



# Biodiversity Action Plan 2021-2030 for Water Voles on the Manhood Peninsula Appendix 1 Water Vole Habitat Management and Creation

## Water vole habitat on the Manhood Peninsula



April 2023

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Section	Title	Page
1.0	<b>INTRODUCTION</b>	<b>5</b>
2.0	<b>MANAGEMENT OF WATER VOLE HABITAT</b>	<b>5</b>
2.1	Water vole habitat requirements	5
2.2	Lawful habitat management	6
2.3	Too little or too much management	6
2.4	Other management issues	7
2.5	Non-native invasive species	7
2.6	Management regimes	8
2.7	Timing of work	11
3.0	<b>WATERWAY ASSESSMENT</b>	<b>11</b>
3.1	Waterway assessment for water voles – why bother?	11
3.2	Waterway assessment sheet	11
4.0	<b>MAKING IMPROVEMENTS TO WATER VOLE HABITAT</b>	<b>12</b>
4.1	Specific vegetation management regimes	12
4.2	Cut back overhanging trees	12
4.3	The value of ponds	12
4.4	Encouraging greater vegetation diversity	13
4.5	Controlling Hemlock Water Dropwort (HWD)	13
4.6	Litter removal	13
4.7	Mink control	14
5.0	<b>CREATING WATER VOLE HABITAT</b>	<b>14</b>
5.1	Data gathering	14
5.2	Site assessment	15
5.3	Special features	15
5.4	Invasive species identification and their removal	16
5.5	Checks, communication, and engagement	16
5.6	Initial work – vegetation removal	17
5.7	Contractor work	18
5.8	Planting	19
5.9	Seeding	21
5.10	Coir rolls	21
5.11	Monitoring	22
5.12	Management plans	22
6.0	<b>REFERENCES</b>	<b>23</b>



## Contents



Section	Title	Page
	<b>APPENDICES</b>	<b>24</b>
<b>A1</b>	<b>WATER VOLE STATUS, PROTECTION, AND FIELD SIGNS</b>	<b>24</b>
<b>A1.1</b>	<b>Water vole status</b>	<b>24</b>
<b>A1.2</b>	<b>Water vole Legal Protection</b>	<b>24</b>
<b>A1.3</b>	<b>Water Vole Field Signs</b>	<b>24</b>
A1.3.1	Latrines	<b>24</b>
A1.3.2	Burrows and lawns	<b>25</b>
A1.3.3	Feeding piles or stations, and cut ends	<b>25</b>
A1.3.4	Runs and footprints	<b>26</b>
<b>A2</b>	<b>WATERWAY HABITAT ASSESSMENT SHEET</b>	<b>27</b>
<b>A3</b>	<b>SIMPLE MANAGEMENT PLAN TEMPLATE</b>	<b>29</b>

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## 1.0 INTRODUCTION

Water voles (*Arvicola amphibius*) are the fastest declining mammal in England and Wales despite nationwide conservation efforts to stem the downward trajectory of the population (PTES 2022).

Water voles hold an important role in wetland ecosystems as they are prey for different predators. They also help disperse plant seeds and cut up rootlets of plants, thus helping to diversify the wetland vegetation. They create complex burrow systems in the waterway banks that many other species like the grass snake use in winter. Therefore, the loss of water voles has a direct impact on many other species.

Any efforts to create and improve habitat for water voles is valuable especially in this area where they have a thriving stronghold and there are water vole colonies dispersed across the wider landscape. This also helps to mitigate some of the losses in water vole habitat and numbers.

While water voles have very specific habitat requirements, they can also use sub-optimal habitat in order to find new breeding territories and link up with partners. When a site is identified as not having suitable habitat for water voles but occurs within a landscape where they are present, it is still worth checking for their presence and considering improvement.

Water voles leave clear evidence of their presence, and, while not hibernating during the winter, they are less active but stimulated by longer daylight hours and warmer temperatures, start to energetically feed in spring.

## 2.0 MANAGEMENT OF WATER VOLE HABITAT

### 2.1 Water vole habitat requirements

Water voles have quite specific habitat requirements so that if an area becomes unsuitable or fragmented, water voles will move to find better opportunities.

Water vole habitat needs:

- Soft soil to make up the banks of the waterway so that they are able to create a burrow system with above and under water entrances.
- A rich and diverse flora for year-round food as water voles do not hibernate and need to eat between 70-80% of their body weight each day.
- Clean gently flowing water year-round for good health and for varied riparian and aquatic plants.
- Habitat should have little fluctuation in water levels otherwise they are at risk of being drowned in their burrows during flooding or losing their habitat completely if the waterway dries out. They may also become more vulnerable to predators if their burrow entrances are exposed by low water.



Should be mature and complex with a succession of different plant species growing, flowering, and fruiting at different times, with dead material allowed to cover the banks, and plenty of overhead growth offering protection.

**No** American mink – this invasive non-native species is a significant threat to long term water vole presence in an area, especially in linear based habitat.

## 2.2 Lawful habitat management

Water voles and their habitat are protected by the Wildlife and Countryside Act 1981, amended 2006, and therefore any management of their habitat must be carried out extremely sensitively with their presence insitu taken into consideration, or licenses sought from Natural England, NE, if their displacement or removal is required. Light cutting on the banks is permissible at the correct time of year but digging out of the channel must be done in early winter and this may well need a license if resident water voles are going to be disturbed or displaced.

## 2.3 Too little or too much management

Water vole habitat can be adversely affected by both a lack of management and over or poor management practices. In England it is these management issues that have so significantly contributed to habitat loss for water voles. Farming has changed across the country to industrialise agricultural practices from gentle but annual vegetation cuts on the banks of ditches and streams to no cutting for 5-10 years and then complete vegetation removal and channel de-silting. This lack of management followed by complete cover removal and bank scraping leaves waterways unsuitable for water voles.



Over management with complete loss of vegetation for food and cover

Under-management takes the form of leaving waterways unmanaged for many years. This sounds on the surface like good practice but in the absence of grazers or keystone species like the European beaver or bison, who would have naturally cut the plant growth, bramble (*Rubus* sp) and trees, particularly willow (*Salix* sp), take over. This results in a dark and shaded channel which does not allow lush bankside/riparian plant species to grow and water voles are unable to survive without the food diversity they require. They eat over 200 plant species.



Too little management with increased shading of the waterway and banks

## 2.4 Other management issues

- Rats have an impact on water voles in ditches that are poorly managed. Rubbish not only can contain pollutants that affect water quality but often attracts rats which are a predator of water voles, particularly their young. Therefore, waterways that have a high rat number will have no water voles. This can be due to simple actions such as feeding ducks, pheasant rearing near watercourses. See Appendix 3 for the difference between rats and water voles.
- Pollution can affect water vole health and impact fertility or the ability to cope with the parasitic burden that wild water voles carry, thus increasing their chances of succumbing to disease.
- Canalisation and piling of the banks prevents water voles from being able to create the burrow systems they use and impinges on the plant cover at water level that offers them protection from predators.



- Along the south coast the effect of climate change on the weather has been seen with warmer wetter winters, increased intensity of rainfall and longer drier periods in spring and summer. The results of this on the waterways is an increased flood risk and high-water levels in autumn and winter, and then total drought and dried out ditches in the spring and summer. This impacts water voles through the raised pollution issues that come with flooding, the effect of drought periods on the vegetation, and directly through no water being present in the ditches to protect burrow entrances.

## 2.5 Non-native invasive species

Invasive plant species can be a significant threat to water vole habitat by quickly dominating it and out competing other native species (Himalayan Balsam *Impatiens glandulifera*, Japanese Knotweed *Fallopia japonica*, American Skunk Cabbage *Lysichiton americanus*).

Not only can they cause issues on the banks, reducing diversity, but aquatic invasives species can cover the water completely, reducing oxygen for aquatic invertebrates and thus reducing biodiversity in the whole ecosystem - Floating Pennywort *Hydrocotyle ranunculoides*, Azolla Fern *Azolla filiculoides*, Parrots Feather *Myriophyllum aquaticum*, New Zealand Pygmyweed *Crassula helmsii*.

