



**Pool Meadow Wetland Restoration and Public Access Project – Interim Report**

**By: Jonny Ackroyd, Beaumont Rivers Ltd. on behalf of Chipping Norton Town Council**

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**Chipping  
Norton**  
Town Council

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## Introduction

Beaumont Rivers Ltd. has been commissioned by Chipping Norton Town Council to investigate the feasibility of restoring the area within Pool Meadow to a ponded wetland area with improved countryside access to residents. We have found that the project is eminently feasible and offers numerous benefits to ecology, flood risk, geomorphology, archaeology, community amenity, local prosperity and education.

Pool Meadow is currently an unused area of land on the site of a medieval fish pond that supplied food to the castle. The site measures 180x65m and was supplied by groundwater and the stream that runs along the northwest face. In Victorian times, the site became a retention pond for Bliss Mill to ensure their water supply, and then as a local amenity. Until approximately the 1940's, the site was flooded to allow people to go ice skating during the winters and swimming in the summers. This was done by operating a sluice (the remains of which can still be seen) and creating a makeshift dam to channel the water. The area downstream was also flooded and there are often confused reports about which site was flooded when; however, we have managed to clarify to the extent needed. The pond has since been drained and the area colonised by Great Horsetail (*Equisetum telmateia*), which has out-competed all other ecology, leading to poor biodiversity within the meadow.

The project aims to reverse the species decline and restore the meadow as a wildlife and countryside access project. This includes:

- Reconnecting the watercourse to the floodplain to create a ponded wetland area.
- Bringing the *Equisetum* monoculture under control throughout.
- Re-planting the meadow with a floodplain adapted wildflower seed mix.
- Improving 285m of existing footpath surface to include wheelchair/pushchair accessibility.
- Installing 2 information boards to educate people about the history and ecology of the site.
- As optional extras for consideration, there is also provision for a picnic area with associated waste bin, and if there is enough funding, we could formalise the path that runs the rest of the way around the site (a further 163m).

As Chipping Norton Castle is on private land and inaccessible to the public, this project represents an opportunity for people to engage with local history, as well as benefiting wildlife including endangered populations, such as: bees and other pollinators, water voles, newts and other amphibians, various bird species, macrophytes, phytobenthos and numerous terrestrial plant species.

As part of the project, Beaumont Rivers is giving students at Aberystwyth University the opportunity to study the impacts of the project and to contribute to the mapping exercise, as well as the chance to study the environmental impacts of the work. Local schools and groups will also be offered the opportunity to come to site to learn more about the project, as well as the local ecology, geomorphology and history.

Numerous permits and consents are required before construction aims to begin in the summer months of 2023. Once consents and permits are in place, we can then apply for funding for the construction phase. Funding organisations are unable to allocate funding for construction until the appropriate permits are in place, but we have been successful in applying for funding from the Evenlode Catchment Partnership, administered by the Trust for Oxfordshire's Environment to arrange permits for the project. Local contractors and consultants are being employed throughout the works for the benefit and engagement of the local community and economy.

To support the permit applications, further work is required to determine the archaeological significance of the site, for which we are engaging GW Heritage, and also Frank Lucas to produce an ecological impact assessment. This is being funded by the grant from the Evenlode Catchment Partnership/Trust for Oxfordshire's Environment.

A number of different design options have been explored, with one preferred option, one option retained as a plan B, and the third option discounted.

## Outline Design

### Creating wetland – Option 1

The preferred option is to construct a fixed control structure and box culvert at the upstream end of the meadow (approximately in the same location as the Victorian sluice) to divert 50% of the flow from the stream beside the footpath into the meadow and allow the lower sections to flood and drain through a second culvert set to 154.5MaOD at the toe of the embankment at the downstream end. This could either be done by restoring the existing collapsed Victorian culvert (preferred), or by building a new one. The topography of the area will result in a pond approximately 80-90cm deep at the deepest point and gradually sloping to dry land, through a series of smaller pools and an extensive wetland area. The surface of the main pond will be approximately 2.5 hectares, surrounded by smaller pools and wetland.

Following advice from archaeologists and ecologists, we would also remove some hawthorn and blackthorn scrub that's growing inside the area being inundated to protect the archaeology from encroachment and improve the opportunities for biodiversity in that location.

