

FoLV objection, 2 Dynham Place, Sept 2020 new 'Hydrological Impact Assessment, Surface Water Management and Maintenance Plan' by Stantec Project Ref: 45340/5003, August 2020. 02.10.2020

For Planning Application :

20/00463/FUL | Erection of 2 x 3-bed semi detached dwelling houses (Use Class C3). Provision of bin and cycle storage and alterations to landscaping. | 2 Dynham Place Oxford Oxfordshire OX3 7NL. Applicant: Oxford Housing Association

Summary

The Committee of the Friends of Lye Valley posit that the misleading and inaccurate report by Stantec not only fails to successfully address the issues of hydrological and construction damage to the SSSI fen, it highlights the fen's on-going fragility and vulnerability to all development within its water catchment areas.

Given that, when the Town Furze estate was constructed from 1954, neither this site nor the Warren Meadow site was built on, strongly suggests that neither a flooding, wet gully nor builders' rubble was deemed suitable for supporting family accommodation. The proposed piling, causing build-up of water behind it, will not only starve the fen but will undermine the houses, making them unstable by eroding their foundations. This application to build at 2 Dynham Place should be refused.

Analysis

After careful consideration of the Hydrological Impact Assessment Surface Water Management and Maintenance plan produced by Stantec(1), and the new proposed drainage arrangement (Appendix E drawing 45340-5003-201 ref 2) produced by Stantec, the Friends of Lye valley (FoLV) remain deeply concerned about the negative impacts of this proposed development on the Lye Valley SSSI and LWS spring fed fen habitats. We find no evidence in these documents to allay concerns and make us withdraw our previous objection of Mar 2020; **we continue to Object. This is not a safe site for any housing** and there will be more damage resulting to the Lye Valley North Fen. There is planned to be **no infiltration of rainwater from hard surfaces of 190m2 into the ground** to feed the aquifer supplying vital fen springs that are already much short of water. **All hard surface water in this development is to be run to the surface drain network that causes erosion** in the Lye brook in full volume as before (albeit slowed in delivery). A key point is that this is water that will be lost to the groundwater-fed fen springs, every drop of **which** is critical to survival of the fen habitat in the face of accelerating Climate Change.

Also, there has been no assessment or consideration of the likely important groundwater flows under the development site occasioned by placement of houses over the centre of the gorge of the Upper Lye Valley, a relic streambed and old fen habitat, now enclosed in gardens. The attenuation gravel tank proposed to receive surface water from roofs and paving (22m long, to 1m deep in the soil) has an impervious covering and is situated behind the houses where it will likely act as a blockage to soil water travelling south underground. However, **this** blockage is minor in comparison to the blockage to southwards-travelling groundwater in the gorge which will occur with the more than 17m long wall of contiguous piling to 10m depth necessary to support foundations and basement of these houses in this challenging location. Diverted and disrupted underground water flows will be the result with unknown consequences to the safety of these houses and the normal routes of water transit through the variable Beckley Sands to the fen spring areas south of this location.

Losing a significant proportion of its water feed, the Lye Valley SSSI calcareous alkaline fen, the rarest habitat in all England, will slowly dry out with loss of biodiversity and oxidation of peat, liberating tonnes of carbon dioxide, contrary to the spirit of the Council's recent declaration of a Climate Change Emergency.

Duty of Care by Oxford City Council for Lye Valley and future survival of the wonderful biological heritage In the Lye Valley

All of the Lye Valley North fen SSSI, LWS/LNR is owned by Oxford City Council and is a beautiful valley which is a site of exceptional habitat importance and biodiversity – once in a rural setting but now an enclosed and isolated island of wildlife hemmed in by urban development and suffering because of that. This is a time of accelerating Climate and Ecological Emergency. Climate Change threatens the death of the special wetland valley wildlife. Without strong complete protection of the rare fen habitat rainwater catchments, there is little hope future **climate heating** will not destroy all. None of the valley wildlife can be moved elsewhere, or compensated for by offsetting or biodiversity net gain in any development. All the wildlife is locked to the springs where they emerge. Here it either lives or dies on that spot. It cannot go elsewhere, but houses can. Duty of care upon Oxford City Council should extend to care not just for the limits of the site, but for the vital rainwater catchment extending beyond site limits and protection of the groundwater quality that feeds it (policy R.E. 4 in the Local Plan). Without this care and special protection a slow death of the rare habitat will result from drought.

