

# **Pond Survey and Management Plan**

## Long Sutton Pond



**Carmen Green**  
**November 2020**

## Acknowledgements

Arcadian Ecology & Consulting Ltd were contracted by Susan Richardson of Long Sutton & Well Parish Council to deliver this work.

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## Document Control

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## Executive Summary

Arcadian Ecology & Consulting Ltd (Arcadian Ecology) were appointed by Long Sutton & Well Parish Council to undertake a survey and assessment of Long Sutton pond to determine the biodiversity value and water quality based on species present, and the potential for protected species in order to identify opportunities to enhance the pond for wildlife and inform a management plan.

Long Sutton Pond is located in a rural location in the village of Long Sutton in Hampshire (SU 73820 47399; Map 1). There is some marginal vegetation at the edges of the pond and it is surrounded by a lawn of amenity grassland bordered by trees and shrubs.

The survey, conducted on the 3<sup>rd</sup> November 2020, was undertaken to assess the habitats and species to inform a management plan with recommendations for enhancements of the pond.

Currently, the pond is considered to be of low biodiversity value and there is a build-up of leaf litter and a lack of oxygenating aquatic plants. However, Long Sutton pond has the potential to support a range of species. With appropriate management and enhancement, the pond can be a valuable resource for supporting a range of wildlife, providing shelter and foraging resources. The management plan has been developed from the findings of the survey. The vision for the pond is to enhance and create a variety of habitats which support biodiversity, whilst creating a peaceful and aesthetically pleasing environment for visitors and residents. A number of recommendations have been provided which include enhancing existing habitat and features to benefit biodiversity as well as creating new habitats for wildlife.

Key recommendations include planting of locally sourced, native species to encourage wildlife. This could include a mixture of bankside vegetation, marginal plants, tall emergents, and floating and submerged plants. In addition, the willow tree that is overhanging the pond could be trimmed back to reduce the amount of leaf litter entering the pond. The grassland around the pond could also be enhanced by planting a variety of wildflowers to attract insects.

Due to the fact that the pond is located at the bottom of a hill, there is a large amount of runoff from the road into the pond. Therefore, silt traps have been installed to prevent the debris, sediment and pollutants entering the pond. Despite this, some silt does occasionally enter the pond. Planting up the pond and its edges and banks with a mix of native vegetation will help deal with the effects of this by absorbing and filtering out harmful pollutants both in the soil surrounding the pond and within the pond itself. The silt trap must be regularly cleaned and maintained to be effective and avoid silt building up, spilling out into the pond or potentially blocking the drainage system entirely. In particular, they should be checked after heavy rainfall events.

If desired, chemical testing of the water (pond testing kits can be found online or in aquatic garden centres) could be conducted on the pond prior to management activities commencing and regularly afterwards. This could monitor the effectiveness of management activities, such as planting with native vegetation, in reducing the amount of pollutants entering the pond through runoff.

Mallards and a duck house were observed during the survey. A small number of wild ducks are unlikely to have a significant negative impact on other wildlife in the pond and water quality, and if the pond is designed in such a way to have areas of emergent vegetation which ducks do not favour, the two can co-exist without significant adverse effects. A large duck population, however, can be a problem. Although not perceived as an issue to the pond currently, it should be noted that feeding of ducks with bread should be discouraged due to concerns over welfare and nutrient enrichment, as well as increasing sediment churn. Therefore, it is recommended that only feeding of the ducks with appropriate bird food is carried out and over feeding is discouraged. This information could be included on an interpretation board by the pond.

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## **1. INTRODUCTION**

### **1.1. Background**

Arcadian Ecology & Consulting Ltd (Arcadian Ecology) were appointed by Long Sutton & Well Parish Council to undertake a survey and assessment of Long Sutton pond to determine the biodiversity value and water quality based on the species present and the potential for protected species in order to identify opportunities to enhance the pond for wildlife and inform a management plan.

