

Water Environment Improvements Project Evidence Form

Scope & Purpose

This form is to be used by the external Water Environment Governance Group (WEGG), to review, validate and formally approve the length of bluespaces improved for the Water Environment Improvements ODI. The form will be completed by the Water Environment Team with support from project partners and presented to the WEGG. After formal approval, the km of water environment improved will be recorded against the ODI and projects will be marked as completed on the Water Environment Scorecard and illustrated as delivered in the Bluespaces Mapping Portals.

Project Name

Dickleburgh Moor

Project Lead

Company/ Organisation	Named Lead	Position
The Otter Trust	Ben Potterton	Trustee

Bluespaces Improved

Year	Claimed	Proposed	Reason For Any Change
Year 4	4.1 km	4.1 km	NA

Water Environment Assurance

This project has been reviewed internally to ensure it has delivered benefits above and beyond our baseline and regulatory obligations to improve the water environment accessible to customers across at least two out of three aspects. Following our assurance process, the project was approved by both our internal and external groups for review before delivery. This form presents evidence of project completion and the outputs achieved, to request project sign off.

Level	Project Acceptance Date	Project Approval Date	Completed Project Sign Off Date
Project Team	February 2023	N/A	N/A
Water Environment Steering Group (Internal)	February 2023 & March 2023	March 2023	N/A
Water Environment Governance Group (External)	March 2023	March 2023	May 2024

Project Timescales

Candidate Project Approved	Project Initiated	Project Completed
March 2023	April 2023	March 2024

Project Summary and Highlights

Project Summary

The Otter Trust has used Bluespaces funding to work with partners to deliver 4.1 km of water environment improvements at Dickleburgh Moor, in the upper Waveney Valley, near Diss, Norfolk.

Dickleburgh Moor is a Nature Reserve owned by The Otter Trust, which has recently increased in size. It is located on the site of an ancient glacial lake and contains a considerable peat deposit (in places over 35m deep). An Internal Drainage Board ditch borders the site along the southern boundary, with excess water being pumped from Dickleburgh Moor and into the ditch to flow towards the River Waveney. Decades of poor agricultural management and inappropriate land drainage leading to excessive summer drying and extreme winter flooding had reduced the biodiversity of the site. In March 2023 under planning law, land use was officially changed from agriculture to Nature Reserve, and the site is now being restored and managed for wildlife. This archaeological site was home to early Britons and contains archaeological sites of interest.

This Bluespaces project has restored the aquatic habitats at Dickleburgh Moor, created new and enhanced habitats, increased flood storage across the site, and improved and increased public access to the Nature Reserve for the local community.

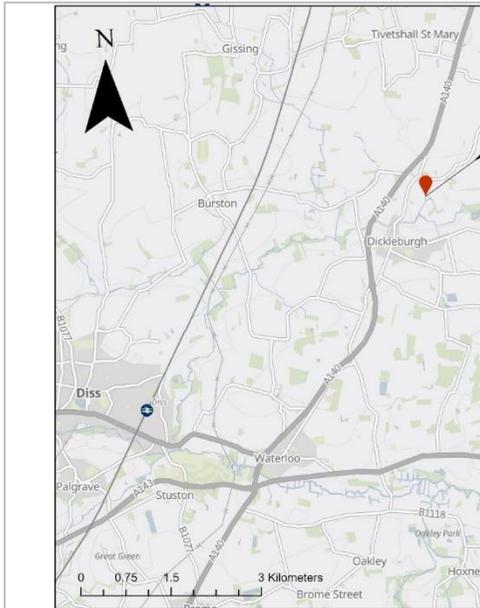
Going forward, The Otter Trust has purchased further land on the eastern side of Dickleburgh Moor. During the winter of 2024/25 the trust intends to turn these arable fields into wet meadows and hopes to deliver further improvements to water quality and public access.

