**Project Proposal for Cherry Orchard Lake and Nobles Green Ditch improvements**

**Water Quality improvement aims (based on WFD waterbody classifications:**

* **Phosphates:** currently **BAD** improve to **MODERATE**
* **Fish:** currently **MODERATE** improve to **GOOD/HIGH**
* **Invertebrates:** currently **MODERATE** improve to **GOOD/HIGH**
* Determine if **Biohaven** can improve the **amonia** levels which are currently **POOR.**

**Cherry Orchard Country Park Lake:**

**Outline:** Creation of wet woodland and wetland areas, reduce bank erosion on North-east edge of the lake and improve existing Water Vole ditch between Nobles Green Ditch and the lake.

Currently the Cherry Orchard CP lake is characterised by steep banks and mimimal emergent vegetation. We propose extending the South-west corner of the lake by reprofiling and land forming to allow emergent vegetation to establish, to plant trees to create wet woodland and install some under water berms to create a more structured bed which will allow variation in the floral communities that can establish in-channel. At the north end of the lake where it is positioned closely to Nobles Green Ditch we propose reprofiling the bank and encouraging a wetland and wet woodland area to develop between the lake and ditch, this may also help to reduce the erosion on the North-east corner of the lake as tree planting will help stablise the bank and reed establishment will help reduce erosion. This area of the lake could also be utilised as a run off point from the lake to the ditch, connectivity between the ditch and the lake will also increase the biodiversity of both. At present there is a path used by local people that runs between the lake and the ditch but it isn’t a PROW but there is a PROW that runs behind the lake so diverting the path to the PROW is possible.

The vision is to establish the lake to act as a filtration system to improve the water quality of Nobles Green Ditch downstream from the lake. When constructing the lake a weir was installed and a ditch dug to allow water to overflow from the Nobles Green Ditch along the constructed ditch line into the lake but only when water flow was relatively high. We propose altering the system slightly by removing the weir and deepening the ditch so that more of the water from Nobles Green Ditch enters the lake, creating the opportunity for silt to drop out and reduce any pollutants in the water before it drains back into Nobles Green Ditch via a reed bed at the North-east end of the lake. The wetland and wet woodland areas between Nobles Green Ditch and the lake and on the South-west edge of the lake will also allow run off points when water levels are high. We also propose installing a Biohaven (a specially designed floating island that uses natural processes to improve water quality) or a network of small Biohavens to act as an additional filtration system within the lake to reduce pollutants and silt further. These islands would be planted with a mixture of semi mature Phragmites, Carex, Juncus, Iris and Lythrum so they will also create an attractive feature within the lake. As well as improving water quality for Nobles Green Ditch it will also help to eliminate or reduce the Blue-green algae problem the lake currently has.

An additional aim for the project is to try to restore the drainage ditch between the lake and Nobles Green Ditch so that it once again is suitable habitat for Water Voles and other riparian species as currently this ditch seems to be dry except when water levels are high.

Before and after the project we would monitor factors such as levels of phosphate and amonia in Nobles Green Ditch and the lake, fish and invertebrate numbers and presence or absence of Water Voles. This would determine if the project has been successful in improving the WFD status of Nobles Green Ditch and improved the biodiversity of the area as a whole.

**Outcome:**

Increased flora and plant structure with significant amounts of emergent vegetation created including, reed, Carex and sedge communities that in turn will lead to increased invertebrate interest. Some wet woodland, an increasingly rare habitat in Essex, would help improve habitat for Water Voles and breeding birds including Coots, Moor Hens and Mallards amongst others. Increased shade will also reduce the impact of Blue-green algae on the lake.

Both a Biohaven and a wetland area created between the lake and the ditch will help to reduce the pollutants entering the channel from further upstream from the Sewage treatment works. The lake would effectively act as a filter to remove some of the pollutants impacting on the quality of water in the ditch using natural processes and increasing biodiversity at the same time. The wetland area will also increase connectivity between the lake and the ditch, increasing biodiversity and available habitats.

There will also be increased value to the local community with some capacity for engaging with local schoolchildren and wildlife groups.

**Basic estimates of costs for EWT Cherry Orchard lake and wetland/wet woodland project**

Licences: £2,000

Temporary closure of footpath: £1,000

Biohaven: £14,000

Earth Works: -

Weir removal £7,000

Digger Hire with driver £1,000

Consultant fees: £6,000

Materials: -

Fencing: £1,000

Trees: £2,000

Wetland plants, reed, etc: £1,000

Interpretation panels: £1,000

Baseline monitoring: £1,000

Staff time/Management costs: £3,700

Contingency (10% of project total): £3,700

**Total £44,400**