### **1.2. Site Description**

Long Sutton pond is located in a rural location in the village of Long Sutton in Hampshire (SU 73820 47399; Map 1). There is some marginal vegetation at the edges of the pond, and it is surrounded by a lawn of amenity grassland bordered by trees and shrubs.

The immediate surroundings consist of residential housing with associated gardens to the north, east and west and the main road through the village (the Street) to the south. In the wider landscape, the town of Hook is to the north and the town of Alton is to the south. There are extensive areas of arable fields and grazed pasture in all directions, as well as large blocks of woodland, particularly to the south.

### **1.3. Remit and Scope of the Report**

This report details the findings of the survey and assessment of the pond to determine the biodiversity value and water quality based on the species present and the potential for protected species. It also provides recommendations on how the pond could be managed and enhanced to benefit wildlife. The management plan has been developed from the findings of the survey with the vision of creating a variety of habitats which support biodiversity whilst creating a peaceful and aesthetically pleasing environment for visitors and residents.

## 2. METHODOLOGY

### 2.1. Phase 1 Habitat Survey

An extended Phase 1 habitat survey was conducted on 3<sup>rd</sup> November 2020 by Carmen Green (ACIEEM) of Arcadian Ecology & Consulting Ltd.

A walkover survey of the pond was undertaken, to assess its potential to support protected and notable species. A plant species list was also compiled; this list will not give every species found on the site, but will give a representation of the diversity, significance and dominance of plant species found within the survey area.

Plant nomenclature in this report follows Rose (1989; 2006) for native and naturalised species of vascular plant. Plant names in the text are given with the common names first, followed by the scientific name in italics. Where there is a degree of doubt in the identification of a plant, 'cf.' precedes the specific epithet to signify the plant is very probably the species indicated, but it was not possible to distinguish it from similar members of the genus with certainty.

### 2.2. Phase 1 Protected/ Notable Species Assessment

An assessment of the habitats described in Section 3.2 for their potential to support protected and notable species was made for the following species/ groups: amphibians, bats, breeding and Schedule 1 bird species, widespread reptile species and invertebrates. Details of the species-specific survey methods are given below.

#### 2.2.1. Amphibians

An assessment of the site to support amphibians was based on the presence of ponds, the connectivity of the habitat, and presence of suitable features/ habitats for amphibians during their terrestrial phase, particularly features suitable for hibernation such as log and rubble piles.

#### 2.2.2. Bat

An assessment was made of the suitability of trees and features within or on the site boundary to support roosting bats. This involved consideration of the age and condition of the tree, and identifying features that roosting bats may favour (e.g. holes, cracks and cavities that might be used as entrance points or roost sites). Features with potential for roosting bats were noted, including woodpecker holes, rot cavities, splits, cracks, flaking bark and thick-stemmed or matted climbing plants.

An assessment was also made of the suitability of the site and the surrounding landscape to support foraging and/ or commuting bat species. All assessments conformed to current Bat Conservation Trust (BCT) guidelines (Collins 2016).

#### 2.2.3. Birds

The assessment of the potential of the site for breeding birds was based on the suitability of the habitats present, evidence of nesting such as old or currently active nests, and the presence of bird species that may potentially nest within the available habitat.

The site was also assessed for its potential to support important assemblages of notable wintering birds and/ or birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

#### 2.2.4. Reptiles

The site was assessed for reptiles, with particular attention paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (rough grassland and scrub).

The site was assessed for its suitability for each of the four widespread reptile species. Specific habitat requirements differ between species. Common lizards *Lacerta vivipara* use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland. Slow-worms *Anguis fragilis* use similar habitats to common lizards, and are often found in rank grassland, gardens and derelict land. Grass snakes *Natrix helvetica* also have broadly similar

requirements, with a greater reliance on ponds and wetlands where they prey on common frogs *Rana temporaria*. Adders *Vipera berus* use a range of fairly open habitats with some cover, but are most often found in dry heath (Beebee & Griffiths, 2000).

