



## A38 Stover Park

Stover park, Newton Abbot, Devon, ENGLAND

Highways England, Devon County Council, Natural England, Kier, South West Highways/David Goodwin-Hughes

## BIG Biodiversity Challenge Award Category: *Project of the Year (up to 5 ha)*

### Project overview

Highways England worked with Stover Country Park, Devon County Council and Natural England to treat highways runoff to improve the water quality of the lake at Stover Country Park. A design by Kier was chosen for its ability to blend with the surrounding environment and filter water naturally.

### What were the biodiversity conditions on site, prior to the enhancement?

Since 1992 Stover Park SSSI had seen a significant decrease in biodiversity attributed to water pollution. This is due in part to sediment accumulation and dissolved heavy metals from highways runoff has resulted in this SSSI unit being given an Unfavourable condition rating. Sustainable Drainage Systems (SuDS) were chosen to create a full treatment process consisting of weirs diverting flows, forebays to collect sediment, baffle chambers to hold back oils, detention basins to settle out fine particles and reed beds. Devon County Council provided land to build the reeds beds on that was previously a conifer plantation with poor biodiversity.

### What were the reasons behind this project ?

The biodiversity of Stover lake has deteriorated for many years, an investigation determined that water quality was the main factor and key stakeholders including Highways England were consulted. Using the Highways England Water Risk Assessment Tool (HAWRAT) the location was classed as a 'Priority Outfall' requiring urgent action. The collaborative working group selected SuDS to create a full treatment process consisting of weirs diverting flows, forebays to collect sediment, baffle chambers to hold back oils, detention basins to settle out fine particles and reeds already present naturally within Stover to remove the pollutants mitigating the risk from highways runoff.

*Natural England reported "unfavourable no change" condition, due to "Water pollution"*



*Natural England reported that 'Siltation, natural succession and pollution by hydrocarbon runoff from the A38 pose ongoing management issues at Stover Lake'*

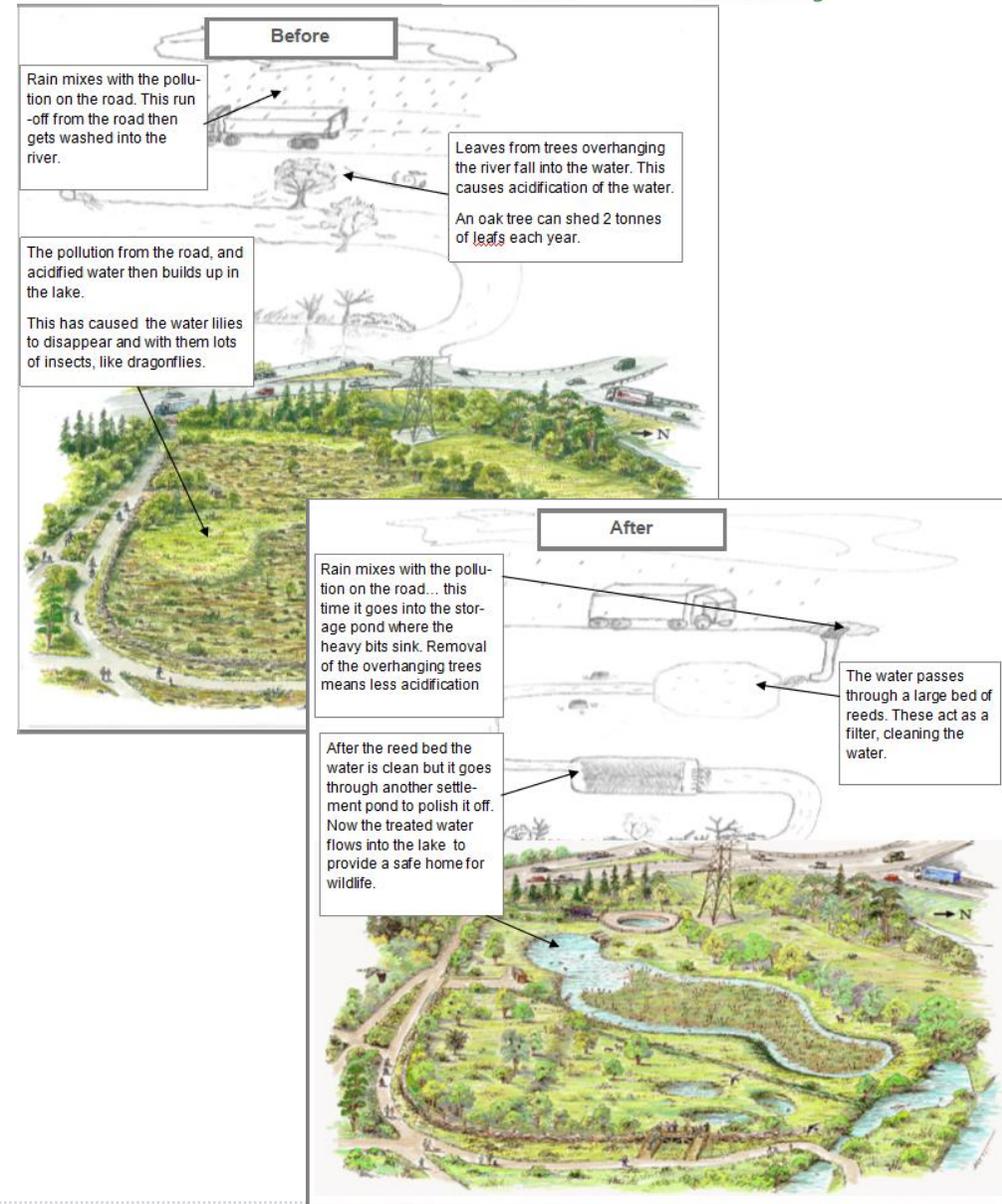
## What were the biodiversity measures taken?

