherry (*Prunus padus*) and a planted Daffodil (*Narcissus* sp.) here, both of which should be removed.

TN4 *West Woodland*

Dry broad-leaved semi-natural woodland on the southern and western edges of the site boundary, evident in the lack of Alder is replaced by Common Lime (*Tilia x europaea*) and Pedunculate Oak (*Quercus robur*), with some Beech (*Fagus sylvatica*) and Horse Chestnut (*Aesculus hippocastanum*). Under this is locally abundant Holly (*Ilex aquifolium*) and frequent Hawthorn (*Crataegus monogyna*) and occasional Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*). The field layer is generally scant owing to the dense canopy, nevertheless Lords-and-ladies (*Arum maculatum*), Common Ivy (*Hedera helix*), Herb Bennett (*Geum urbanum*), Common Nettle, Red Campion (*Silene dioica*), Cleavers and Ground-ivy (*Glechoma hederacea*) are all present.

- TN5 *Woodland glade*  
On a steep dry bank on the boundary edge to the school ground is a small opening in the woodland canopy, see Photograph 4. Here there is abundant Yorkshire-fog with forbs such as frequent Germander Speedwell (*Veronica chamaedrys*), Common Sorrel and Lesser Stitchwort. Also present are Common Knapweed, White Dead-nettle (*Lamium album*), Pignut (*Conopodium majus*) and Yarrow (*Achillea millefolium*). Common Nettle is locally abundant in patches.

## Gosden Woodland Strip

### *Broad-leaved semi-natural woodland*

- TN6 *Woodland strip*  
Even aged Alderwood canopy belies the wet nature of this seasonally flooded woodland, see Photograph 5. It is possible that it would have once been coppiced, a practice that has diminished in recent years. Under this Sycamore (*Acer pseudoplatanus*), Holly, Hawthorn, Elder (*Sambucus nigra*) and Hazel are prevalent. The field layer comprises frequent Cleavers, Lesser Celandine and Pendulous Sedge (*Carex pendula*). Occasional are Red Campion, Jack-by-the-hedge (*Alliaria petiolata*), Sycamore saplings, Ground-ivy, Cow Parsley (*Anthriscus sylvestris*), False Wood-brome (*Brachypodium sylvaticum*) and Hogweed. On a more localised scale there is locally frequent Grey Field Speedwell (*Veronica polita*), Lesser Stitchwort, Wavy Bittercress (*Cardamine flexuosa*) and Bramble (*Rubus fruticosus* agg.). Common Nettle and the invasive Himalayan Balsam are locally abundant.
- TN7 *Pathway*  
Access leads from the Horsham Road along the northern extent of the site and carries on south wards towards Bramley, see Photograph 6. It is lined with a variety of trees and shrubs such as Ash (*Fraxinus excelsior*), Alder, Pedunculate Oak, Sycamore, Hawthorn, Silver Birch (*Betula pendula*), Downy Birch, Elder, Horse Chestnut, Holly, Dog-rose (*Rosa canina*) and the invasive Cherry Laurel (*Prunus laurocerasus*). The field layer is made of abundant Common Nettle and Cleavers with frequent Red Campion, Creeping Buttercup and occasional Hogweed, Dandelion, Broad-leaved Dock, Herb Robert (*Geranium robertianum*) and Bramble.

## Cranleigh Waters

### *Running Water*

#### TN8 Cranleigh Waters

There are scattered Alder and Goat Willow along the southern edge of the Cranleigh Waters, see Photograph 7. There did not appear to be much floating or submerged vegetation (although a grapnel hook was not used). However there is a small patch of White Water-lily (*Nymphaea alba*), probably planted, (although in its true native form is a Surrey Rarity).

