

To: planning@oxford.gov.uk

Re: Application number 13/01555/CT3
Land East Of Warren Crescent Oxford Oxfordshire OX3 7NQ.
Erection of 10 x 3-bed dwellings (use class C3) together with associated car parking, cycle and bin storage. Diversion of public footpath.

Objection from: Dr Judith A Webb

Date: 06.08.2013

I keep being told these 10 houses have to be built on this site because the land has been allocated for housing in Oxford City Council's adopted Sites & Housing Plan. I do not dispute the fact that housing is needed. However, the houses do not have to go on the small greenfield area at Warren Crescent. The decision to schedule this site for housing was wrong.

There are three reasons for my objection:

1. Loss of green area for residents

This development would remove a green area which is used for valuable informal recreation by the people living nearby. Many of the adjacent residences are flats with no gardens.

The importance of access to local green space is indisputable. A European Environment Agency assessment of the health benefits of forests and green spaces cites a study that concluded 'Every 10% increase in green space is associated with a reduction in diseases equivalent to an increase of five years of life expectancy' (2nd paragraph under 'The wider health benefits...' at <http://www.eea.europa.eu/articles/forests-health-and-climate-change/>).

I have seen that it is a safe area where children can kick a football about away from the danger of a road. Play structures for young children exist on the verge to Girdlestone Road but there is no space there for older children. It could be said that residents could use the adjacent Lye Valley nature areas for recreation but in practice they do not, because it is mostly a wetland, with dense scrub/trees. This is of no use to children who want an informal kick-about or a family wanting to picnic on dry grass under a shady tree in hot summer. What happens is that bored children gravitate to the adjacent nature area and engage in arson, causing habitat damage.

The demand for recreational space could only increase with the arrival of 10 more families, putting further pressure on the nearby nature areas and depriving all residents of an easily accessible, level, dry, grassed recreational area.

2. Increase in public pressure on the nature areas nearby

The arrival of 10 additional families would most likely mean a few more dogs needing exercise and therefore more dog mess, i.e nutrient enrichment; a few more cats to eat the birds and reptiles (grass snake, slow worms, lizards); a bit more light pollution to make it difficult for the glow worms to find each other on a July night; certainly a lot more fly-tipping of anything from garden clippings to metal objects over the back fence of the properties directly down the bank into the springs of the Local Wildlife Site. The wildlife site is already heavily afflicted by such tipping and is only slowly being cleared of the alien Japanese Knotweed, which came from garden rubbish dumped previously.

All small effects, perhaps deemed not worth worrying about - but see the 'Death by a Thousand Cuts' comment below.

3. Potential damage to SSSI and LWS sites in the long term

This proposed development would be immediately adjacent to the Lye Valley SSSI within a Local Nature Reserve (LNR) and Local Wildlife Site (LWS). It would be situated directly on the fen catchment (see detail on Catchment Protection below).

I am not a neighbour of this site. I am an ecologist who has studied the wildlife of these areas intensively for the past 10 years.

Previous urban development has been a very poor neighbour to the fens and has definitely been the cause of damage to them. It is remarkable that so much good quality habitat has survived, although there have been species losses, but the valuable areas that remain are critically small.

How valuable and rare a habitat is it? Extremely – see comments on Page 4 under Point 2: 'Just How Valuable is this Wetland'. The remaining valuable areas have survived because high-quality water still emerges from springs and a helpful management regime is in operation. Previous urban development is the cause of some of the decline in quality of a lot of the site, the reason why now only some of it meets the SSSI standard; the degraded portions have only LWS/LNR designation. Remediation of these poorer quality areas to higher grade fen is possible and will be happening soon with the help of local volunteers – Friends of Lye Valley.

All good-quality nature areas need a green buffer between the site and urban development. This development of 10 houses would remove most of the protective green buffer area to the SSSI and LWS on the west side of the valley and would prevent water infiltration to the aquifer that feeds the vital springs. A mitigation SUDS (Sustainable Urban Drainage System) for this is suggested in the plans. A roof and paving water interception system and infiltration swale is proposed by which water that would otherwise be taken away by drains would be returned to the soil.

Here it is worth remembering that 'mitigation' merely means 'making a damaging situation less damaging to some degree' and NOT 'making the situation as good as it was before. My major objection here centres on whether this mitigation would actually work *indefinitely* to protect this valuable wetland. When first installed, it would work (though perhaps not to the same extent as a greenfield site) but certainly it would depend absolutely on frequent and expensive maintenance to keep it working. Would this happen? Consider the following:

- All SUDS require regular maintenance to work at full efficiency. With no maintenance, efficiency of SUDS declines due to drainage pores in permeable paving silting up, as they become clogged by dust. No SUDS would be as freely permeable FOREVER as the greenfield would be, because new rainwater channels continuously form in a greenfield as a result of root and worm action (infinitely renewable infiltration, i.e. a truly sustainable system). This never happens with SUDS, channels only ever clog up. The permeable paving would need the silt sucked out of the pores annually.
- The swale (shallow channel 50m long, 2m wide, 40cm deep with a limestone bottom) would receive run-off water from the houses after a storm and the water would slowly sink into the ground under the swale. Or rather it would, if the swale was not base-compacted, silted-up or filled with leaves from the overhanging row of large field maple trees (these are not shown on the plans). The swale would need cleaning out every year, and for some time before being cleaned, it would not be working efficiently.

