

# Comment on the *Additional Air Quality Evidence* Paper for VoWH Local Plan Part 2

The VoWH District Council has published a report entitled ‘Cumulative Impact of Planned Growth on the Air Quality Management Areas’ as part of the evidence base for the Local Plan Part 2 (LPP2).

We maintain that a conclusion of that report – that the impact of growth on the Marcham Air Quality Management Area (AQMA) is negligible – is incorrect because it is based on an underestimate of the additional traffic from LPP2 developments which will pass through the Marcham AQMA. On the contrary, we believe that the cumulative impact of growth, particularly but not solely, from developments in the Kingston Bagpuize – Southmoor (KBS) area on the Marcham AQMA, will be substantial.

Our conclusion is supported by the independent air quality assessment which accompanied an outline planning application for development of the LPP2 allocation on Land East of Kingston Bagpuize (LEKB), and the opinion of the VoWH DC’s own Environmental Health Officer.

We have no comments to make on the impact of growth on the other AQMAs in VoWH District.

## Background

Currently around 13,500 vehicles using the A415 pass through the centre of Marcham village per day. The levels of nitrogen dioxide (NO<sub>2</sub>) at parts of the AQMA exceed the Air Quality Assessment Level (AQAL) of 40 micrograms per cubic metre. The average monitored four-year (2014 – 2017) annual NO<sub>2</sub> concentration at 10 Packhorse Lane was 48.4 micrograms per cubic metre<sup>1</sup>.

The sensitivity of the issue of the Marcham AQMA is illustrated by the submission<sup>2</sup> of the District and County Councillors for Marcham to the publication version of LPP2:

*“We are delighted that the Vale has finally taken full account of the AQMA running through Marcham and have removed 410 houses due to be built east of the village. ... Surely the argument NOT to build 410 houses also applies to the 90 houses, **especially as nearby, Kingston Bagpuize continues to expand sending much of its west-east traffic through Marcham’s AQMA...**”* [Our emphasis].

After consultation, an allocation of 410 houses north east of Marcham, initially included in LPP2, was withdrawn on the grounds that the additional traffic from this allocation would have an adverse effect on air quality. However, the allocation was on the east of the village and most of the traffic would not have travelled through the centre. Given the distribution of destinations (primarily Abingdon, Oxford and Science Vale) only of the order of ten percent of journeys would have been west through the village, amounting to an increase in the traffic through the AQMA by less than 200

<sup>1</sup> Data from VOWH Air Quality Annual Status Report, 2018.

<sup>2</sup> Regulation 19 consultation response to published version of LPP2 by R and C Webber, 15 Nov 2017

vehicles per day or 1.5 percent of the 2016 Average Annual Daily Flow (AADF) of 13503<sup>3</sup> vehicles per day. Nevertheless, the allocation was removed from LPP2 on the grounds of its potential adverse effect on air quality. An allocation of 90 houses to the south east of Marcham was, however, retained in the published version of LPP2.

We presented written<sup>4</sup> and verbal evidence to the public examination of LPP2 that traffic from the committed developments in the KBS area and the allocation at LEKB would lead to unacceptable congestion at the A415/A338 Frilford junction. The VoWH DC (in conjunction with Oxfordshire County Council) acknowledged our arguments and proposed MM28 to LPP2.

We also argued that most of the additional traffic from the KBS area using the A415 would pass through the Marcham AQMA and result in an unacceptable deterioration of air quality. The impact of the additional traffic was roughly quantified as being equivalent to the building of 530 additional houses in Marcham.

### Our estimates

Whilst the quantification of 530 equivalent houses was sufficient to indicate that the cumulative effect of the developments in the KBS area on air quality in Marcham could not be dismissed, it understated the true size of the effect, which is best seen by considering the additional traffic flows.

*Table 1 FLAG estimates of the additional traffic flow through the Marcham AQMA 2016 – 2026, not including contributions from LPP2 allocations in the Hanneys, Dalton Barracks or Grove*

Source	Average Annual Daily Flow	
AADF 2016	13503	DfT estimates from 2012 count
Committed developments in KBS	1079	560 houses committed from 2016
LEKB allocation	1436	700 houses proposed in LPP2
Growth in background traffic 2016 - 2026	2701	2 percent / year x 10 years
<b>Total AADF 2026</b>	<b>18719</b>	39% increase 2016 - 2026

Table 1 shows our estimates of traffic flow through the Marcham AQMA for 2026. The developments at KBS and LEKB would result in an additional daily flow of *circa* 2500 vehicles per day in 2026. If an expected two percent annual growth<sup>5</sup> in background traffic is included the additional flow would increase to *circa* 5200 vehicles per day. Traffic from the LPP2 allocations in the Hanneys, Dalton Barracks and Grove is not included in Table 1 and therefore the figures are underestimates.

