



Wycombe District Local Plan and the Duty to Cooperate Report

March 2018

Appendix 4: Habitats work



Appendix 3 - Habitats work

Wycombe District Council took advice from AECOM (Habitats Regulations consultant) in relation to the report published by Royal Borough of Windsor and Maidenhead on Habitats and air pollution in January 2018.

Their advice is set out in the letter overleaf.

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13th March 2018

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Planning Policy Officer
Wycombe District Council
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Review of Ricardo Air Quality Report produced for Royal Borough of Windsor & Maidenhead

Dear Aude,

I am please to present my review of this report, and the supporting traffic modelling work where appropriate.

Traffic modelling

Ricardo have used traffic modelling work undertaken by Parsons Brinkerhoff to support the Royal Borough of Windsor & Maidenhead (RBWM) Local Plan. The report 'Local Plan Assessment using RBWM Strategic Highway Model' (<http://consult.rbwm.gov.uk/file/4593474>) states in paragraph 2.1.1 that: '*Three forecast scenarios have been produced and run through the RBWM-HM2 to enable the analysis of impact of allocated housing and employment up to 2032, the end of the emerging Local Plan period:*

- *Scenario A: includes planned development outside the borough and committed development in the borough but does not include the Local Plan growth in the borough*
- *Scenario B: based on Scenario A but also includes Local Plan development in the borough*
- *Scenario C: based on Scenario B but also includes transport interventions that may be required to mitigate the impact of the Local Plan developments'*

Paragraph 2.1.3 of the Parsons Brinkerhoff report makes it clear that the 'planned development outside the borough' is derived from TEMPro (the National Trip End Model Presentation Programme). This is standard practice. TEMPro contains growth assumptions for every local authority in England and Wales, broken down to Middle Layer Super Output Area (MSOA).

Section 2.3.2 of the Ricardo report correctly identifies that the traffic modelling produced by Parsons Brinkerhoff for Scenario C already includes '*planned development outside the borough*' and Section 2.4.1 correctly states that the difference between Scenario C and Scenario A gives the contribution of the policies in the RBWM plan.

Since Scenario C already makes an allowance (taken from TEMPro) for growth in other local authorities, comparison of the Scenario C data with the current Base Case would have provided an 'in combination' assessment for the relevant link at Chiltern Beechwoods SAC, including not only an allowance for Wycombe Local Plan but also for all other authorities in England and Wales. Rather than confirm (and if necessary adjust) the TEMPro allowance for Wycombe District Ricardo have taken the approach of reviewing Local Plan HRAs for surrounding local authorities and summing the change in deposition rates/NOx concentrations identified in those HRAs with the contribution of the RBWM Local Plan. The risk with taking this approach is that it may give an inaccurate impression of the 'in combination' effect as it is unlikely that the results of modelling exercises undertaken by different organisations at different times using different methodologies would be able to be summed without risk of introducing inaccuracies.

Air quality analysis

Table 8 identifies the contribution of the RBWM Local Plan to NO_x concentrations to be 0.92 µgm⁻³ at the closest point of the road to the Chiltern Beechwoods SAC. The report concludes that the baseline NO_x concentration of 19.4 µgm⁻³ is well below the 'critical level' of 30 µgm⁻³ (i.e. the concentration below which no NO_x-related effects can be dismissed) and that it is likely to remain so by 2032 even with the RBWM Local Plan taken into account. The report therefore concludes that NO_x in itself can be dismissed notwithstanding the elevation attributable to the Local Plan. I agree with this conclusion but it does lead to a question regarding the significance of the additional nitrogen deposition attributed to the RBWM Local Plan. This is because the main importance of NO_x to vegetation is its role as a source of nitrogen. Table 6 identifies that the modelled RBWM contribution to nitrogen deposition at the closest point of the SAC to the road will be 0.16 kgN/ha/yr and Table 9 indicates that the current baseline nitrogen deposition at this location is 26.5 kgN/ha/yr, which is in well excess of the critical load of 10 kgN/ha/yr. However, the fact that nitrogen deposition rates are very elevated while NO_x concentrations are low suggests that much of the deposited nitrogen at this location may actually be derived from ammonia (such as from agriculture), or from sources of NO_x elsewhere in the kilometre square for which background deposition rates have been sourced, rather than from traffic on this specific road. One would not generally expect local traffic to be a major source of deposited nitrogen within 200m from the roadside where NO_x concentrations are well below the critical level.