#### **2.2.5. Invertebrates**

An assessment was made of the site for its potential value to support diverse communities of terrestrial and/ or aquatic invertebrates, or any protected, notable or BAP species. The assessment was made based on the presence of suitable habitat features such as an abundance of dead wood, the presence of diverse plant communities, the presence of a varied woodland structure and sunny woodland edges with a diverse flora, presence of ponds and water courses and the presence of free draining soil exposures. During the Phase 1 habitat survey, no attempt was made to comprehensively identify the range of species present, though where encountered, *ad hoc* sightings were noted.

### 3. RESULTS

#### 3.1. Habitat Assessment

The survey area consists of a small pond within the village of Long Sutton. The pond is variable in depth; mostly shallow at the edges and becoming deeper at the centre. There is a lot of leaf litter at the bottom of the pond and it is quite turbid in places (Photograph 3). It supports little submerged, emerging or floating vegetation, only a small patch of common water starwort *Callitriche stagnalis* was observed. As such, the water quality in terms of clarity and oxygen levels is likely to be low. The banks of the pond are mostly bare. At the edges, there is some marginal vegetation with species including gypsywort *Lycopus europaeus*, nettle *Urtica dioica*, soft rush *Junus effusus* and yellow flag iris *Iris pseudacorus*. There is a large patch of pendulous sedge *Carex pendula* along the eastern edge of the pond.

Surrounding the pond is a lawn of amenity grassland dominated by creeping bent *Agrostis stolonifera* and perennial ryegrass *Lolium perenne*. There is a low diversity of common herbs in low levels of abundance including creeping buttercup *Ranunculus repens*, curled dock *Rumex crispus*, ground elder *Aegopodium podagraria*, ground-ivy *Glechoma hederacea* and white clover *Trifolium repens*. Along the western edge of the pond there is a large *Salix* tree overhanging the pond. In addition, to the north, east and west of the lawn of amenity grassland, there is a line of trees and shrubs comprising ash *Fraxinus excelsior*, beech *Fagus sylvatica* and sycamore *Acer pseudoplatanus* with scattered ivy *Hedera helix* growing on and beneath the shrubs.

#### 3.2. Phase 1 Protected/ Notable Species Assessment

##### 3.2.1. General

Based on the Phase 1 habitat survey, the site is considered to contain habitat potentially suitable for the following species:

- amphibians;
- bats;
- breeding birds;
- reptiles (widespread species); and
- invertebrates.

##### 3.2.2. Amphibians

Long Sutton pond offers some suitable breeding locations for common amphibians. The marginal vegetation, trees and scrub offer some terrestrial habitat for amphibians for shelter and movement around the landscape. There is an old tree stump covered in ivy at the edge of the pond with multiple splits and cracks that may offering shelter to amphibians (Photograph 4).

A habitat suitability index (HSI) of the pond gave a score of 0.69, which is average suitability to support great crested newts (Table 1). While the size of the pond, apparent absence of fish and low levels of shade make the pond suitable for great crested newt, the limited terrestrial habitat immediately surrounding the pond and very low levels of aquatic vegetation for cover and egg-laying reduce its suitability for great crested newts, and other amphibians.

It should be noted that the habitat suitability index (HSI) for great crested newts only gives a rough indication of suitability of ponds for great crested newts and is not sufficiently precise to conclude that any particular pond with a high score will support newts, or that any pond with a low score will not do so (Oldham *et al.*, 2000).



**Table 1.** Habitat suitability index (HSI) for great crested newts

	Field score	SI
Location	A	1
Pond Area	450m <sup>2</sup>	0.9
Pond Drying	Rarely	1
Water Quality	Moderate	0.67
Shade	10%	1
Fowl	Minor	0.67
Fish	Absent	1
Ponds	3	0.65
Terrestrial Habitat	Poor	0.33
Macrophytes	<1%	0.3
<b>Score</b>	<b>0.69</b>	
<b>Suitability</b>	<b>Average</b>	

### 3.2.3. Bat

No evidence of the presence of bats was recorded during the Phase 1 habitat survey. An assessment of the trees on site was carried out. No features with the potential for roosting bats (such as cavities, woodpecker holes and knot holes) were identified.