Species presenting a particular threat to our waterways:



Japanese Knotweed



Himalayan Balsam



Parrots Feather



Floating Pennywort



Azolla Fern



New Zealand Pygmyweed

If any of these species are identified, the EA or DEFRA should be informed of their presence as they are seen as a significant threat to biodiversity and their national coverage is monitored. Advice can be accessed about their safe removal and disposal. <https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants#full-publication-update-history>

## 2.6 Management regimes

Different management regimes can be used on waterways if it is known that water voles may be resident or using that habitat.

The EA has a document on the management regimes available for clearing waterways where water voles are present (EA - delivering consistent standards for sustainable asset management - FCRM Asset Management, Maintenance Standards, version 3, March 2012).

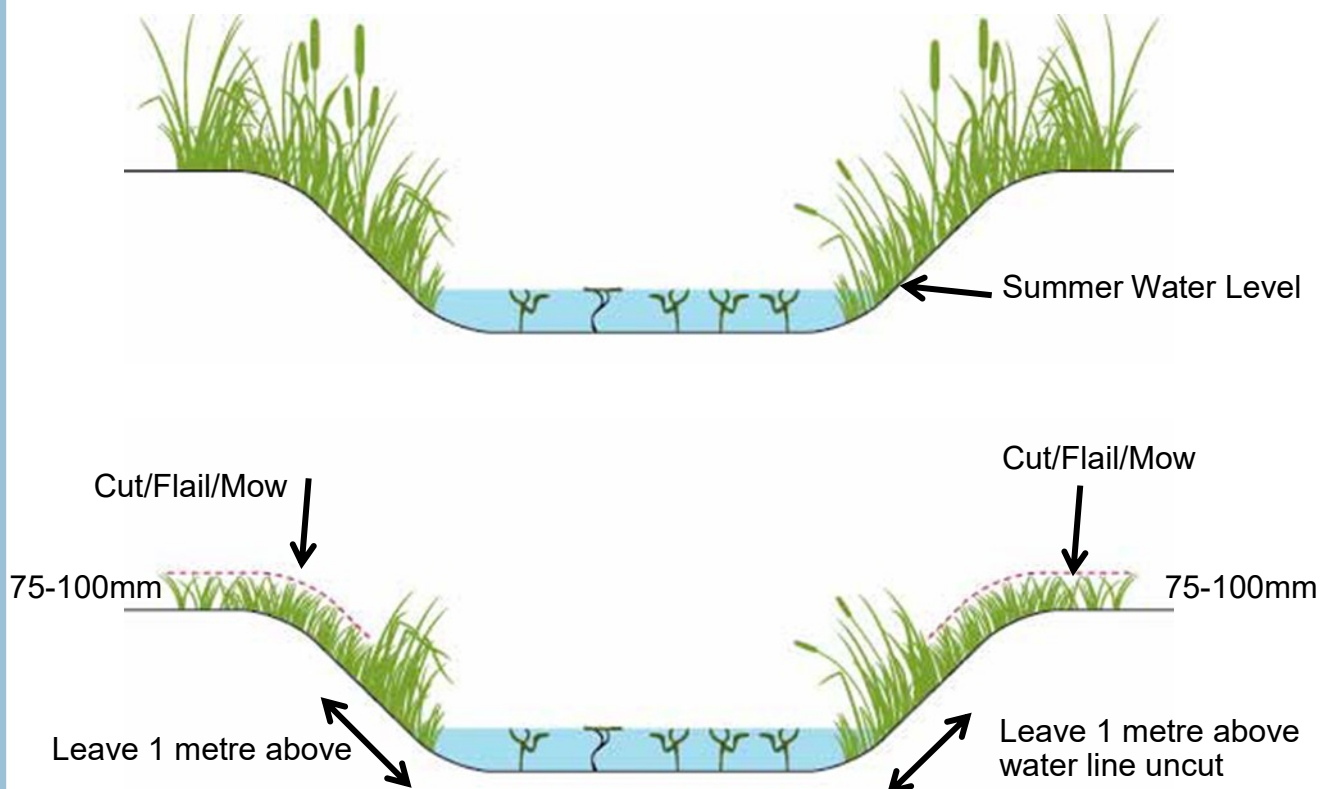
There are different techniques for vegetation removal but the key approach is **NOT TO REMOVE ALL THE VEGETATION ALONG ALL THE BANKS.**

If vegetation is to be removed, be sympathetic, remove the minimum, leave some areas untouched, do not cut both sides of the bank, and do not move or place heavy vehicles over water vole burrows.

Try to carry out management on alternate banks on alternate years so that wildlife has a chance to recover.

**EA Management regimes:**

**A) Ditch Management – Grass Control Option 1**

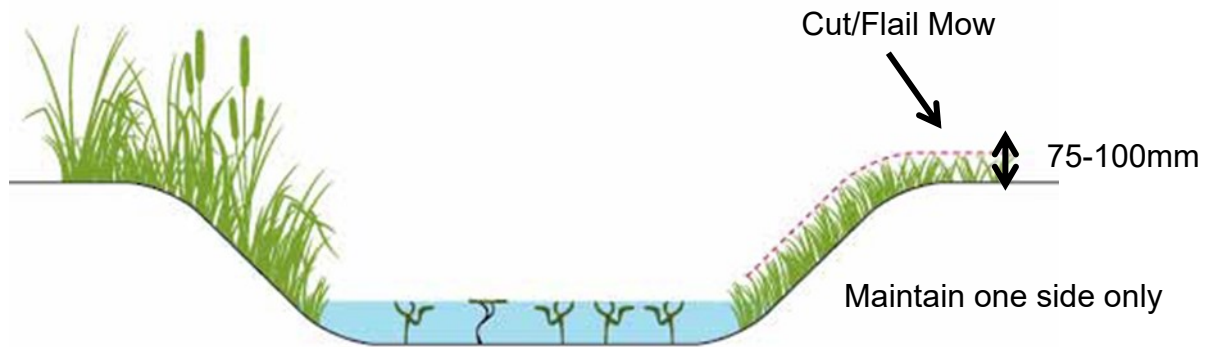


Cut once a year regardless of water course width, with 1m above summer water line on each bank left uncut.