Highlights

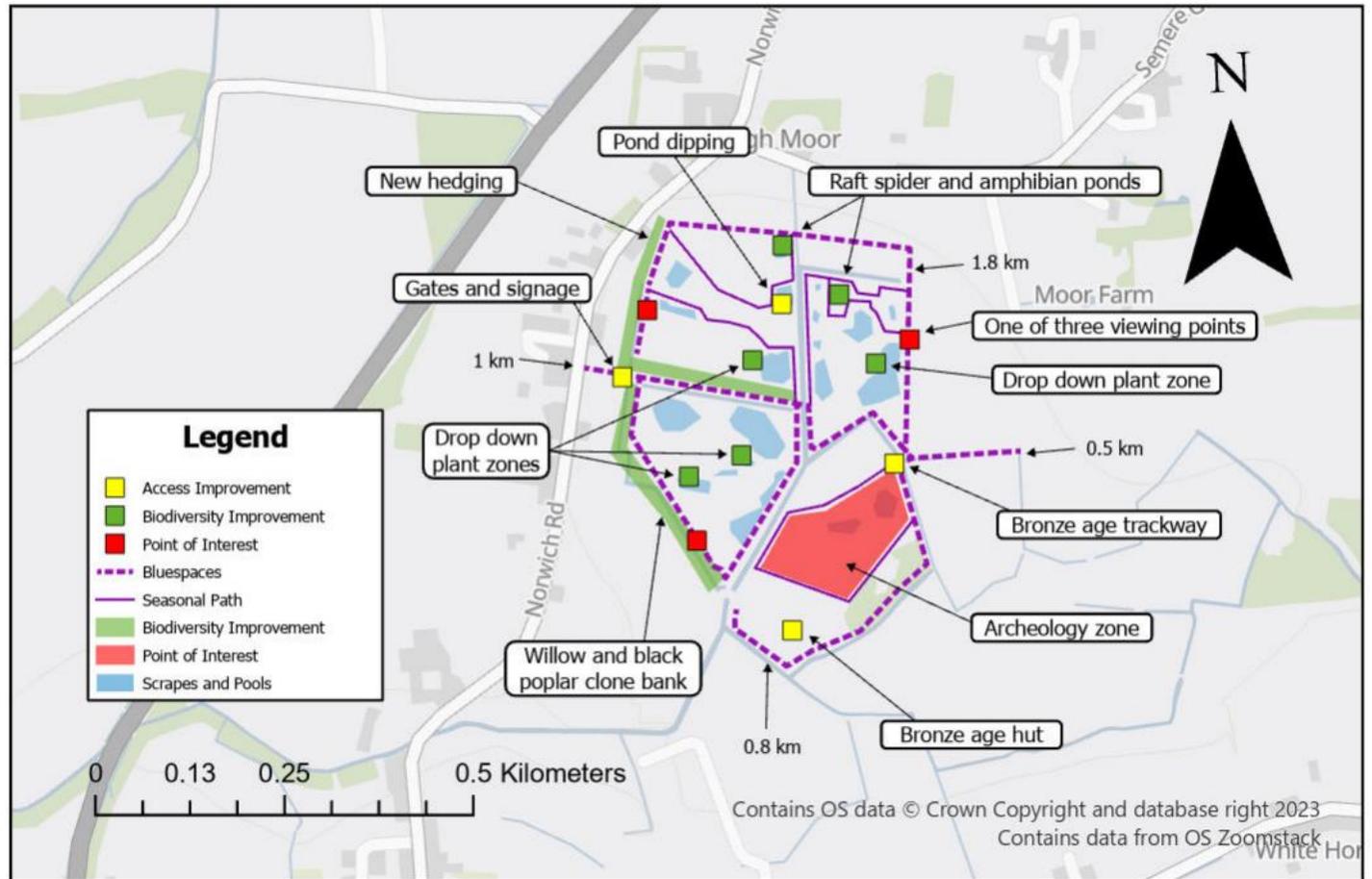
- Widening and levelling the existing footpath and creating additional permissive access paths that link to different habitat types on the site
- Planting of native trees, including hundreds of native Black Poplar and creating hedges along the boundaries and areas of Alder woodland
- Creation of a series of amphibian ponds along the northern section of the site
- Wetland planting
- New signs and interpretation provided for visitors