Reed beds are important because dissolved heavy metals in the water can only be treated through vegetated treatment systems, with the roots of certain varieties able to capture offending heavy metals. Reeds planted in these ponds were carefully selected with the help of Natural England, the Environment Agency and Stover Country Park to remove the pollutants, with species already present naturally within Stover, avoiding introducing foreign species to this sensitive environment. Water needs a long contact period with reeds to capture pollutants, so the ponds and reed beds have been designed to be large enough for this to happen.

To keep the treatment system functioning as designed, on-going maintenance will be needed. This will be annually or following inspection. Reed beds slowly accumulate pollutants and will need to have 50% of reeds removed and replanted every 5 years on average. This will ensure that Stover Lake continues to be protected and flora and fauna continues to thrive.

The new habitat created by the reed beds have already seen biodiversity starting to flourish with common sandpiper, heron, ducks, swallows and sandmartins already observed. This is hugely beneficial when compared to the conifer plantation which was previously in this location that was contributing to leaf drop and acidification of the water entering Stover Lake.

A key element of the scheme was to engage with all stakeholders and particularly members of the public who use Stover Park. Information boards were established at the start of works explaining the background to the scheme, why this solution was chosen and the outcomes that were anticipated. The interest in the scheme also attracted local media and was very well received locally. This has been acknowledged by being awarded a certificate of excellence by the Considerate Contractors Scheme for a site performing above compliance.





### Further information

The existing drainage system was modified to collect multiple discharges into two outfalls; one either side of the lake tributary. The basins created for the treatment system are positioned were formed using a cut and fill technique ensuring as much material as possible was re-used on site. During the design stage, boreholes were taken to review ground conditions and material, but it was found that there were significant variations across the site which were then managed. This included artesian groundwater so filter drains were installed beneath the pond liner to help lower water levels during construction and manage pressure build up afterwards. It will take up to 12 months for the reeds to fully establish themselves. The topsoil strip of species rich grassland was spread over a wider area where conifers were previously planted and supplemented with broad leaf trees. These areas will establish themselves more quickly and also include pond scrapes to further enhance biodiversity by providing a range of habitats to become established around the treatment system. The scheme will help Highways England meet the Performance Indicator for removing “Priority Outfalls” from the register. It will also allow Stover Park to apply for Heritage Lottery Funding for dredging and tree felling around the lake to further improve water quality, but also include the conservation of poor and dangerous listed structures, overcome the fragmentation of a historic designed landscape, and to reverse the decline of some of Stover’s wildlife species.

### Project Team

Highways England/Devon County Council/ Natural England/Kier/South West Highways

### What was the motivation for carrying out the enhancement?

Working in collaboration with stakeholders over many years has been the only way to improve water quality in Stover Park SSSI. This has been down to the perseverance and tenacity of the project team to deliver the scheme despite the many obstacles over the years. These have ranged from identifying the causes from multiple sources, changes in funding mechanism and contracts, changes in people in the team – despite all this the desire and motivation has continued to drive the scheme to its successful delivery and the long-term aim of returning the SSSI back to favourable condition.



A Conveyor belt was proposed to move over 6,000 tonnes of soil around the site. This was changed during construction to a bridge which has been donated to Stover Park to aid maintenance

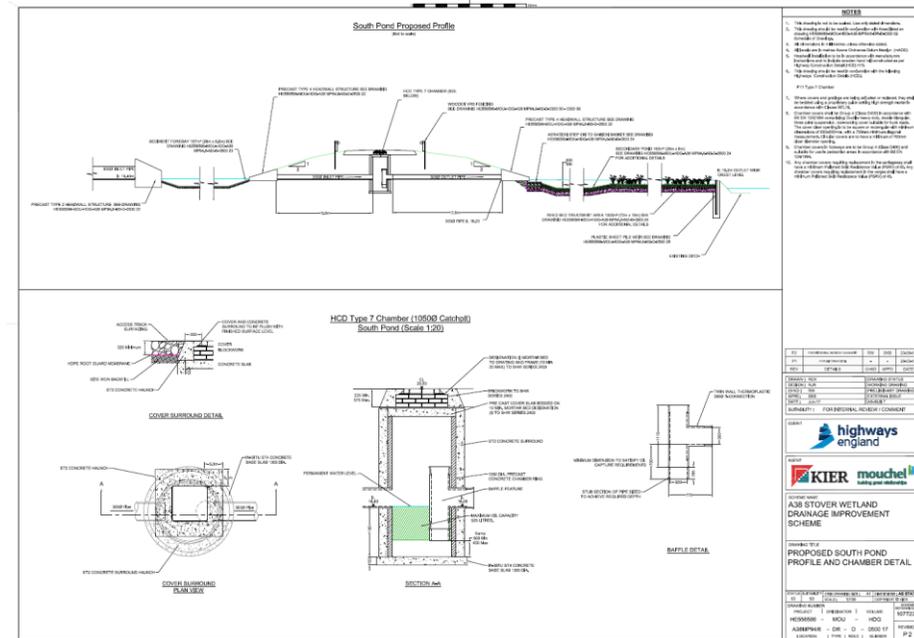


### Equipment used

11 tonne tracked dumper for moving materials around the site



20tonne wide tracked Excavator for digging large holes



Baffle chambers were agreed to be used with the Environment Agency to control spillages without the need to manually operate valves