**B) Ditch Management – Grass Control Option 2**

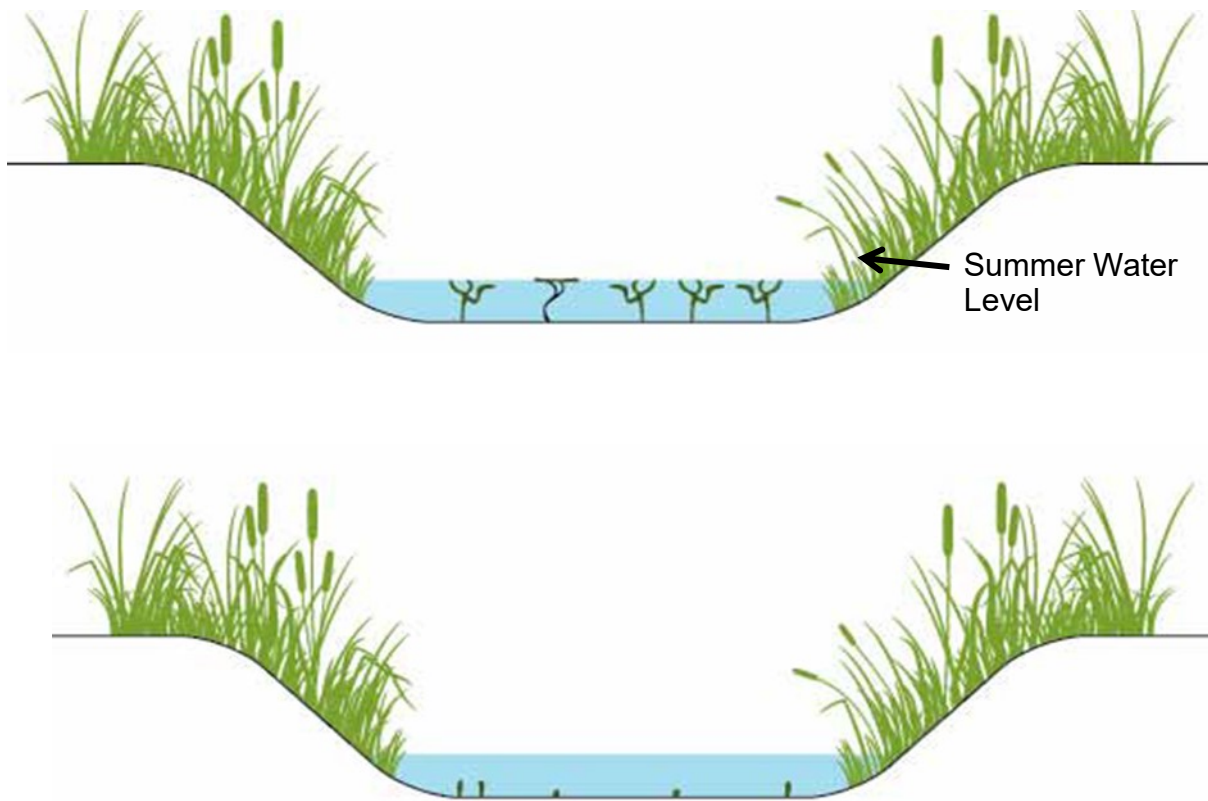






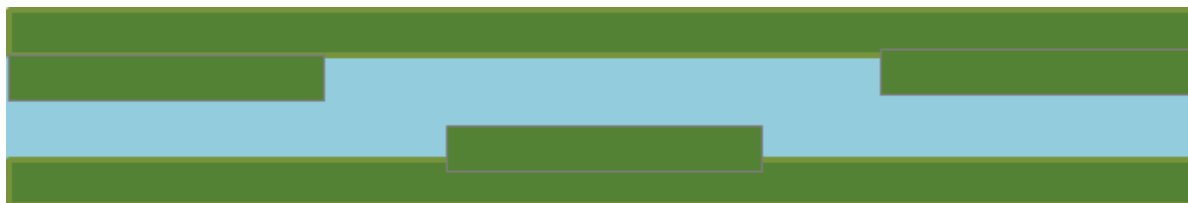
Cut once a year regardless of water course width, better still is to cut one side and leave the other vegetated, alternating this from year to year or better still leave completely on a 3-year cycle.

### Ditch Management – In Channel Option 1



For water courses up to 2m wide the vegetation can be cleared in its entirety from the central water course, however not the banks. All cut vegetation should be moved away from the floodplain area/ditches in order to avoid it washing back into the water and blocking up water control structures. This should be done once a year or twice if necessary although this is unusual. For water courses wider than 2m this system changes to an 80:20 cut which in many ways is a more conservation minded approach.

## C) Ditch Management – In Channel Option 2



Bird's eye view – of alternate cutting of bankside vegetation allowing variety of growth.

### 2.7 Timing of work

Water voles breed from March to September (the start of the season can depend on temperature) and during this period no work to remove bankside or cut in-channel vegetation should take place as this counts as interfering with water vole habitat is illegal.

If vegetation does need to be removed, advice should be sought from NE as this may require a license. <https://www.gov.uk/government/publications/water-voles-licence-to-displace-them-for-work-on-flood-defences-water-courses-or-drainage-systems>

Water voles do not hibernate but do spend more time in burrows over winter. Removing vegetation from the banks will expose burrow entrances and make the animals more vulnerable to predation when they leave to forage.

Work in winter is less intrusive but often the ground is wetter and ditches water-filled and this can make the work difficult from a practical standpoint. Work in late Autumn, when a ditch has been dry or the water levels very low for a period of time, may be the best time to carry it out.

Do not remove all vegetation but aim to leave some cover on the banks and do a bit at a time, allowing water voles and other wildlife to adjust.

## 3.0 WATERWAY ASSESSMENT

### 3.1 Waterway assessment for water voles – why bother?

- Baseline information on suitability
- Track water vole population movements
- Long term condition monitoring
- Highlight focal areas for works
- Enable strategic engagement

### 3.2 Waterway assessment sheet

See **Appendix 2** for a copy of the sheet template

Developed from the Water Vole Conservation Handbook (Strachan, Moorhouse and Gelling 2011) and adapted for ditches, ponds and rifes by the FLOW project.

This method allow the rapid condition assessment of:

- ◇ the channel
- ◇ the surrounding land use
- ◇ the vegetation Structure

This assessment sheet was developed to capture information about ditches, specifically the channel itself – its physical characteristics, water flow direction, any pollution, the quality of the bankside vegetation, the in-channel vegetation, presence of hedges, culverts and whether or not the channel dries out.

This data is then collated and scored so that the channel can be given a quantitative value that can then be used to label the ditch good, moderate, or poor.

This information can be used to create maps that illustrate the varied information in an accessible format and shared with different organisations and communities. With regard to water voles this information can help to identify areas that need improvement, what the issues are, and to prioritise resources.

Harris et al (2009) developed a similar method for assessing water vole habitat suitability that also uses a scoring system and which has helped to inform impact assessments, scope options for mitigation, and to monitor habitat re-instatement in relation to a number of flood defence schemes in dyke systems in Norfolk.

## **4.0 MAKING IMPROVEMENTS TO WATER VOLE HABITAT**

### **4.1 Specific vegetation management regimes**

Lack of management is one of the main causes of habitat loss for water voles. The key action needed is to get light in on the banks. Vegetation removal towards the top of the banks can prevent shading, especially of bramble, is necessary but plants on the water's edge need to be left to offer water voles cover to enable them to hide. Small pockets of bramble should be left as it is important for a range of species but should not be cut until September. Light should promote colonisation by other plant species.

### **4.2 Cut back overhanging trees**

Ditches frequently suffer from heavy shading which reduces plant diversity and can be a route for bramble to move over the water channel, tenting it and exacerbating the shade. Cutting back branches of trees overhanging the water can help get light onto the banks and potentially improve the range of plant species on the banks. However, leaving some areas of shade will benefit other species like the European Eel and Brown Trout and with Climate Change this will be increasingly important. Overhanging willow branches are useful for kingfishers and some dragonfly species.

No branch removal work can take place between the 28<sup>th</sup> February to 1<sup>st</sup> September window as the spring and summer months are bird breeding season and the Wildlife and Countryside Act 1981, amended 2006, makes it an offence to remove habitat within that time frame.

### **4.3 The value of ponds**

Where there is an intersection of ditches there is potential to create deeper junction ponds to hold water back for longer and thus provide an area for riparian vegetation to develop. Given climate change and rising temperatures and periods of drought, these pond areas can become very important for wetland species including water voles, amphibians, and invertebrates.

#### 4.4 Encouraging greater vegetation diversity

Plant diversity, especially riparian and aquatic species, is key for water vole success. These can be added to sites through seeding, plug planting, and / or coir rolls. Where some plants, such as yellow flag iris, are present onsite, the rhizomes can be split up and spread to other waterways. There is value in doing this in combination with bramble removal and taking back of overhanging branches – targeting key waterways with the best potential to be improved into moderate / good habitat.

#### 4.5 Controlling Hemlock Water Dropwort (HWD)

While nationally common this wetland plant is extremely abundant on the coastal plain south of Chichester and has been identified as a contributor to flooding. This plant grows early in the year with fresh green shoots appearing in late January. It outcompetes other native species by growing so early on and effectively pushing out other species. It then peaks in growth by May when it starts to flower. It then dies back and falls over back by July / August. This leaves bare soil which is then prone to being washed away by rainfall. On steep banks this can cause erosion and slumping, creating more silt.

Do not use herbicides next or near to water courses. Mechanical removal, digging it out, is the only advisable method. HWD is poisonous, every part of it contains photosensitive chemicals like hogweed so great care must be taken when handling it. The roots are like parsnips (but deadly) and all pieces must be removed from the soil to prevent regrowth. Once removed it can be left in piles to dry out and die before being disposed of.



