

OXFORD LOCAL PLAN 2040 CONSULTATION

January 2024

Response from Friends of Lye Valley (FoLV)

(<https://www.friendsoflyevalley.org.uk/>)

To: planning@oxford.gov.uk

Introduction

The Lye Valley fen SSSI and LWS, Headington, Oxford, is a 14,000-year-old nationally and internationally rare and irreplaceable habitat, a tufa-forming, valley-head, alkaline spring-fen with M13 Black Bog-rush-Blunt-flowered Rush association, on 1-2 metres of peat. The northern SSSI section is in the centre of the Lye Valley Local Nature Reserve. The Lye Brook, two sewers and footpath run through the middle of the reserve. The southern SSSI section is 600m to the south, in private gardens adjacent to the Boundary Brook and Oxford Golf Course. The two SSSI sections are **1.5 ha of only 19 ha of this rare habitat left in all England**. They are linked, and the habitat extended, by a linear Local Wildlife Site which is an important part of the City's Green and Blue Infrastructure network. The whole valley is a biodiversity hotspot, supporting 22 species of plant rare in Oxfordshire of which 14 are on the England Red List. It also hosts ten species of rare and 27 species of nationally scarce invertebrates, notably soldier flies and glow worms, as well as thriving populations of reptiles and amphibians. Friends of Lye Valley (FoLV) are a group of people who carry out conservation work to restore, protect and preserve this internationally-important site for wildlife in association with private landowners and Oxford City Council. See our website at <https://www.friendsoflyevalley.org.uk/> for more information.

There are currently 276 members/supporters of Friends of Lye Valley.

Our comments are restricted to areas of the city in Eastern region which surround and support Lye Valley, Lye Brook and Boundary Brook.

Developments in the area around Lye Valley and its wetlands

Background. Being a groundwater-dependent, spring-fed wetland the Lye Valley SSSI and LWS biodiversity lives or dies by spring water-flow which also enables peat formation. This is water which originally fell as rain in the Headington and Wood Farm area on remaining green permeable soil of verges, gardens, playing fields etc. (see simple catchment sketch maps in the Appendix). Urban development soil-sealing has already deprived the fen wetland of a big proportion of its life-blood groundwater, meaning some spring areas are dry, negatively affecting both wetland biodiversity and carbon sequestration and storage in peat. Rain that should have gone into the rocks underground is now directed in road drains to the Lye Brook and Boundary Brook, where flash-flooding after rainstorms is causing extremely damaging erosion to the SSSI and LWS fen areas. **Flooding to roads and properties from the Boundary Brook in the Cowley Marsh/Florence Park/Campbell Road area is a consequence to humans.**

The North Fen section of Lye Valley SSSI **cannot yet achieve ‘Favourable’ Condition** as assessed by Natural England because of the problems of drying and erosion caused by urban development. This is despite the huge increase in habitat quality and biodiversity of recent years achieved by a 1000 hours per year of weekly conservation vegetation management by Friends of Lye Valley volunteers.

Every green area, however small, in the rainwater catchment of groundwater-fed springs and fens of Lye Valley is vitally important as a rain holding ‘sponge’. And for this role, it is vitally important they stay completely green over the whole area. **Ground and surface water protection zones are needed** for water supply to the rare fen habitat and **development with SuDS cannot ever fully compensate in water infiltration terms for loss of freely permeable green vegetated** areas. Whilst SuDS are useful in preventing flood risk offsite from a development, **they are inadequate to supply the groundwater needs of a hydrologically-linked fen site**. This is explained in more detail by hydrologist Dr. Curt Lamberth (cf. References) who calculated the rainwater catchments of Lye Valley fens under contract to Oxford City Council. His statement on page 39:

‘Groundwater protection zones are not fully mitigated by the use of SUDS therefore development within these areas must be restricted or eliminated.’ (Lamberth, C., 2007)

A simple explanation of how water supply to the Lye Valley fen is generated from rain can be found on our website and in the Appendix. In addition, Climate Change is now so severe that there is predicted to be **50% less summer rainfall in 25 years’ time**, putting the wetland fen under extreme water (and heat) stress each summer by the end of the Local Plan period in 2040. Climate Change predictions also say that **much heavier and more intense rainfall will be concentrated into the winter months**, when more of it will run off to surface drains which are directed into the Lye and Boundary brooks, damaging the Lye Valley fen by erosion; So far less water will infiltrate into the ground. Heavier, intense rainfall is already here and a major problem for the valley fens. There has been much grant-funded mitigation log-damming work by contractors and volunteers in Lye Valley North fen over the last 5 years to try and slow the damaging peak flow from surface road drains. **But increasingly, on a weekly basis, all our mitigation log structures are being damaged - or swept away - by high water flows, resulting from the current intense rainstorms**. This situation will only get worse in future with Climate Change greatly increasing storm intensity by the end of the Local Plan period. If strong policy protections in the Local Plan are not put in place now; the Lye Valley rare wetland with its high biodiversity could be destroyed; dried out and eroded away before 2040.

