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Project name:
HRA of the Warfield Neighbourhood Plan

Project ref:

From:
[REDACTED], Consultant Ecologist
[REDACTED] (Ecology and
HRA)

CC:

Date:
24th November 2020

Memo

Subject: Air Quality Modelling

Dear Julie,

In July this year we exchanged correspondence regarding the Warfield Neighbourhood Plan. AECOM is currently undertaking a technical study to inform the Habitats Regulations Assessment (HRA) of the Warfield Neighbourhood Plan (WNP), which involves assessing each of the NP's policies and its potential for adverse effects on the integrity of nearby European sites. One of the impact pathways we have been asked to investigate by Bracknell Forest Council is atmospheric pollution from increased traffic, particularly through nitrogen deposition on sensitive habitats. For the WNP, the Thames Basin Heaths SPA and the Windsor Forest & Great Park SAC have been identified as sensitive to a potential increase in road traffic due to the WNP (specific the Hayley Green site allocation).

In July we provided a version of this document presenting our initial (pre-modelling) analysis. In light of the analysis in this document you advised that it was necessary, for both Thames Basin Heaths SPA and Windsor Forest & Great Park SAC to undertake further analysis, specifically air quality modelling, using traffic data from the Bracknell Transport Models. We understand that the site promoter's transport consultants – Stantec – have been in liaison with the Council Highways team to agree use of the Models. This note has therefore been updated to include a section at the conclusion confirming the further work that will be undertaken.

Thames Basin Heaths SPA

The SPA is designated for its breeding bird species European nightjar, woodlark and Dartford warbler. The site is sensitive to atmospheric nitrogen deposition due to its potential for affecting the birds' habitats, the heathland and the conifer plantations. The Air Pollution System (APIS) identifies nitrogen critical loads for dwarf shrub heath (10-20 kg N/ha/yr) and coniferous woodland (10-15 kg N/ha/yr¹). A sufficiently large additional nitrogen dose when the critical loads are exceeded is likely to lead to increased grass dominance in heathland (reducing the ability of the ground-nesting species to find sufficient suitable breeding sites). The suitability of plantation woodland as nesting habitat for nightjar or woodlark (it is of no value as nesting habitat for Dartford warbler) is closely linked to whether the plantation is rotationally managed commercial forestry and the likelihood of restoration to heathland. Unmanaged plantation is of no value as nesting habitat for SPA birds, although it may have some foraging value.

Windsor Forest & Great Park SAC

¹ The lowest part of the critical load range for coniferous woodland is 5 kgN/ha/yr but APIS clarifies that unless lichens/free-living algae are important features of the site a critical load of 10 kgN/ha/yr is appropriate.

The SAC is designated for its oak-dominated broadleaved deciduous woodland, with a high proportion of veteran / ancient trees. APIS identifies a nitrogen critical load of 10-15 kg N/ha/yr for the SAC and a sufficiently large additional nitrogen dose when the critical loads are exceeded could lead to the loss of lichens and bryophytes, and changes in ground vegetation.

The first (pre-modelling) stages in our analysis involved a sequence of exercises:

- (1) A review of the road infrastructure and the likely commuter routes that are most likely to connect the proposed allocation to the aforementioned European sites. For the Hayley Green allocation, the most likely journey-to-work routes were identified using Google maps and Census 2011 data. The accompanying screencaps show the most relevant commuter routes in relation to Hayley Green and the aforementioned European sites, including the A3095, A322 and Foresters Way (all relevant to the Thames Basin Heaths SPA), the B3022 and the A332 (both relevant to the Windsor Forest & Great Park SAC). Links more remote from the development site can generally be expected to experience a smaller change in daily flows as traffic disperses across the network with increasing distance.
- (2) Analysis of whether the relevant habitats in the designated sites occur within 200m of these major roads. For the Thames Basin Heaths SPA heathland lies directly adjacent to the A3095 (see Figure 1 for suggested heathland modelling transects). Plantation woodland lies directly adjacent to both the A395 and the A322 (see Figure 2 for suggested plantation woodland modelling transects). For the Windsor Forest & Great Park SAC broadleaved deciduous woodland is adjacent to the B3022 and the A332 (see Figure 3 for suggested broadleaved woodland modelling transects).