One way to manage the spread of this plant over time is to let it flower, as it is extremely attractive to a large range of pollinators, but to then cut the flower head off before it turns to seed.

#### 4.6 Litter removal

Litter in the waterways impacts wildlife. It can introduce pollutants into the water, cover up plants and become a hazard for birds and mammals. A less obvious effect is that it can attract rats who live throughout rural environments and are omnivorous opportunists always on the lookout for an easy meal. Food waste, bird food, and litter is an ideal source of food for rats and when in waterways this affects the habitat. Rats predate water voles and therefore they do not live side by side comfortably.

Water voles will soon move out of a ditch or reedbed if rats start to use them. Therefore, keeping ditches free of litter and a site clear of food debris is important.

If active rat management takes place through poisoning, then it must be ensured that any dispensers are kept well away from waterways so that water voles are not accidentally targeted. If rat traps are put in then live ones are best so that only target species are dispatched. Spring traps will kill anything that triggers the mechanism and therefore they can potentially be indiscriminate. The location of these traps is key to ensure only the rats are caught.

#### 4.7 Mink control



Mink monitoring needs to be undertaken as they are a contributing factor to water vole population demise. They can readily decimate water vole colonies as they access their burrows.

Mink monitoring information can be found here:

<https://www.gwct.org.uk/advisory/guides/mink-raft-guidelines/>

Floating rafts with clay pads can be used to gather evidence on the presence of mink and water voles and are a low intensity way of monitoring for these species.

## 5.0 CREATING WATER VOLE HABITAT

In an area where water voles have a stronghold, and there are no mink and an active monitoring programme, it is always valuable to create more habitat as it is very likely that habitat loss is occurring within the landscape through poor management. Water voles will move into the new opportunities quickly especially if it is linked through ditches and streams within the catchment. The following is a step-by-step guide to creating suitable habitat for water voles:

### 5.1 Data gathering

An important source of information is the County Biodiversity Records Centre who will supply species data for any sites and can therefore provide a picture of what has previously been reported, exists, and may be present or use the site.

This evidence base, added to an up-to-date multi species survey should inform the work being carried out.

Particular attention should be given to records of protected species such as European Eels, Hazel Dormice, Great Crested Newts and Bats species. Even if there are no records at the site, many species are very under recorded so an assessment of the habitats for its suitability should be carried out. E.g. Dormice are under recorded with suitable habitat and good connectivity required – Oaks, Hazel, Bramble, Climbers such as Honeysuckle & Traveller's joy. If the site looks suitable for dormice the use of footprint tubes prior to any works would be advisable. This is a non-invasive survey technique which does not require a licence as the chance of disturbing dormice is very low.

A services check should take place to ensure that no gas mains, water mains, telecoms cables or electrical lines run through the area, as these need to be avoided.

## 5.2 Site assessment

When a site is found, the following features need to be assessed:

- the boundary of the site
- groundwater levels if it is clear
- the culverts or ditches coming in
- the outlet where water continues downstream,
- the substrate of the banks
- any grates or drains,
- any bankside trees
- veteran trees
- retaining walls
- historical features
- the substrate of the base of the wetland
- the depth of any silt.

This, again, will be information that contributes to the decision-making process about what can be done on the site, what needs to be prioritised and what needs to be saved etc.

## 5.3 Special features

Many Sussex farm ponds have a brick and flint walled sides. This can be a heritage feature that is protected, if it is within a Conservation Area and also valuable as a unique characteristic of the pond.

Before any work takes place, the site should be checked to see if it falls within a Conservation area or if any of the trees that have been identified for management have Tree Preservation Orders (TPOs) on them. This information will be available through the District Council or the Planning Authority for the area. In order to carry out work in these areas or on the trees, formal planning permission will need to be obtained.

When considering carrying out work with digging contractors, a services check would be advisable to ensure that they are mapped before work commences and thus no damage is caused. This can include water mains, sewerage pipes, telecoms cabling (particularly along verges) and gas mains.

Tree surgeons will need to consider the proximity of overhead telephone wires and electricity pylons.



A flint wall at the back of a pond area



A flint wall used as a landowner boundary with a bricked archway for water to travel

#### 5.4 Invasive species identification and their removal

See section 2.5 for a list of invasive species, they should be identified as their presence may well affect any future work on the site.

These plants can be a significant threat to biodiversity and a biohazard as they are easily transported to other sites. The methodology for removing and disposing of each species will need to be understood and followed to prevent contamination of clothing, tools, and vehicles.

Between sites, footwear should be cleaned with an antibacterial, antifungal, and antiviral liquid and scrubbed to remove any tiny spores or seeds. Cuffs on trousers and pockets should be checked to ensure there are no accidental transfers. Equipment such as nets, ropes and rakes should also be rinsed off.

The presence of American Mink should be considered as having a negative impact on the wetland ecosystem and biodiversity. If possible, they will need to be eradicated if water voles are to be made long term residents or encouraged to recolonise a site (see section 4.7).

#### 5.5 Checks, communication, and engagement

Before carrying out any improvement work, the ownership of the site must be confirmed and an agreement made about what is planned / suggested, the impacts, the look of the site and the overall targets. This agreement may be informal with a conversation and then a follow up email with an overview of the discussion or it may be more formal, with detailed descriptions of the works, responsibilities, and outcomes etc.

If a site is visible to the public, it would be worth engaging the local Parish Council about the works as, inevitably, they will be asked by parishioners about what is going on and why. If there are residential properties near to the site, a plan to inform people would be worth investing in as it will prevent complaints and queries that could hold up the work. Putting information slips through doors, signage onsite and using social media to publicise the positive benefits of the work will help to make the local population feel engaged and considered.

## 5.6 Initial work – vegetation removal

No vegetation removal work can take place between the 28<sup>th</sup> February to 1<sup>st</sup> September window as the spring and summer months are bird breeding season and the Wildlife and Countryside Act 1981, amended 2006, makes it an offence to remove habitat within that time frame.

If a site is very overgrown and has not been managed for many years, it may be difficult to see what main features the site has, therefore, some removal of vegetation maybe required to gain insight into any special features (Section 6). Ideally the initial clearing work should be carried out by hand tools so that the site can carefully be uncovered. It will be bramble and willow that are the most likely plants to take over a relic pond site, as they will make the most of the moisture and the lack of management.

Both the bramble and willow can be cut back hard, as they will regrow. If water voles are on site, then their burrows may emerge from within a bramble patch, so some cover will have to be maintained. The willow and bramble offcuts can be used in a dead hedge on the site boundary which has multiple purposes:

- putting a form of habitat back for invertebrates, birds, amphibians, and small mammals to help negate what is being lost
- provide protection along the boundary of the site from adjacent land uses (traffic, agriculture, blowing litter, dogs etc)
- provide a place for the dead material to be kept onsite – as part of carbon sequestration – instead of burning it.

This is great work for volunteers to carry out as part of work parties, community days or green gym events and will require basic tools like loppers and pruning saws, and a good pair of gloves.

Ivy climbing up trees provides important late summer / autumn nectar for pollinators and any berries should be left for the birds, where possible. There is a belief that ivy weakens trees, but a healthy tree should not be adversely affected by its growth and the habitat opportunities it provides are vitally important.



Dead hedge up against a wire boundary fence – aesthetically more pleasing while offering habitat for wildlife.



Dead hedge along the edge of a site – using chestnut stakes to hold the slotted material in place.



## 5.7 Contractor work

As part of the improvement work on the site, some larger trees, probably willow species, may need to be removed or cut right back. The trees should be removed if they are heavily shading the wetland area as this will suppress the ability for native aquatic and riparian plants to grow and thus impede biodiversity.

### Before



Pond area covered in bramble and significantly shaded out by numerous mature willow trees on the periphery. They have also fallen within the pond and regrown, holding silt back and de-

### During



Tree surgeons brought in to cut back the trees, remove the shading branches and get light onto the water surface. Also, to remove the fallen trees and open up the site.