## Conclusions

- 103 vascular plant species and 4 mosses were recorded during the site visit.
- 7 of the plant species are strongly associated with ancient woodlands. These are Geulder-rose, Holly, Pignut, Hornbeam, Pendulous Sedge, Giant Fescue and Moschatel.
- In addition one Surrey Rare plant species was recorded, namely Large Bittercress, found in the flush. Whilst White Water-lily was also recorded in the Cranleigh Waters, this is a Surrey Rarity only in its true native form and the plant in the water was probably planted.
- There are some invasive non-native species. In particular was the ubiquitous Himalayan Balsam, which requires drastic management if populations are to be reduced. Also close to the flush is non-native Bird Cherry and a planted Daffodil that should be removed.
- The delicate and sensitive nature of the flush habitat on the site should be taken into account when managing the site, such that it is left undisturbed.
- The habitats present on the site, wet woodland, wet meadow, flush and the Cranleigh Waters are all considered UK and Surrey high priority BAP habitats. The sensitive management of the site would therefore contribute to Surrey's and UK national BAP habitat objectives.

## 4.0 Data Search

### Methodology

4.1 A data search has been conducted by the Surrey Biological Information Centre (SBIC) for records of protected species within the locality of the site. Both statutory and non-statutory sites within 2km of the site were looked for and for records of protected species and species of conservation concern within 1km of the site.

### Results

4.2 The data search report is provided as Appendix 1. The relevant protected species data has been taken into account in the following protected species assessment section 5.0.

## 5.0 Protected Species Assessment

- 5.1 The site was surveyed during daylight hours on the 5<sup>th</sup> May 2010. Accessible areas within the survey area were surveyed and assessed for their potential to support protected species.
- 5.2 Protected species either recorded during the site visit, or with the potential to be present within the survey area are listed below. Each section contains a summary, in italics, of the legal protection afforded to each species. Please note that this is for information only and is not intended to be a complete synopsis of the legislation.

### Reptiles

- 5.3 *All native British reptiles are protected under the Wildlife and Countryside Act (1981) from killing and injury. Sand Lizards (Lacerta agilis) and Smooth Snakes (Coronella austriaca) also receive additional protection.*
- 5.4 The data search picked up on one reptile record within 2km of the site, namely Slow-worm (*Anguis fragilis*) in 1997.
- 5.5 The survey area contains good reptile habitat with potential for Grass Snakes and Slow-worm in particular, such as the wet meadow (**TN1a & TN1b**), woodland edges (**TN3, TN4 & TN6**) and boundary edges (**TN5**).
- 5.6 A full reptile survey has not been conducted on the site, but this is recommended.

### Amphibians

- 5.7 *Great Crested Newts (Triturus cristatus) are protected under schedule 5 of the Wildlife and Countryside Act 1981 and Regulation 39 of the Conservation (Natural Habitats &c) Regulations 2010 from intentional killing and injury and from intentional damage, destruction or obstruction of access to a place of shelter.*
- 5.8 Common Toad (*Bufo bufo*) and Common Frog (*Rana temporaria*) have been recorded within 2km from the site in 1990. In addition the data search picked up on a Smooth Newt (*Lissotriton vulgaris*) record from 2000.
- 5.9 As the Cranleigh Waters (**TN8**) contains moving water with steep sides and probably contains fish, it is unlikely to be able to support a breeding population of amphibians. There are no other water bodies on the site, expect for a very small, very shallow flush in the wet meadow area (**TN2**), which is also unlikely to support amphibian populations. However, there is plenty of terrestrial habitat opportunity i.e. the wet meadow. The nearest two ponds within 500m of the site are to the west in Peasmarsch Meadow.

5.10 A full amphibian survey has not been conducted on the site.

### **Bats**

5.11 *All species of British bats are protected under the Wildlife and Countryside Act and under Regulation 38 (Schedule 2) of the Conservation (Natural Habitats etc.) Regulations 2010. Together this legislation makes it an offence to kill, capture or disturb the animal, or to damage or destroy a breeding site or resting place of such an animal.*

5.12 The data search showed that Daubenton's (*Myotis daubentonii*), Noctule (*Nyctalis noctua*) and Pipistrelle (*Pipistrelle sp.*) bats have all been recorded in 1997 within 2km of the site.