Local Plan ‘Sustainability Appraisal (SA) / Strategic Environmental Assessment (SEA)’ and Plan Policy G6 ‘Protecting Oxford’s Biodiversity including the Ecological Network’

In the Sustainability Appraisal document, the approach to building on greenfield sites (page 6) preferred by the Council planning team is stated as:

‘A1. Direct development away from greenfield sites, but assess whether there are any Green Belt or other greenfield sites that are not important for biodiversity, flood storage, or the rest of the Green Belt.’

It is an important omission (UNSOUND as it stands) not to state in addition that some greenfield sites (even if ‘poor quality’ in biodiversity terms i.e. just one species of grass) if within the Lye Valley fen rain catchment areas, are vitally important for comprehensive water infiltration to recharge the limestone aquifer. So development should be directed away from green aquifer recharge areas to preserve Lye Valley Biodiversity (to comply with **Policy G6**). We suggest an addition as follows:

*'A1. Direct development away from greenfield sites, but assess whether there are any Green Belt or other greenfield sites that are not important for biodiversity, flood storage, **aquifer recharge** or the rest of the Green Belt.'*

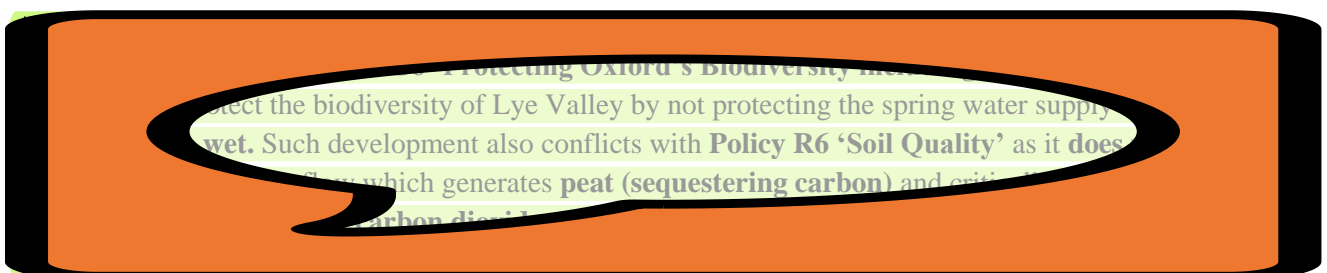
Some of these greenfield sites include **Residential green garden land** and these areas are also critically important for rainwater infiltration within the Lye Valley fen calculated rain catchments. We therefore object to the city council's stated **aim that:**

*'Planning permission will be granted for new dwellings on residential garden land' ... with only certain biodiversity provisos. If the garden is within the known calculated rainwater catchment zones of Lye Valley fens, development should be directed away from it. Even with SuDS there is always loss of green area. Simply requiring the application of **Policy G4 'Mandatory Biodiversity Net Gain'** in developing such green garden land is just not good enough when the higher and more important irreplaceable biodiversity of Lye Valley depends on water infiltration over the green area of such gardens. No 'Biodiversity Gain' in the remnants of any developed garden will come anywhere near compensating for the loss to greater value biodiversity in Lye Valley fens which get drier with development putting a hard surfacing 'lid' on a green rainwater catchment.*

Our stance therefore is:

- **NO** further urban development in any green area in the fen catchments should be planned to allow maximum ground-water supply to the fen to help it survive in the face of accelerating Climate Change
- Redevelopment of any area already built should incorporate re-greening of previously impermeable surfaces to restore lost rainwater flow into the ground
- Reduction of run-off to road surface drains which discharge to the Boundary or Lye brooks in any re-development of any built site
- No new connections to road surface drains that pour water into Lye or Boundary Brooks
- Innovative solutions to hold back and attenuate high water volumes in road surface drains which outpour damaging volumes of water to the Lye and Boundary brooks should be considered.