### Creating Wetland – Option 2

As a backup option or 'Plan B' in case we do not get Scheduled Monument Consent, we could install a leaky dam structure on the Field Reeves land beneath the castle that inundates the field and direct the flow into the culvert beneath the track and into the meadow. This would require the culvert under the track to be restored. Levels could either be managed by controlling the freeboard of the leaky dam, or by restoring the Victorian culvert at the downstream end of the site, depending on what's permitted by Historic England.

### Access Improvements – Options 1 & 2

In addition to inundation as per the two options below, this project aims to improve the accessibility of the site. Public access around the site is currently very poor, averaging between 0.45 and 0.6m wide and very uneven. This makes it very difficult for people to walk down and impossible for wheelchair users or those with impaired mobility. In the early 1990's, the footpath was rebuilt to approximately 1.5m wide and has since been eroded away and encroached by vegetation. To improve access, we plan to rebuild the footpath to a minimum width of 1.5m as per the Equality Act 2010, with a geotextile base beneath a compacted type 1 surface with timber or recycled plastic edging strips. Depending on funding, we have two options: We could either build a path all the way round the site, totalling 448m, or we could go half way round to connect the path with footpaths that continue along the valley, which would total 285m and cost substantially less, but also offer reduced benefits.

Depending on budget, it is proposed that we also clear an area of high ground at the north-eastern end of the site and provide some picnic benches and associated infrastructure (bins) for the community to enjoy.

### Information Boards

As part of the project, it is proposed that we install 2 information boards. One board will tell people about the ecology of the site, using information and observations from the ecological report produced as part of the permitting stage. The second board will connect people with the fascinating history of the site. This is particularly important to the community as the site of the castle is inaccessible to the public and its history remains an under-utilised community asset. Historical information will come from the Chipping Norton History Society and the archaeological report required for Scheduled Monument Consent. A local artist will be asked to produce a rendering of the site in medieval times for the history board.

Information boards will also be used to display the names/logos of contributors to the project, both as a thank you, and also to raise awareness of the brilliant and important works that those organisations carry out.

### Discounted Options

Due to the archaeological significance of the site, it is not feasible to dig a new lake and let it fill with groundwater and runoff – Historic England have ruled that out during the pre-application consultation.

It should also be stated that the embankment between pool meadow and the stream must on no account be used to retain water. The structure has not been maintained as a bund and would require significant assessment and engineering to make it safe.



## Ecology and Geomorphology

This project is designed to be highly beneficial to the local ecology and contribute to the improvement of the Water Framework Directive (WFD) ecological status of the wider Evenlode Catchment. As you can see from the image below, at present, the meadow is dominated by Great Horsetail (*Equisetum telmateia*), which has out-competed all other ecology, leading to very poor biodiversity within the meadow. The project will reconnect the river to its natural flood plain and manage that area for biodiversity and geomorphological benefit, as well as maintaining and restoring the Scheduled Ancient Monument and preventing its neglect. Over the course of the



project, we will be able to create a rich, diverse area of habitat that we can monitor and evaluate for changes in biodiversity, in line with the Thames Water Smarter Water Catchment Plan and the Evenlode Catchment Partnership, hosted by Wild Oxfordshire.

Before the area is re-wetted, the equisetum is to be rolled and then sprayed with Glyphosate weedkiller (or similar), and then put on a maintenance schedule of mowing in early spring to inhibit spores developing and dispersing, and then throughout the summer/autumn to deplete the rhizome network and ultimately reduce the plant's dominance in the meadow. The site will then be sown with Emorsgate EM8 Meadow Mixture for Wetlands with the following composition:

<b>Wild Flowers 20%</b>	<b>Grasses 80%</b>
Achillea millefolium – Yarrow	4% Agrostis capillaris – Common Bent
Centaurea nigra – Common Knapweed	4% Anthoxanthum odoratum – Sweet Vernal-grass
Filipendula ularia – Meadowsweet	4% Briza media – Quaking Grass
Galium verum – Lady’s Bedstraw	54% Cynosurus cristatus – Crested Dogstail
Leontodon hispidus – Rough Hawkbit	4% Deschampsia cespitosa – Tufted Hair-grass
Leucanthemum vulgare – Oxeye Daisy – (Moon Daisy)	10% Festuca rubra – Red Fescue
Lotus corniculatus – Birdsfoot Trefoil	
Plantago lanceolata – Ribwort Plantain	
Primula veris – Cowslip	
Ranunculus acris – Meadow Buttercup	
Rumex acetosa – Common Sorrel	
Silaum silaus – Pepper Saxifrage	
Succisa pratensis – Devil’s-bit Scabious	
Taraxacum officinale – Dandelion	
Traopogon pratensis – Goat’s-beard	
Vicia cracca – Tufted Vetch	

The project will then move to the construction phase with the stream reconnected to the meadow. This will gradually fill the southwestern end of the meadow to approximately 80-90cm deep over an area of approximately 2.5 hectares, with numerous pools and geomorphological complexity as dictated by the topography of the site. These will get progressively shallower and produce a wetland environment at the edges of, and between, the pools, promoting a diverse set of habitats for different species. Keeping the depth under 1m ensures an ecology resilient to changes in water quality and environmental incidents as the ecology that prefers deeper water gets progressively more specialised, less diverse and less suitable for an on-line pond.

As the site is online, as well as a geomorphological relic, the ponded areas will quickly establish an ecosystem native to the area, as well as giving the existing seed bank within the meadow the opportunity to germinate and reveal macrophyte species that used to live there. As we have no records of historic species from when this was last ponded, this offers the potential for insight and study into the historic ecosystem of the area, and an exciting opportunity to see if any now-endangered species manifest. Environment Agency monitoring of the catchment has found that the populations of macrophytes and phytobenthos were “Good” until 2015, whereas the populations have since fallen to “Moderate” (<https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039037400>). This project aims to significantly improve that classification as the main problems within the catchment are caused by downstream pollution, and water quality on site has been reported to be good. Because reducing pollution downstream is challenging and extremely expensive, Pool Meadow presents the best opportunity to encourage nature to thrive in the catchment. This will, in turn, lead to better support for downstream populations, due to the greater level of beneficial biochemical processes and reproductive material travelling downstream.

Despite being asked by members of the public, it is not suggested that the area will be stocked with fish. Small species that already thrive in the stream will appear naturally and support the returning ecosystem.

These works will significantly improve the habitat for pollinators and insect species that reproduce in ponds and wetlands, and provide a much wider variety of plant species for animals that specialise either in diet or habitat, which will have a knock-on impact throughout the food chain.

The immediate area is known to be habitat to water voles and newt species, with Great Crested Newts reported within 500m of the site. This project will expand the available habitat and food supply for both species and encourage population expansion. Neither species will be a blocker to construction work, which will be undertaken outside of breeding seasons with ecological checks in place.

The stream used to supply the pond is home to the invasive American Signal Crayfish. Any attempt to trap and remove these is generally counter-productive as doing so catches only the largest of the population which would otherwise eat the smallest and control the population numbers that way. Therefore, these works are not being proposed.

There is a noticeable lack of any invasive non-native plant species on site due to excellent work by the Chipping Norton Green Gym who remove any that appear.

## Hydrology

### Flood Risk Benefits

There are numerous communities that flood within the Evenlode Catchment and this project will improve floodplain storage away from vulnerable areas. As this part of the catchment has not been modelled, it is impossible to quantify the impact on downstream flood risk and drought.

Nonetheless, the project offers a significant storage and attenuation capacity for a watercourse of this size, and will certainly increase the lag time between rainfall and river level change, so it is certain that there will be downstream flood risk benefits. This project fits into a variety of strategies and legislation aimed at improving flood risk, resilience, biodiversity and protected landscapes.

Particularly, the wider 2020 Flood Risk and Coastal Erosion Strategy for England by “*making greater use of nature-based solutions that take a catchment led approach to managing the flow of water to improve resilience*” as well as the Environment Agency’s Flood and Coastal Erosion Risk Management Strategy Roadmap to 2026, by building places with increased resilience to climate change and improved biodiversity.

As the area will be holding water, it will naturally improve the response of the ecosystem to drought and improve resilience. We lack any long term flow data, but the watercourse is spring fed and still flowing, despite the present drought at the time of writing (September 2022).