5.13 There are several mature trees on the site that could provide suitable holes and crevices for bats. In addition the Cranleigh Waters will provide plenty of insects and there are good flight lines around the woodlands. Also, in the wider area outside the site boundary are more mature trees (in particular a veteran Pedunculate Oak at TQ0039 4596, see Photograph 8), as well as mature broad-leaved semi-natural woodland and old tiled buildings. All provide ample roosting potential habitat for bats. Therefore it is likely they forage and roost in this area.

5.14 A bat survey has not been conducted on the site, but it is recommended, especially if any of the mature trees are to be felled, or pruned.

### **Breeding Birds**

5.15 *All wild birds are protected from damage or destruction of their nest whilst in use or construction.*

5.16 Records show that there are a wide variety of birds that have been recorded within 2km of the site.

5.17 The areas of broad-leaved semi-natural woodland and Alder/Willow Carr in the survey area have high potential to support breeding birds. Therefore prior to any clearing/felling or pruning work on woodland, scrub or mature trees, the area should be checked for breeding birds. In addition such work should be scheduled for outside the breeding season. This season is between March and the end of August.

5.18 A full breeding bird survey has not been carried out, but this is recommended.

### **Badgers**

5.19 *Badgers (Meles meles) are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take a badger or to interfere with their setts.*

- 5.20 The data search did not locate any records within 2km of the site.
- 5.21 The survey area was searched for signs of Badgers and none were found. A wider search for Badgers in the surrounding area was not conducted. A Badger survey is therefore not deemed necessary.

### **Dormice**

- 5.22 *Dormice (Muscardinus avellanarius) and their habitats are fully protected under schedule 5 of the Wildlife and Countryside act (1981) and the Conservation (Natural Habitat &c) Regulations 2010. Together this legislation makes it an offence to kill, capture or disturb the animal, or to damage or destroy a breeding site or resting place of such an animal.*
- 5.23 The data search did pick up on a Dormouse record from 1996 within 2km of the site.
- 5.24 The broad-leaved semi-natural woodland does contain limited amounts of Hazel (a favourite food of Dormice), but given the site location and the surrounding habitat it is thought that overall the potential is low to support Dormice.
- 5.25 A small mammal survey has not been conducted on the site and is recommended to include Dormice, Water Vole and Water Shrew Potential.

### **Water Voles**

- 5.26 *The Water Vole is fully protected in England by its inclusion on Schedule 5 of the Wildlife and Countryside Act (1981) as amended, under section 9 of this act it is an offence to Damage or destroy any place used for shelter or protection or Disturb Water voles while they are occupying places of shelter.*
- 5.27 The sides of the Cranleigh Waters were checked for tell tale holes and latrine points to indicate that Water Voles are present. None were seen and there are reports that Mink use the water rendering it unlikely that there is any Water Vole here. Nevertheless there is a potential for them, if there was a widespread mink control for the wider area, they may return.

### **Other**

- 5.28 No evidence of other protected species was found during the site visit.

## 6.0 General Management Recommendations

6.1 The following management recommendations are based on the site survey and the additional on-site meeting with Chris Matcham, Rivers and Otters Project Officer at SWT and Scotty Dodd, Invertebrate Specialist at SWT.

### **Further survey work & monitoring**

6.2 Further survey work is recommended in order to detail what species are present on the site, if there are any rare or notable species for the location and or Surrey and if they require specific management recommendations applicable to the site. Recommended surveys include: -

- Aquatic invertebrates
- Terrestrial invertebrates
- Breeding birds
- Reptiles
- Bats
- Mammals (to include Dormice, Water Vole and Water Shrew potential).

In addition advice should be sought for protected species such as bats and breeding birds prior to tree felling management.

6.3 Monitoring will be key to provide an essential component of any revised management recommendations, whilst also ensuring that the site objectives are being achieved. This could be in the form of simple and cheap methods ie simple species indicator species monitoring and/or sward height. Or it could be done using outside consultants, which would provide detailed information with specific management recommendations that would use standard, repeatable methodology used as baseline information for further monitoring. It is important to monitor in a standard fashion, thus being able to pass on relevant records for comparison at national database level. This will then put your site into the national context of other similar sites.

