

Helen Murch
Planning Policy Manager
Place Directorate
Royal Borough of Windsor & Maidenhead
Town Hall, St Ives Road, Maidenhead SL6 1RF

Robert Paddison
Principal Neighbourhood Plan Lead

Ricardo Energy & Environment
Gemini Building
Fermi Avenue
Harwell
OX11 0RA

Mark Broomfield

T: [REDACTED]

E: [REDACTED]

ee.ricardo.com

Our ref. ED13199_Preliminary AQ
Issue Number 1

11 September 2019

**Re: Air Quality Assessment for Royal Borough of Windsor & Maidenhead BLP Housing Allocation Review
Preliminary assessment of air quality issues**

Dear Helen, Robert

Thank you for your commission to carry out an assessment of the air quality impacts of the updated Borough Local Plan (BLP).

Ahead of receiving detailed traffic forecasts, we agreed that the first step in this process would be to provide a preliminary assessment of expected changes in the assessment of air quality impacts, compared to our previous report ref. ED11104 dated 31 January 2018.

1 Key findings of January 2018 study

The key findings from the previous study were as follows:

1.1 Habitats Regulations Assessment

It was concluded that there was no significant risk of impacts due to the BLP alone at the following Natura 2000 sites:

- Burnham Beeches SAC
- Thames Basin Heaths SPA
- Thursley, Ash, Pirbright & Chobham SAC (part of Thames Basin Heaths SPA)

The risk of impacts could not be screened out at two Natura 2000 sites:

- At **Chilterns Beechwoods SAC**, it was concluded that further investigation of potential impacts was needed in a small area of the Bisham Woods SSSI component of the SAC, close to the junction of the A404 and the A308 (small triangular area shaded orange as highlighted in Figure 1). Subsequent investigation indicated that this area of the site contained relevant interest features, and mitigation of potential impacts would be required.

Ricardo Energy & Environment, a trading name of Ricardo-AEA Ltd

Head Office
Gemini Building,
Fermi Avenue,
Harwell,
Oxon
OX11 0QR

Tel: +44 (0)1235 753 000

Registered office

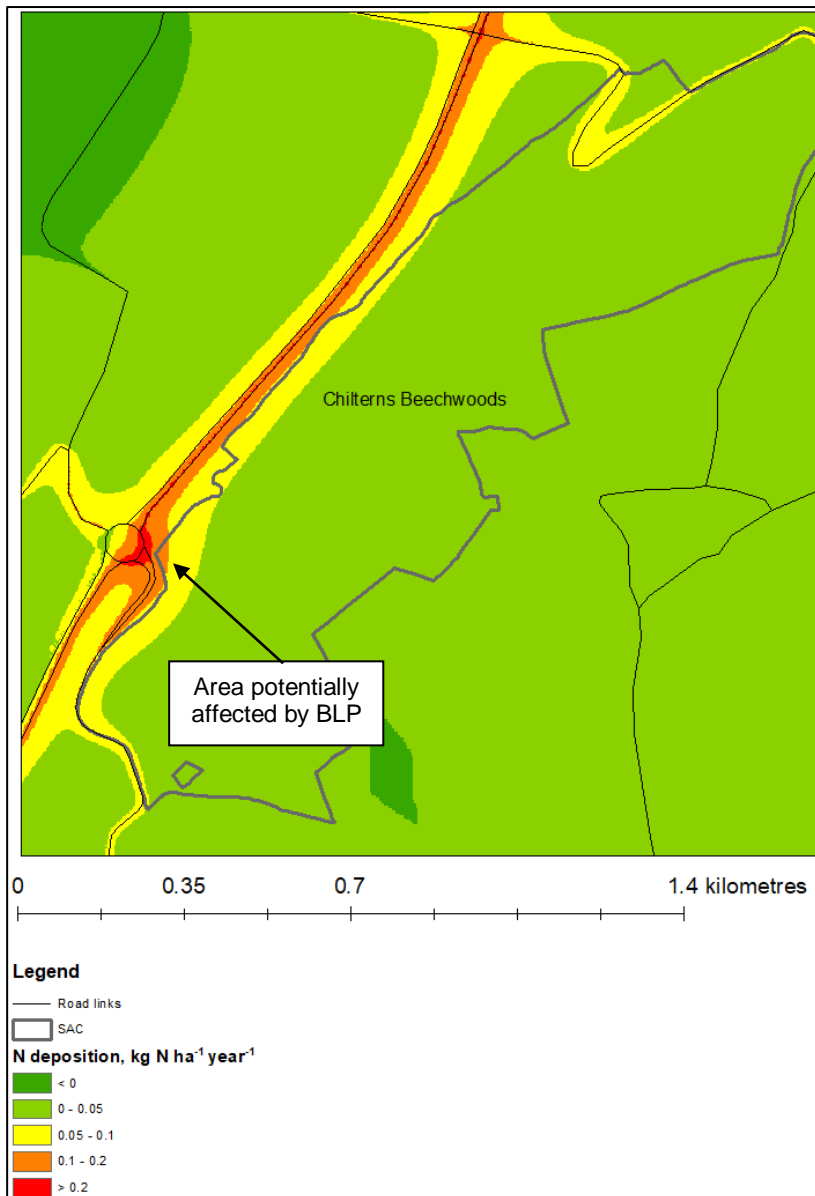
Shoreham Technical Centre
Shoreham-by-Sea
West Sussex
BN43 5FG