Table 10 of the report cites a figure of 0.1 kgN/ha/yr for the Wycombe Local Plan contribution to nitrogen deposition at the closest point to the SAC. The report does not discuss the derivation of this rate and there is no suggestion that traffic from Wycombe was specifically modelled for this assessment. Based purely on the information currently available it is therefore impossible to verify the accuracy of the number presented for Wycombe Local Plan.

No attempt appears to have been made in the report to discuss or calculate a future baseline deposition rate for the SAC (i.e. background nitrogen deposition by 2032). This is relevant because Defra forecasts that NO_x emission factors from traffic are expected to continue to improve over long time periods such as Local Plan timescales. This means that a given volume of traffic is expected to emit less NO_x (and thus make a smaller contribution to nitrogen deposition) in 2032 than the same volume does in 2018. This also means that the future (2032) baseline nitrogen deposition rate could well be lower than the current baseline deposition rate (although it is likely to remain above the critical load). It is unclear from the report whether any improvements in vehicle emission factors over the period to 2032 have been factored into the modelling. If they haven't, then 26.5 kgN/ha/yr and 0.16 kgN/ha/yr may well be over-estimates of both the background deposition rate in 2032 and the deposition due to the RBWM Local Plan.

I will now move onto the physical area of the SAC that the report identifies will be subject to elevated nitrogen deposition. Figures 4 and 34 depict this area. The report seems to interpret 'significant elevation' as anywhere with a forecast elevated deposition rate greater than 0.5% of the critical load (i.e. 0.05 kgN/ha/yr). Figure 34 indicates that a very small part of the SAC (highlighted orange) is forecast to be subject to an increase in nitrogen deposition of 0.1 to 0.2 kgN/ha/yr due to the RBWM Local Plan but page 59 confirms that '*beech trees [the principal interest feature of the SAC] are scarce in the area of the SAC highlighted in orange*'. As such, it would appear that the orange highlighted zone is actually of little significance since it doesn't represent SAC habitat and is small in extent (c. 0.2ha based on measurements made by me on www.magic.gov.uk). A second area of the SAC (identified by yellow colouring on Map 34) is forecast to experience a deposition rate elevated by between 0.05 and 0.1 kgN/ha/yr due to the RBWM Local Plan. This zone covers a larger area, extending up to 65m from the road (Table 11), and *may* support beech woodland. However, the report is unclear on this last point and the derivation or relevance of 0.5% as a threshold (as opposed to any other numeral) is not made clear in the report.

No attempt is made to take the estimated contribution of Wycombe Local Plan cited in Table 10 into account in the mapping of modelled deposition rates.

The report produced for RBWM therefore contains a number of matters that would benefit from clarification or expansion before a conclusion can be drawn as to whether there would actually be an adverse effect on integrity of the SAC due to growth due to RBWM Local Plan alone or 'in combination':