The pond, trees and shrubs provide some commuting and foraging habitat for bats on site. These also connect to other areas of suitable foraging habitat in the wider landscape.

### 3.2.4. Birds

The trees and scrub provide suitable nesting opportunities, and the pond and lawn provide foraging habitat for a number of common species of bird. Mallard ducks *Anas platyrhynchos* were observed during the survey. This species is listed on the amber list of Birds of Conservation Concern.

There are intentions to purchase a new duck house to replace the old one in order to continue to provide a safe refuge for the waterfowl currently using the pond. The existing one is currently floating at the centre of the pond and attached to the banks by rope. A duck house of a similar design may be purchased, however, maintenance of this is difficult. Alternatively, a woven duck nesting basket could be purchased (Figure 1). This provides a safe nesting place, away from predators, for ducks and moorhens. It should be installed either in dense vegetation near the edge of the water or on stakes/poles and elevated within the pond. It should be checked annually, and any old and damp vegetation removed.



Figure 1. Example of a woven duck nesting basket (<https://www.arkwildlife.co.uk/product/long-duck-basket/>).

### **3.2.5. Reptiles**

No evidence of the presence of reptiles was recorded during the Phase 1 habitat survey.

There are limited foraging opportunities at Long Sutton pond, however the trees and shrubs surrounding the pond do provide sheltering and hibernation opportunities. These back onto gardens that are likely to provide shelter and foraging habitat for slow-worm *Anguis fragilis*, and opportunities for species movement around the wider landscape.

### **3.2.6. Invertebrates**

No protected/ notable invertebrates were observed during the Phase 1 habitat survey. The trees, shrubs and marginal vegetation offer foraging and sheltering opportunities for common and widespread invertebrate species including butterflies, bumblebees and beetles. However, there is limited suitable vegetation within the pond to support aquatic invertebrate species such as dragonflies and damselflies, water boatmen and caddisflies. However, large numbers of water fleas *Daphnia* were observed within the pond, particularly at the edges. This species is beneficial to ponds as they feed upon algae and improve water clarity, as well as providing a food source for a range of species.

## 5. RECOMMENDATIONS

Based on the results of the survey, the site is considered to be of low ecological value in its current state due to the build-up of leaf litter and a lack of oxygenating aquatic plants but has the potential to be of significantly greater value through habitat enhancement and management measures. Suitable objectives and actions have been developed that will enhance the biodiversity interest of Long Sutton pond. The management recommendations are aimed at maintaining the biodiversity of the site in the future.

A management plan outlining the biodiversity actions for Long Sutton pond is detailed in Table 2. The table is divided into 5 main columns; Objective, Action, Outcome, Targets and Monitoring Action. Objectives are the overall aim of undertaking the action, actions are the key activities that need to be undertaken, outcomes are the benefits to biodiversity that will be achieved, the targets are the steps that need to be fulfilled by the end of the stated years, and the monitoring action identifies how progress towards the final objective is going to be assessed. Some targets also include management suggestions on how best to achieve the target, these should be incorporated into the management plan for the site.

Due to the fact that the pond is located at the bottom of a hill, there is a large amount of runoff from the road into the pond. Therefore, silt traps have been installed to prevent the debris, sediment and pollutants entering the pond. Despite this, some silt does occasionally enter the pond. Planting up the pond and its edges and banks with a mix of native vegetation will help deal with the effects of this by absorbing and filtering out harmful pollutants both in the soil surrounding the pond and within the pond itself. The silt traps must be regularly cleaned and maintained to be effective and avoid silt building up, spilling out into the pond or potentially blocking the drainage system entirely. In particular, they should be checked after heavy rainfall events.

If desired, chemical testing of the water (pond testing kits can be found online or in aquatic garden centres) could be conducted on the pond prior to management activities commencing and regularly afterwards. This could monitor the effectiveness of management activities, such as planting with native vegetation, in reducing the amount of pollutants entering the pond through runoff.

