FWAG East Consultancy Ltd

CATMERE END VILLAGE POND

BIODIVERSITY ENHANCEMENT AND MANAGEMENT PLAN

Catmere End, Saffron Walden, CB11 4XG

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1 Introduction

FWAG East Consultancy Ltd have been appointed by Littlebury Parish Council to provide a Biodiversity and Habitat Management Plan for the Catmere End village pond and surrounding area. It will include detailed habitat management with the aim of maintaining and enhancing the pond and surrounding wildlife habitats to provide a biodiversity gain for locally occurring species.

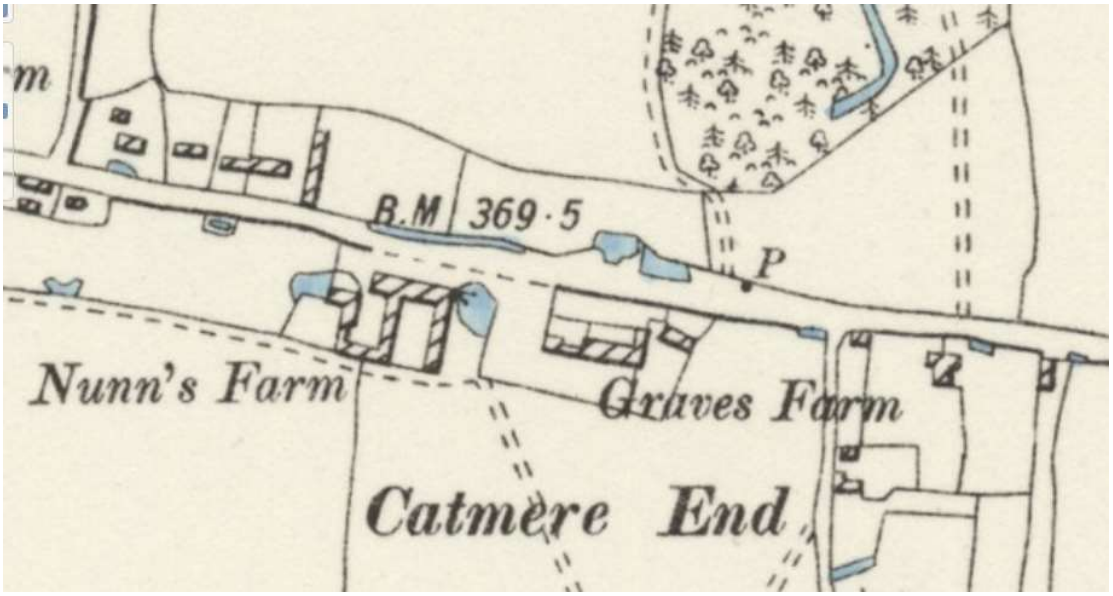
2 Site location

The pond is located centrally within Catmere End on the northern side of the road that runs east to west through the village. The habitat area is approximately 1960m^2 and includes the pond (389m^2), grassland, trees and shrubs. The pond is adjacent to the road and sits lower than the road surface. The land rises away from the edge of the pond to the north where the surrounding grassland adjoins an arable field. The grass is closely mown with scattered trees which become denser in the north east corner adjoining the adjacent property. Tree species include ash, sycamore, elm, field maple and oak. Occasional hawthorn, blackthorn and elder provide some shrub cover in discrete areas across the site. The pond itself is relatively open and sunny, with the exception of some overhanging trees around the western section (including a fallen field maple). The eastern end of the pond slopes down towards the road.

3 Water supply and quality

Layered above the chalk, Catmere End sits on a formation called the Reading Beds which is capped by boulder clay. Ponds can be fed in several ways depending on the underlying geology. Seepage ponds are supplied from the water table by seepage into the pond and the 1888 map (below) shows that it is likely that water flows laterally from higher ground to the west of the pond. Prior to the adjacent houses being built this water may have been overground but is now likely to be an accumulation of underground water

flows feeding the pond. The pond also responds quickly to rainfall and can fill rapidly with a direct overflow on the eastern end onto the road.