### After



Trees cut to different heights to allow growth to form at different heights. Some trunks had holes and damage and were left as bat roost/woodpecker nest potential and habitat for

Trees should be checked for bat features where bats maybe roosting – cracks, gaps, holes and splits, and bird holes – where woodpeckers, tree creepers, owls and other species may be using them. These should be protected and left. The tree may resprout or die, depending on the species and condition of the tree, but dead standing wood is an extremely important and rare habitat in the UK – attractive to birds, invertebrates, and small mammals. Stag beetles need dead standing wood for their larval stage to develop requiring 5-7 years.

If required tree surgeons should be chosen who have some knowledge of wildlife work and have a LANTRA qualification - Arboriculture and Bats - Scoping Surveys for Arborists. This is specialist work, requiring careful removal of tree limbs and reducing the risk of damage to the rest of the site.

When the trees have been reduced, the cut wood should all stay onsite as this provides habitat for many species. Logs can be piled up at the base of trees and put along the banks of the wetland area, next to the water, for amphibians and reptiles. The brash and smaller branches can be slotted into a dead hedge on the site.

Dead hedges are created by hammering in chestnut stakes (approx. 1-2 inches in diameter) in 2 parallel lines about 50cm apart. The dead material can be slotted in between the two lines of stakes and should be held in place securely. Over time more and more material can be piled up to replenish the hedge so that no material need be burnt or removed.

Once the trees have been managed and taken back from the water, digging contractors can come in and carry out work.

**There must be checks to ensure that water voles are not present as the weight and manoeuvring of the machinery could crush active water vole burrows on the banks.**

The digging contractors can remove silt from the base of the pond / waterway to deepen it, increasing the water holding capacity and lengthening the season during which it is wet.

A consideration is what to do with the spoil as it can be expensive to dispose of. The best thing to do is leave it onsite if there is somewhere to spread it, or on an adjacent field (with an EA D1 exemption certificate).

**During**



Digger working on an unmanaged farm pond by digging out the base and putting the spoil elsewhere on the site. The driver created curves and some shallow areas for riparian planting.

**After**



Wood was cut up and piled next to the water's edge and the spoil was spread across an adjacent area and seeded with specialist riparian wildflowers.

It is worth identifying plant species that need to be kept and either taping them up so they are clearly marked or getting the digger contractor to carefully dig them up and put to one side for future replanting.

When digging out the pond it is an opportunity to create new micro habitats by reprofiling the banks, forming curves, and creating different depths. New pond or ditch banks should be at an angle of approximately 45° as this is good for water voles and not too acute that it could contribute to erosion.

### **5.8 Planting**

When replanting or adding plant species to a site, locally sourced species should be prioritised. These are more likely to survive as they are used to the local conditions. However, when transplanting species from another site, be extremely cautious about accidentally introducing an invasive species such as duckweed, New Zealand Pygmyweed or Azolla Fern that may cling to another plant or on people's wellies and whose prions or roots can be almost impossible to detect.

Native riparian plants can also be bought from reputable wholesalers such as Aquamaintain (<http://aquamaintain.com/aquatic-plants/>) and Salix (<https://www.salixrw.com/product/uk-nativeplants/>).

A range of native aquatic and riparian plants can increase biodiversity significantly and offer excellent food sources for pollinators, especially bumble bee species who actively prefer riparian habitat. They also stabilize the banks, preventing erosion during high rainfall events and flow rates, contributing to flood risk reduction.

#### Native riparian plants

Water plantain	<i>Alisma plantago-aquatica</i>	Hornwort	<i>Ceratophyllum demersum</i>
Greater pond sedge	<i>Carex riparia</i>	Starwort	<i>Callitriche palustris</i>
Marsh Woundwort	<i>Stachys palustris</i>	Bogbean	<i>Menyanthes trifoliata</i>
Yellow Flag iris	<i>Iris pseudacorus</i>	Flowering rush	<i>Butomus umbellatus</i>
Purple loosestrife	<i>Lythrum salicaria</i>	Marsh Marigold	<i>Caltha palustris</i>
Water forget-me-not	<i>Myosotis scorpioides</i>	Brooklime	<i>Veronica becabunga</i>

Trees planted onsite can be a real boost to biodiversity, either as a bordering hedge or standalone trees, and as long as they are planted away from the water's edge, they will not cause a problem. Suitable native species should be chosen that will dominate the site and will be easy to manage. Fruit trees such as crab apple, wild plum and wild cherry, and nut trees, like hazel will offer good pollen and nectar sources during the spring and food in the autumn. Trees that can cope with wet conditions such as alder or black poplar are a good choice and low growing native species such as spindle or guelder rose won't cause shade issues.

Willow should be avoided as it is probably the tree that will take over and cause shading issues. Sycamore trees onsite can be invasive and if there are any and the ground is exposed with tree removal, multiple seedlings will emerge in the spring and will require removal and constant vigilance.

Native tree species with flowering and fruiting value include:

Hazel	<i>Corylus avellana</i>	Wild Service Tree	<i>Sorbus torminalis</i>
Spindle	<i>Euonymus europaeus</i>	Yew	<i>Taxus baccata</i>
Guelder Rose	<i>Viburnum opulus</i>	English Oak	<i>Quercus robur</i>
Bird Cherry	<i>Prunus padus</i>	Field Maple	<i>Acer campestre</i>
Wild Cherry	<i>Prunus avium</i>	Rowan	<i>Sorbus aucuparia</i>
Wild plum	<i>Prunus Domestica</i>	Hawthorn	<i>Crataegus monogyna</i>
Crab apple	<i>Malus sylvestris</i>	Blackthorn	<i>Prunus spinosa</i>
Elderflower	<i>Sambucus nigra</i>	Holly	<i>Ilex aquifolium</i>
Beech	<i>Fagus sylvatica</i>	Purging Buckthorn	<i>Rhamnus cathartica</i>
Hornbeam	<i>Carpinus betulus</i>	Black poplar	<i>Populus nigra</i>
Alder	<i>Alnus glutinosa</i>	Apple	<i>Malus x domestica</i>

When planting trees, their protection from rabbit and deer damage may be necessary and, where possible, non-plastic biodegradable guards should be considered (<http://ezeetrees.com/>)

### 5.9 Seeding

Once a site has been dug out and any plants that were saved have been replanted, bare soil areas exposed to light and warmth may stimulate growth from the seedbank within the spread spoil. This could be a good source of plants but there is a chance that good first coloniser plants such as nettles, cleavers, bramble, and sycamore seedlings may dominate this area.

Before



Site was seeded with specialist heavy clay-tolerant wildflower species in March

After



Annual and perennial wildflowers emerged in June and remained in flower until September

An alternative could be to reseed some sections with specialist wildflower seeds that contain native species that are suitable to the conditions – wetland, heavy clay, shade, semi shade etc. The mix might include annuals and perennials, so over time the plant mix may change. A seed specialist will have a good range of native plant species seeds <https://www.bostonseeds.com/>

### 5.10 Coir rolls

Coir rolls, made up of coconut fibre, can be a quick way of introducing wetland plants to a site where there are no nearby plants available to colonise the site or that substrate is so poor that plants will take time to establish, or the banks are too steep.

Coir rolls can be purchased pre-planted and wet, and ready for installation immediately. These tend to be expensive, heavy and need about 8 people to manoeuvre and fix into position. An easier way to work with them is to buy them dry. They can be stored and used in your own timescale, and the exact plants species and numbers required can be bought separately. This allows the coir rolls to be tailored to each site with specific plants and only needs about 3 people to lift them.

The coir rolls are secured in place with short chestnut stakes, which are a dense wood and decay slowly, so that they remain in place against the bank.

Companies that priced coir rolls include Aquamaintain (<http://aquamaintain.com/aquatic-plants/>) and Salix (<https://www.salixrw.com/product/uk-native-plants/>) – the delivery charge is normally high therefore it is worth buying a large number or working with another organisation to bulk buy and deliver in one go.