Friends of Lye Valley have submitted a request to the Council for a **Supplementary Planning Guidance** policy document including the above covering the Lye Valley and its catchment areas several years ago, but so far there has not been any such policy produced by the Council and this current Local Plan contains no policy changes that are helpful to Lye Valley as regards groundwater supply.



development boundary and that biodiversity on one area can be affected by what happens in a green area at some distance away, does not yet seem to have really sunk in. This comment applies not only to SSSI areas but also to Local Wildlife Site and Oxford City Wildlife Site areas which do not seem considered worthy to get any protection from offsite impacts. The whole section of **Infrastructure policies** is full of fine words and aspirations about protection of wildlife, but this is not reflected in actual wildlife protection when you examine the policy wording in detail – there is too much reliance on 'mitigation' for damage and for example translocation of reptiles away from any development site with an uncertain survival for them in future. **'Biodiversity Net Gain'** with development is only really in practice **'facsimile plant habitat net**

'gain' and always results in loss of wildlife area under bricks and tarmac with uncertain habitat 'recreation' which may be compromised by Climate Change (look at the mass death of young planted trees with climate change-induced extremely hot and dry summers like 2018 and 2022). BNG is a very inadequate proxy for total biodiversity as there is no assessment of invertebrates, fungi or any species other than vascular plants

(declared by the Council) with catastrophic wildlife declines nationally. No damage to any site with conservation status is acceptable.

Housing Targets

for employment should be used for high density very low-cost housing or there should be building over car parks or using redundant commercial buildings like Debenhams and the Odeon which should be converted to flats. All of this would reduce the pressure to build on greenfield sites reducing biodiversity and threatening the future of Lye Valley rare wetlands.

Specific Development Sites in the Local Plan, comments

Valentia Road site

This small green area did have a specific planning policy statement in the 2036 Local Plan but we see it is removed from the set of sites with such policies to an Appendix. This presumably means it is destined for 9 or fewer dwellings. We object to **any** number of dwellings on this site for the reasons explained above and for the loss of accessible green recreation space for local residents. Development of **any** number of dwellings on this site conflicts with Policy **GSP1** in the **Headington Neighbourhood Plan**. **These HNP policies, agreed and accepted by the Oxford City Council, were in accordance with the Council's own Core Strategy**. This is in accordance with the principles of sustainability and the Oxford City Core Strategy which aims to improve the quality of the public realm for both visitors and residents. It accords with **Core Strategy Policy CS21, which seeks to maintain the existing level of green space provision within any area of Oxford City and with Core Strategy Policy CS17'** (HNP page 23).

Adjacent to the eastern margin of Valentia Road Recreation Ground the Boundary Brook currently runs underground in a pipe. To reduce erosion caused by Boundary Brook at the Lye Valley South fen SSSI unit and to reduce flooding in the Cowley Marsh/Florence **Park**/Campbell Road area of the city, **a good alternative use of part of the Valentia Road green area would be to construct a temporary holding or attenuation pond. This would be designed to** intercept and hold back high flows after storms which are usually piped into the Boundary Brook adjacent, damaging the fen. The pond could become a positive enhancement of the park, like the ponds in Dunstan Park and the Lye Valley, attracting wildlife such as birds, flowers and butterflies and used for study by Brookes students.

Coolidge Close site

This green area also in an Appendix as destined for 9 dwellings or less is probably both on the permeable Headington limestone rock aquifer and within the Lye Valley North Fen water catchment in an important area for good rain infiltration to recharge the limestone aquifer and supply fen springs to the south. We object to any housing development with any soil-sealing at all at this green site for the reasons given above.

Plan Policy R6 Soil Quality

Whilst we welcome this new policy which sets out to protect soil carbon and peat as natural capital, we have many concerns about the policy wording and mapping which may make the Peat aspect of this policy **UNSOUND**.

Peat accumulates very slowly on a site with growing vegetation with a water level at or just above the surface for most of the year, which enables the anaerobic conditions which stop oxidation of dead plant remains. A **peat layer as shallow as 30cm can contain more carbon per same area as a tropical rainforest**. Wet vegetated areas with growing peat sequester carbon and help the city with its Net Zero Commitment. It is crucial all peat areas are kept as wet as possible to prevent oxidative CO₂ release. There is no mention in this policy of the **desirable aim to keep as much of the city's peat reserves wet** to prevent CO₂ release. We feel this aim should also be included. Above all, **peat should be part of a living, thriving wetland ecosystem** generating a hugely biodiverse habitat via the kind of dry peat restoration by re-wetting that Friends of Lye Valley have carried out extensively in fen areas over the last 8 years. The city should be ambitious for its peat-rich areas as a positive feature, and not view peat as a dead inert material that is a 'problem' for development. Wetlands restoration with all the biodiversity gain expected should be a priority wherever peat is found and development directed away from such areas.