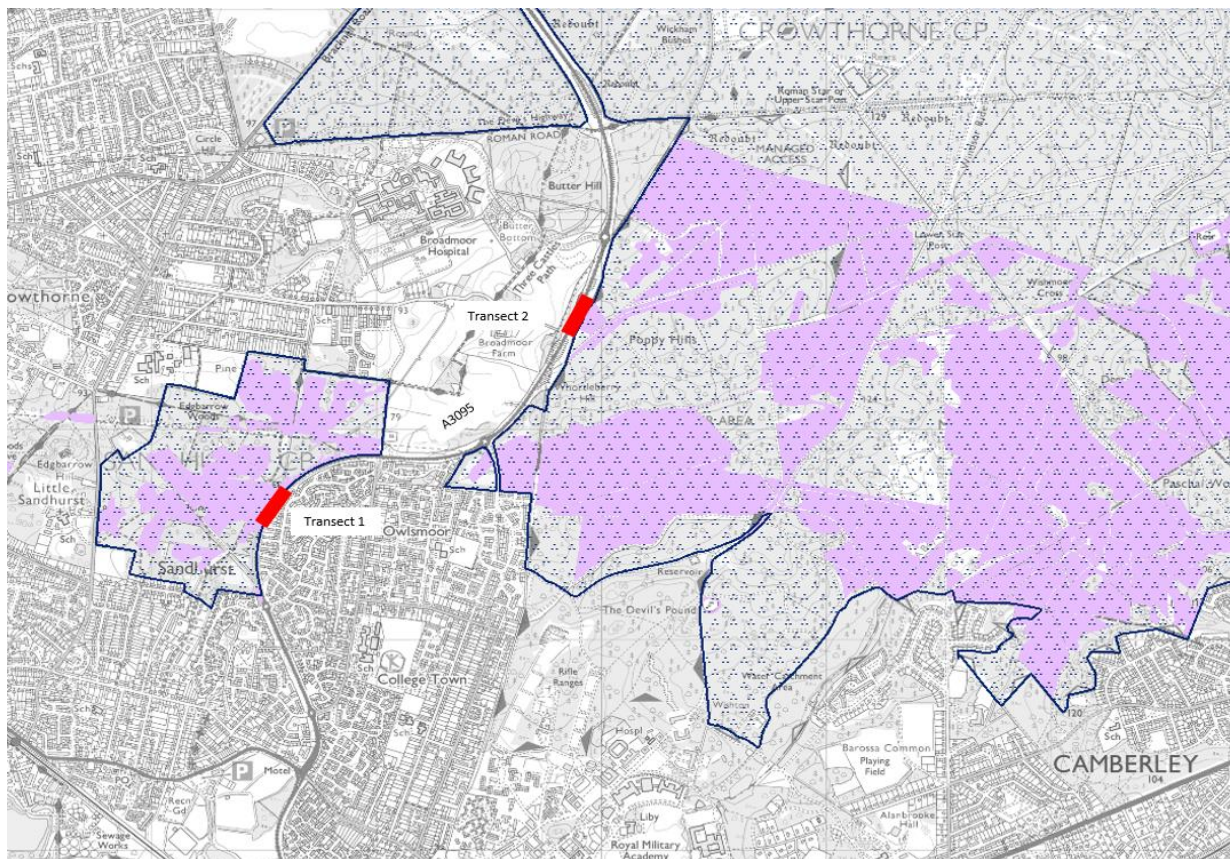


Figure 1: Suggested heathland modelling transect locations for the A3095 adjacent to the Thames Basin Heaths SPA.