Before



The coir rolls are dry and have holes in them for chosen plug plants to be inserted. They are easy to move and install

After



The coir roll planted up. The coir absorbs water and allows the plants to remain moist even if the site dries out. It is staked into place to prevent movement by flowing water

### 5.11 Monitoring

Once a habitat has been created or adapted, monitoring over the subsequent months and years is important to assess biodiversity change, the dominating of any species, and any unpredicted consequences of the work. This may take the form of hundreds of sycamore seedlings emerging into newly created open areas or a non-native species now more noticeable. This information can then be added to the future planning of the management of the site.

### 5.12 Management plan

A site should have a management plan that has aims, objectives and the practical actions that are going to take place to ensure the meeting of these targets. This plan needs to be flexible to adapt to new information and also be accessible so that it can be rolled out to volunteers actioning the necessary management work. See **Appendix 3** for a simple management plan template.



## 6.0 REFERENCES

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Water vole habitat and management - <https://watervole.org.uk/home/water-vole-habitat-management/>

## APPENDICES

### APPENDIX 1: WATER VOLE STATUS, PROTECTION, AND FIELD SIGNS

#### A.1.1 Water Vole Status

The water vole (*Arvicola amphibius*) is the largest of the British voles, once common on the riverbanks throughout Britain, favouring sites with lush waterside vegetation for food and shelter. From the first nationwide survey 1989 - 1990 it was concluded that water voles had suffered long-term decline, with 97% of the sites no longer supporting them, and extinction in Devon and Cornwall (Strachan & Jefferies, 1993). The second national survey (1996 - 1998) suggested this decline has developed into a serious population crash with a further loss of 67.5% of the survey sites previously occupied, (overall 88% loss of the British population) since the first national survey. The main cause of this decline was changes in agricultural practices and river habitat management (Strachan 1993). The resultant habitat degradation and therefore isolation and fragmentation of the water vole populations increased the predation risk, especially from the introduced American mink (*Mustela vison*), (Macdonald and Strachan, 1999).

Despite a National Biodiversity Action Plan with revised targets being put into place in 2006 to focus conservation efforts on recovery of water vole numbers and populations, this has not been successful.

The most recent estimates of national water vole populations numbers put them at between 130,000 – 77,000 left across the country (Gow, D, 2022)

#### A.1.2 Water vole Legal Protection

Water voles are protected under Section 9, Schedule 5 of the Wildlife and Countryside Act 1981, amended in 2008. It is an offence to intentionally: kill, injure, or take them, possess, or control them (alive or dead). Water voles are listed as endangered on both the Great Britain and the England Red List for Mammals. Their habitat is also covered by the law and therefore it is also an offence to destroy or damage it. Ignorance of this protection in law is no longer a defence and it is responsibility of the landowner or manager to be aware of their existence. Fines of up to £5000 or 6-months imprisonment can be imposed per offence.

#### A.1.3 Water Vole Field Signs

##### A.1.3.1 Latrines

Water voles leave droppings in piles to mark their territory when they are breeding. These are called latrines. Droppings are about 1cm long and 5mm wide with blunt ends. When broken open they have concentric rings almost like tree rings. They are mainly brown or a dark green, depending on the feeding material, and just smell of vegetation and are not unpleasant. The consistency when fresh is of a condensed paste. These droppings are found in favoured areas where voles leave and enter the water, near their burrow entrances and sometimes on old food piles. Voles in breeding condition create large latrines with old droppings flattened down and fresh ones on the top. They will often use litter of any raised area too make the latrines more noticeable to other voles.



### A.1.3.2 Burrows and lawns

The entrance to water vole burrows are the shape of a squashed tennis ball and about 4-8cm across. The burrow system, in the banks next to the water, usually have a number of entrances including some above and below the water, and some 'escape' exits as far as 3 metres back into the bank.



When water voles are breeding, it is thought that the female eats the grass around the entrance of her burrow so that she doesn't have to stray too far from her young. This can make the entrance to the burrows quite obvious,

### A.1.3.3 Feeding piles or stations, and cut ends

Water voles sit on their haunches to eat – they leave little piles of cut vegetation about 6 - 10cm long and cut at about a 45° angle as stockpiles for later. These can create large and obvious feeding piles and are not subtle with whole plants being cut up into sections. There will sometimes also be a latrine nearby.





Stems cut at 45° angle by the water vole's teeth can be seen near runways and burrows. Where a blade of a reed or a leaf has been bitten off, the imprint of the large incisors is usually obvious.

#### A.1.3.4 Runs and footprints

If you look closely enough down at a 'vole' level on the ground you can see their vole shaped runways amongst the plants. Often if these runs are followed, they will lead to more obvious signs.

Water vole and rat footprints look similar with 'star' shaped 4 toed foot at the front. Rat prints are often bigger and you may also be able to see the 'drag' line of the rat's tail between footprints.

For more details on water vole field signs see Dean, M. (2021).

## APPENDIX 2: WATERWAYS HABITAT ASSESSMENT SHEET

Survey Information				
Location		Survey Ref.		Grid reference
Recorder		Date		Recent rainfall
Water present	Y/N	Depth (m)		Flow direction
Attribute	Scoring criteria			Score
Water availability	Dries out = 0; unsure = 1; always wet = 2			/2
Ditch profile				
Ditch width	<0.5m = 0; 0.6m-1m = 1; 1.1m-2m = 2; 2.1m-4m = 3; >4m = 4			/4
Ditch depth	<0.5m = 0; 0.6m-1m = 1; 1.1m-2m = 2; >2m = 3			/3
Banks slope	neither bank slope between 30° & 60° = 0; one side only = 1; both sides = 2			/2
Bank structure	Concrete = 0; gravel/sand/earth etc. = 1			/1
Total				/10
Environment				
B1* buffer width	0m = 0; 0.1m – 1m = 1; 1.1m – 2m = 2; 2.1m – 4m = 3; > 4m = 4			/4
B2 buffer width				/4
B1 buffer quality	Bare/managed lawn/nettle dock or thistle dominated = 0			/1
B2 buffer quality	Diverse plant and shrub communities/scrub = 1 (if no buffer enter NA)			/1
Bank erosion	Medium/high = 0; none/low = 1			/1
Litter	Abundant = 0; present (1-2 items) = 1; absent = 2			/2
Total				/13
Water quality				
Turbidity	High (water appears opaque) = 0; moderate = 1; low (almost clear water) = 2			/2
Algal bloom	Present throughout ditch = 0; present in part of ditch = 1; absent = 2			/2
Pollution e.g. oil	Present = 0; absent = 1 (comment on nature and possible source overleaf)			/1
Total				/5
Bankside vegetation				
B1 trees	/2	B2 trees	/2	Absent = 0 Present (1-50%) = 1 Abundant/dominant (>50%) = 2
B1 bushes	/2	B2 bushes	/2	
B1 riparian forbs	/2	B2 riparian forbs	/2	
B1 sedges	/2	B2 sedges	/2	
B1 rushes	/2	B2 rushes	/2	
B1 reeds	/2	B2 reeds	/2	
B1 long grass	/2	B2 long grass	/2	
Total	/14	Total	/14	
Total				/28
In-channel vegetation				
Open water	<40% = 0; 41%-60% = 1; >60% = 2 (if dry enter NA)			/2
Aquatic plants	>60% = 0; 41%-60% = 1; 1-40% = 2 (if none enter NA)			/2
Non-aquatic	>60% = 0; 41%-60% = 1; 1-40% = 2 (if none enter NA)			/2
Total				/6
Management				
Rotation	Both sides managed together = 0; different timings/types = 1			/1
Shading	Watercourse >80% shaded by vegetation = 0; 40%-80% = 1; <40% = 2			/2
Sediment depth	>25cm = 0; 5-25cm = 1; <5cm = 2			/2
Invasive species	Any non-native invasive sp. = 0 (record info in sketch); none present = 1			/1
Total				/6
<b>Overall score:</b>				<b>/70</b>

Additional ditch information						
Drainage issues	Previous flood events in vicinity				Yes / No	
Connectivity	Number of adjoining ditches (if culverted more than 10m = no connection) <b>Include ditches at either end of surveyed section</b>					
Adjacent land use	B1	Arable Pasture Residential Garden Road Commercial Other .....	B2	Arable Pasture Residential Garden Road Commercial Other .....		
Hedgerow present	B1	Yes / In-part / No		B2	Yes / In-part / No	
Hedgerow survey	B1	Yes / No		B2	Yes / No	

Pipes/culverts in ditch section		
Please record the location and condition of any pipes the ditch flows through, including at the start and end of the surveyed section.		
Ref. number (please label on map)	Condition description e.g. clear / blocked / collapsed / unknown	Approximate size
1		
2		
3		
4		
5		

Additional comments	
<p><i>e.g. any recent disturbances, blockages, information received from local people, concerns about invasive species, nature of any pollution, etc.</i></p> <p>Include a diagram if necessary</p>	

Annotate the survey map with the following information:

- Direction of flow, where evident
- The location of any pipes/culverts with the reference number used on this form
- The location of any points of note e.g. sewage locations, blockages, invasive species, water vole signs etc.
- Mark any areas of flooding or very wet ground

Photo taken?