Maps



Dickleburgh Moor



Total Length of Accessible Water Environment: 4.1 km (1.5 km seasonal paths)



Dickleburgh Moor site image showing the Internal Drainage Board ditch in red and The Otter Trust newly purchased land in yellow next to the current site in green

Project Outputs, Benefits & Evidence Against Criteria

Access, Facilities & Recreation	
Expected Project Outcomes	Benefits
<ol style="list-style-type: none"> 1. Creation of a network of permissive paths, improvements to public footpaths, the addition of signage, gateways, wildlife cameras and the provision of a volunteer and bird ringing hut improves and increases access to the water environment 2. Working with Historic England to protect the Bronze Age Lake settlement and recreating the features increases engagement, understanding and enjoyment of the historic water environment 3. Additional facilities and wildlife improvements increases volunteer opportunities benefiting health and wellbeing 	<ul style="list-style-type: none"> ➤ A1: Increases access to, engagement with and enjoyment of the water environment ➤ A2: Benefits health and wellbeing ➤ A3: Influences positive environmental behaviors
Outputs	
<ol style="list-style-type: none"> 1. The public footpath has been raised, widened and levelled to improve public access. Staff and volunteers have also started mowing a 1m wide strip along the full length of the path, to encourage visitors to use the path. New permissive access paths have been created around the boundary, and the Otter Trust aims to continue to work to increase the paths to the east. New signs and notice boards have been created, but due to ongoing flooding, these will be installed in May (see images of prepared materials). 2. The Otter Trust has worked with Historic England and a team from University College London / Royal Holloway to understand the Bronze Age Lake Settlement, so it can be protected and recreated for visitor engagement. Soil and bone samples and sediment cores have been analysed, and the buried trackway investigated. In addition, students were joined by visiting experts to discuss preservation and analysis of animal bone, plans to DNA pollen and conduct surveys for preserved fish skin. 3. Additional facilities have been provided, including picnic benches positioned along the permissive access path in a number of scenic locations, to further enhance the visitor experience. Bird nesting boxes and bat roosting boxes have been erected in the wet woodland by volunteers including a team from the Waveney Bird Club. Clear areas within the woodland have also been created to enable the club to erect nets and areas for members of the public to observe this species monitoring work. Ponds have been created along the northern section of the site, with a sloped access area from the car parking area on Norwich Road. The ponds are shallow and provide a safe environment for volunteers to offer pond dipping sessions. 	
Evidence	
	 <p>Bird ringers at work on one of the new picnic benches</p>  <p>Bird ringing demonstration for the public</p>
<p>Creation of footpaths underway at the site in summer 2023</p>	