The City Council paid for a hydrological report on the area by Dr. C. Lamberth in 2007. The site is in Lamberth's **groundwater protection zone** and this is his recommendation in conclusions:

' MITIGATION AND ENHANCEMENT OPTIONS - SUMMARY

Groundwater protection zones are not fully mitigated by the use of SUDS therefore development within these areas must be restricted or eliminated'

Oxford City Council is failing to apply the expert recommendations it paid for by allowing further development in the rainwater catchment of Lye Valley fens.

All the habitat management work carried out by no less than **4 different groups of conservation volunteers** is bringing the valley habitats back to good condition – a peak of beauty and biodiversity. Yet all this human input will be wasted if further development continues to damage the water supply to the habitat.

Do we want future generations to enjoy the beauty and be amazed by the plants from the Ice Age (10,000 years ago) surviving there? Or do we let it all die due to lack of vision and the assumption that every tiny piece of land in the Lye Valley catchment area must be used for housing, continuing the death by a thousand cuts already suffered by the valley wildlife, since it has dried in so many areas. The choice is stark and it is upon us now.

The reasons for our Continued Objection

The Lye Valley SSSI and LWS fens **are already severely damaged** by prior urban developments since the 1920s by –

- 1) tipped embankments of clay and rubble (made ground) burying springs and fen habitat in the northern fen area
- 2) lack of groundwater from the springs (40% catchment built over, rain to storm drains)

3) excessive run-off storm drainage from development scouring the Lye Brook, drying the fen adjacent.

No further damage should be acceptable by the **Council** who own the Lye Valley (see our full objection dated Mar 2020). The argument of supplying 'much needed housing' is often advanced by development applicants to justify building. We say what about the 'much-needed wildlife' for city biodiversity and for the mental health and well-being of the people of Oxford, and specifically:

- This development would deprive the Lye valley rare fen habitat of more '**much-needed infiltration**' of rain to groundwater.
- Run-off from the site goes instead to a surface drain which emits into Lye Valley brook, augmenting damaging erosion of fen as the brook runs through it.
- Groundwater flows under the 2 Dynham Place site to the fens are un-assessed but **will clearly be severely** damaged by development due mainly to necessary deep piling for foundations in a wet site.
- This is in addition to the damage to groundwater flows in this Upper Lye Valley area already **probably** occasioned by the illegal building just north of 2 Dynham Place now (after enforcement action) known as 195 the Slade.
- The houses on piles at 2 Dynham Place **may be unsafe** due to groundwater flow erosion around the piled foundations – **this is the worst possible place to build safe housing.**
- The Stantec surface water management plan is woefully inadequate to 'prove' no adverse impact from this development. **Its conclusions are invalid.**
- The development site is half a made ground embankment and half a wet pit/pool (anecdotal evidence from locals). **It beggars belief that the City Council** would offer this site to a housing association as a good place for family homes.
- The long garden of 2 Dynham Place could have a good alternative use as a valuable additional interception pond area, of benefit to the Lye Valley fens by adding to groundwater recharge and thus helping them survive climate change.

Conclusions

The obvious question is - why wasn't the site built on when Town Furze estate and Girdlestone Road as access were constructed? Too difficult a site because of water issues? It is hardly any more suitable now, as all building 'solutions' to the site problems will have an adverse effect on the **Lye Valley fens. Unavoidable ground conditions may make the houses unsafe in future.** We suggest the City Council offers Oxford Housing Association an alternative site outside the Lye Valley fens catchment and the site remains green and wet, becoming a positive help to Lye Valley groundwater recharge as suggested above.

Detailed Discussion

The Stantec report – Errors, omissions, lack of evidence, FoLV concerns not addressed

The new hydrological report by Stantec (1) contains a number of errors, a serious omission and unfounded assertions. There can therefore be NO confidence in its conclusions. The

onus of proof on the developer is to **prove 'no adverse impact'** on Lye Valley fens as in Policy R.E. 4 of the local plan. The Stantec report does not do this. **It fails.**

1) Errors

Confusing/misleading presentation

Section 3.1.3 Page 5. Figure 1 on page 5 reproduces what is stated to be the '**stormwater catchment**' areas contributing to the SSSIs from the Curt Lamberth hydrological report commissioned by Oxford City Council in 2007. This diagram in fact shows the **surface water catchment** from the Lamberth report, **not a stormwater catchment**. Lye Valley does indeed have a stormwater catchment; this is the artificial catchment area of the Thames Water 60cm dia surface drain pipe outfall that emerges at the valley head, an entirely different thing. The network of drains in this huge stormwater catchment is to be found in a report study by MWH Global (ref 3) and can be seen orange depicted in

