



**Protecting the  
environment at  
Lockwood  
reservoir.**

# Protecting the environment at Lockwood reservoir.

We've been working on a soft engineering solution to stabilise and prevent further erosion on a stretch of the embankment at Lockwood reservoir in north London. This reservoir is part of the Walthamstow Wetlands Site of Special Scientific Interest (SSSI) and Special Protection Area (SPA). We worked closely with Natural England, Walthamstow Wetlands Trust, Waltham Forest Council and the fisheries throughout the project.

## Soft engineering solution.

We combined environmentally sensitive design with innovative, robust natural engineering solutions in this project to enhance the SSSI and SPA. We installed wire cages filled with large stones, called rock mattresses, on the embankment. These mattresses protect the embankment and help prevent erosion by letting fine sediments build up in the gaps between the rocks, where vegetation will grow. We also used geotextile reinforcement matting underneath the rock mattresses to provide further protection from erosion. Both of these design approaches, which incorporate environmentally sensitive materials, enhance biodiversity as well as being safer, quicker, less intrusive and more cost effective to install than conventional solutions.

## Effective communication.

We used our digital channels to share information and photographs of the project's progress to keep the public and stakeholders informed. The Walthamstow fisheries and wetlands have thousands of Facebook and Twitter followers, so our messages reached a wide audience.

- **Rock mattresses promote biodiversity and provide a cost effective way to protect the embankment, saving around £194 per m<sup>2</sup>**
- **Our design for a new access road reduced around 3,200 tonnes of excavated waste, 110 tonnes of carbon and a total cost saving of £660,000**



## Providing site access.

The site is situated amongst the Walthamstow reservoirs and has public access for anglers and other visitors.

We built a 7.8km road around the reservoir to provide access for pedestrians and maintenance vehicles. We've minimised impacts on the SSSI and SPA by designing the narrowest possible road for our purposes.

By building on suitable existing ground, we were able to reduce the amount of excavated material, minimise the use of new material, and keep embodied carbon and costs as low as possible. As well as providing access, the road protects the western embankment from wind and wave erosion. These works have improved both safety and access to the reservoir for the future.

## Innovative drone survey.

We conducted innovative pre and post-work surveys using unmanned aerial vehicles (UAVs), also known as drones, to assess the impact of the project on birds from surrounding works at Walthamstow Wetlands, and to monitor habitat changes at the reservoir over time. We've shared this data, which included thermal imagery, with Natural England, who are keen to explore how they can use drones as part of their regulatory activities.