Wildlife & Biodiversity	
Expected Project Outcomes	Benefits
<ol style="list-style-type: none"> 1. Planting of native black poplar, wildflower margins and creating habitat for the reintroduction of marsh fleawort improves the quantity, quality and connectivity of habitats 2. Housing a turtle dove reintroduction enclosure with birds fitted with Motus receivers and colour rings assists the in the conservation of this declining species 3. The recreation of wetland habitat and ephemeral ponds improves the quantity and connectivity of wetland habitat 	<ul style="list-style-type: none"> ➤ B1: Improves the quantity, quality and connectivity of habitats ➤ B2: Improves the conservation status and or abundance or distribution of species
Outputs	
<ol style="list-style-type: none"> 1. Native Black Poplar trees have been planted along ditches, stabilising areas prone to flood damage and creating native plant corridors that link to neighbouring land. This also included removing non-native Poplar trees from around the site, and creating ‘dead wood’ areas, that have benefited bats, hole nesting birds and a variety of insects. Two areas of meadow were cleared in 2023 following an earlier trial, by removing the topsoil and exposing the wet peat area below to provide drop-down zone habitat for plants. This also enabled connectivity of shallow water zones via seasonal ditches to help transport seed around the site. Trial plots were also created in the grassland areas to increase the wildflower population. Each of the three areas have been marked out and mowed flat. One plot has been scarified to encourage germination of any buried seed, another plot has been set with seed collected elsewhere on site, and the third plot was set with seed from roadside verges in the Dickleburgh village. To link habitats and provide an additional buffer, Alder trees have been planted along the southern boundary. These will provide screening, reduce sedimentation of the meadows, stabilise banks and provide a link between the wet woodland and existing trees around the perimeter of the site. 2. The Turtle Dove reintroduction enclosure at Dickleburgh Moor did not prove to be feasible, although the Otter Trust was able to support a release site elsewhere in the catchment, at Ellingham on the River Waveney where 500 doves were released in 2023. Wild Turtle Doves do already breed at Dickleburgh Moor, with pairs on the northern and southern boundary, and these will continue to be protected. 3. Recreation of wetland habitat has been undertaken through plant conservation work with Natural England. Under licence, the project has propagated several thousand rare fen plants. Creeping Marshwort is endangered in the UK and Europe. Plants were introduced to the trial plots in 2023 and following the success of this trial, a larger introduction has taken place spring 2024, when Water Germander was also introduced. 15 ephemeral ponds have been created in several areas of the site, to particularly support Floret Bur-Marigold and Golden Dock, and provide a habitat that is beneficial to breeding waders and aquatic invertebrates with short lifecycles. Ponds will be re dug every two years. A series of 12 new amphibian ponds have also been created along the northern section of the site. Water Vole have been recorded in each of these new ponds and the adjoining ditch, with new burrows being found in the banks of the newly created access bund. As a result of black poplar planting, a rare and IUCN Red List Vulnerable Orange-Fruited Elm Lichen was found on site and then surveyed for translocation to other sites. 	

Evidence



Creation of larger ponds for aquatic birds



Creation of new pond with shallow edges to support wading birds



Edge of the new shallow pond with signs of use by waders



Natural England and Norfolk Floral Group surveying scrapes



Marsh Fleawort, or *Tephroseris palustris* found on site after improvement works - extinct in the UK since 1899



Alder Tree planting

Surveys from 2023 have shown a massive increase in biodiversity since 2016: Habitat types have been increased to mirror the species that have been recorded on site e.g. creation of shallow water scrapes for waders (Lapwing increase from 1 pair in 2016 to 35 pairs in 2023) and increasing areas of wet meadow and shallow ditches, to increase invertebrates and associated species (breeding of Shoveler Duck and Yellow Wagtail, 60% increase in Reed Bunting territories)

Water Quality	
Expected Project Outcomes	Benefits
<ol style="list-style-type: none"> 1. The planting (under licence), of Marsh fleawort and of native black poplar helps to naturalise this water environment. 2. The creation of shallow ponds to capture rainwater will improve the functioning of water within the habitat 	<p>➤ C3: Improves state and function of water, including naturalisation, visual appearance, litter and odour</p>
Outputs	
<ol style="list-style-type: none"> 1. Wetland and fen plants, including Marsh fleawort, and native trees have been planted to help naturalise the site (see Wildlife and Biodiversity). 2. A series of 12 new shallow ponds have been created along the northern perimeter of the site. <p>The Internal Drainage Board ditch along the southern border can flood the whole site, impacting water quality across the entire area, and farmland to the north and east, and residential properties along the western boundary all create water pollution that can enter the site. By creating a perimeter buffer zone, fragile water habitats and species within the central section of the site can be protected, and the buffer zone also allows high quality water to be pumped back out into the Dickleburgh stream which feeds the River Waveney.</p> <p>Other water quality outputs have been achieved through the project:</p> <ul style="list-style-type: none"> • Creation of planted ditches as buffers between neighboring farmland and the main site to trap sediment and nutrients. • Planting of an Alder tree buffer along the southern boundary between the Internal Drainage Board ditch and the main site, and extension of the existing area of Phragmites, to enhance the filtering ability of vegetation and prevent overflow material from the ditch flowing onto the site during flooding. 	
Evidence	
	