### **Control of invasive & non-native species**

6.4 One of the first management priorities of the site should be to reduce and ultimately eradicate the presence of Himalayan Balsam. Options for the management is chemical treatment (spraying) and/or pulling/cutting. Whilst spraying is an option the downside is that it is not plant specific ie it will kill other plants if in direct contact and perhaps should only be used if the current method of hand pulling does not prove to be effective. It should be pulled or cut to ground level, otherwise it will cause the plant to regrow and flower later in the season, before the during May and before the end of June prior to the plants flowering and seeding (the dehiscent seed pods will expel seeds up to 7m and can persist in the soil bank for between 2-5 years). Cutting/pulling will prevent the plant flowering however the Environment Agency stress that cutting too early will result in the regrowth and formation of the flowers with a greater number of seeds. Therefore

partial or improper management could be less effective than no control at all. The resulting pulled plants should be removed from the site and burnt or composted off-site. Considering the sheer volume present, it will require many dedicated work parties with many volunteers over a several years. This should be closely monitored with before and after photographs as it may be necessary to consider future spraying.

- 6.5 The presence of Curled Dock, Common Nettle and Hogweed all tend towards a site with eutrophication, i.e. increase of nutrient availability leading to a taller, more productive sward but with a lower species diversity. The broad-leaved community especially will decline or ultimately be lost. Therefore the management recommendation is either to cut early in the season ie mid June to curtail its spread. Or a Spring and Autumn mowing to restore back to species rich wet meadow.
- 6.6 Remove non-native Bird Cherry and planted Daffodil from the flush area.

#### **Management of sensitive habitat**

- 6.7 The flush located at approximately TQ 0004 4612 (TN2 on map), should be left undisturbed as it contains an unusual and sensitive habitat type. The current proposals to erect a boardwalk should be amended to leave this area uninterrupted.

#### **Grassland management**

- 6.8 There is the potential to graze, but the problem of Hemlock Water Dropwort needs to be addressed first as it is toxic to animals. It would therefore be prudent to remove the labels referring to SWT stock grazing at this stage.
- 6.9 On the control of Hemlock Water Dropwort, most people use Glyphosate which can be applied using a weed wiper during May or June. However, in there is a good 'off-label' way of doing this that is most effective and much better in conservation areas. If you cut the plant off at the base of the stem and then squirt a good quantity of diluted glyphosate down the hollow stem, this is very effective. Alternatively some people cut the plants down and then put some straight 'nitram' type of ammonium nitrate fertiliser down the cut stem, which is also said to be very effective.

#### **Woodland/bank-side tree management**

- 6.10 The Alder on the Cranleigh Waters bank provide bank stabilisation and they should be coppiced on long rotation (20-25 years) to ensure their continued longevity.
- 6.11 All dead wood, where there is no health and safety issue, should be left in situ, either as dead standing wood or dead lying wood. Brash from coppicing should be stacked up in the woodland and on the woodland edge.

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**Potential otter management**

- 6.12 Thoughts from the on site meeting with Chris Matcham, Otters and Rivers Project Officer at SWT, are that a plastic holt would be appropriate as it may take time for Otters to move into the area and a wood one will rot down eventually. Having said that if trees are to be felled in the area, then they could be used to make a wooded holt. The holt should be located in a relatively undisturbed part of the site, ie away from public access and perhaps using the quiet location on the school side. Interpretative information should not be used to publicise this as it has potential to cause ill feeling with a minority of anglers.

**Wetland management**

- 6.13 Consider monitoring of ground water levels to inform decisions on future intervention.