We much regret that the City Council states it **will not rule out building on peat**. Given the importance of carbon store in peat reserves the following statement in R6 seems a start, but the volume stated before development refusal we consider **far too high at 10m³**:

'5.42 Any harm or loss from a proposal which equates to the removal or dewatering of 10m³ or more of peat will be refused'

One estimate (National Trust for Scotland, see reference) suggests the value of **172kg CO₂** per m³ of peat, so 1720kg of CO₂ (30-70kg of carbon) likely to be emitted from 10m³ of peat upon oxidation following dewatering. Considering the large potential CO₂ emission, we think the volume of peat removed or dewatered in the above statement should be much lower.

Peat Reserve mapping

FoLV currently **estimate that over 11ha of peaty soils** exist in the Lye and Boundary Brook areas. **This extent is not reflected in the current mapping of peat reserves in this Local Plan interactive map.**

Borehole data carried out by the Wildlife Trust BBOWT in 1986 mapping peat in Lye Valley areas has been available to the council in an Appendix in the current **Lye Valley Management Plan** held by the City Council. **This data appears not to have been accessed for R6 Peat reserves mapping in the Plan Map**. In addition FoLV peat specialist **Dr Judy Webb** has carried out extensive site walkover in the whole area. From all this information FoLV have devised an **indicative peat presence sketch map** which reveals deposits and forms part of the group's '**Vision for the Valley**' document produced in 2016 and sent into the Council, this appears not to have been used either. FoLV have encouraged a Brookes MSc student project on carbon storage in Lye Valley North Fen SSSI which has provided important data on Peat Reserves in this section and has provided an estimation of Peat and Carbon resource in the whole valley. This project (Haldar, 2021) has been made available to City Council Planners, again this information appears not to have informed peat mapping.

For convenience the FoLV peat area sketch map is presented here in the Appendix. The council's peat reserve map needs much change. The most defective areas of the current peat resource mapping in Lye Valley and Boundary Brook corridors are listed below.

Omissions and areas of peat inaccurately mapped known to us:

- OCWS 'Boundary Brook Corridor- Mileway Gardens –shown without peat but we know it is there.
- LWS Lye Valley and Cowley Marsh LWS alongside the Boundary Brook to the south west of Churchill Hospital- shown without peat but we know it is there.
- R6 Peat Reserves inaccurately mapped in Lye Valley SSSI North Fen unit and in the Northern section of the LNR/Lye Valley and Cowley Marsh LWS.
- R6 Peat Reserves off to the west of Lye Valley Road adjacent to Boundary Brook are inaccurately mapped in areas where we know there is no peat and not mapped in areas we know there is peat.
- R6 Peat reserves are inaccurately mapped both in Lye Valley South fen SSSI unit and in the Lye Valley and Cowley Marsh LWS adjacent to the Boundary Brook as it runs through the south section of Oxford Golf Course.

FoLV are very willing to work with the City Council in improving the mapping of Peat Reserves in this area of Oxford, and to help with advice on re-wetting and restoration projects.

Other Inaccurate Mapping of areas on the Local Plan Interactive Map

1. **Long gardens of houses off Lye Valley Road** down to the Boundary Brook (including the 0.5ha South Fen unit of Lye Valley SSSI) are mapped as Green Infrastructure network with the subtitle of 'Accessible Natural Green Space'. All this land is private, so this latter definition is definitely wrong for the gardens area including the South Fen SSSI unit. We have informed as many owners as we have contact details for of this error.
2. **Churchill Hospital Field.** The red line margin on the south side of the **Churchill Hospital site SPE6** is drawn over part of the Churchill Hospital Field which is mapped as an Oxford City Wildlife Site in the interactive map and is a Provisional Local Wildlife Site extension to 'Lye Valley and Cowley Marsh LWS 50M02'. This area of the field has been enhanced by construction of a large number of refuge mounds for slow worms (400) which were translocated to this field from a housing development in Littlemore some years ago. The red line needs to be moved back to the edge of the urban concrete road area of the hospital site to fit with the OCWS/pLWS mapped boundary.

References

Lamberth, C (2007) 'Investigation of the possible hydrological effects on the Lye Valley Sites of Special Scientific Interest and the riparian zones of the Lye and Boundary Brooks as a result of development on Southfield Golf Course A pre-EIA assessment' Available at on the Friends of Lye Valley website:

<https://drive.google.com/file/d/0B73oYRm5m97oYTdDV3YyTTd2Nk0/view?resourcekey=0-K8-fAFmDrmpC80Kt2NFF8Q>

But it seems to have disappeared from the Oxford City Council website; this link used to work but no longer do – We have requested its re-instatement:

<http://www.oxford.gov.uk/Direct/72511FINALAssessmentofhydrologicalimpactofdevelopmentonLyeValleySSSI.pdf>.

Haldar, D. (2021) 'Estimating the Carbon Stock in the Lye Valley's peat fen. MSc dissertation', Oxford Brookes University, Faculty of Health and Life Sciences.