<p>Setting Marsh Fleawort, or <i>Tephroseria palustris</i> seed</p>	<p>Alder Tree planting on the IDB boundary</p>



Otter Trust staff collecting Black Poplar cuttings for propagation and planting



One of the new shallow ponds created



Dickleburgh Moor showing ponds and ditches created in this project

Additional & Secondary Benefits

Expected Project Outcomes	Benefits
<ol style="list-style-type: none"> 1. In collaboration with Royal Holloway University, climate studies analysing sediment cores help research into climate change 2. Additional water environment habitat captures excess water helping to reduce the risk of flooding in the local area 3. The black poplar project is a regional activity and working with multiple partners to help improve this site will benefit the local community and generate positive PR from media activity 	<ul style="list-style-type: none"> ➤ D1: Provides resilience and adaptation to climate change and/or reduces the risk of flooding ➤ D2: Provides benefits to local communities, the local economy or NWG ➤ D3: Supports strategic project or investment into strategic partnership or landscape/regional activity

Outputs

1. Work on the archeological site with Royal Holloway University is supported through international collaborative research, investigating fluctuations in the peat environment and climate change. This link is strengthened as Professor Blockley from Royal Holloway has been appointed Chair of the site’s archaeological research group. This group will direct further studies at Dickleburgh Moor, promote best practice, and link regional and international partners. The Otter Trust’s aim is to provide supervised access to the Bronze Age settlement for any interested individual or group.
2. Improvements through this work and the wider site restoration project have increased water storage in the upper Waveney Valley, providing 24 hectares of grass meadows as natural flood land, which will help prevent flooding of houses and businesses downstream during heavy rainfall. This water also provides climate resilience, supporting low flows and mitigating local drought conditions of the summer months.
3. The Black Poplar species work at this site is linked to the East of England Black Poplar Project. The creation of the Norfolk Black Poplar clone bank at Dickleburgh Moor and the extensive planting of Black Poplar around the site enables us to use the reserve as a demonstration site for tree conservation activities in the region, providing public access to a demonstration area. DNA tested propagation material is available to any interested groups and the site will produce 1000 saplings each year that will be available to be donated to any suitable group or landowners. The Otter Trust is co-hosting the National Black Poplar Conference with the Natural Trust at Calke Abbey on the 25th April 2024, and will be hosting a Norfolk/Suffolk tree conservation tour in May 2024 and a national group visit in September 2024.

In addition, the benefit to the local community is greater than anticipated – the community of Diss has widely appreciated the improvement to existing paths and provision of new paths at the site. An unexpected benefit has been the social aspect as neighbours have been meeting to walk, take photographs and watch wildlife. A Dickleburgh Village Facebook page has been created independently, with members posting pictures of the site.

A rare lichen (Orange-Fruited Elm Lichen) was found at this site which sparked a collaboration with a local citizen science group the charity did not know was in operation called the Norfolk Fungus Group. Dickleburgh Moor is now one of the only two sites in Norfolk to host the IUCN Red List Vulnerable species and so is a cornerstone for the community for this species to be translocated to other sites and has triggered beneficial partnership building.