Registered in England No.
08229264

VAT Registration No.
GB 212 8365 24

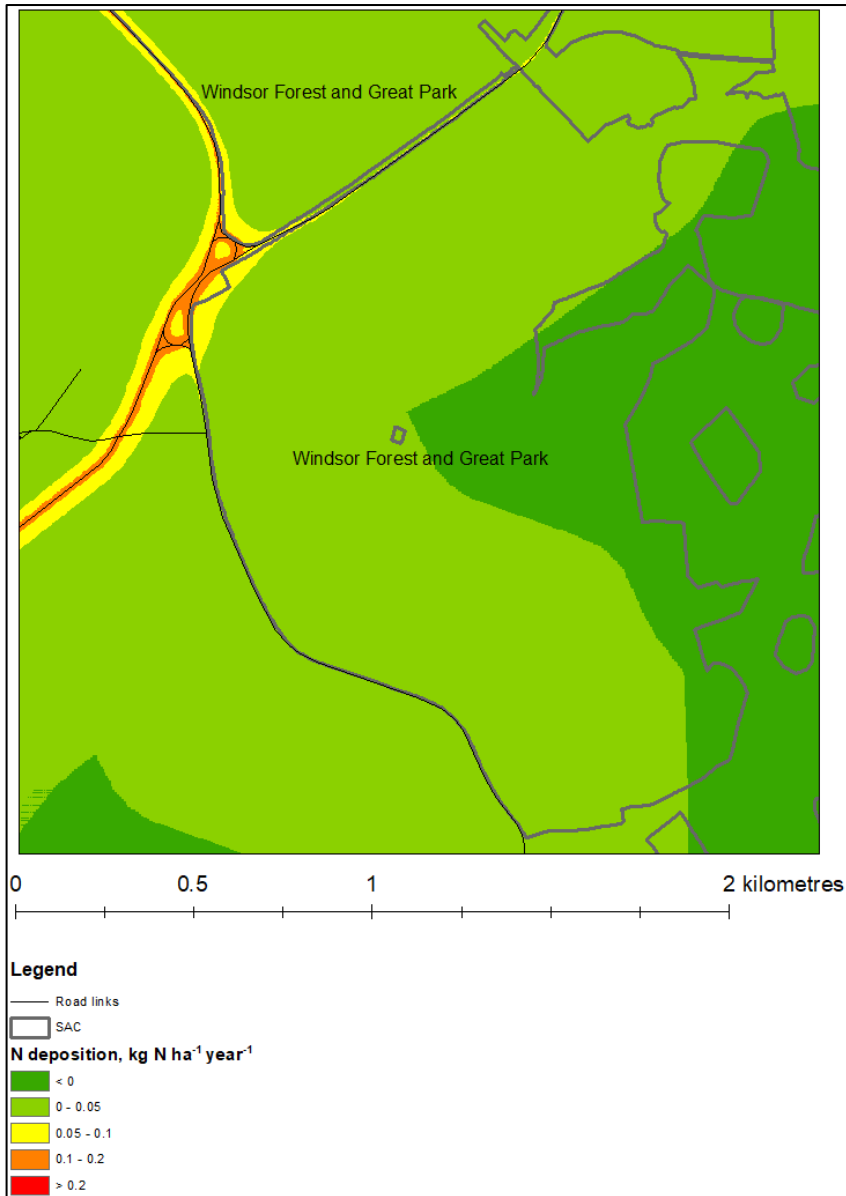


ee.ricardo.com

Figure 1: Modelled contribution from BLP to nitrogen deposition at Chilterns Beechwoods SAC (2032)

- At **Windsor Forest and Great Park SAC**, it was concluded that further investigation of potential impacts was needed in a small area of this site close to the junction of the A332 and B383 (area shaded orange in Figure 2). Further investigation indicated that there were no relevant interest features in the area potentially affected, and as a result, no further mitigation would be required in relation to impacts at Windsor Forest and Great Park SAC.