Conserving Natural Capital: the Trust's peatlands, National Trust for Scotland. Available at: <https://www.nts.org.uk/stories/conserving-natural-capital-the-trusts-peatlands>

The Committee of the Friends of Lye Valley (FoLV):

Dr Judy Webb, BSc, PhD, Chair FOLV, 2 Dorchester Court, Blenheim Road, Kidlington, OX5 2JT

Dr Terry Wood, PhD, 50 St Anne's Road, Oxford, OX3 8NL

Heather Armitage, MA (Oxon) PGCE, 50 St Anne's Road, Oxford, OX3 8NL

Steve Dawe, BA, M Phil, 53 Bulan Road, Oxford, OX3 7HU

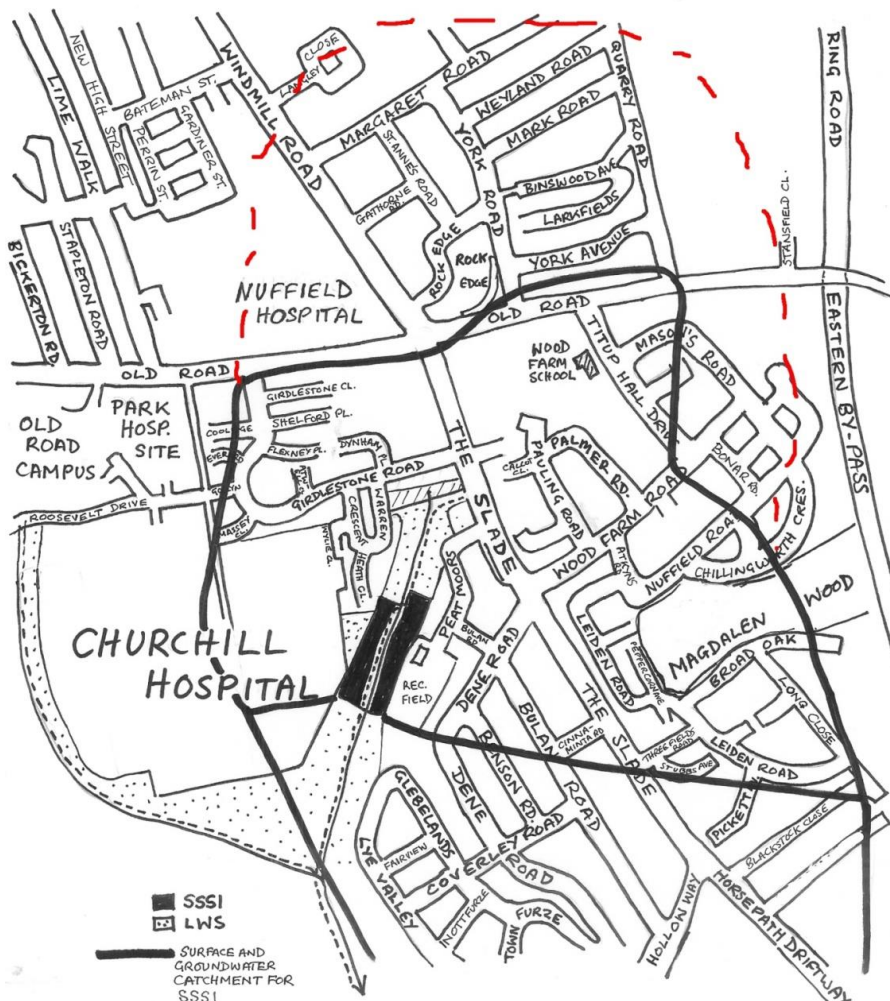
Dr Hazel Dawe, LLB, PGCTLHE, SFHEA, 53 Bulan Road, Oxford, OX3 7HU