Evidence



Students from Royal Holloway University taking sediment core samples from the site



Dickleburgh Moor experienced its first major flood incident since 2021, on the 16th October 2023, with the IDB ditch and Dickleburgh Stream breaching on dozens of occasions over the winter, storing flood water for the upper Waveney catchment

The submerged area had a maximum depth in the middle of 15ft



Orange-Fruited Elm Lichen found on site
Surveyed for translocation to trees at Dickleburgh Moor from one of the two only known Norfolk locations

Customer Testimonies & Media



Dickleburgh Moor Nature Reserve

3 October at 17:51 · 🌐

Today we started our Autumn maintenance jobs. We expect to be working on site for 5 weeks and aim to remove the layer of silt that accumulated in the central section during the 2021 flood. Unfortunately this silt had smothered our fen plants, so we removed the top layer of soil from a test plot last Autumn and the fen plants quickly recognised the area. Following the success of the trial plot we aim to remove the silt from the whole of the central section of the site this year. Our thanks go to Essex & Suffolk Water and Natural England who have funded this habitat work.



👍❤️ 24



Dickleburgh Moor Nature Reserve

13 July 2023 · 🌐

Plant Reintroduction to Norfolk

This morning we reintroduced Marsh Fleawort (*Tephrosia palustris*) to Dickleburgh Moor in partnership with Natural England. Natural England have licenced the reintroduction in Cambridgeshire and Norfolk, with the aim of returning this species to suitable habitat throughout in original range.

Text credit to Botanical Society of Britain and Ireland: *Tephrosia palustris* was first recorded in Britain in 1650 but had been extirpated by the end of the 19th century. It was lost from Sussex in 1725, from the Cambridgeshire and Lincolnshire fens by the early 1800s, and from the Norfolk Broads by the 1890s. Its last native record was from Dersingham (West Norfolk) in 1899. Drainage and agricultural changes probably caused its demise at most sites.

A biennial or short-lived perennial herb of pond margins and fen ditches, it is known to be an early colonist of bare mud.



👍❤️ 36

1 comment 6 shares



Dickleburgh Moor Nature Reserve

29 September at 20:31 · 🌐

We've created some more wildflower test plots in our northern fields. By cutting the grass tightly, removing the clippings and scarifying the surface, we are providing the ideal condition for seed sowing. We are then sowing seed collected from other parts of our site and neighbouring verges, enabling us to increase the population of plants that benefit our bees and butterflies.



👍❤️ 44

2 🗨️

👍 Like

🗨️ Comment



👑 Top fan

Andrew Goodall

Superb. Looking forward to the results of this.

3 w



Dickleburgh Moor Nature Reserve

17 October at 16:40 · 🌐

Professor Simon Blockley has been on site today with some students from Royal Holloway, University of London. The team have been core sampling in the central section of the site.



👍❤️ 22

1 🗨️ 1 📄

Lead Partner Quotes & Testimonials

“The Bluespaces Funding has enabled us to improve the habitat surrounding Dickleburgh Moor, increasing the overall biodiversity of the site and directly benefiting some of the regions declining and endangered species such as Creeping Marshwort, Water Vole, Water Germander and Crested Cow-wheat.

*One of the highlights of this project was reintroducing the Marsh Fleawort plant (*Tephrosia palustris*) to Norfolk. Last recorded in the West Norfolk village of Dersingham in 1899, we have introduced this to Dickleburgh Moor, by creating some shallow seasonal field ponds. The Bluespaces funding has enabled us to create a selection of small temporary wetland ‘scrapes’ that will support a wide range of plants, but also farmland waders including Lapwing, Oystercatcher, Little Ringed Plover and Curlew.”*

Ben Potterton, lead partner at The Otter Trust

Due to extensive flooding on site, the Dickleburgh Moor big opening event with a Wind in the Willows free public theatre entertainment has been moved to the 22nd July 2024.

A press release will be issued in June 2024.