The infiltration of water is important because water has to get down to the limestone underground to produce the essential alkaline environment for the fen when it emerges from the nearby springs – see Comment on Water Purity and Chemistry below.

- The swale would need regular short mowing and vegetation control and removal of any fly-tipped objects to ensure functioning.
- Compaction of the base of the swale by trampling would need to be avoided, so people/dogs would have to be fenced out of the swale area. Because of its uneven topography the swale might be attractive to children for play and BMX-type bike sport. This exclusion might

not go down well with the locals, especially as this would be the last bit of their green area that they could access.

- If any compaction were allowed to occur, the swale would need its base regularly spiked to re-create drainage channels.
- This would be an unlined swale. As envisaged, it has to have no liner in order to allow infiltration. This leaves the aquifer under the swale vulnerable to chemical pollution from cars parked in front of houses. Spillages of petrol, diesel, engine oil or other hydrocarbons are to be directed by the interception system via a pipe to the swale, and thence into the soil to the aquifer which feeds the springs. Furthermore, one deliberate dumping of waste engine oil into this swale would be all that would be needed to seriously pollute the aquifer underneath. An oil filter could be installed in the pipe, but this would need to be regularly inspected and changed if necessary when contaminated. Can there be any surety that this would happen?
- Swales were designed for dealing with the problem of excess run-off water and the prevention of consequent flooding. In this situation a swale would be used also for a different purpose, i.e. to re-supply a critically important aquifer with pure water. Frankly it seems no more than a supposition that this would work without problems.

Where is the scientific proof that such a system can reliably work to re-supply a critical aquifer with pure water - and for ever?

- For this swale to cope with run-off from these 10 houses, the entirety of all the back gardens would have to remain green and freely permeable FOREVER. How could impermeable paving/extensions into the green back gardens be prevented in the future? Even if these properties remained rented forever, who would inspect regularly and insist on removal of any hard surfaces the occupants had installed?
- Skimping of any of the above measures due to lack of funds (City Council, County Council - who will pay? Who will check that it is done correctly?) would compromise the survival and purity of the spring water and the survival of the fens.

There is just not enough information given in the SUDS hydrological mitigation proposal (permeable surfaces and roof water to go to an interception pond or swale) to be SURE that NO damage to the Lye Valley fen SSSI adjacent (and the LWS/LNR) would happen in the future – in the long term, in perpetuity, not just in the next couple of years.

Lye Valley Background & Further information

1. Catchment Protection

Protection of the catchment of any ground-water-fed wetland is vital. The 'catchment' is the area of land upon which rain water falls, percolates into the soil and eventually emerges again in a spring which feeds the wetland. This catchment area can extend quite a long way out around the site. The catchment of the springs on the west side of the Lye Valley North fen extends out to under Warren Crescent, Girdlestone Road, Dynam Place, Heath Close, Wylie Close and the eastern third of the Churchill Hospital. If these areas were not already developed and under housing and roads, the recommendation for the survival of the fen would be that all this area should never be developed.

Building on a wetland's catchment is very nearly as bad as building directly on the wetland. These rare, calcareous, valley-head fens in the Lye Valley depend critically on their catchment, which provides spring flow. There are two reasons:

A. Water volume – life or death to wetland

Without a continuous supply of water at a good rate, so that the surface of the peat is wet all the time, the rare wetland will die. It will change to a different, drier, habitat, like damp meadow, and will lose its special plants and animals.

Springs depend on an aquifer (reservoir) of water underground in porous rocks. This reservoir ensures the springs run abundantly all year round, even in dry weather. The very special wetland plants and animals cannot stand even one week of 'too dry'. An extreme drought may happen rarely, but 51 weeks of the year with enough water and one week with none will be catastrophic. How would you manage without water for a week? Extremes matter.

The quantity of water in the aquifer controls how well the springs run. If water is taken from the aquifer (e.g. borehole for drinking water) less is left and the springs reduce or dry up. If rainwater is prevented from entering the soil in the 'catchment' and percolating down to the rock aquifer (due to development, impermeable tarmac, housing, paving), less water gets to the aquifer and the springs will reduce or dry up. Because of prior development the springs must be producing much less than they used to do; already some areas are dry that used to be wet.

B. Water purity and special chemistry

The plants and invertebrates of the calcareous (limy) fens are adapted to very high calcium amounts and very low Nitrogen and Phosphorus (plant nutrients) in the spring water. Any deviation from this special chemistry will unbalance the ecosystem and lead to loss of species. To get this special chemistry, rain water needs to percolate through humus-rich soil and become slightly acid from absorbing CO₂. Then, as it percolates further down through the limestone, this acidity enables the water to dissolve some of the rock, resulting in calcium going into solution in the water whose pH rises to 7.5-8.0 or more as it emerges in the spring. It takes time spent in the aquifer for the water to acquire this special chemical state of high alkalinity and loading with calcium. When the water emerges from a spring, calcium precipitates on the vegetation like lime in a kettle; this is 'tufa'. Tufa locks away phosphate, so the availability of this nutrient is extremely low. Rare plants of this habitat are adapted to a 'diet' that's low in nutrients.