Lucy Radford, BSc, MSc, 38 Catherine Street, OX4 3AH

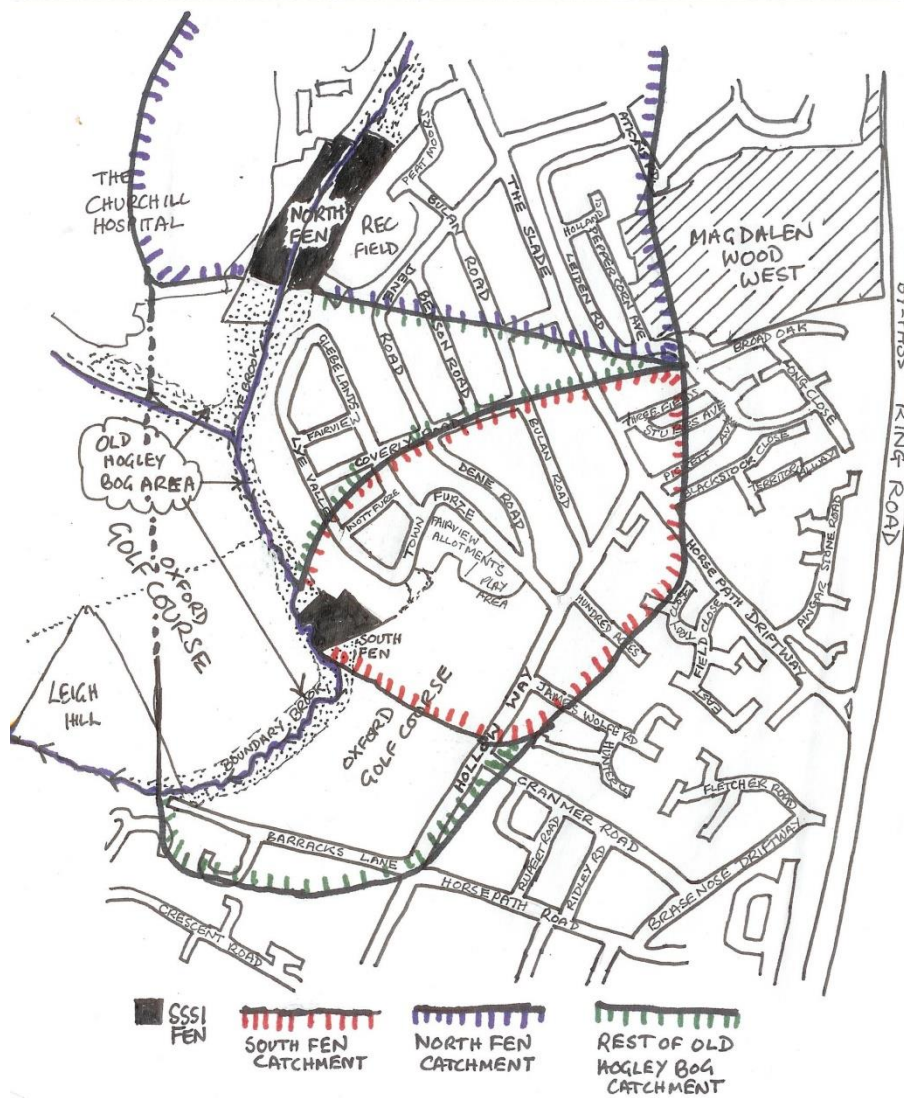
Jennie Hopkins HND

Website <http://www.friendsoflyevalley.org.uk/>

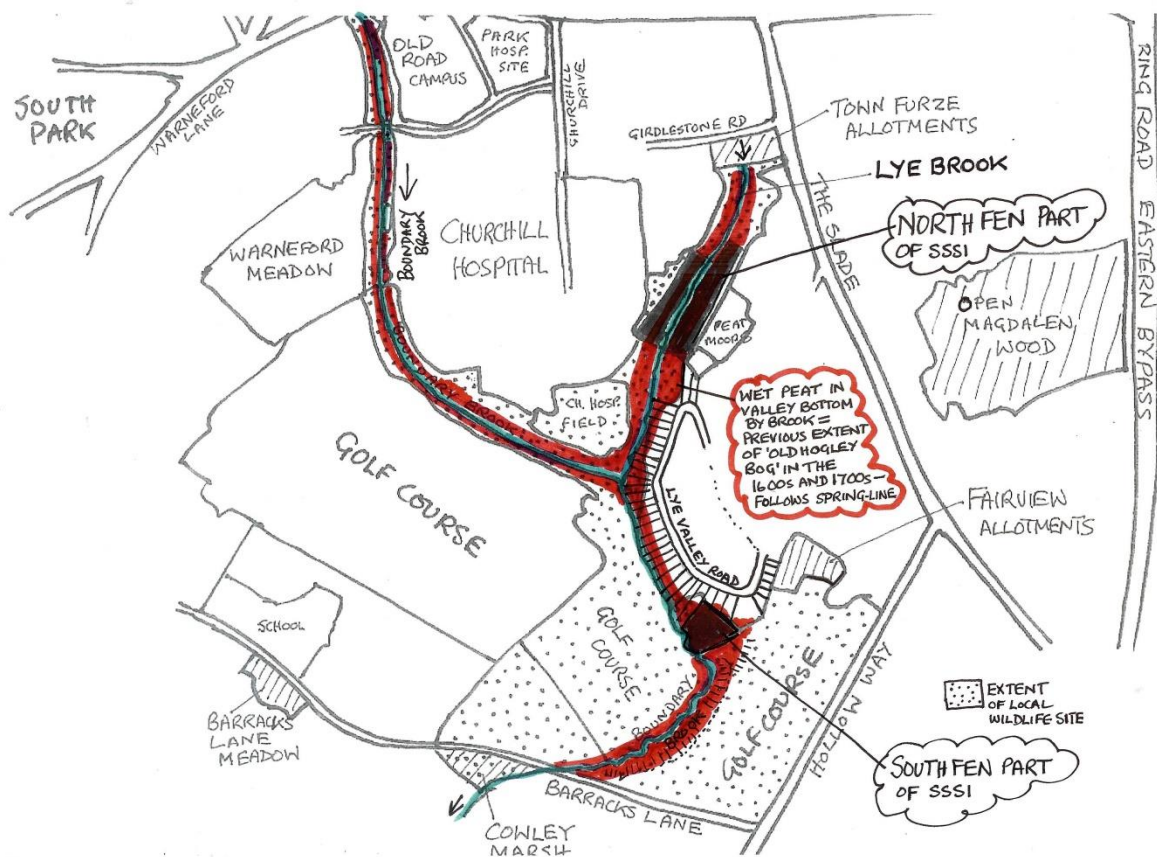
Appendix



1. Sketch map above of approximate calculated limits of the surface and groundwater catchments (combined) for the North section of Lye Valley SSSI and LNR fen (map produced by J A Webb from the detailed study by Lamberth (2007) with permission from that author. Red dashed line is Curt Lamberth's edit to this simple diagram showing his author's amended probable extent of the catchment northwards.