Other Supporting Evidence & Data

<https://www.theottertrust.org/dickleburgh-moor.html>

<https://www.dickleburghandrushallpc.org.uk/dickleburgh-moor>

<https://www.facebook.com/profile.php?id=100080031723168>

Publicity & Events

- Pulmonaria Reintroduction and Guided Walk – Dickleburgh Moor 7th May
- Norfolk & Norwich Naturalists Visit- Dickleburgh Moor 11th May
- Waveney Heritage Guided Walk – 22nd May @ Dickleburgh Moor
- Suffolk Show (Waveney Conservation Stand) 28th-29th May
- Plants & Wetland Habitats Day – 84 children from Harleston Primary School @ Dickleburgh
- Regional Black Poplar Meeting – September DTC @Dickleburgh
- Waveney Valley Biodiversity Meeting – September DTC @Dickleburgh
- Wild Waveney Festival Weekend
- Earsham Wetland Centre 20th July - Wind in the Willows (Free outdoor theatre) from 3pm
Free Entry - Stalls, live music, talks etc
- Dickleburgh Moor 21st July - Wind in the Willows (Free outdoor theatre) from 3pm
Introduction of Creeping Marshwort & Water Germander

Information on Plant Conservation Projects – Waveney Valley

Marsh Fleabane (Tephrosia palustris)

Reintroduced to UK – Dickleburgh Moor (Norfolk) and Lakenheath Fen (Suffolk) – from seed collected in the Netherlands by Natural England. Last UK record 1899 Dersingham (Norfolk). Plant Reintroduced at Dickleburgh Moor by Norfolk Plant Recorders from BSBS/Norfolk & Norwich Naturalists and Suffolk & Essex Water under licence from Natural England.

Creeping Marshwort (Apium repens)

Small UK population (3 sites, 1 in Norfolk). 5000 plants grown at Dickleburgh for introduction under license from Natural England at Dickleburgh Moor

Water Germander (Teucrium scordium)

Former population in Norfolk & Suffolk, now confined to two sites in Cambridgeshire. 500 plants grown at Dickleburgh for introduction at Dickleburgh Moor under license from Natural England

Milk Parsley, Fen Violet, Tubular Water-dropwort

In propagation for planting in 2025. This project will also be working with the team at NNR Chippenham Fen to create a Norfolk (Waveney Population) of Cambridge Milk-Parsley as a backup population to the two in Cambridgeshire.

Information on Black Poplar (East of England) Project

The Otter Trust is working with partners Water Management Alliance, Norfolk Wildlife Trust and High Suffolk Farm Cluster to increase the number in the Waveney Valley. The Otter Trust staff have surveyed and DNA tested all the mature Norfolk trees, with propagation material being collected from all and planted at a new clone bank at Dickleburgh Moor, with a second population being established at Earsham Wetland Centre. 1500 saplings are being propagated each year and donated to projects, individuals and organisations (including Natural England, Norfolk County Council etc.). The Otter Trust sent 175 saplings to Essex in January 2024 for planting along the River Blackwater. A new Waveney Community Tree Nursery is being created at Earsham, supported by Defra. The regional meeting will be held at Dickleburgh in September.

Some Information on Other Projects at Dickleburgh Moor***Bird Projects***

The Otter Trust is involved in colour ringing for Little Egret and Grey Heron chicks in Waveney Valley. All Little Egret chicks are moving north, following fledging (predominantly to River Humber). None of the colour rung Grey Heron chicks have been spotted yet. The 2023 Winter population of Mute Swans in Upper Waveney Valley is estimated at 600 birds. The Moorhen Waveney project is about to commence as part of a national project.

River Management Volunteers

The Otter Trust is planning to have groups litter pick and remove branches from the river from May and through into July as required. The trust has contacted groups in Diss and Beccles, with the aim of coordinating the effort along the river.

Otter, Water Voles & Harvest Mice Surveys

Over the winter The Otter Trust completed bridge surveys along the Waveney and its tributaries. The team has also completed surveys across West Norfolk and Suffolk. Results are comparable to those in 2022/23. Otter cubs were reported from 5 locations. In July & August an ecology student will be surveying the upper Waveney and tributaries for Water Vole. Between July-September another ecology student will be surveying Harvest Mice at four water meadows in the Waveney Valley.

Supporting reports and more detailed project information is available on request