Figure 2: Windsor Forest and Great Park SAC: Habitat review and airborne NO_x due to BLP



- It was not possible to fully screen out the risks of cumulative impacts resulting from other plans and projects, due to a lack of information in relation to the potential impacts on Natura 2000 sites for other relevant development plans.

1.2 Local air quality assessment

The January 2018 study found that, although the BLP would result in increases in air pollution levels in some parts of the five Air Quality Management Areas (AQMAs) in RBWM, levels of nitrogen dioxide are forecast to fall more rapidly, resulting in compliance with the air quality standard for nitrogen dioxide by 2032. Baseline levels of PM₁₀ and PM_{2.5} already comply with the air quality standards and guidelines, and the forecast impact of the BLP on PM₁₀ and PM_{2.5} is lower than the forecast impact on nitrogen dioxide levels. No risk of exceeding the air quality objectives as a result of implementation of the BLP was identified.

It was found that the BLP would have a negligible impact on air quality at all locations within the Windsor, Imperial Road/St Leonards Road Junction and Wraysbury AQMAs. The BLP would have a slight to moderate impact at some locations within the Maidenhead AQMA, and a slight impact at some properties within the Bray/M4 AQMA.

2 Changes compared to January 2018 study

There are two main changes to the assessment since the January 2018 study was completed.

2.1 New allocations

The Borough Local Plan has been updated with changes to housing allocations and employment locations. As regards housing allocations, the total number of housing units is almost unchanged at approximately 8300 new properties, but the locations of new housing development have changed significantly. The key change is that residential development will be focused more closely within Maidenhead, with less residential development in other parts of the borough. Information provided by RBWM indicates an increase of approximately 1500 properties in Maidenhead. This would be expected to result in an increase in additional traffic due to the BLP on the roads providing access to and from Maidenhead, with proportionately less traffic due to the BLP on roads elsewhere in the Borough.

The main change to employment allocations is a substantial increase in the “Triangle” area located between the M4, the A308 and the A330 to the south of Maidenhead and west of Windsor. The previous traffic modelling study assumed that 306 jobs would be created at this location, out of a total of 11,125 in the borough as a whole. Although no figures are currently available, it is anticipated that significantly more jobs are planned to be created at this location. This would be expected to result in additional traffic on roads linking to this site, including roads passing through the Bray/M4 AQMA, and the A404 and A308 which run adjacent to the Bisham Woods SSSI.

2.2 Ammonia

Following the development of new emissions datasets and discussions with Natural England, it is now good practice to include the contribution of ammonia emissions from road vehicles. This becomes particularly significant for assessment of future year impacts, as ammonia emissions from diesel catalyst additives become more significant.

Ammonia is potentially harmful to habitat sites as an airborne pollutant. This is reflected in the adoption of two air quality guidelines by Natural England. A demanding air quality guideline is applicable at sites where sensitive lichens and mosses are an important component of the site. A less demanding guideline is applicable at other sites. Additionally, accounting for ammonia emissions would result in an increase in modelled levels of nitrogen and acid deposition (nitrogen deposition was found to be the more significant impact for the sites under consideration).

We will include assessment of ammonia emissions in the updated air quality assessment. We anticipate that this will result in an increase in the areas potentially affected by air pollution impacts.