2. Sketch map above of approximate calculated limits of the surface and groundwater catchments (combined) for the South section of Lye Valley SSSI (map produced by J A Webb from the detailed study by Lamberth (2007)).

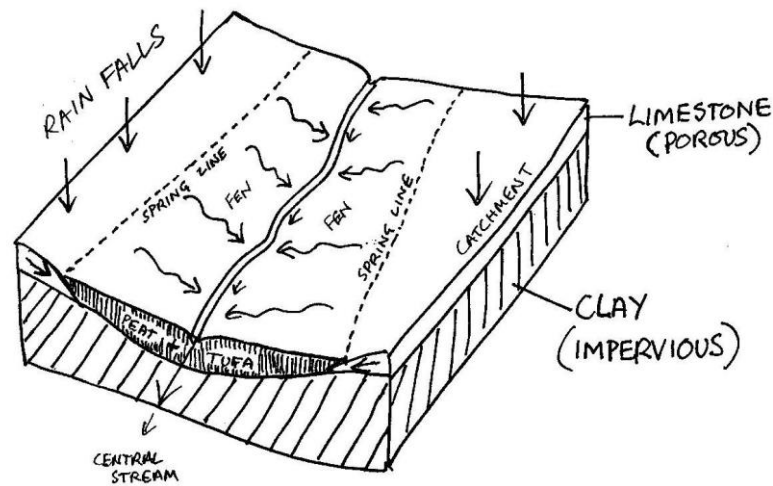


3. Sketch Map (above) with an estimation of the area of peat (red) at the surface from extensive site walkovers in Lye Valley and areas adjacent to Boundary Brook by dr. J A Webb. This is from part of the FoLV document 'Vision for the Valley' produced in 2016 (see FoLV Website).

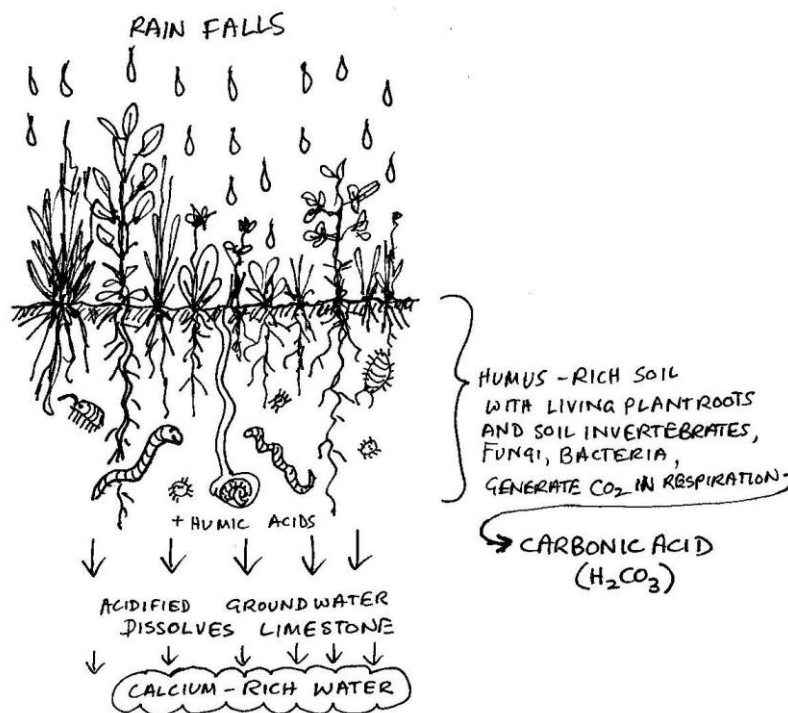
4. How does a Calcareous, Valley-head Spring-fen like the Lye Valley Work?