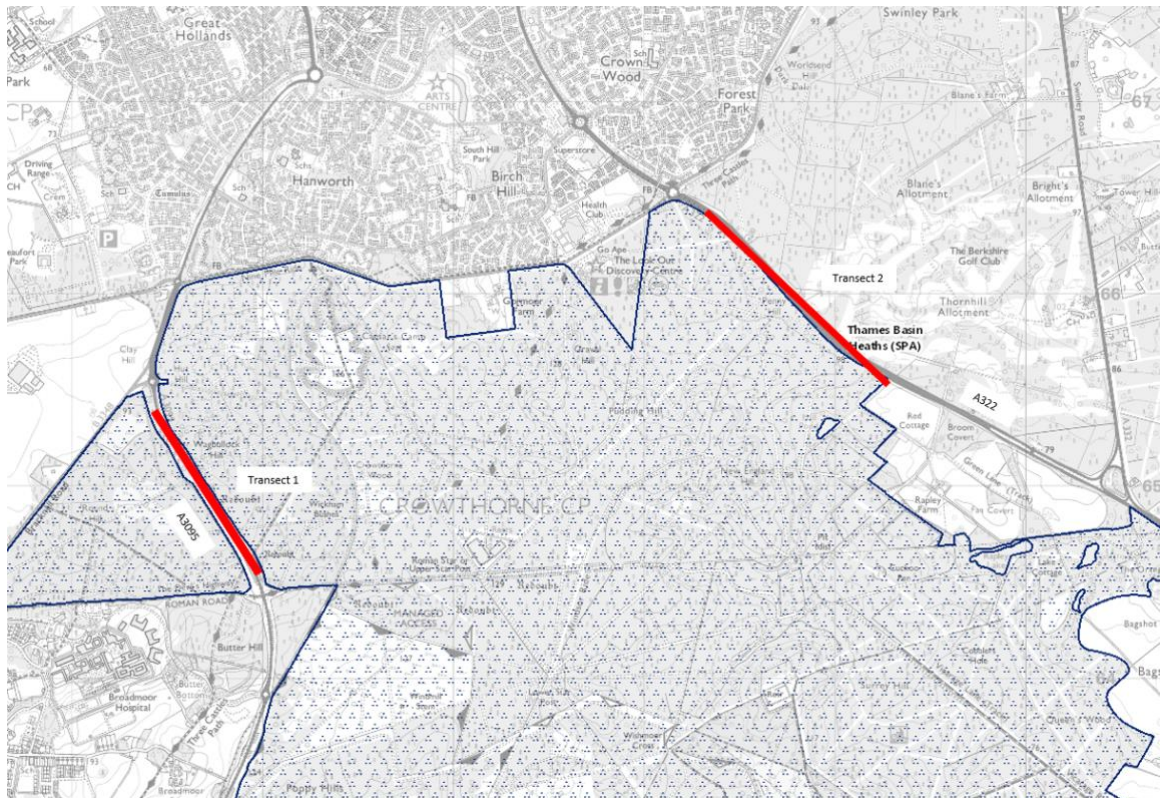


Figure 2: Suggested plantation woodland modelling transect locations for the A3095 and the A322 adjacent to the Thames Basin Heaths SPA.