### Bliss Mill

Downstream of the site, the watercourse supplies Bliss Mill with water that is now used for aesthetic purposes around the Mill. Having spoken with the Property Manager, they are happy for flow to be reduced while the pond and wetlands are inundated, so long as they are able to offset the leakage through their sluices with the baseline flow. A loss of head level on site could possibly risk bank stability on the site. To ensure that we do not reduce their flow beyond this level, the impoundment and inlet structure will be upstream of a confluence with a spring that produces a reliable base level of water to Bliss Mill, even in times of drought. Pool Meadow will be inundated throughout the course of a winter, and once full will allow water to pass on in its original quantity, so the supply to Bliss Mill will be restored by summer when levels may drop. If there is ever any problem, it will be possible to temporarily block the Pool Meadow inlet structure to top-up Bliss Mill as required. The meadow wetland will be resilient to this due to the fixed crest control structure being able to



maintain the level. However, although being planned in case of emergency, this contingency is not foreseen to be required. It is worth pointing out that as Pool Meadow was once used as a retention pond for Bliss Mill, there is an element of historic design that will ensure that one does not adversely affect the other.

## Archaeology

Pool meadow is part of the “Chipping Norton motte and bailey castle and fishpond” Scheduled Ancient Monument. Originally, the meadow had a pond supplied by groundwater and the stream via a sluice that was used to keep fish to supply the castle. Later, it became a retention pond for Bliss Mill, and then as a local amenity.

The site is a particularly good example of a medieval fish pond, and as such, it is nationally significant. It is believed that the bund surrounding the site is a Victorian addition installed to ensure a constant supply of water to Bliss Mill, which is theoretically less significant.

To undertake the planned works (option 1) will involve excavating two sections of the bund around the meadow, which is subject to Scheduled Monument Consent. To apply for Scheduled Monument Consent requires a desktop study by a suitably qualified archaeologist to establish the archaeological impact of the works. If the bund is a Victorian addition, it will be of significantly less value than if it is a medieval structure. Either way, the designs propose digging in locations where the Victorians installed culverts, so the archaeology has already been compromised.

Depending on the outcome of the report, this may mean that an archaeologist needs to be present on site for the construction; however, as these works will prevent further neglect and undo damage by the encroachment of trees onto the archaeological site, it is anticipated that Historic England will approve the works.

If Historic England do not approve the works, we will change to Option 2 (see Outline Design section above), which is far less disruptive to the archaeology and delivers similar results, albeit with different challenges.

To establish the significance, we procured quotes from 3 appropriately qualified archaeologists to find the best value for the project. GW Heritage were the successful applicants and come very highly recommended.

## Educational Outcomes

As an offshoot of the project, Beaumont Rivers has offered students at Aberystwyth University the opportunity to study any aspect of the project they like. It was initially suggested that they might be interested in the change of species, geomorphology or the hydrological impact of the project, and one student would like to undertake a mapping exercise using LiDAR data to gain some professional experience under the guidance of their tutor and staff from Beaumont Rivers. We are more than happy to give such an opportunity and are looking forward to working together.

When the project is complete, we are planning to reach out to local schools and offer the chance of field trips for classes to learn about the geography, history and ecology of the site, and we'll set up some fun educational activities for the kids (and teachers!) to enjoy.

## Maintenance

Most of the day-to-day maintenance of the area will be undertaken by volunteers from Chipping Norton's Green Gym, which is a local, independent group that undertakes environmental work in

much of the public open space within the town to a very high standard and is the sole reason that Himalayan Balsam has been thoroughly eradicated from the site.

To ensure that the area is managed in the best way to improve the local ecology and meet project targets, Beaumont Rivers are supplying Chipping Norton Town Council and the Green Gym with a maintenance schedule for the site, which will cover mowing regime, footpath maintenance, screen clearance, invasive non-native species control, and any other requirements the site will need.

Chipping Norton Town Council are currently undertaking an independent review of tree safety and maintenance on the site and will ultimately remain responsible for its care and maintenance, as well as health and safety on site.

## Permits, Consents and Planning Permission

Beaumont Rivers have approached the relevant authorities to ensure that we have full details for all permits required and have approximate costs for the permits and work involved. We then sought funding and this phase of the works has been made possible by a grant from the Evenlode Catchment Partnership administered by the Trust for Oxfordshire's Environment.