Mallards and a duck house were observed during the survey. A small number of wild ducks are unlikely to have a significant negative impact on other wildlife in the pond and water quality, and if the pond is designed in such a way to have areas of emergent vegetation which ducks do not favour, the two can co-exist without significant adverse effects. A large duck population, however, can be a problem. Although not perceived as an issue to the pond currently, it should be noted that feeding of ducks with bread should be discouraged due to concerns over welfare and nutrient enrichment, as well as increasing sediment churn. Therefore, it is recommended that only feeding of the ducks with appropriate bird food is carried out and over feeding is discouraged. This information could be included on an interpretation board by the pond.

No fish were observed within the pond and it is thought that they are currently absent. The pond should be maintained so that it is free of fish as they can be detrimental to wildlife ponds. They can reduce the water quality and make the pond turbid, reducing its suitability for aquatic vegetation and consequently wildlife. In addition, fish will also feed on amphibian eggs and larvae.

If any tree works or clearance of vegetation is required, this should be undertaken outside of the bird nesting season (February to August inclusive) to avoid causing death or injury to nesting birds, their eggs and young, and the damage or disturbance of nests and nesting sites. If this is not feasible, a suitably experienced ecologist should be employed immediately preceding the works to carefully check for the presence of breeding birds and/ or their nests at the proposed site, and works may commence if none are found.

It should be noted that water levels in ponds naturally rise and fall over the course of a year and many aquatic and amphibious species are adapted to this occurrence (<https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/What-to-do-if-your-pond-is-drying-out1-1.pdf>). However, if levels remain unusually low for a long period of time, then it may be necessary to top the pond up using harvested rainwater. Improving the vegetation structure of the pond will also enable more species to survive periods of drought.

**Table 2.** Biodiversity actions for Long Sutton pond

OBJECTIVE	ACTION	OUTCOME	TARGET (YEARS)			MONITORING ACTION	PRIORITY
			1- 2	3 – 5	6 – 10		
Maintain and enhance existing habitats for wildlife	Manage and maintain pond	Improved water quality and floral diversity suitable for wildlife	<p>A pond with clear, clean water suitable for a range of wildlife including aquatic invertebrates such as dragonflies and damselflies.</p> <p><b>Management:</b> Light pruning of overhanging willow tree and surrounding trees and shrubs to reduce leaf litter entering the pond and causing a build-up of silt.</p> <p>Removal of excessive leaf litter using a handheld net when necessary. When doing so, check the net for any animals that may have been collected. Leaves to be added to a nearby compost heap. Any animals missed can then escape and move back to the pond.</p>	As previous		Carry out vegetation survey at 3-5 year intervals	High
	Enhance pond	Improved water quality and floral diversity	<p>A pond containing a mix of botanical species that attract a range of wildlife including aquatic invertebrates such as dragonflies and damselflies.</p> <p><b>Management:</b> Planting of native, locally sourced aquatic species in and around the pond. This should include a mix of bankside vegetation, marginal plants, tall emergents, floating and submerged plants. A list of suitable aquatic plant</p>				