<https://headingtonheritage.wordpress.com/the-upper-lye-the-secret-garden/>

Section 3.1.3 page 6:

Misleading on water contribution to Lye Valley

Quoting data from the Lamberth report, it is stated:

'total groundwater catchment for the Lye Valley is estimated to be 900,000 m2. The proposals set forward would see runoff from 190m2 of proposed hardstanding area change the method of surface water drainage, however it would still continue to contribute to the Lye Valley through direct discharge'(STANTEC)

'Contributing to the Lye Valley through direct discharge' sounds as though it might be useful, but it means only it adds to the erosive load of water running down the Lye brook which **drains** the fens. The brook does not contribute water to the fens today (lack of understanding?) – **it now drains them** because of **severe erosional deepening of its channel**. Only 40 years ago the fen and the stream base were almost the same level (according to locals); the stream bed is now gouged out to a depth of about 2m or 6ft in some places.

Catchment area for calculation wrong- major error

Then there is a calculation that: considering the catchment area of the Lye Valley calculated by Lamberth is 900,000 sq metres the 190m2 of hard standing at 2 Dynham Place therefore constitutes only 0.02% of the total catchment area, '*a figure that can be considered negligible in terms of groundwater charging*'.(STANTEC). **The calculation and conclusion are wrong.**

The 900,000m2 catchment Lamberth calculated refers to the whole of the Lye Valley from the north down past the south fen unit 2 and down to Barracks Lane, indeed an enormous area and is obviously considerably larger than the areas solely supplying the fens. **THIS IS THE WRONG AREA TO USE FOR THIS CALCULATION.** The only relevant water catchment area is that associated with the North Fen SSSI Unit 1 and north section of the LWS. This is therefore the northernmost section only of the Lamberth calculated catchment, a much smaller area. Limits to this catchment for the North Fen have been drawn by Lamberth and supplied to Natural England and FoLV at their request.

Considering that this relevant catchment is already over 40% built-over where roofs, tarmac and paving put a lid on the surface, preventing infiltration, only 60% remain green and freely **permeable. This the now functional catchment area** – obviously much smaller than the limits on a map. Crucially, the position of 2 Dynham Place can be shown to be disproportionally important in control of water supply to the west side of the north fen SSSI, already at risk from the Warren Crescent development.

The **relevant calculations** are discussed with clear visual presentation at:

https://headingtonheritage.wordpress.com/dam_of_dynham/

Importance of 'Upper Lye Valley' – completely unrecognised

Within this relevant green catchment northern area, the really important section of the catchment for water supply to the fens is in the newly discovered '**Upper Lye Valley**' gorge with old stream bed verified on the ground by investigations of Headington Heritage See:

<https://headingtonheritage.wordpress.com/the-upper-lye-the-secret-garden/>

The gorge feature is clearly apparent on historic maps and one in particular is extremely useful - the Town Furze Estate planning map (ref 4) at the time of its construction in 1954. This map has close contours and covers the area of 2 Dynham Place. This is also clear in the Ground investigation Services report (ref 5) -

'12.2 'The geology revealed during the invasive ground investigation is suggestive of a continuation of the Lye Valley geomorphology with a steep narrow type gorge feature which has been infilled with alluvial type soils (clays, sands and some organic peat deposits) overlain by made ground in-fill ostensibly to raise ground levels to form a level platform (rear gardens) and later engineered infill to form a platform for Girdlestone Road.'(GIS)

The Lye Valley fens need every single square metre of natural green in the catchment to continue to supply water by gentle infiltration to survive future Climate Change and city growth. In this context loss of this 190m2 area is not negligible. Infill development in the catchment will deliver, over time, 'death by a thousand cuts' to the Lye valley fens by reduction of their water supply. Bear in mind that uncontrolled activities of householders extending building into green gardens and/or paving front gardens for parking in this area of Oxford happens all the time and more may be expected. In addition there appears much granting of **retrospective planning permission** – people will build what they want and the Council will simply accept it (as the history of No. 195 The Slade – a very damaging development just north of 2 Dynham Place, demonstrates).