## APPENDIX 3: SIMPLE MANAGEMENT PLAN TEMPLATE



MANHOOD WILDLIFE AND HERITAGE GROUP



# Site name Management Plan

*Photograph of site*

5 YEAR MANAGEMENT PLAN

Date from – Date to

*Name of author*

<b>CONTENTS</b>	<b>PAGE</b>
<b>PART 1 – INTRODUCTION – information about the site</b>	
Site Location	
Site Description	
Recent Management	
Land surrounding the site	
Management Team	
Habitat Management to date	
Recent specific management activities carried out onsite	
Habitat Areas	

<b>PART 2 – Future Management</b>	
<b>Future Overall Aims and Objectives for the site</b>	
Future Operational Activities	
Tools needed for management work	
Other equipment / resources	
Risk Assessment	
Priority species	
Extra Information	
Summary	
Attachments	
Relevant Sources of information	

<b>PART 3 - MANAGEMENT PLAN 5 -YEAR PROGRAMME</b>	
What to do when, where and how on the site	

<b>Appendices</b>	
Site Plan	
Species List	
Non-Native Species	
Site Reports	

## **PART 1 - INTRODUCTION – information about the site**

Title and dates of plan

<b>Site reference</b>	
<b>Grid reference</b>	
<b>Area of site</b>	
<b>Local authority</b>	
<b>County</b>	
<b>Landowner/s</b>	
<b>Contacts</b>	
<b>Right of Access</b>	

### **Site Location**

Description and Google earth or Magic Maps

### **Site Description**

Including size of site, borders, key features

### **Recent management**

Describe recent management actions

### **Land surrounding the site**

Describe the land use and other influences on the site

### **Management Team**

Describe the management team and who they are

### **Habitat Management to Date**

Describe and overview of the management that has taken place, the aims, when and how

### **Recent specific management activities carried out onsite**

List the specific actions that have taken place and the dates.

## Habitat areas

Habitat type 1 – e.g., Hedgerow  
Describe each habitat type found on the site with any key species or attributes

Habitat type 2 – e.g., ditch

## Future Overall Aims and Objectives for the site

### Example - TO MAINTAIN THE BIODIVERSITY OF THE SITE AND QUALITY OF THE WATER VOLE HABITAT

#### Objectives

**Ditch and Pond area** - maintain a healthy abundance of mixed vegetation cover along the banks and in the water channel. Keep bramble and Hemlock to a maximum 30% cover for the whole site. This will maintain species variety along the banks. Maintain open water coverage to a maximum of 30% to improve in-channel aquatic vegetation.

**Woodland and hedgerow area** – keep present Sycamore and Bramble coverage to a maximum coverage of 20%. Maintain a good balance of light cover, 30% total shade, 50% semi shade and 20% sunlight. This will allow other plant species to thrive which will in turn offer opportunities for a wider range of invertebrates, mammals and birds.

**Meadow area** - maintain 70% maximum sun light across the meadow and 30% semi shade in some areas. Keep Ivy and bramble down to a maximum of 10% cover. Rotational cut 20% of meadow every autumn. Lightly disturb the soil with a fork or rake and sow mixed wildflower seeds.

#### Future Operational Actions - examples

Site	Objective	Management
<b>Coppicing</b>	Maintain 50% light over the water course. Maintain 40% light over the remaining site. This process creates light and semi shade which improves biodiversity abundance.	Selected trees coppiced on a 7-year rotational system. November to February using hand tools. Coppiced wood remains on-site and put into dead hedges.
<b>Hedgerow work</b>	To maintain perimeter hedgerows as important habitat for nesting birds.	Hedge trimmed annually November to February. Hedge laid on a 3-year cycle according to landowners wishes. November to February.

Site	Objective	Management
<b>Control of native invasive vegetation</b>	To reduce competition with less hardy native species	Action taken in accordance with site requirements. Plant and root extraction using hand tools. Disposed as green waste into dead hedges onsite.
<b>Control of non-native plants identified by as injurious</b>	To eradicate or restrict the spread of aggressive non-native species	Action taken in accordance with national directives. Removal using hand tools with all cut material burnt onsite or disposed of as advised.
<b>Pond / ditch maintenance or restoration</b>	Control of marginal vegetation. Pond clearance of invasive submerged aquatics. Preservation of habitat for water voles	Cut out and remove unwanted marginal and invasive pond weeds using hand tools. September to mid-March. Monitor habitat for water voles
<b>Drainage</b>	Maintain free flowing drainage to avoid flooding and loss of habitat.	Clear any blockages caused by vegetation or fallen branches with hand tools. October to March
<b>Litter</b>	The clearance of litter and fly-tipped rubbish	Carried out during routine work on the site and responsibly disposed of Call CDC if large scale tipping occurs
<b>Surveys</b>	Ecological surveys (baseline and species specific) taken in the interest of habitat improvement and to ascertain the success or otherwise of the management regime.	Carried out by volunteers on a quarterly basis. Results passed to MWHG and Sussex Biological Records Office via iRecord.
<b>Fixed point photography</b>	To maintain visual site record	Carried out by volunteers to record progress and changes onsite

### Tools needed for management work - **examples**

Tools	Use
<b>Loppers</b>	To cut vegetation - thick brambles and thin branches (no larger than a finger)
<b>Shears</b>	To cut grasses, reeds, thin brambles and nettles
<b>Pole saws</b>	To trim back higher branches in trees and bramble growing through tree canopy
<b>Silky saws</b>	To cut thicker tree branches in tight places, to cut through bramble, and to saw up logs for habitat piles
<b>Bow saws</b>	To cut thicker tree branches and trunks where there is more space around the area to work
<b>Bill hooks</b>	For sharpening the ends of stakes and for hedge laying trees
<b>Rake</b>	For clearing out any debris from the ditches and pond areas, raking over the ground to disturb it for wildflower planting and for flattening out the woodchip when it is put on the path to top up the surface



Tools	Use
<b>Spades</b>	For digging over the soil and planting trees
<b>Litter pickers and bags</b>	For picking up glass, litter and any debris without having to touch it, and for reaching into difficult to get to areas

### Other equipment / resources - examples

#### Risk Assessment - **examples**

Equipment / resources	Use where and when	Source
<b>Wood chip</b>	To continually refresh the foot-path	Local tree surgeons, e.g. Stephen Bacon <a href="https://www.stephenbacontreeservices.co.uk/">https://www.stephenbacontreeservices.co.uk/</a>
<b>Wildflower seeds</b>	To annually sow in sections around the site	Boston Seeds - <a href="https://www.bostonseeds.com/products/wildflowers-seed/wildflower-seed-mixtures-100/">https://www.bostonseeds.com/products/wildflowers-seed/wildflower-seed-mixtures-100/</a> can provide specialist seeds – for wetland or shade loving wildflowers
<b>Identification books / FSC id guides</b>	To identify plants, trees and species on-site	Field Studies Council - <a href="https://www.field-studies-council.org/product-category/publications/">https://www.field-studies-council.org/product-category/publications/</a> Have a range of easy to use guides of all common species of plants, trees and insects