1888 map showing the position of the village pond opposite Graves Farm and, the likely, surface lateral water flow to the pond.

There is a possibility of contamination of the ground water as there are 4 properties, previously council owned, in Catmere End running west from the pond. These are served by a small rural sewage treatment plant that sits approximately 7m above the pond and is in a fenced area of about 71 m^2. The treatment plant treats the foul water from these properties through biological/mechanical/settlement and discharge means. The discharge treated effluent enters into the water course system at some point. It is not clear as to where the discharge goes but on inspection over the summer a recently filled-in trench ran along the top of the bank towards the road. Assuming the pipes are not broken or act as weeping drains then discharge water from this sewage tank should not enter the pond, but it is not known if this is the case. The council has an obligation to treat this foul drainage and maintain the discharge to Environment Agency acceptable levels. The tank itself may also require the periodic pumping out of sludge and it is not known where this material ends up.

An unofficial channel has been created from the road directly into the pond, presumably to take water runoff from the road during heavy rainfall. The drain below the pond often becomes overwhelmed in periods of heavy rainfall but any water redirected from the road will bring in pollutants (including oil) to the pond and have a negative impact on the water quality and therefore aquatic species within it.

A flow of water also enters the pond from a pipe that brings water in from the western edge. The old map shows this was once an overgrown flow but is likely to have been

piped when the nearby houses were built. It is not known if any other flow is linked to this inlet, but it could potentially be bringing in contaminants from the road or properties further up the village.

The cone in the left picture marks the line where a trench has been dug to take water from the road into the pond. The picture on the right shows the pipe and culvert that brings in underground water laterally to the western end of the pond.

4 Habitat creation and enhancement

The village pond and surrounding habitat features sit in a relatively small space in the centre of the village. However, the desire is that the design and long-term management of the area seeks to improve its function through protecting and enhancing the existing habitats and creating new areas to improve the ecological complexity. This will make the site a more vibrant and wildlife rich area for the residents of Catmere End to enjoy. The advantage of the Catmere End pond site is that it already has water, grassland, trees and shrubs and managing these to best effect can have a significant benefit to local wildlife.

4.1 Wildflower grassland

The grassland around the pond, and area leading up to the arable field, is closely mown by a local resident on behalf of the village. Whilst this keeps the area 'tidy' it significantly reduces the ecological value of the grassland. Insect declines have been significant over

the last three decades and it is vital that every effort is made to create as much feeding, breeding and overwintering areas for insects as possible.

4.2 Wildflower enhancement

A change in the timing and frequency of mowing will have the greatest ecological impact here alongside enhancing the diversity of wildflower plants within the grassland area. This should be targeted to improve the complexity of habitat in this area and increase available habitat for important pollinating insects including bumblebees, solitary bees, hoverflies, butterflies, moths, beetles and flies.

As the area is already established grass only wildflower seed or plugs is required to enhance plant diversity. The seed mix should contain a mixture of wildflowers using seed of UK native flower species of local provenance. The mixture should be designed to provide a lengthy foraging season for pollinating insects, in particular bumblebees. It is recommended that a seed mix is used in line with Habitat Aid https://www.habitataid.co.uk/products/premium-wildflowers-only-seed-mix. The red clover, yellow rattle and bird's-foot trefoil within the mix will provide excellent pollen sources for queen and worker bumblebees. Common knapweed will act as an important nectar source. This mix can be sown in the more open, sunny area of grassland above the pond whilst a mix more suitable to some shade can be sown where the trees are closer together, for example in the north east corner. It is recommended that a seed mix is used in line with https://www.habitataid.co.uk/products/woodland-edge-wildflowers-only-seed-mix. It is important to note that the introduction of non-native seed sources starts to erode local countryside character and introduces new risks to our native flora. When adding seeds to a site in the countryside it is vital that they are of native species and that they originate from the UK. Planting wildflower seeds of varieties from overseas is never appropriate otherwise there is a risk that invasive species or inappropriate variants of wild plants could be introduced.