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OBJECTIVE	ACTION	OUTCOME	TARGET (YEARS)			MONITORING ACTION	PRIORITY
			1- 2	3 – 5	6 – 10		
			<p>species can be found in Appendix 2.</p> <p>Regular maintenance of the aquatic vegetation including removing any dead plants or excessive weeds/ vegetation growth to allow a mix of species to flourish without any becoming dominant. Add dead/ removed vegetation to a compost heap</p>				
	Enhance areas of grassland around pond	<p>Habitat for invertebrates, such as bees and butterflies as well as reptiles and small mammals</p> <p>Area for residents/ visitors to enjoy nature</p>	<p>Areas of longer grass and wildflowers with no large ruderal species such as nettle, docks and thistles.</p> <p><b>Management:</b> Year 1: Cut grass in March then leave to grow over the summer. In autumn remove any weeds &amp; cut. If not very species diverse, seed with a wildflower mix. Do not leave cut grass in-situ.</p> <p>Year 2: Cut when height between 10-15cm, then every 6 to 8 weeks, always removing the grass. Do not cut below 5cm. Avoid cutting during main flowering period (mid-May to July).</p> <p>Leave some areas uncut to provide a safe refuge for amphibians and invertebrates to retreat to. Rotate the areas left uncut.</p>	<p>Grassland with a mixture of grass and native wildflowers with no dominant species.</p> <p><b>Management:</b> Year 3: Cut twice – once in late March/ early April, &amp; once in late August/ early September. From Year 4: Adopt an annual mowing regime – cutting once in late August/ early September. Vary the time of the cut each year to allow late-flowering plants to set seeds in some years. Remove any large weeds. Remove grass cuttings from area.</p>	<p>Grassland with a mixture of grass and native wildflowers with no dominant species.</p> <p><b>Management:</b> Continue annual mowing regime, mowing alternate strips on a rotational basis, removing the cut grass from the area and not cutting below 5cm</p>	<p>Carry out vegetation survey at 3-5 year intervals</p> <p>Carry out surveys for invertebrates such as butterflies and bumblebees</p>	High
Creating space for wildlife	Creation of a wildflower area	To enhance floristic diversity	Sow a small wildflower meadow on the lawn such as	Grassland with a mixture of grass and	Grassland with a mixture of grass and	Carry out baseline	Low

OBJECTIVE	ACTION	OUTCOME	TARGET (YEARS)			MONITORING ACTION	PRIORITY
			1- 2	3 – 5	6 – 10		
		of site and provide pollen and nectar sources for invertebrates	<p>to the east of the pond. Maintain with appropriate cutting regime to create areas of long grass and wildflowers with no large ruderal species such as nettle, docks and thistles.</p> <p>Plant native wildflower species such as common knapweed, oxeye daisy, red campion and selfheal. This could be created using a seed mixture such those by Emorsgate (<a href="https://wildseed.co.uk/home">https://wildseed.co.uk/home</a>), bee bombs or by using plug plants.</p> <p><b>Management:</b> Year 1: Late summer cut to no less than 5cm, then removal of cut material to keep nutrient levels low and encourage wildflower growth and seed germination. In autumn remove any weeds &amp; cut.</p> <p>Year 2: Cut when height between 10-15cm, then every 6 to 8 weeks, always removing the grass.</p> <p>Repeated cutting of nettlebed and ruderal vegetation to prevent these from dominating and out-competing the grasses and wildflowers.</p>	<p>native wildflowers with no dominant species.</p> <p><b>Management:</b> Year 3: Cut twice – once in late March/ early April, &amp; once in late August/ early September. From Year 4: Adopt an annual mowing regime – cutting once in late August/ early September. Vary the time of the cut each year to allow late-flowering plants to set seeds in some years. Repeated cutting of nettlebed and ruderal vegetation.</p> <p>Remove grass cuttings from area.</p> <p>Mow alternate strips on a rotational basis with some areas left uncut so that any animals that are disturbed during the mowing have a safe refuge to retreat to.</p>	<p>native wildflowers with no dominant species.</p> <p><b>Management:</b> Continue annual mowing regime, mowing alternate strips on a rotational basis, removing the cut grass from the area and not cutting below 5cm</p>	survey to check establishment of meadow plant species	

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OBJECTIVE	ACTION	OUTCOME	TARGET (YEARS)			MONITORING ACTION	PRIORITY
			1- 2	3 – 5	6 – 10		
	Provision of bird boxes	To provide additional nesting opportunities on the site for breeding birds	<p>A new duck house will be put on the pond to replace the old one and continue to provide a safe refuge for the waterfowl currently using the pond.</p> <p>A standard bird box could be installed on the willow tree by the pond.</p> <p>Position the box 2-4m above ground, angled north and east (away from prevailing winds) and tilted forwards slightly.</p> <p>The duck house and box should be checked once a year during the late autumn/ winter to remove old bedding.</p>	Any damaged boxes should be replaced		Carry out annual bird box checks. Data submitted to BTO nest Record Scheme, and Wildlife Trust.	Low
	Provision of a log pile	Increased habitat for invertebrates and small mammals as well as providing hibernation habitat for amphibians and reptiles should they colonise in the future	<p>Creation of a log pile at the base of the trees and shrubs, such as to the north and east of the pond.</p> <p>Use logs from broad-leaved trees of varying sizes. These should be partially buried in the ground in a semi-shaded area (i.e. somewhere warm enough for insects but not exposed to prolonged sunlight which can dry out the wood).</p>				Low