Hazard	Risk	Action
Lyme disease Borreliosis	Tick borne bacterium	Clothing and body should be checked after working Report incident to team leader
Hemlock water dropwort <i>Oenanthe crocata</i>	All parts poisonous	Wear protective gloves
Glass in the soil	Puncturing skin	Wear gloves and long sleeves and gather any pieces of glass found and dispose safely
Steep slippery banks	Slipping into the water	Ensure everyone knows where the edge of the water is and stays on the path delineated by woodchip
Deep water	Drowning	Ensure everyone knows where the edge of the water is and stays on the path delineated by woodchip
Deep mud	Slipping and falling	Ensure everyone stays on the path delineated by woodchip

Hazard	Risk	Action
Uneven ground	Slipping and falling	Wear strong boots with ankle support
Canes / stakes on new trees	Hazard to eyes	Be aware when bending down and encourage use of eye protection
Brambles	Puncturing skin	Wear protective clothing and eye wear
Nettles	Cause skin irritation	Wear protective clothing
Bee and wasp stings	Bee(s) hives situated adjacent to site and can cause an allergic anaphylactic reaction	Check no one has a known allergy and if yes, make sure EpiPen or oral / cream antihistamine is available

### Priority species - **examples**

Name	Scientific name	Habitat	National status	Status
Water vole	<i>Arvicola amphibius</i>	Banks and ditches	Endangered Priority species	Native and locally common but vulnerable to extinction
Daubentons bat	<i>Myotis daubentoni</i>	Feeding sites ponds	Priority species	Abundant and protected

### Extra information - **examples**

- Ivy is good on trees – please do not remove from the trunks of trees – it offers a great habitat for invertebrates, birds, bats and small mammals, and is one of the last food sources in late summer for pollinators such as butterflies, wasps and bees.
- Water voles and their habitat are protected by the Wildlife and Countryside Act 1981(amended 2006) and therefore it is an offence to injure or kill and water vole, or to intentionally damage or obstruct access to water vole burrows
- Once any plastic tree guards get fragile and start to break, remove from site and the associated bamboo canes.

X Pond has important wildlife value with mature trees, all year-round water and protected water voles living onsite. The site will also be a significant local asset for local people as it matures.

### Summary - **examples**

### Attached to this document

- Appendix 1: Plan of the site
- Appendix 2: Species lists
- Appendix 3: List of Non-Native species to be aware of
- Appendix 4: Site Reports from start of work in x

Use this section to refer out to other documents with specific details e(.)g. maps, pho-

Wildlife and Countryside Act 1981 - <http://www.legislation.gov.uk/ukpga/1981/69/schedule/5>  
 Countryside and Rights of Way Act 2000  
<http://www.legislation.gov.uk/ukpga/2000/37/contents>

tographs, lists etc.

### Relevant sources of information

### PART 3 - MANAGEMENT PLAN 5 - YEAR PROGRAMME - **EXAMPLE**

#### What to do when, where and how

Season	Work	Where	Why
<b>AUTUMN</b>			
<b>September</b>	Pile up dead wood from the site into piles	Pile up the dead-wood across the site, under trees and near to the water.	The deadwood is excellent habitat for invertebrates, amphibians, and reptiles.
	Check planted trees to see which survived over the summer	Across the site and in the planted hedge	Remove any dead trees and their stakes and rabbit guards.
<b>October</b>	Vegetation removal – bramble, nettles, and sycamore saplings	In amongst the hedge trees and along the path	To prevent these invasive species dominating the site.
	Pick up dead and fallen wood	In amongst the trees and on the path	Create habitat piles and use long branches to line the path edges. Prevent brambles growing through it and creating an impenetrable barrier.
	Check growth of willow and trim back	Next to the waterways	To prevent domination of this tree species and shading of the waterway and banks.

<b>WINTER</b>			
<b>November</b>	Trim the hedge and any low tree branches	Across the site	Remove any low or damaged branches that may catch people walking through the site
<b>December</b>	Further tree removal	Elms, hybrid poplar and sycamore	To get a mix of species on the site and prevent sycamore domination through seeding. Keep all wood onsite either in the dead hedge or stacked up into habitat piles.
	Lay hedge once it is 4 years old and then every 3 years	The hedge line along the front of the site	Thickens the base and encourages new growth which is great for invertebrates, birds, and small mammals.
<b>January</b>	Add more woodchip to the path and re-define path edges with dead wood	Add woodchip to the path	Put woodchip back onto the path to make it firm and delineate the edges with dead wood to keep people in this area.
<b>February</b>	Spread wildflower seed pods	Across the wildflower areas and the banks of the ponds and ditches	To spread as many wildflower seeds as possible around the site to continue increasing the amount and to encourage biodiversity.
	Pile up dead wood from the site into piles	Pile up the dead wood across the site, under trees and near to the water	The dead wood is excellent habitat for invertebrates, amphibians, and reptiles.
<b>SPRING – no more cutting of bramble or trees – bird breeding season</b>			
<b>March</b>	Sycamore seedling removal	Across the site, especially the path	To prevent the sycamore dominating the site
	Light vegetation removal	Wildflower area	Just ensure the bramble has been cut back and is not dominating this area
	Dig out any non-native bluebells	Across the site	To prevent spreading and being a threat to the native ones present
<b>April</b>	Break up the ground for wildflower seeds, sow seeds	Wildflower area	Rake over the soils in patches and sow wildflower seeds so that they can make the best of the disturbed soil
	Sycamore seedling removal	Across the site, especially the path	To prevent the sycamore dominating the site
	Floral survey	Across the site	To record the floral diversity of the site and update it on iRecord.

<b>SUMMER – no cutting of bramble or trees – bird breeding season</b>			
<b>May</b>	Survey for water voles	Along the waterways, specifically the deeper wider pond section	To monitor their arrival on-site as will inform any activities and management in the future
	Sycamore seedling removal	Across the site, especially the path	To prevent the sycamore dominating the site
	Trim nettles and bramble	That start to ingress on the woodchip path	To prevent small children being stung or caught by thorns
<b>June and July</b>	Survey for bats and freshwater invertebrates	Across the site	To record which species are using the site and update the information to iRecord
	Sycamore seedling removal	Across the site, especially the path	To prevent the sycamore dominating the site
	Trim nettles and bramble	That start to ingress on the woodchip path	To prevent small children being stung or caught by thorns
<b>August</b>	Floral survey	Across the site	To record the floral diversity of the site and update it on iRecord.

**Monitoring Note** - A report of all work carried out on the site could be compiled monthly and added to the site reports and held by the Team Leader. At the end of each year this could be written up as an annual report and attached to the Management Plan.

The Manhood Wildlife and Heritage Group (MWHG) has been a registered charity since 2011 and has worked to promote and protect the environment and history of the Manhood Peninsula in West Sussex, since its creation in 1997. After originally forming as the Selsey Parish Map Group, the name of the Group was changed in 2011 to MWHG, to reflect the increasing scope of conservation work undertaken.

The group have carried out a large range of projects since its formation including:

- Selsey Biodiversity Action Plan- 2001
- Manor Green Park group- 2003
- East Beach Pond Group - 2003
- Manhood Wildlife Officer - 2004
- Medmerry Realignment - 2005
- Water Vole Project - 2012
- Sidlesham Heritage Project - 2013
- Wetland Management Guide - 2015
- Fixing and Linking our Wetlands (FLOW) - 2016
- Mink Monitoring Project - 2016
- Selsey Photo Archive Project- 2018
- Community Conservation Partnership- 2019
- West Wittering Tree Nursery Project- 2021
- West Manhood Community Conservation Officer - 2021
- Selsey Tree Nursery Project- 2022

MWHG are grateful to the many grant giving bodies, partnership organisations, businesses, donating individual and volunteers, who give their time, for supporting the group and its aims. The Manhood Peninsula is a special place for people and nature and we need to look after it.



[mwhg.org.uk](http://mwhg.org.uk)