3 Effect of changes

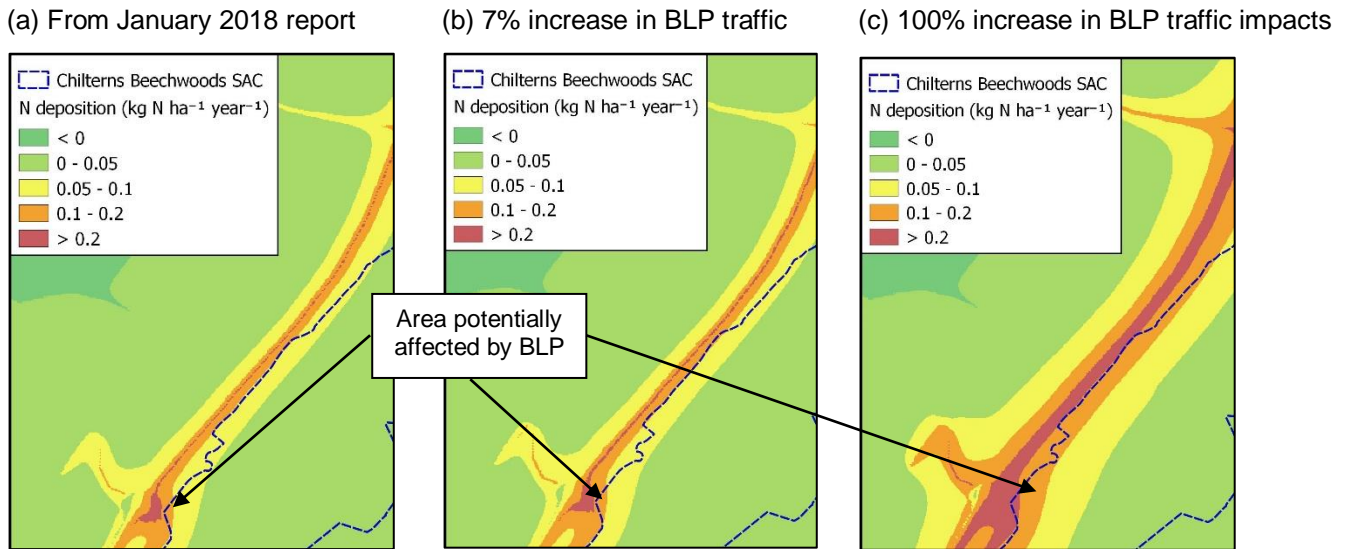
3.1 Habitats Regulations Assessment

As set out above, the changes to the BLP could potentially result in an increase in traffic flows on the roads adjacent to the Chilterns Beechwoods SAC and the Windsor Forest and Great Park SAC. In view of the changes in housing and employment numbers set out above, it is anticipated that the changes to the BLP may result in an increase in the traffic flows associated with the BLP of approximately 5% to 10% in the vicinity of Chilterns Beechwoods SAC. No significant change in traffic flows would appear likely in the vicinity of Windsor Forest and Great Park SAC.

The inclusion of ammonia emissions in the assessment is likely to have a more significant influence on the study results. This will result in an increase in forecast ammonia levels, nitrogen deposition rates and acid deposition rates due to traffic emissions for all scenarios. Nitrogen deposition rates were the main pollutant of concern in the 2018 study for Chilterns Beechwoods SAC, and we estimate that the inclusion of ammonia emissions may result in an increase of up to 100% in modelled nitrogen deposition rates. As a result, the area forecast to experience an increase in nitrogen deposition of more than 1% of the critical load is expected to increase.

Two sensitivity tests were carried out to investigate these effects. The first test investigated the effect on modelled concentrations of increasing BLP traffic by 7%. The second test investigated the effect of increasing the impact of traffic emissions on nitrogen deposition by 100%. The results of these tests are shown in Figure 3.

Figure 3: Modelled contribution from BLP to nitrogen deposition at Chilterns Beechwoods SAC (2032)