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OBJECTIVE	ACTION	OUTCOME	TARGET (YEARS)			MONITORING ACTION	PRIORITY
			1- 2	3 – 5	6 – 10		
	Provision of a compost heap	Increased habitat for invertebrates, reptiles and small mammals	Can be created using cuttings from the surrounding lawn piled up into a heap. All future cuttings as well as vegetation and leaf litter cleared from the pond from future management could be added to this.				Low
Maintenance of drainage system	Regular maintenance of silt trap	Improve water quality suitable for wildlife through the reduction of silt entering the pond	Clean, clear water in the pond free of silt and other contaminants.  <b>Management:</b> Clean and empty out silt traps, particularly after heavy rainfall events.	Repair or replace as necessary			High
Community engagement	Communicate wildlife management intentions to residents/ visitors via local parish newsletter and/ or pondside interpretation board	Residents/ visitors engaged and supportive of wildlife management of pond	Interpretation board designed and installed.	Repair or replace as necessary			High

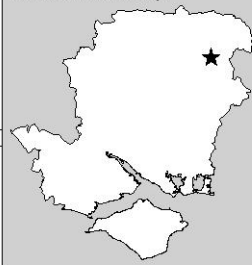


## 6. REFERENCES

- **CIEEM. (2013).** *Code of Professional Conduct*. CIEEM.
- **Froglife & World of Water (2011).** *Just Add Water: How to build a wildlife pond*. Froglife, Peterborough.
- **Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000).** Evaluating the suitability of habitat for Great Crest Newt (*Triturus cristatus*). *Herpetological Journal* 10(4), 143-155
- **Rose, F. (1989).** *Colour identification guide to the grasses, sedges, rushes and ferns of the British Isles and north-western Europe*. Viking, London.
- **Rose, F. (2006).** *The wildflower key: how to identify wild flowers, trees and shrubs in Britain and Ireland (revised edition)*. Fredrick Warne, London.
- **RSPB** Wild birds and the law. [Online] Available at: <http://www.rspb.org.uk/forprofessionals/policy/wildbirdslaw/birdsandlaw/wca/index.aspx> [accessed 18<sup>th</sup> November 2020].
- **RSPB** Red, amber and green explained. [Online] Available at: [http://www.rspb.org.uk/discoverandenjoynature/discoverandlearn/birdguide/status\\_explained.aspx](http://www.rspb.org.uk/discoverandenjoynature/discoverandlearn/birdguide/status_explained.aspx) [accessed 18<sup>th</sup> November 2020].

**MAPS**

Location within county:



## Map 1. Site Location

Long Sutton Pond

Scale 1:20000



◆ Site Location



## **PHOTOGRAPHS**





**Photograph 1:** Long Sutton pond, facing north-west



**Photograph 2:** Long Sutton pond, facing north-east





**Photograph 3:** Abundance of leaf litter within pond



**Photograph 4:** Old tree stump at the edge of the pond that provides suitable shelter for amphibians

## **APPENDICES**

Appendix 1:  
Botanical species list compiled during Phase 1 habitat survey with a qualitative  
measure of abundance based on DAFOR scale



**Appendix 1.** Botanical species list compiled during Phase 1 habitat survey with a qualitative measure of abundance based on DAFOR scale

The DAFOR scale provides an assessment of the abundance of particular species.

D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare. Species can also be Locally Dominant (LD) or Locally Abundant (LA) meaning there is a particularly dense patch but it does not extend to an entire area, for example a nettle bed.