There is to be NO infiltration, despite claim

Section 3.1.4 seems completely confused and actually misleads:

'3.1.4 As shown in the layout drawing (Appendix E) and corresponding calculations (Appendix F).

The surface water drainage design is primarily served by a stone filled attenuation trench which will filter the surface water prior to controlled discharge to the surface water sewer. The proposed SuDS system utilises a stone-filled trench which will further filter clean runoff generated from the roof of the new house prior to direct discharge to stratum underlying the made-ground.' (STANTEC)

The last sentence is obviously wrong. There is to be no discharge to the ground strata from that stone-filled attenuation trench if it is discharging to a storm drain. The cleaning of run-off from roofs and paving provided by this stone filled attenuation trench sounds good, but in fact it provides no benefit to the Lye valley fens at all, because **this run-off does not go to the fens but goes to the Lye Brook, which in spite erodes and damages the fens** through bank erosion. This relatively clean water is lost to the fen springs.

We note that the geological investigations report mentions study and calculation of appropriate rates of water infiltration found in test pits on site yet there is **no explanation of the fact that infiltration soakaways are not now to be used** and the only mitigation designed for this development is merely attenuation of flow off the site to 'greenfield rates'. **What are the reasons for not using infiltration, as it is so valuable and a vital need to supply water to the fens?**

[We note 'greenfield rates' emerging from a narrow pipe can be just as erosionally damaging as any other fast flow from a pipe. Greenfield rates emerging over a broad front from an actual field (not a pipe) are a completely different scenario and would not be so damaging.]

2) Omissions

No Evidence for 'no harm'

Section 3.1.5 states a conclusion of **no harm to the fens without any actual evidence!**:

'3.1.5 The existing rainwater falling on site is estimated to infiltrate into a perched aquifer rather than supply the main groundwater aquifer which serves the SSSI. The proposals are considered to have no significant detrimental effect on the quality of quantity of groundwater feeding the fens' habitat.' **(STANTEC)**

No Evidence a Perched Aquifer unimportant

There is stated to be a 'perched aquifer*' on site but it is stated that it is not important as it is a deeper ground water aquifer that contributes to the fens. Where is the evidence for this assertion? A perched water table has been shown to exist under the nearby Warren Crescent green housing development site and this is very important for West side of SSSI fen spring flow support, adjacent. This 2 Dynham Place perched water table/aquifer could be crucial, **and** no evidence is presented to prove otherwise."). **It would be damaged by piling.**

*(*2.1.3 Groundwater was encountered in both boreholes rising to levels of 90.95m and 91.10m AOD. The encountered groundwater is present in the superficial deposits layer of highly compressible clay. For this reason, the groundwater encountered may be perched on the lens of less permeable clay (STANTEC))*

Groundwater flow evidence lacking, a serious omission

It is not only the loss of green area (and rain infiltration) on the actual site of 2 Dynham Place which is the main important point about water for the dependent fens to the south. The site is in a crucial 'conduit' position for the underground flow of water from the 'Upper Lye' green gardens catchment, through/under the site, under Girdlestone Road and to the Valley fen areas via the wet bottom in the Town Furze allotments - here there are at least 4 wells that utilise this groundwater flow. **We stated this really clearly in our objection, but this point has not been addressed at all.**

That this was once a very wet site is evidenced **by the** Town Furze estate construction in the 1950s. At this time the builders inserted a **northwards-running** branch of the Town Furze surface water drain system. **It extended from Girdlestone Road a distance north in the bottom of the gorge of the Upper Lye Valley and directly under the proposed position of these two houses (clear on the 1954 plan of the Town Furze Estate on the planning website- ref 4).**

Obviously the drain was to take away water which would have moved south in the gorge of the Upper Lye Valley, and then pooled above Girdlestone Road (the embankment acting as a dam blocking its passage south). No one sensible would consider building a house in such a risky naturally wet position. In this new housing proposal, this surface water drain is extinguished under the two houses and diverted around the houses to the west side, then under Girdlestone Road to re- join the surface drain that eventually empties water into the Lye brook south of the embankment below Town Furze allotments. This drain cannot be removing all the south-wards flowing **water from the Upper Lye Valley**. There will be diffuse flow over a broad area around this collecting pipe. Local people tell us of water and boggy **conditions after rain in the garden of this site** and also 4 Dynham Place. This is not a new phenomenon. It is an area of old wet fen habitat as evidenced by peat in the site boreholes: fen habitat that is now lost to the Lye Valley nature reserves.