1. The report identifies forecast additional nitrogen deposition by 2032 due to the RBWM Local Plan. However, it does not clarify whether expected improvements in NO_x emission factors over the Local Plan period have been taken into account in the calculation;
2. The report identifies a current baseline nitrogen deposition rate for the SAC but does not present a 'future baseline' rate for 2032. Therefore, it is not possible to place the additional nitrogen from Local Plan traffic within the context of the improvement in background nitrogen deposition that might be expected as a result of the aforementioned improvement in emission factors. As such there is no discussion of whether, by 2032, a net improvement in nitrogen deposition rates might be expected notwithstanding the additional Local Plan emissions;
3. The report *asserts* a forecast deposition rate for Wycombe Local Plan but no explanation is given for the derivation of this numeral. It does not appear to derive from any traffic modelling undertaken for the RBWM Local Plan or Wycombe Local Plan;
4. Having identified that a zone within 65m of the road *may* experience additional nitrogen deposition exceeding 0.05 kgN/ha/yr due to the RBWM Local Plan, that such an increase *may* be significant, and that this area *might* support beech woodland, the report moves straight to mitigation. There is no confirmation of whether beech woodland is indeed present, or of the contribution of the Wycombe Local Plan. There is also no attempt to ecologically evaluate whether the small forecast additional nitrogen deposition would actually result in any change in the vegetation present given the high background rates. For example, there is no attempt to consider nitrogen dose-response data that has been published for a variety of habitats which illustrates that, with a few exceptions such as calcareous grassland, a given 'dose' of additional nitrogen has less and less ecological effect as background deposition rates increase above the critical load. While there has been little research into woodland the broad trends observed may be reflected in this habitat. Certainly there has been no published data which identifies any habitats to be ecologically responsive to the small changes in nitrogen deposition suggested in this modelling (an extra 0.26 kgN/ha/yr by 2032 from the RBWM Local Plan and Wycombe Local Plan combined if the data are taken at face value), particularly when nitrogen is already well in excess as appears to be the case for this part of the SAC.

Conclusion

In my view, there are sufficient uncertainties in the work undertaken for RBWM so far that a conclusion of 'adverse effect on integrity' in combination with the Wycombe Local Plan cannot be drawn with confidence and could be excessively pessimistic. As mentioned at the start of this letter, one would not generally expect local traffic emissions to be a major source of deposited nitrogen where NO_x concentrations are well below the critical level, as appears to be the case here. Therefore traffic on this road may actually be playing a relatively small role in nitrogen deposition at the modelled location.

These residual uncertainties are reflected in the concluding sections of the report. Section 5.1.3 uses phrases such as '**could** [emphasis added] *potentially be significant*', '*there is not a definite in-combination impact*' and '**if** [emphasis added] *significant effects are identified*'. Therefore, this report acknowledges that the work is incomplete. While mitigation is discussed in the report, this is presented as ideas about the sort of measures that could be undertaken, in the event that everyone agreed there was an issue.

Since two different HRAs now exist which draw two separate conclusions, and since the conclusion of the RBWM HRA is admittedly incomplete subject to further analysis, additional modelling should be undertaken for Wycombe Local Plan in order to draw a conclusion. This should consist of:

Traffic modelling for the effects of Wycombe Local Plan alone and 'in combination' with other projects and plans. This latter could be derived several ways such as by making appropriate adjustments to the TEMPro growth assumptions for those authorities in the existing Wycombe traffic model;

Using the Base, future Do Minimum (i.e. without the Wycombe Local Plan) and future Do Something (i.e. with the Wycombe Local Plan including any existing traffic mitigation measures) flows in 24hr AADT and indication of percentage heavy duty vehicles and average vehicle speeds, air quality modelling can then be undertaken. This modelling should make an appropriate allowance for improvements in vehicle emission factors over the plan period and any related improvement in background NOx concentrations and nitrogen deposition rates;

Ecological interpretation of those data, including both the 'in combination' scenario (i.e. the difference between Do Something and existing Base) and the contribution of Wycombe Local Plan (i.e. the difference between Do Something and Do Minimum). The ecological interpretation should consider whether, taking account of improvements in emission factors, the 'in combination' additional NOx or nitrogen deposition will exceed 1% of the critical level or load, whether SAC interest features are actually present in the affected area and whether or not the degree of additional nitrogen deposition expected would cause an effect on the woodland vegetation at the forecast background deposition rates.

I hope you find this useful.

Yours sincerely,

A handwritten signature in blue ink that reads "James Riley". The signature is written in a cursive style with a large, looping 'y' at the end.

Dr James Riley
Associate Director (HRA), AECOM

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