

Short-form initial ecology report, Finchley Brook proposed flooding alleviation**Introduction:**

A section of footpath adjacent to the lower reach of Finchley Brook floods during periods of heavy rainfall, preventing access to parts of the LNR and to the adjacent Staffordshire to Worcester Canal towpath. The final reach of Finchley Brook is in a long culvert under school playing fields, before this discharges to the canal downstream of a lock. The culvert appears to be undersized. There is a proposal to remedy the footpath flooding by creating a series of ponds, as flood retention.

E J Lomas, of Camlad Ecology Ltd. has been asked by Wolverhampton Council's Landscape and Ecology Section to review the proposal as a biodiversity survey, considering the potential impact on habitats and the known great crested newt population in ponds on the site. Ed Lomas, the author of this report, carried out great crested newt surveys of the ponds in and next to the former WEC site and advised on the woodland restoration there between 2015 and 2021. It should be noted that in a previous employment, with NJL Consultants, he provided ecological consultancy services to the Environment Agency in relation to several flood defence and management schemes, working closely with the Agency's engineers and hydrologists.

The work as proposed may be permitted development and as of conservation management value, so might not require full Biodiversity Net Gain assessment under the Environment Act 2021, but the BNG Metric provides the current model for overall biodiversity gain and loss. Wolverhampton Council has continuing obligations under the Habitats and Species Regulations, The Wildlife and Countryside Act 1981 as amended, and the NERC Act 2006, which places an obligation on all local authorities to preserve biodiversity.

Scrub clearance for topographic survey:

This needs to be made specific. Most of the habitat around the proposed ponds would have to be classed as 'Lowland mixed deciduous woodland' under current habitat classification systems (UK Hab Ltd (2023), *UK Habitat Classification Version 2.0*). Small areas may be 'Wet woodland'. Scrub of various kinds is also defined in the classification; none of these match the habitat on site. From this, clearance of small shrubs, bramble etc. could count as scrub clearance, but if areas with numbers of trees over 70mm diameter (dbh) have to be fully cleared this becomes woodland clearance. This is established habitat over 30 years old, of high biodiversity value. If any habitat is cleared that then takes more than three years to fully re-establish, it has to count as habitat loss

Potential impact on amphibians – the nearest known breeding pond is over 200m from the proposed works. Studies have shown that great crested newts rarely move more than 100m from their breeding pond, especially when the pond is completely surrounded by high quality terrestrial habitat, as at this pond. The risk to the GCN population is very low, and the risk of an offence is very low.

However, some GCN do disperse over longer distances. This means that careful working practices would be needed. It also means that there is a longer term issue; the proposal is to create a series of small ponds, not necessarily all ephemeral, that might be used by GCN in future. Any new development within 250m of these ponds, for example around the school, would then require a full GCN survey, possible re-design, and possible licensing.

Arisings and mitigation:

Disposal of arisings in a woodland area is not advisable, as this can easily smother tree root systems. Previous surveys found that most soils under the grassland areas of the local part of Smestow LNR were disturbed and enriched, so there should be no long term consequence from spreading arisings in these areas, following localised soil surveys and testing of the intended excavated material for contamination. Restoration as moderately diverse grassland should be practical.

Mitigation for loss of established woodland would be problematic, if judged by BNG principles. A much greater area of young woodland would have to be planted, and if this was done over the medium value grassland at Smestow, the grassland loss would then have to be mitigated.

Overall impact on biodiversity:

The ponds, if true ephemeral ponds in terms of water body permanence, would not be ponds at all; they would develop as reedbeds or as willow carr, neither of which has the diversity of a pond in open ground. In addition, silt and organic debris would accumulate, impacting the flood storage value.

The real capacity of any storage ponds, hollows, swales or similar has to be considered. The volume is determined by three measurements:

1. The normal winter water level of the adjacent stream – any volume below this does not count, because it will already be full.
2. The level at which flooding out of the ponds will occur – remembering that the water has to get in, and without complex and well maintained engineering, it will get out by the same route.
3. The average surface area of the pond, between levels 1 and 2

Subtract level 1 from level 2, then multiply this by area 3.

If the total storage volume in the proposed ponds is insufficient to hold the added flow from several hours of heavy rain, above the discharge capacity of the culvert, during a generally wet period, then the work and environment loss will be pointless. It will simply delay the onset of flooding by a short time, and any bunds will then retain the flooding.

If the ponds can be drained continuously by a new discharge channel, then this channel itself could provide an adequate solution. There would be better places to dig new ponds.

It should be possible to measure flow rates fairly simply. There is a length of consistent deep channel downstream of the railway route, which could provide a good estimate.

There are alternatives to the proposed ponds, such as a multi-stage channel around the existing stream. This option would work with bunds. Any ponds dug into sloping ground would require extensive excavation beyond the pond outline, to provide stability.

Overall there is a need for careful measurement and topographic survey, followed by objective modelling. The actual need for and extent of scrub clearance before the topographic survey should be carefully reviewed. The conventional full topo survey might not be necessary before the modelling demonstrates the viability or otherwise of the scheme; a series of cross sections rather than a full contour plan would provide the required information.