Costs for Planning Permission and Environment Agency Licences are calculated by the District Council and the Environment Agency at the time of application, but we procured best estimates in pre-application advice. They were unexpectedly high and Beaumont Rivers is seeking clarification and disputing the figures. We will continue to work with the authorities to ensure the best value for money is obtained, and because this is a community-led project, we expect the final costs to be lower.

Some permits require applications to contain further reports on the site by suitably qualified suppliers. For example, Scheduled Monument Consent requires a report carried out into the archaeological significance of the site, and Planning Permission requires an Ecological Impact Assessment to highlight the benefits and risks to ecology. To ensure best value, Beaumont Rivers has secured a minimum of three quotes from different suppliers for each task and selected the most competitive based on value. Both reports will also be crucial for the business case of future funding applications ahead of the construction phase.

As the works are on an ordinary watercourse, this project does not require a Flood Risk Activity Permit from the EA, but it does require Land Drainage Consent from West Oxfordshire District Council.

The required permits, reports and suppliers are detailed below:

<b>Application</b>	<b>Supplier</b>
Land Drainage Consent	West Oxfordshire District Council
Transfer License	Environment Agency
Low Risk Impoundment License	Environment Agency
Scheduled Monument Consent	Historic England
Planning Permission	West Oxfordshire District Council
Ecological report for Planning Permission	Frank Lucas, Facilitating Nature
Archaeological report for Scheduled Monument Consent and Planning Permission	GW Heritage
Consultant time (12 days)	Beaumont Rivers

## Future Funding Required

Once we have the permits and clarity on what we are permitted to do, we will seek a minimum of 3 quotes from local contractors with a precise scope of works to ensure fairness in the tender process.

Funding for the *construction* of the project is being sought from a number of organisations, including:

- Wild Oxfordshire
- Thames Water
- Trust for Oxfordshire's Environment (TOE)
- Heritage Lottery Fund
- Chipping Norton Town Council
- Esmée Fairburn Foundation
- Local businesses willing to make a donation to improve their Environment, Social and Governance/Corporate Social Responsibility outcomes.

## Summary of Project Benefits

- Catchment-wide improved water quality.
- Huge biodiversity improvements that will support downstream populations.
- The opportunity to revitalise a historic seed bank that could benefit endangered populations.
- New wetland habitat for endangered species, including water voles and great crested newts.
- Improved floodplain storage, with improved flooding lag time and reduced impacts for downstream communities.
- Improved public access to the outdoors, including disabled people and pushchair users.
- A new, safe amenity for the community to enjoy.
- Improved care and maintenance for a nationally significant archaeological site.
- Improved connection between a growing town and its history, with the opportunity for people to learn from on-site information boards.
- Local community involvement and prosperity, with local suppliers being used for every step of the way.
- The opportunity for local schools and clubs to have field trips to learn about nature, environmental restoration and history, where they can be inspired to study and act upon wider environmental issues.
- Students from Aberystwyth University will be given the opportunity to develop professional skills and experience by helping with LiDAR and mapping.
- Students from Aberystwyth University also have the opportunity to study the environmental impacts of the restoration.

## Public Engagement

There is a great deal of public support for this project to go ahead, with the project team being approached regularly on site and by email with people offering help and encouragement for the scheme. Since erecting signage on site (see below), we have been inundated with positive support from the public, which we will anonymise and use to support future funding applications for construction.

The only concern raised has been from dog walkers who want to know if dogs will still be allowed on site. They have all been responded to and informed that dogs will continue to be welcome on site, but it is of increased importance that people pick up after them to avoid polluting the water.



## Closing Summary

This project offers the opportunity to make a relatively large environmental restoration project that will deliver first class results possible. Undertaking these works promotes best practise and engages the whole community with the environment and history of the area, and it results in real-world benefits for biodiversity, geomorphology, flood risk, education, water quality, archaeology, community, and disabled access to the countryside. Bringing this to fruition means a lot to the people of Chipping Norton, and will significantly further the catchment-wide ambitions of our partner organisations working to improve the environment across the Evenlode catchment.