Simple scaling<sup>6</sup> by the relative annual traffic flows given in Table 1, and including the DEFRA projections for emissions reduction between 2016 and 2026, suggests that in 2026 the NO<sub>2</sub> concentration at 10 Packhorse Lane would be approximately 42 micrograms per cubic metre. Traffic from other LPP2 developments not included in the 2026 total in Table 1 would raise the level even further above the AQAL and leave no overhead for any future growth in traffic. (The contribution from other LPP2 developments is properly included in the independent air quality assessment

<sup>3</sup> DfT estimate for 2016 based on 2012 counts.

<sup>4</sup> Written material and appendices for Matter 4 of the LPP2 examination 'Kingston Bagpuize and Southmoor', submitted by Fyfield and Tubney Parish Council and FLAG, July 2018

<sup>5</sup> Based on the Atkins report for VoWH DC Local Plan 2031 Part 2, 'Evaluation of Transport Impacts – Stage 2', Oxfordshire County Council, 5 October 2017 which forecast growth of 36% in all districts between 2013 and 2031.

<sup>6</sup>  $NO_2(2026) = NO_2(2016) * (AADF(2026) / AADF(2016)) * 0.622$  where 0.622 is the DEFRA emissions reduction projection factor 2016 – 2026 <https://lagm.defra.gov.uk/tools-monitoring-data/roadside-no2-projection-factor.html>

discussed below.) Although the figures are simple estimates, they serve to demonstrate the potential problem.

### VoWH Estimates

At the request of the Planning Inspector, Mr David Reed, the VoWH DC has prepared two notes on the impact of LPP2 developments on air quality. Both these notes assert that the cumulative impact of the planned developments in the KBS area on the Marcham AQMA would be negligible.

The first VoWH note<sup>7</sup> was based on a technical report by RPS consultants<sup>8</sup> and primarily addressed the effect on air quality in Marcham from the LPP2 allocation at LEKB.

The RPS note and conclusions were challenged<sup>9</sup> at the time for the following reasons:

1. The results in the technical note were scaled up from a previous study for the allocation of 90 houses south east of Marcham to be built by 2022 and which would have increased the traffic through the AQMA by only 38 vehicles per day;
2. The model used appeared to underestimate the monitored pollutant levels by 25 to 30 percent;
3. No allowance was included for any growth in background traffic, and
4. Traffic from the already-committed developments in the KBS area was not included.

The total additional daily flow of traffic through the Marcham AQMA used in the RPS assessment was 1548 vehicles per day, including contributions from allocations at Dalton Barracks (312), the Hanneys (124) and south east of Marcham (38). Only 1074 vehicles per day were assumed to originate from LEKB, compared with the *circa* 2500 from the LEKB allocation plus committed developments at KBS discussed above, and a potential total of around 5200 if growth is included. In other words, the RPS study assumed an additional traffic flow that was too small by a factor of between 1.7 and 3.4.

For the above reasons – but primarily the underestimation of traffic flows – the conclusion that the cumulative impact of traffic from LPP2 developments on the air quality in Marcham is negligible appears to be flawed.

The second VoWH note<sup>10</sup> (which, as Additional Air Quality Evidence, is the subject of this consultation) was prepared by SLR consultants in the context of the allocation of 1200 houses at Dalton Barracks and addresses cumulative effects on all three VoWH AQMAs. For the Marcham AQMA, it simply repeats the RPS conclusions and cites some additional evidence that a large reduction in pollutant concentrations had been observed between 2016 and 2017. The VoWH monitoring data<sup>11</sup> shows that whilst there is an overall downward trend in NO<sub>2</sub> concentrations, the sharp decrease 2016 – 2017 was the result of a sharp increase between 2015 and 2016.

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<sup>7</sup> VoWH, Note for Inspector re: Cumulative impact of air quality, 22 August 2018, published in the LPP2 examination library as HEAR04.5

<sup>8</sup> Cumulative Impact of Planned Growth on Air Quality in Marcham, RPS consultants technical note, 22 August 2018, available as an appendix to HEAR04.5

<sup>9</sup> Letter to Inspector, 29 August 2019, HEAR04.5.1

<sup>10</sup> Vale of White Horse District Council Local Plan 2031: Part 2 Evidence Base – Cumulative Impact of Planned Growth on Air Quality Management Areas, SLR Consultants, November 2018 published in LPP2 examination library as PC03.4.2

<sup>11</sup> VoWH Air Quality Annual Status Report, 2018.

Because both of the assessments prepared for the VoWH DC are based on the same unrealistically low estimate of the additional traffic through the Marcham AQMA, their conclusions are not credible.

The Additional Air Quality Evidence report admits, however, that the analysis was 'high level', that 'potential air quality impacts will be considered in detail at planning application stage...' and that 'the future construction of a Marcham By-pass would fundamentally alter the current road network [thereby providing the essential mitigation].

### Independent Air Quality Assessment

A completely independent assessment of the cumulative impact on air quality in Marcham of traffic from development at LEKB and elsewhere was provided as supporting material to an outline planning application to the VoWH DC (P18/V2791/O) for development of the LEKB site in November 2018. The report was prepared on behalf of the developers of the site by MEC Consultants<sup>12</sup>. It assumed that a development of 700 houses and 70 extra-care homes at LEKB would be completed by 2027.