4.3 Establishment

1. To introduce new seed, small patches of bare ground can be created either by using a rake or just using your foot to scrape back the area so that there is some bare soil to scatter seed onto. This could be a village event!
2. Seed is best sown in the autumn or spring when the ground is warm and has moisture. The seed should be surface sown and firmed in with a roll or simply pressed in using your foot to give good soil/seed contact. Sow at a rate recommended by the seed supplier but it is usually 4g/m^2.

3. In the first year manage with mowing several times through the late spring, once plants have established and grown, and then early summer to control any weeds and help the perennial flowers to become established. If present allow annual plants such as yellow rattle to flower and set seed.

4.4 Management of established grassland

In the second and subsequent years the wildflower grassland can be managed to help determine the character of the grassland. The annual variations in grass growth will dictate mowing to help maintain the floristic diversity within the sward but, generally speaking, a consistent mowing regime should be followed.

As mowing is considered to be the most practical method of grassland management here an annual management review should be carried out to assess the abundance and diversity of wildflowers within the sward and whether any additional management recommendations are required to help maintain the meadow in good condition (FWAG can help with this).

The mowing management should adhere to the following regime:

Time of year	Recommended management
March	An early cut in the more open area if ground conditions allow, particularly if grass growth has continued into the late autumn. There should be no significant patches of open muddy ground. Be aware of any early spring flowers, such as cowslip and bluebell, in the shady area as these will germinate earlier so avoid cutting this section.
April to mid-May	No mowing during April to mid-May, to allow spring flowers to blossom and set seed. A path could be cut through the area to allow villagers to walk through. This should be cut early in the season and maintained to prevent anything nesting and then being cut.
Mid-May to August	Summer flowering plants should be frequent throughout the area.
By mid-October	Wildflowers will have flowered and set seed. Area could be cut with at least 10% left uncut over winter. All cuttings should be removed and left in the northern most corner of the site to compost down. Alternatively, the area could be left and cut in the early spring to provide overwintering habitat.

It is important that management needs to prevent the development of coarse vegetation which will cause the number of wild flowers to rapidly decline.

5 Shrubs and trees

The wildlife area around and above the pond has a number of trees and shrubs which provide shade and adds another layer of habitat complexity in conjunction with the grassland. The majority are trees species and includes sycamore, elm, ash, field maple and oak. The ash is scattered but there is also a concentration in the north eastern corner. These are likely self-set ash but have signs of ash dieback disease. The trees are growing fairly close together and are impacting each other's growth. The oak tree at the back, in particular, would benefit from trees around it being coppiced, to open up the area around it, and allow it to develop into a better shaped tree for the longer term. The trees growing around the oak are not very old and coppicing requires cutting them down to the ground which then encourages them to send up multiple new shoots and regrow.

The ash trees can be thinned to permit more light to reach the ground layer and allow the remaining trees to develop better. The trees to be felled could be selected on the basis of how badly affected they are by ash die back. If villagers are going to be encouraged to visit this area, then there is a health and safety aspect to managing these trees. A tree assessment and some thinning will help to mitigate this. If all of these ash are allowed to develop into large trees then a considerable number are likely to require significant work in the future. By managing the trees now will prevent a greater cost and risk in the future. FWAG can help identify which trees could be thinned.

The left picture shows the oak tree at the back which would benefit from surrounding trees being coppiced to allow it to grow out. The picture on the right shows the denser area of ash trees, many of which are suffering from ash die back.

Thinning some of the trees would also open up the area to allow more shrubs to be planted in discrete clumps. There are already some scattered shrubs around the area including blackthorn, hawthorn and elder. These can be hugely beneficial to wildlife providing areas to nest and shelter in as well as vital sources of pollen and nectar in the early spring and berries in the autumn. Further shrub species can be planted to increase this habitat and to also make the area more visibly appealing.