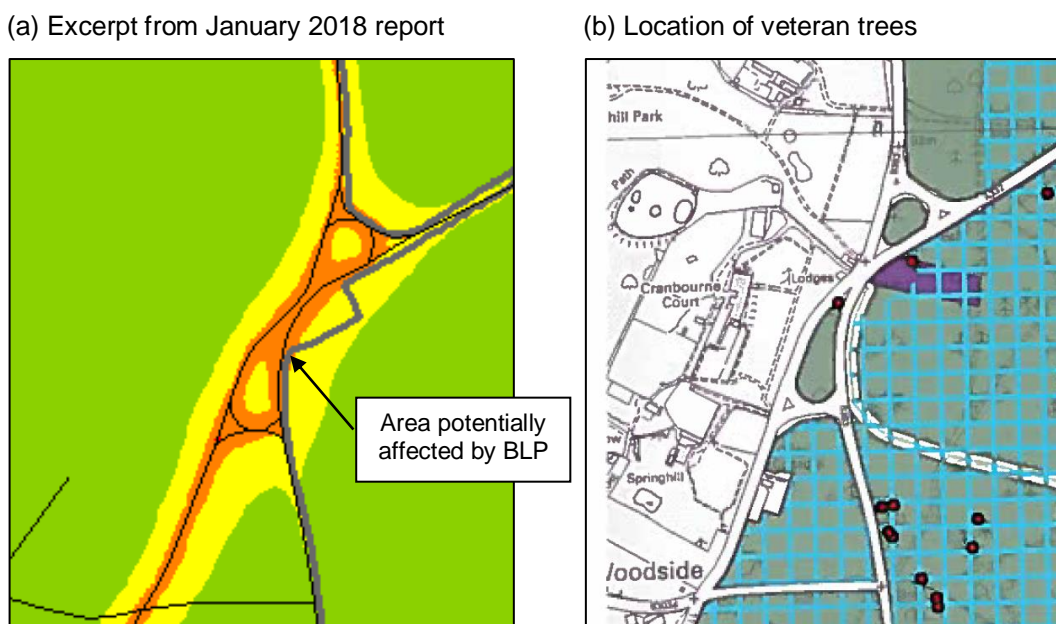


This assessment indicates that the changes in housing allocations (figure 3(b)) could result in a small increase in the area affected by the BLP. This is not likely to materially change any findings from the previous assessment.

The inclusion of ammonia in the assessment could result in a more significant increase in the area of Chilterns Beechwoods SAC affected by emissions resulting from the BLP. However, the main area affected would continue to be the zone closest to the A404. Parts of the SAC close to the A308 and Quarry Wood Road could also be affected. As a result, it is considered likely that this will be a more significant issue in the updated assessment. The available mitigation measures, such as investigating traffic management options and more detailed attention to management of the Bisham Woods SSSI, would remain the same.

The effect of including ammonia in the assessment for Windsor Forest and Great Park SAC was also considered. This is illustrated in Figure 4

Figure 4: Modelled contribution from BLP to nitrogen deposition at Chilterns Beechwoods SAC (2032)



The area potentially affected by the BLP would be unlikely to extend to include any new veteran oak or beech trees. The potentially affected area would continue to include the veteran tree located to the south-east of the northern roundabout shown in Figure 4(b), but this was identified in the 2018 study as a veteran pine tree, which is not a critical habitat for the violet click beetle, the feature of greatest interest for this site.

3.2 Local air quality management

The area at greatest risk from increases in air pollution levels due to the changes to the BLP is the Maidenhead AQMA. The Bray/M4 AQMA may also be at risk from increases in air pollution as a result of increased traffic movements to/from new residential development in Maidenhead, and increased traffic associated with increased development of the Triangle employment site.

The preliminary figures provided by RBWM indicate that the changes to the BLP could result in approximately 36% more new residential units in Maidenhead, compared with the previous version of the BLP.

As with the previous version of the BLP, it will not be possible to screen out impacts in AQMAs based on a simple assessment against a criterion of a 1% increase in pollution levels due to the BLP. Instead, it will be necessary to assess overall concentrations, including baseline levels, and determine whether total levels of nitrogen dioxide are forecast to achieve the air quality objective by the assessment year (previously 2032).

The previous assessment indicated that nitrogen dioxide levels would be less than 75% of the air quality objective throughout all AQMAs in the borough, with the exception of the very near vicinity of the M4 motorway. An increase of 36% in housing allocations in Maidenhead would be significant, but assuming that this can be accommodated without causing traffic problems and excessive congestion, this could be accommodated within the "headroom" that will be available in Maidenhead by 2032.

In view of this, it is concluded that the planned increases in residential development in Maidenhead and elsewhere would not have a significant adverse effect on the ability of RBWM to achieve good air quality throughout the four AQMAs in the borough. Ensuring that air quality standards are not exceeded may require careful management and phasing of development, with additional constraints on the timing of new development potentially imposed by the increased intensity of development in Maidenhead and at the Triangle employment site.

4 Conclusions

It is concluded that the key issue for RBWM will be including ammonia in the assessment of impacts at habitat sites, in accordance with what has become established practice for assessments of this nature. This is likely to result in wider areas of habitat sites being affected than previously anticipated. Mitigation measures will remain the same in principle as those previously identified, but may require more detailed management.

Changes to the BLP are not expected to affect the ability of RBWM to achieve and maintain good air quality in the AQMAs within the borough. However, the increased intensity of development in Maidenhead and at the Triangle employment site may require careful management and phasing, with additional constraints on the timing of new development to ensure that air quality objectives are not exceeded.

Finally, it will be important to update the in-combination assessment of air quality impacts on European sites in accordance with the Habitats Regulations. We understand that significant progress has been made by neighbouring authorities, which may enable this to be progressed with more confidence than was possible in the January 2018 study.

Please do contact me if you wish to discuss any aspect of this letter further

Yours sincerely

Reviewed by



Dr Mark Broomfield
Associate Director



Dr Jessica Virdo
Senior Consultant