

Flood Alleviation and Stopping Erosion in the Lye Valley

**By Rod d'Ayala, for
Friends of Lye Valley, July 2024**

The Lye Valley in North Fen SSSI section, mid summer. A spring-fed, alkaline, tufa forming valley-fen rare habitat on 1m peat



Lye brook runs parallel to the boardwalk through fen centre and is deeply eroded (gouged-down) by intermittent high water flow

Photo Tony Gillie 2023

Flash-flooding in the brook is a result of rain run-off from roads, paving, houses being directed from a large area of Headington into the small Lye Brook



Volunteers constructing mitigation leaky log dams and bank defences in the brook channel. These slow peak flows and stop peat erosion

Photo Tony Gillie

The 60cm wide Thames Water road run-off drain at the head of valley drains Headington. In dry weather, no flow



Road drain emitting after a rainstorm, raging torrent



Peak out-flow after a rainstorm was estimated **1,750 litres per second** in 2011



Depth of bank erosion in the Boundary Brook as it goes through the Golf course, 2011. Deeper now...



Erosion and brook bank collapse along Lye Brook lower down in the golf course area next to the south fen part of the SSSI following 20th June 2023 rain-storm. Bridge damaged

The only photo we have of channel/fen erosion by the 1980s at the valley head, beginning of remedial work



Photo – Oxford City Council archives

Lye brook joins Boundary Brook. Flooding from this joint watercourse in the Florence Park & Campbell road area:



Photo Martin Crane (resident) flooding in Campbell Road

Interception ponds with weirs dug at the valley head, 1988. The start of mitigation work TW funded



The ponds silted up, the limestone placed in the brook channel washed away, new solutions needed..

FoLV work started on restricting spring water loss and re-wetting dry peat via small dams/bunds in 2016



A fen has to be wet. There were pipes draining the fen to the brook. First job was to dig out drainage pipes that had been under the old boardwalk.....with new boardwalk all can now go dry-footed through wetter fen

Installation of leaky log-dams throughout the SSSI section was grant funded by Natural England in 2018



This work is continued by volunteers. Dams slow water flow and take the erosive energy out of it...Log dams are anchored to bank defence 'shuttering'



**The work uses
natural materials
available in Lye
Valley like logs
and willow
coppice branches
for weaving**

Soft peat in the brook banks is protected from erosion by stakes driven in, woven hazel & willow barriers & fen cuttings are packed in behind



Log dams work by slowing the flow and reducing the energy of the water



Not only the fen benefits, other effects lower down the watercourse.....

Photo Tony Gillie

Climate Change gives the valley fen these further problems:

1. Hotter, drier summers...

Less rainfall to the limestone rock aquifer for fen spring flow – drying peat, death of wetland species

More evaporation in very hot days – water stress

Heat stress on plants and invertebrates

2. More intense rainfall storms...

Less rain penetrates ground to feed springs

More runs-off to the Thames Water drain at valley head

Heavier rainfall – greater volume of water arrives all at once at the valley head – destruction of mitigation log dams

Result of peak flash-flooding event after a fierce rain-storm on the morning of 20th June 2023



Flow had gone over bridge and undermined it. Piled cuttings washed out of bank in foreground and...

Photo Tony Gillie

Damage at the boardwalk bridge over the brook



Intensity of rainstorm resulted in a massive peak flow event (flash-flooding). These extreme events will be commoner

Log dams above bridge were broken & log & brash debris piled up against bridge and onto boardwalk

Photos Tony Gillie





On the golf course a bridge over Boundary Brook was washed away – lifted up and deposited further down, twice in 2023

Now – new strategy involves more strengthening of bank defences, cuttings packed behind woven barriers



and **stronger (but leakier) log dams** across the channel, more water has to be let through, but still significantly slowed

But constant repair and dam maintenance is still needed, using up volunteer time



But is there a better long term solution? The peak flow needs reduction- see the '**Sponge Headington**' project

Photo Tony Gillie