The shrub species chosen should already be represented in the surrounding hedgerows and there is an opportunity to increase the species diversity of the available shrubs. This ensures that those species are suited to the local climate and soil conditions. As a guide the table below include species of native local provenance that are present locally.

Species	Species
Hawthorn	*Crataegous monogyna*
Dogwood	*Cornus sanguineum*
Blackthorn	*Prunus spinosa*
Hazel	*Croylus avellana*
Spindle tree	*Euonuymus europaeus*
Dog rose	*Rosa canina*

5.1 Planting

- All plants to be protected from wind exposure at all times. All plants to be soaked in water for several hours prior to planting and to be well watered in.
- No planting to be carried out during poor weather conditions, i.e. when ground is frozen, waterlogged, or during droughts, hot sunshine or persistent dry or cold winds. All plant material to receive enough water to ensure healthy establishment.
- Time of year for planting: November to March, inclusive. It is best to plant early in the season, before January, however if soils are waterlogged it is best to wait until the beginning of March as heavy frosts can cause frost heave and expose roots and there is a risk that roots will rot in poorly-draining soil if planted early.
- Watering and weed control: Provide as necessary.

It is recommended that you buy plants grown from indigenous, preferably local, root stocks. The stocks must be of good quality, and be free of pest, disease and weed growth.

Plant in clumps and preferably fence the area from deer (an example of fenced shrub planting can be seen in The Bumpy Nature Reserve in neighbouring Littlebury Green). If guards are used, then protect from rabbit and deer grazing using biodegradable guards (consider Ezee Tree or NexGen).

5.2 Management

- In the first five years following the planting, at the end of each growing season, remove and replace any failed or failing plants with new stock.
- Firming up of plants, stakes and guards should be undertaken during the first 3 years.
- In the establishment period (2-3 years) all new planting will be watered when required to prevent failure of the plants.
- Some light trimming of the shrub plants in its early 2-5 years (once per growing season) will encourage dense, bushy growth. After this period the shrubs should be managed on a coppiced cycle (12-15 year cycle depending on growth). This can be done in small blocks to allow light in and enable regrowth to maintain dense bushy growth and a varied habitat.
- Any cutting should be done between January and February so that wildlife can take advantage of the berries and nuts produced in the autumn. This management should help to maintain a dense shrub area.

6 Pond management

Catmere End villagers take pride in the pond and have been involved in its management. The aspiration is to have an ecologically rich habitat that the village can enjoy alongside wildlife. Ponds provide a critical hotspot for freshwater species (both animals and plants) and so the village pond and surrounding area in Catmere End can provide a high-quality habitat.

In order to achieve this the first objective is to, as far as possible, improve the water quality by reducing pollutants entering into the pond:

- Run-off from the road is being directly channelled into the pond and this will bring in a range of traffic contaminants such as oil and salt which will have a significant impact on water quality in the pond. Road run-off needs to go into the road drain not the pond.

- The parish council should contact Uttlesford District Council to investigate what type of seepage occurs from the small sewage treatment area to see if this has any likely impact on the pond.
- There is an area of spoil and dumped vegetation to the east of the pond. These areas are not ideal and should preferably be removed. Green material breaking down can leach nitrates into the pond and have a negative impact on water quality, causing excessive growth of pond plants. The growth of nettles indicates high nitrogen and phosphate in this area.
- Bonfires should not occur on site as this enriches the area and encourages excessive growth of vigorous plants.
- Fish should not be introduced. Fish and ducks can cause disturbance of the silt and cause nutrient enrichment of the pond. They themselves, through their faeces, increase the nitrate levels. Fish will also predate on other pond species such as newt eggs and frog and toad spawn.
- The diversity of marginal plants around the pond can be significantly enhanced by including further plantings. This can be done either by using appropriate seed or plant plugs. Do not purchase these from garden centres as their provenance is not guaranteed. It is recommended that a seed mix or plant plugs is used in line with Habitat Aid https://www.habitataid.co.uk/products/aquatic-native-plants-marginals. By increasing the range of plants this will benefit the greatest range of wildlife and provide an aesthetically appealing pond for those visiting it.
- There is already a range of floating and submerged plants and these provide a refuge for many of the aquatic species occurring here. They will also act as pond oxygenators and filter to some of the excessive nutrients. Further plants can be added such as https://www.habitataid.co.uk/products/oxygenating-pond-plants.
- The overhanging trees should be retained as they provide some shade and cover for wildlife. They are also host to many insects which can fall into the pond and be an important food source for pond insects.