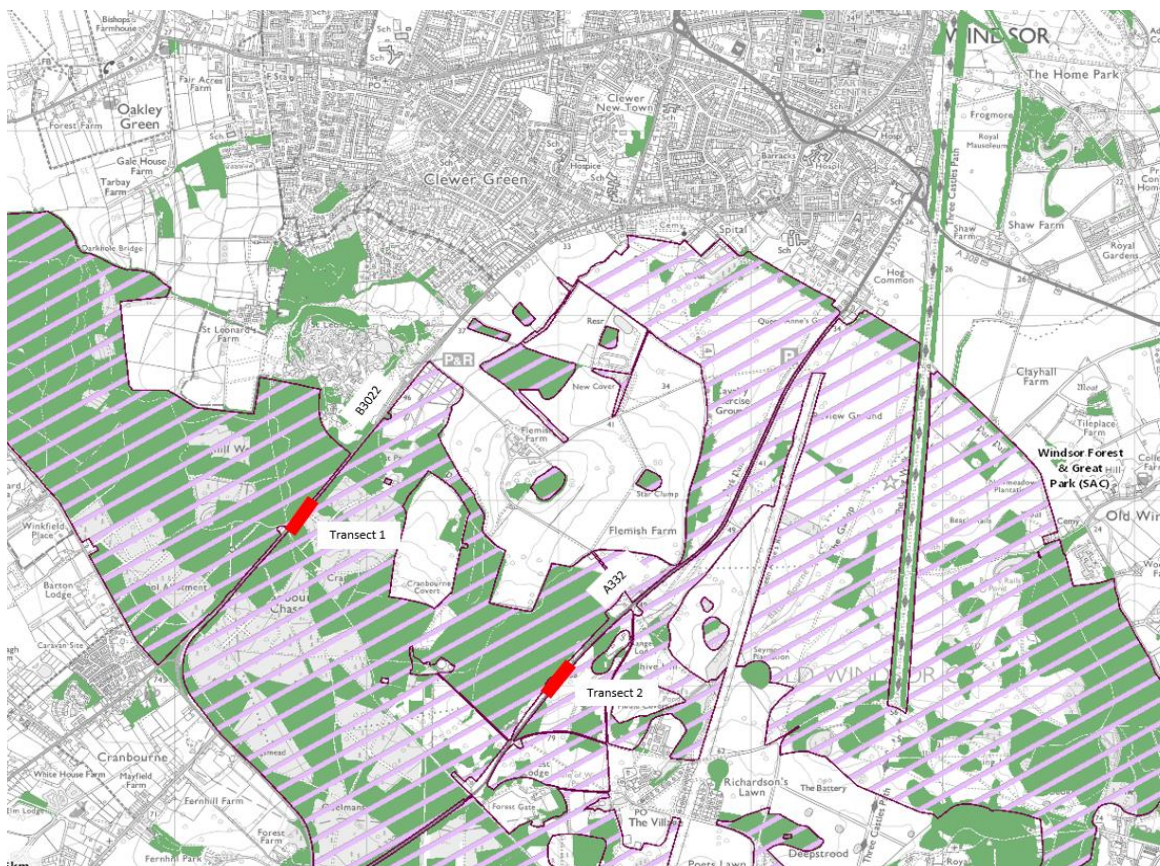


Figure 3: Suggested broadleaved woodland modelling transect locations for the B3022 and the A332 adjacent to the Windsor Forest & Great Park SAC.

- (3) Examination of the change in flows on these links due to the 235 new residential dwellings associated with the Hayley Green allocation. As a first step, prior to any use of the Bracknell Transport Models, Stantec modelled changes in Annual Average Daily Traffic (AADT) attributable to the Hayley Green site alone. These are presented in the table below. The road links identified adjacent to the Thames Basin Heaths SPA are expected to receive a net increase of 12 AADT (expressed as two-way vehicle movements). An increase of 304 AADT is predicted on the B3022 and the A332, both of which are a significant increase on the existing traffic baseline.

Plan Ref:	Route	Arrivals	Departures	Two-way
Windsor Forest and Great Park SAC	Transect 1 (B3022)	152	152	304
	Transect 2 (A332)	152	152	304
Thames Basin Heaths SPA Plantation	Transect 1 (A3095)	6	6	12
	Transect 2 (A322)	0	0	0
Thames Basin Heaths SPA	Transect 1 (Rackstraw Road)	6	6	12
	Transect 2 (Foresters Way)	6	6	12

In the experience of AECOM from many modelling exercises, we consider that any resulting air quality changes from the forecast changes in AADT for the Thames Basin Heaths links would be inconsequential even in combination with other projects and plans for the following reasons:

- Daily traffic flows are not fixed numerals but fluctuate from day to day. The AADT for a given road is an annual average (specifically, the total volume of traffic for a year, divided by 365 days). It is this average number that is used in air quality modelling, but the 'true' flows on a given day will vary around this average figure. Very small changes in average flow such as 12 AADT will lie well within the normal variation (known as the standard deviation or variance) and would not make a statistically significant difference in the AADT; and
- When converted into NO_x concentrations, ammonia concentrations or nitrogen deposition rates, the experience of AECOM's air quality modelling team is that such very small changes in AADT would only affect the third decimal place. The third decimal place is not normally reported in air quality modelling to avoid false precision. For this reason, pollution is generally not reported to more than 2 decimal places (0.01). Anything smaller is simply reported as less than 0.01 (< 0.01) i.e. probably more than zero but too small to model with precision.

In expressing this opinion, we were mindful of Advocate-General Sharpston's Opinion in European Court of Justice Case C-258/11 where at paragraph 48 she stated [emphasis added]: *'the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.*

You and I subsequently had some discussion of whether this ruling was potentially contradictory to other rulings regarding 'in combination' assessment. I expressed the view that they were not. The most pertinent other rulings are those in *Wealden v SSCLG* [2017] EWHC 351 (Admin) (2017) and ECJ combined cases C-293/17 and C-294/17 (the Dutch Nitrogen case). In the former, a case in which I was closely involved, Sir Robert Jay deemed that the (then) standard practice of first determining whether a given project or plan would result in a change in flows of 1000 AADT, and dismissing it from any further assessment if it would not, was not legally compliant. However, he did accept that if the contribution of an individual plan or project was 'very small indeed' (he quoted a notional 20 AADT in making this illustration) it could be legitimately and legally excluded from 'in combination' assessment, which matches Advocate-General Sharpston's observation. Similarly both Advocate-General Kokott (in paragraph 110 of her opinion) and the ECJ itself (in paragraphs 3 and 4 of their ruling) accepted in the Dutch Nitrogen case that the principle of a de minimis threshold (such as that used by the Dutch government) was compatible with the Habitats Directive.

In any event, while we anticipate based on experience that a change of 304 AADT past Windsor Forest & Great Park SAC would translate into a small change in pollutants even at the closest point to the road, we consider that the change is not sufficiently small it can be dismissed outright from any potential 'in combination'


effect and therefore 'in combination' traffic and air quality modelling would be needed using the Bracknell Transport Models. Since the Council did not concur with the suggestion of dismissing impacts on the Thames Basin Heaths SPA based solely on the work reported in this note, we can confirm that **both** Windsor Forest & Great Park SAC and Thames Basin Heaths SPA will be included in the modelling. The next step will therefore involve using the Bracknell Forest strategic transport model to model the alone and 'in combination' effects of the Hayley Green site on both European sites and running the results through an air quality model to determine the effect this would have on NOx and nitrogen deposition along the relevant links within 200m of both European sites.

The analysis will follow the guidance that was attached to your email of 07/07/20, titled '*Air Pollution Effects on Habitats Sites Guidance Note for Air Quality Assessments in Bracknell Forest 2020-21. V1.1*' and the air quality analysis will reference the steps in the Natural England document '*Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)*'. The traffic modelling will extract relevant data for A & M category roads (i.e. those most likely to be materially affected by development) that pass within 200m of the Thames Basin Heaths SPA and Windsor Forest & Great Park SAC within a 10km radius of Warfield Parish. A 10km radius has been chosen because our experience dealing with Natural England in the local area (Marc Turner and colleagues) is that this is the zone of influence they normally wish to be considered in HRA-related modelling exercises.

The work is likely to take approximately 3 weeks for the traffic modelling, 3 weeks for the air quality modelling and 1-2 weeks for the subsequent ecological interpretation i.e. approximately 2 months in total. Allowing for Christmas, the exercise is therefore likely to be complete towards the end of January 2021.

We are providing this updated note to confirm the approach we are to take. Since we are following your advice on this matter, we assume you are content with the approach but please do not hesitate to get in touch with any questions.

Kind regards,


Technical Director (Ecology and Habitats Regulations Assessment)
AECOM Limited