The traffic flows used in the MEC report were based on an assessment prepared by Key Traffic Consultants (KTC) for the same planning application and included growth of background traffic, traffic from LEKB, Dalton Barracks and developments in the Hanneys and elsewhere. This assessment predicts a total AADF through the Marcham AQMA of 21,395 vehicles per day by 2027<sup>13</sup>, an increase of 7892 or 58 percent compared with 2016. These figures are higher than our estimates because the KTC traffic assessment included traffic originating from a wider area.

The MEC air quality assessment used a comprehensive 'bottom up' model which was verified (calibrated) by comparison with VoWH monitoring data and took account of DEFRA emissions reduction projections. NO<sub>2</sub> concentrations were predicted for fourteen receptor locations within the Marcham AQMA, although none of these were identical with the VoWH monitoring locations and covered a wider area away from the centre of the AQMA.

Notwithstanding some concerns about the verification factor used in the report, which could be 10 or 11 percent too small<sup>14</sup> (and therefore the predicted NO<sub>2</sub> concentrations would be underestimated by this amount) the conclusion was unambiguously that, by 2027, the cumulative impact on the Marcham AQMA would be 'substantial' for seven of the fourteen receptor locations considered, with a mean annual NO<sub>2</sub> concentration of 57.7 micrograms per cubic metre at one location, far above the AQAL.

The conclusion of the MEC assessment is that cumulative effects would be substantial and mitigation would be necessary. The suggestion, however, that mitigation could be achieved by re-routing HGVs away from the centre of Marcham by diverting them along Faringdon Road from the A338 at the Doghouse junction at Frilford Heath to the A415 to just to the west of the Marcham A415/A34 interchange is completely unrealistic.

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<sup>12</sup> Mewies Engineering Consultants, Proposed Retail Development, Land at Abingdon Road, Kingston Bagpuize, Oxfordshire, Air Quality assessment, October 2018, Report Ref: 22259/10-18/5869 prepared for Lioncourt Strategic Land. Reference [1]

<sup>13</sup> Table 5.6 Changes in Traffic Flows for 2027 Scenario.pdf. Reference [2]

<sup>14</sup> The output of the model was scaled up by a factor of 2.24 to obtain agreement with the VoWH monitoring data. It is possible that this calibration (scaling factor) was too low since it seems to have been based on preliminary values of the monitoring data. A correction based on the published values would increase the scaling factor to 2.5 and therefore the predicted NO<sub>2</sub> concentrations by a further 11%.

## Summary

With regard to the Marcham AQMA the Additional Air Quality Evidence published by the VoWH DC is flawed because it is based on an unrealistically low estimate of the traffic through the AQMA in 2026. Our simple estimates suggest that despite the anticipated decrease in vehicle emissions the NO2 levels will remain above the AQAL.

Our estimates are confirmed by a detailed independent assessment of air quality in Marcham accompanying an outline planning application for the Land East of Kingston Bagpuize site which concluded that the cumulative impact would be substantial and that mitigation is necessary.

Finally we note that in response to the planning application for development of the LEKB site, the VoWH Environmental Health Officer<sup>15</sup> has recognised that the air quality impact on Marcham of the LEKB development would be substantial and has put in a holding objection until a suitable mitigation scheme is delivered.

## References

Links to documents from VoWH planning application P18/V2791/O for development at LEKB

[1] Air quality assessment:

*Supporting documentation*

*ES Appendices*

*06.1 Air Quality Assessment.pdf:*

[http://www.whitehorsedc.gov.uk/java/support/dynamic\\_serve.jsp?ID=1034717484&CODE=9496086A66BBA6B023E54A129E834A73](http://www.whitehorsedc.gov.uk/java/support/dynamic_serve.jsp?ID=1034717484&CODE=9496086A66BBA6B023E54A129E834A73)

[2] Traffic tables for 2027:

*Supporting documentation*

*ES Tables*

*Table 5.6 Changes in Traffic Flows for 2027 Scenario.pdf*

[http://www.whitehorsedc.gov.uk/java/support/dynamic\\_serve.jsp?ID=1034717589&CODE=4FD75360EF71CB3D804810A6D49CD51E](http://www.whitehorsedc.gov.uk/java/support/dynamic_serve.jsp?ID=1034717589&CODE=4FD75360EF71CB3D804810A6D49CD51E)

[3] VoWH Environmental Health Officer response:

*Consultation responses*

*Air Quality*

*2019-01-28 Response.pdf*

[http://www.whitehorsedc.gov.uk/java/support/dynamic\\_serve.jsp?ID=1034717385&CODE=86153692C604BFAAF571AD8C1D2C2FD4](http://www.whitehorsedc.gov.uk/java/support/dynamic_serve.jsp?ID=1034717385&CODE=86153692C604BFAAF571AD8C1D2C2FD4)

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<sup>15</sup> Air Quality response to planning application P18/V2791/O from VoWH Environmental Team, T. Williams, 23 January 2019, reference [3]