Pond plants provide essential habitats for a wide variety of wildlife and, ideally, should not be disturbed if at all possible. They are the most important component of a pond and so if you are removing them then you need to know why and what effects of that decision might be. Pond edge areas, with a diverse range of marginal plants, have underwater complexes of wetland herbs and grasses and are usually the most diverse areas in any pond (it's the safest place to be!) Pond plants should not be removed until an assessment has been made as to what it is you are trying to achieve and what the impact of that will be.

7 Monitoring

It would be very valuable to monitor the entire area, preferably by interested villagers, to help identify the success of sowing wildflowers and marginal pond plants and planting of shrubs. It will also help to establish any negative impacts of the timing of grass mowing and the management and whether there is an increase or decline in plant and animal diversity over time. Management revisions may need to be implemented to maximise the site's biodiversity potential. There are many useful apps that can help identify both animal and plant species and keep a record each year of sightings (such as Seek by iNaturalist and Fit Counts (Flower-Insect Timed Counts**)).**

8 Other measures

There are some simple additional measures that can be implemented to increase the overall wildlife value of the area. Owl and bird boxes have previously been erected on several trees, but these have fallen into disrepair and need replacing. These will need annual cleaning so only put up the number that you think can be maintained.

- Erect bird boxes. Face the box between north and east to avoid strong sunlight and the prevailing winds. Put up a variety of boxes to benefit different bird species. Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Site the box high enough so that cats do not have easy access (all villagers who own cats should be encouraged to put collars with bells on their cat to give local birds a chance). Clean out the boxes annually before nesting starts.
- Erect bat boxes. Ideally, several boxes should be put up facing in different directions on sunny aspects to provide a range of warm conditions (south, south east/west. Boxes should be put as high as possible (+ 4m to try and avoid predation from cats). Place boxes away from artificial light sources (to protect them from predation).

- Erect a tawney owl box. These are known to occur around Catmere End and so it is worthwhile putting up a box to provide additional nesting opportunities. Nest boxes need to be sited in one of the most mature trees on the site, preferably within the trees rather than on the fringes.
- A range of bee hotels can easily be constructed using different wooden designs. Great ideas can be found here from Professor Dave Goulson (insect specialist) https://www.youtube.com/watch?v=52Etjme2w40. Create these before April before the solitary bees (who will make use of these) start looking for nests.
- Don't be tidy, leave dead wood where it falls and create log piles in other places from fallen timber scattered around the site. Dead and decaying wood plays a key role in an ecosystem but often gets tidied away or burnt. Leaving it will provide; a haven for the many insects associated with dead and decaying wood; a dark, damp overwintering habitat for amphibians; overwintering habitat for bee species. In addition to this, deadwood that is fully or partially submerged in water provides essential micro-habitats for a variety of freshwater invertebrates so leave some deadwood within the pond itself.

It is very easy to eliminate or ecologically constrain valuable habitats simply because they are not aesthetically pleasing. It has been noted that a non-native tree has been planted close to the pond. This will detract from the naturalness of the area and can potentially bring in disease. There can be a propensity to want to treat areas like this as an extension to gardens. This should be avoided so as to retain the natural character of the pond and surroundings and the priority should be to manage the area as a wildlife haven and not be concerned about what some people might view as untidy. Many pond species do not use the pond habitat in isolation and will use the surrounding land to complete their life cycles. It is therefore important that, in conjunction with the pond, the surrounding habitat is managed to the benefit of as many species as possible.