A **fen** is a type of peat-accumulating wetland fed by (depending on) mineral-rich groundwater or surface water

The **green areas** around the Lye Valley supply the **spring water** (groundwater) which is the life-blood of the Lye Valley spring-fen (green areas = the fen 'catchment' area). Such fens are **alkaline** wetlands and the spring water needs to be extremely high in dissolved **calcium**.

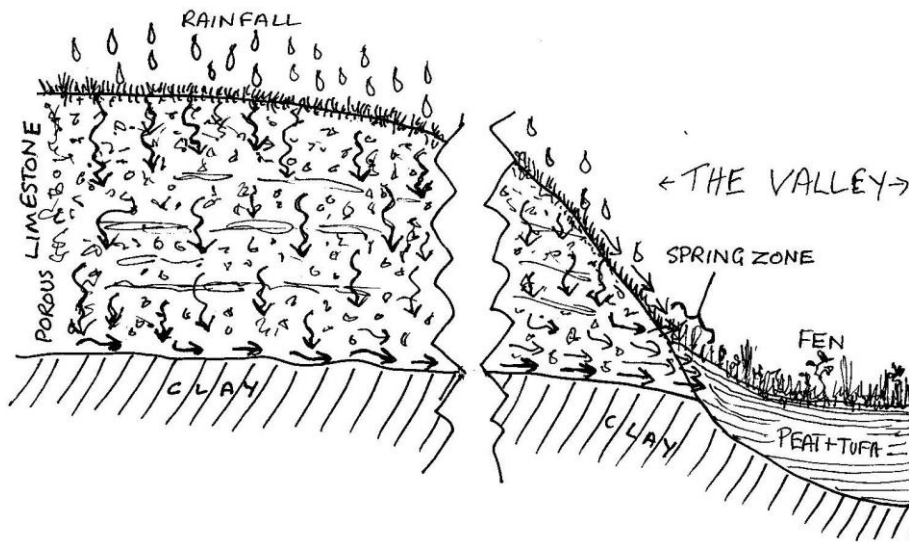


Rain enters the soil in the catchment, then percolates slowly into the ground and becomes **more acidic** from respiration (producing CO₂) of living plant roots and soil organisms; this happens only in soft vegetated green areas. This '**becoming more acidic**' by going through 'living' (active) soil is vital...



As the rain goes through the porous limestone rock below, the acidity helps calcium dissolve in the water (it becomes very '**hard**' water, the sort that makes limescale in your kettle) and it moves through the pore spaces in the limestone rock. When the now **calcium-rich water** reaches an impervious rock layer like clay, it cannot enter so seeps sideways, downslope towards the Valley.

Months **or years later** it emerges continually from the spring or seepage zones on the Valley slopes:



This continuous water emergence over thousands of years encourages wetland vegetation and the accumulation of dead plant remains to form **peat** - a black substance that is a huge wet **carbon store** (a 30cm deep peat layer over a certain area contains more carbon than the same area of rainforest). Keeping the fen wet encourages plant growth and peat accumulation, removing more CO₂ from the atmosphere, fighting Climate Change.

The calcium in the water causes alkaline conditions and deposits in the form of a crust of whitish limescale called '**tufa**' on the fen surface, encouraging a great biodiversity. The species community of plants and invertebrates (with many now-rare species) has been in place in the fen for thousands of years and is therefore **ancient**, older than ancient woodland. Good grazing or cutting and raking management keep the fen's turf short and biodiverse. It also prevents dominance by reed or invasion by willow trees.

As green areas in the fen's rain catchment are built on, so the essential water supply to the fen slowly diminishes (because roads, roofs and drives '**put a lid over the catchment**' stopping water entering ground and diverting it to drains). Past urban development means many spring/seepage zones around the fen are now dry. Green areas also give the calcium-rich water chemistry. Keeping the catchment areas – including Headington gardens - as green as possible, will keep the remaining fen springs still flowing and fen wildlife thriving. **This is vital in the face of the stress of increasing heat and drought with Climate Change.**

By Dr J A Webb, for Friends of Lye Valley, July 2022