2 Just How Valuable is this Wetland?

The Lye Valley has rare wetlands fed by groundwater known as alkaline fens. They are the rarest type of fen habitat, calcareous (limy) valley-head spring-fen, a priority for conservation and the one where nationally there have been huge losses to date. In this fen habitat the health of the plant and animal (invertebrate) community depends completely on the quantity and quality of water issuing from springs, as well as correct management. The springs have been running for thousands of years, building up wet peat deposits of historic significance.

Moreover, it may not be generally known that the Lye Valley fen is a shining jewel amongst such calcareous fens when compared to other remaining fens in Oxfordshire and the southeast generally. My personal research over the last 10 years has revealed that many Oxfordshire fens and their comparable East Anglian fens have been lost, damaged or irretrievably degraded, so their flora and fauna are no longer the equivalent of the valuable community that still exists in the Lye Valley. Only the SAC/SSSI fens in the Cothill/Dry Sandford/Wootton area in Oxfordshire are better in a local context - but the Lye Valley contains some rare plants that even Cothill fens SAC have lost.

Another indication of the value of the Lye Valley is that 22 plant species that are rare in the county are still to be found here. The Lye Valley fen's flora have great historic significance, as they were the subject of study by the earliest botanists in Oxford University. Descriptions, actual specimens, and accounts of the flora of this site exist from as early as the mid-1600s and remarkably the plants are still living there today, when they have been lost from most of the other places where they used to occur in the county.

The flora and fauna have been saved mainly due to the excellent management of Oxford City Council's Countryside Team, Natural England and local volunteers over the last 20 years. It is a site to be proud of, a rare survival of a wetland biodiversity hotspot within a city, thus possibly unique.

For more about the habitat, animals and plants of the Lye Valley fens see:

Photo set from a walk in the Lye Valley at:

<http://www.flickr.com/photos/46225097@N07/9403128476/in/set-72157634856745937/lightbox/>

Talk '*The Wildlife of the Lye Valley and Hogley bog: part of Oxford's Rich Natural Heritage*':

<http://homepage.ntlworld.com/marilyn.cox/Wildlife%20Group/Judy%20Web%20-%20OCS%2017%2001%202013.htm>

Talk "*Early Oxford Botanists and Rare Plants of the Lye Valley*":

<http://homepage.ntlworld.com/marilyn.cox/Wildlife%20Group/Judy%20Web%20-%20Rare%20Plants%20Gp%2024%2001%202013.htm>

Article by Judy Webb published in the Summer 2012 edition of *The Weasel*, the Newsletter of Oxford Conservation Volunteers:

<http://www.ocv.org.uk/weasel.php?n=TheLyeValley&t=1>

3 The shifting baseline

Water-deprivation and water pollution may not kill a wetland immediately. Damage may be slow and insidious so that it is not noticed until it is severe, or people may forget how good it used to be and think that what is there now is OK. Maybe there are no good records of exactly how good it used to be anyway. Each generation adjusts to a more degraded environment than the last and thinks what it sees is normal (the shifting baseline). In the Lye Valley we do have some records of how good it used to be and what used to live there. There have been a great many losses of plants and animals already. Now is a good time to stop allowing further damage.

4 The 'Death by a thousand cuts'

It is the frequent observation of wildlife experts I know (plant and invertebrate) that many SSSI quality habitats are changing over time (indicated by the slow loss of species), which means that the whole valuable assemblage is gradually deteriorating. Maybe no one, large, catastrophic event causing major damage is responsible, but bit by bit damage is occurring – a little pollution here, a little water abstraction there, a small development here, a really unusually dry spring there, combined with some arson. Slow death by a thousand cuts is happening. It may be difficult to notice it happening until suddenly a search for a species that used to be common comes up with zero numbers. Climate change often acts in concert with small abuses brought about by us humans to provide the final nail in the coffin. Development deprives a spring of water, erosion dries the peat and then climate change lands four dry hot springs in succession on the area – result: a vulnerable wetland plant or animal dies out.

Cumulative minor changes (all maybe 'allowed' because damage is small) can add up to just as bad a situation as one incident of major damage (which would not be allowed). How many minor tiny damages before a site becomes worthless in conservation terms?

The Lye Valley's very special and rare wetlands have already taken a great many 'cuts' as a result of the surrounding urban development that has engulfed it since the 1930s. Erosion, pollution, fly-tipping, alien species, arson, drying, lack of management Add to this the invisible 'cut' of continuous diffuse nitrogen pollution from NOX fumes from vehicle exhaust. This air pollution is high in the city today and has the equivalent fertilizing effect of a yearly application of manure everywhere. This is to an ecosystem which depends critically on N input being low.