Scientific name	Common name	Amenity grassland	Pond and its margins	Trees and shrubs
<b>Grasses, sedges and rushes</b>				
<i>Agrotis stolonifera</i>	creeping bent	F		
<i>Carex pendula</i>	pendulous sedge		LD	
<i>Lolium perenne</i>	perennial rye-grass	F		
<i>Juncus effusus</i>	soft rush		O	
<b>Herbs</b>				
<i>Callitriche stagnalis</i>	common water starwort		R	
<i>Anthriscus sylvestris</i>	cow parsley	R		
<i>Ranunculus repens</i>	creeping buttercup	O		
<i>Rumex crispus</i>	curled dock	O		
<i>Taraxacum</i> agg.	dandelion	R		
<i>Glechoma hederacea</i>	ground-ivy	R		
<i>Aegopodium podagraria</i>	ground elder	O		
<i>Lycopus europaeus</i>	gypsywort		O	
<i>Urtica dioica</i>	nettle (common)		O	
<i>Trifolium repens</i>	white clover	O		
<i>Iris pseudacorus</i>	yellow flag iris		O	
<b>Woody species</b>				
<i>Fraxinus excelsior</i>	ash			O
<i>Fagus sylvatica</i>	beech			R
<i>Hedera helix</i>	ivy	R		R
<i>Acer pseudoplatanus</i>	sycamore			O
<i>Salix</i> sp.	willow species			R

## Appendix 2: Suitable Plants for Ponds

**Appendix 2.** Suitable Plants for Ponds (Taken from 'Creating garden ponds for wildlife' by Pond Conservation & World of Water, 2011)

Type of Plant	Species	Comments
Plants next to the pond (for use in wildflower areas adjacent to pond)	<ul style="list-style-type: none"> <li>• Cow parsley</li> <li>• Devil's-bit scabious</li> <li>• Hemp agrimony</li> <li>• Teasel</li> <li>• Purple loosestrife</li> <li>• Red valerian</li> <li>• Yarrow</li> </ul>	Provision of food and cover next to the pond  Links to other habitats
Low-growing wetland grasses (planted on dry ground or in a few cm of water)	<ul style="list-style-type: none"> <li>• Creeping bent</li> <li>• Small sweet-grasses</li> </ul>	
Marginal herbs & rushes (2-10cm depth of water)	<ul style="list-style-type: none"> <li>• Lesser spearwort</li> <li>• Marsh pennywort</li> <li>• Water forget-me-not</li> <li>• Water mint</li> <li>• watercress</li> </ul>	
Marginal plants with attractive flowers & architecture (2-10cm depth of water)	<ul style="list-style-type: none"> <li>• Marsh cinquefoil</li> <li>• Marsh woundwort</li> <li>• Marsh-marigold</li> <li>• Pendulous sedge</li> <li>• Purple loosestrife</li> <li>• Ragged-robin</li> <li>• Water dock</li> <li>• Yellow iris</li> </ul>	
Tall emergents (2-10cm depth of water)	<ul style="list-style-type: none"> <li>• Branched bur-reed</li> <li>• Bulrush</li> <li>• Greater pond-sedge</li> <li>• Hard rush</li> <li>• Lesser reedmace</li> <li>• Reed sweet-grass</li> <li>• Soft rush</li> </ul>	Can become dominant in small ponds so regular cutting back necessary
Floating-leaved plants (15-30cm of water)	<ul style="list-style-type: none"> <li>• Amphibious bistort</li> <li>• Broad-leaved pondweed</li> <li>• Fringed water-lily</li> <li>• Yellow water-lily</li> </ul>	
Submerged plants (Float in deep water)	<ul style="list-style-type: none"> <li>• Common water-starwort</li> <li>• Curled pondweed</li> <li>• Rigid hornwort</li> <li>• Spike water-milfoil</li> <li>• Water-crowfoot</li> </ul>	

Appendix 3:  
Annual Work Plan

### Appendix 3. Annual Work Plan

[illegible]

## Appendix 4: Long-term Work Plan

## Appendix 4. Long-term Work Plan

[illegible]