## 7.0 Species List

AWI = Ancient Woodland Indicators SR = Surrey Rarity

Scientific name	Common name	Abundance
<i>Acer plantanoides</i>	Norway Maple	Rare
<i>Acer pseudoplatanus</i>	Sycamore	Rare
<i>Achillea millefolium</i>	Yarrow	Locally frequent
<i>Adoxa moschatellina</i>	Moschatel AWI	Rare
<i>Aegopodium podagraria</i>	Ground-elder	Locally frequent
<i>Aesculus hippocastanum</i>	Horse Chestnut	Rare
<i>Agrostis capillaris</i>	Common Bent	Occasional
<i>Agrostis stolonifera</i>	Creeping Bent	Occasional
<i>Alisma plantago-aquatica</i>	Water Plantain	Rare
<i>Alliaria petiolata</i>	Jack-by-the-hedge	Locally frequent
<i>Alnus glutinosa</i>	Alder	Abundant
<i>Alopecurus pratensis</i>	Meadow Foxtail	Locally frequent
<i>Angelica sylvestris</i>	Wild Angelica	Locally frequent
<i>Anthriscus sylvestris</i>	Cow Parsley	Rare
<i>Arctium minus</i>	Lesser Burdock	Rare
<i>Arrhenatherum elatius</i>	False Oat-grass	Occasional
<i>Arum maculatum</i>	Lords-and-ladies	Rare
<i>Athyrium filix-femina</i>	Lady-fern	Rare
<i>Aulacomnium androgynum</i>	Drumsticks-moss	Rare
<i>Betula pendula</i>	Silver Birch	rare
<i>Betula pubescens</i>	Downy Birch	Locally frequent
<i>Brachypodium sylvaticum</i>	False Wood-brome	Locally frequent
<i>Caltha palustris</i>	Marsh Marigold	Rare
<i>Cardamine amara</i>	Large Bittercress SR	Rare
<i>Cardamine flexuosa</i>	Wavy Bittercress	Rare
<i>Cardamine hirsuta</i>	Hairy Bittercress	Rare
<i>Cardamine pratensis</i>	Cuckoo-flower	Rare
<i>Carex pendula</i>	Pendulous Sedge AWI	Rare
<i>Carpinus betulus</i>	Hornbeam AWI	Rare
<i>Centaurea nigra</i>	Black Knapweed	Locally frequent
<i>Cirsium arvense</i>	Creeping Thistle	Occasional
<i>Cirsium palustre</i>	Marsh Thistle	Rare
<i>Conopodium majus</i>	Pignut AWI	Rare
<i>Corylus avellana</i>	Hazel	Locally frequent
<i>Crataegus monogyna</i>	Hawthorn	Occasional
<i>Cruciata laevipes</i>	Crosswort	Rare
<i>Dactylis glomerata</i>	Cock's-foot	Occasional
<i>Digitalis purpurea</i>	Foxglove	rare
<i>Dryopteris dilatata</i>	Broad Buckler-fern	Rare
<i>Dryopteris filix-mas</i>	Male Fern	Rare
<i>Epilobium parviflorum</i>	Hoary Willowherb	Occasional