Flooding risk to the houses

'1.1.4 The site is located in flood zone 1, an area of low probability of flooding...'
(STANTEC)

This is just not true.

In the report there are no studies and no data on water flows under the 2 Dynham Place site, which is over the old stream bed of the Lye brook. Bore hole BH1 is reported to have been set up as a groundwater monitoring station. **Where is the monitoring data from this borehole over wet winter and dry summer to give information about groundwater temporal flow variations?** Spot measures of 'water strike' on the day the boreholes were driven into the ground in spring 2019 (at levels of **90.95m and 91.10m AOD**) are inadequate evidence of the range of groundwater heights to be experienced by this site. At what height was the groundwater strike in this borehole in the **wettest February on record in 2020?** We just don't know enough about water levels year round on this site, they could easily rise higher than those found.

Important underground flows across this site north- south towards the fens will be seriously affected by this development. For example:

- 1) By the **gravel filled attenuation trench** (drawings 45340/5003/SD002 and 45340-5003-201) which would be 22m long by 1m wide and 70cm deep but seated under 30 cover soil so situated down to a total depth of 1m into the soil to the north of the houses. This trench **will be** completely impermeable to site water flows (surrounded by impermeable membrane). Thus it will act as a barrier to natural soil water flows from the north in the top 1m of the site soil. Blocked water will accumulate behind the impermeable structure. It will then flow sideways around it at either end of the 22metres where it will meet the next barrier:
- 2) **The houses' foundations** (for safety) are to be supported on a length of complete underground piling wall 10m deep of **'secant contiguous or diaphragm wall bearing'** (Ground Investigation Services report section 12.3, ref 5) which will be the length of the two houses west to east a distance of just over 17m. This is going to stop/divert nearly all the underground water flow going north- south through the 2 Dynham Place site. Blocked water will sit next to the piles at back of property or try

and find a way round and is likely to flow round the two ends of the piling wall, or be forced underneath the piling, possibly causing erosion as it proceeds southwards in entirely new routes to that used currently.

- 3) **OR the piles**, driven down through and thus breaking impermeable limestone layers or limestone islands (doggers) in the Beckley sands, will provide perhaps a new routes for the water running in the quoted '**perched water table**' at higher levels to leak down to lower levels and travel in more permeable sands, again in completely new unpredictable routes to current flows.

In short, after development; the water flows under the site will be completely messed up with unknown consequences to the hydrology of sites to the south, including SSSI and LWS fens and Town Furze allotments above the north fen. Over time **they may simply cause the houses' foundations to wear away and collapse.**

Within the North fen SSSI unit 1 (area 1.8 ha), the sloping West Fen has much the largest area of wet fen and water flows to this side of the site will be disproportionately seriously affected. To understand this we recommend the reader to the following analyses where all discussed above will be clear with good visual images.

<https://headingtonheritage.wordpress.com/lye-fen-another-death-blow/>

https://headingtonheritage.wordpress.com/dam_of_dynham/

We trust that you will take these concerns extremely seriously and refuse the application to build houses at 2 Dynham Place.

Yours sincerely

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

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

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

Steve Woolliams, HNC Applied Biology, 103 Dene Road , Oxford OX3 7EQ

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

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

Jennie Hopkins, HND, 8 Rock Edge, Oxford OX3 8NE

Committee: Friends of Lye Valley

References

- 1) Stantec '2 Dynham Place Hydrological Impact Assessment, Surface Water Management and Maintenance Plan'. Project Ref: 45340/5003 | Rev: - | Date: August 2020
- 2) Groundsure Revised Drainage Report Appendix E Proposed Layout Drawings 45340-5003-201 Proposed Drainage Strategy

3) 'Thames Water Utilities Limited Lye Valley Brook SSSI Catchment Investigation, Final Report RT/EWI/CH11/216/01.00 41518877 February 2012 (MWH Global report Prepared for Thames Water and Natural England)' Specifically the – 'Lye Valley Brook SSSI – Modelling Report v2.0, Appendix A Modelled Network (Drains)'

4) Town Furze Estate Map 1954 – Original Plan and topology of Town Furze (Warren Crescent etc) estate – Oxford City Council (Planning Portal)

5) Ground Investigation Services (southern) LTD. Report S. 5304. Oxford Housing Association. Report on Phase I Desk study and Phase II Site investigation at 2 Dynham Place. March 2019 Report No. S.5304