Scientific name	Common name	Abundance
<i>Equisetum fluviatile</i>	Water Horsetail	Rare
<i>Fagus sylvatica</i>	Beech	Rare
<i>Festuca gigantea</i>	Giant Fescue aw1	Occasional
<i>Filipendula ulmaria</i>	Meadowsweet	Locally frequent
<i>Fraxinus excelsior</i>	Ash	Rare
<i>Galium aparine</i>	Cleavers	Frequent
<i>Galium mollugo</i>	Hedge Bedstraw	Rare
<i>Galium palustre</i>	Common Marsh Bedstaw	Rare
<i>Geranium robertianum</i>	Herb Robert	Rare
<i>Geum urbanum</i>	Wood Avens	Rare
<i>Glechoma hederacea</i>	Ground-ivy	Occasional
<i>Glyceria maxima</i>	Reed Sweet-grass	Locally frequent
<i>Hedera helix</i>	Common Ivy	locally frequent
<i>Heracleum sphondylium</i>	Hogweed	Occasional
<i>Holcus lanatus</i>	Yorkshire-fog	Abundant
<i>Humulus lupulus</i>	Hop	Rare
<i>Hypnum cupressifome</i>	Cypress-leaved Plait-moss	Locally frequent
<i>Ilex aquifolium</i>	Holly aw1	Locally frequent
<i>Impatiens glandulifera</i>	Himalayan Balsam	Locally dominant
<i>Iris pseudocorus</i>	Yellow Iris	Rare
<i>Juncus effusus</i>	Soft Rush	Rare
<i>Kindbergia praelonga</i>	Common Feather-moss	Locally frequent
<i>Lamium album</i>	White Dead-nettle	Rare
<i>Lamium galeobdolon ssp argentatum</i>	Yellow Archangel (variegated)	Locally frequent
<i>Lathyrus pratensis</i>	Meadow Vetchling	Rare
<i>Lonicera periclymenum</i>	Honeysuckle	Rare
<i>Lycopus europaeus</i>	Gipsywort	Rare
<i>Mentha aquatica</i>	Water Mint	Rare
<i>Myosotis arvensis</i>	Field Forget-me-not	Rare
<i>Myosotis scorpiodes</i>	Water forget-me-not	Locally abundant
<i>Narcissus sp.</i>	A planted daffodil	Rare
<i>Nymphaea alba</i>	White Water-lily (SR?)	Rare
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	Locally abundant
<i>Phalaris arundinacea</i>	Reed Canary-grass	Locally dominant
<i>Plantago lanceolata</i>	Ribwort Plantain	Rare
<i>Poa trivialis</i>	Rough Meadow-grass	Occasional
<i>Potentilla anserina</i>	Silverweed	Rare
<i>Prunus padus</i>	Bird Cherry	Rare
<i>Prunus laurocerasus</i>	Cherry Laurel	Rare
<i>Quercus robur</i>	Pedunculate Oak	Occasional
<i>Ranunculus acris</i>	Meadow Buttercup	Rare
<i>Ranunculus ficaria</i>	Lesser Celandine	Frequent
<i>Ranunculus repens</i>	Creeping Buttercup	Frequent
<i>Rhytidiadelphus squarrosus</i>	Spingy Turf-moss	Locally frequent

Scientific name	Common name	Abundance
<i>Rosa canina</i>	Dog Rose	Rare
<i>Rubus fruticosus</i> agg.	Bramble	Frequent
<i>Rumex acetosa</i>	Common Sorrel	Locally frequent
<i>Rumex crispus</i>	Curled Dock	Locally frequent
<i>Rumex obtusifolius</i>	Broad-leaved Dock	Occasional
<i>Salix caprea</i> ssp. <i>caprea</i>	Goat Willow	Frequent
<i>Sambucus nigra</i>	Elder	Locally frequent
<i>Silene dioica</i>	Red Campion	Frequent
<i>Sorbus aucuparia</i>	Rowan	Rare
<i>Stachys sylvatica</i>	Hedge Woundwort	Rare
<i>Stellaria graminea</i>	Lesser Stitchwort	Locally frequent
<i>Stellaria media</i>	Common Chickweed	Occasional
<i>Symphoricarpos albus</i>	Snowberry	Rare
<i>Taraxacum officinale</i>	Dandelion	Occasional
<i>Taxus baccata</i>	Yew	Rare
<i>Tilia x europaea</i>	Common Lime	Locally frequent
<i>Typha latifolia</i>	Reedmace	Rare
<i>Ulmus procea</i>	English Elm	Locally frequent
<i>Urtica dioica</i>	Common Nettle	Abundant
<i>Veronica chamaedrys</i>	Germander Speedwell	Rare
<i>Veronica polita</i>	Grey Field Speedwell	Locally frequent
<i>Viburnum opulus</i>	Guelder-rose awi	Rare
<i>Vicia cracca</i>	Tufted Vetch	Locally frequent
<i>Viola riviniana</i>	Common Dog-violet	Rare

## 8.0 Photographs



Photograph 1 – Wet meadow east



Photograph 4 – Open glade



Photograph 2 – Wet flush with line of Alders



Photograph 5 – Cranleigh Waters edge, looking towards woodland strip



Photograph 3 – Carr woodland



Photograph 6 – Pathway



**Photograph 7 – Cranleigh Waters edge, looking towards flush & wet meadow west**



**Photograph 8 – Mature Pedunculate Oak on school side**

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## 9.0 References

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## Figure 1 Location

## Figure 2 Statutory & Non-statutory Designations

## Figure 3 Phase 2 Survey Results

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## Appendix 1 Data Search

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