Maidstone Local Plan

Air Quality HRA Technical Note - Removal of Binbury Park

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Kent County Council and Maidstone Borough Council

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Contents

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1. Introduction

1.1 Background

Maidstone Borough Council (MBC) and Kent County Council (KCC) are undertaking a Local Plan Review (LPR) for the MBC to address the latest Government standard methodology for calculating authorities' future housing numbers and extend the Maidstone Local Plan period to at least 2037.

In September 2021, the Stage 2 Maidstone Local Transport Modelling and Air Quality Assessment were completed to test the impacts of the committed and local plan developments. More information can be found in Stage 2 Maidstone Local Plan (LP) – Initial Option Forecast Report (Jacobs, 2021a) and Maidstone LP Review Stage 2 (Jacobs, 2021b).

The air quality assessment undertaken highlighted increases in nitrogen emissions and associated nitrogen deposition on the area of the North Downs Woodland Special Area of Conservation (SAC).

In January 2022, updates were made to the Maidstone Local Transport Model to incorporate changes to the planned developments represented; one of which was the removal of Binbury Park. The updated transport modelling report (Maidstone Local Plan – Extended Forecast Modelling Report, Jacobs, 2022) is currently in production and will provide more details on the assumptions used.

This technical note presents the air quality assessment of the mitigation options considered to minimise air quality impacts of the planned developments in Maidstone on the North Downs Woodland SAC.

1.2 Purpose of this Document

This technical note describes the results of the detailed air quality impact assessment of the Local Plan (LP) 2037 and 2050 scenarios with the removal of Binbury Park (i.e. the removal of the Binbury Park development area). This assessment has determined the impact of nitrogen deposition on the North Downs Woodland SAC.

The 2037 and 2050 removal of Binbury Park Scenario also includes the Defra updated Emission Factor Toolkit (EFT) version 11; (Defra, 2021b) which includes electric vehicle fleet penetration into the fleet mix up to 2050. EFT version 11 post 2030 has been produced for use in calculating carbon dioxide (CO_2) emissions as opposed to air quality pollutant emissions (such as oxides of nitrogen (NOx), as pre-cursor for nitrogen deposition) post 2030. However, the use of electric vehicles will not just reduce emissions of CO_2, but will also reduce emissions of NOx (as electric vehicle do not produce NOx), it is therefore deemed appropriate for this assessment.

The Do-Something (DS) has been compared to the Do-nothing (DN) to estimate the in-combination impact, and the Do-minimum (DM), to estimate the LP alone impact. These have been run to enable a comparison between the level of impact attributable to the LP alone and the in-combination (i.e. with other schemes and developments).

It should be noted that this report is an interim version and will be updated once additional options have been confirmed and assessed.

2. Assessment Methodology, Assumptions and Limitations

2.1 Guidance

The assessment of air quality has been completed using the following guidance:

- Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality (Highways England, 2019)
- Local Air Quality Management – Technical Guidance (LAQM TG(16)) (Defra, 2021a)
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural England, 2018)

2.2 Assessment Scenarios

The following scenarios were considered in this assessment:

- The Do-Nothing (DN) scenario in the forecast year (2037) and future year (2050) includes traffic growth but no committed developments. The growth was derived from a global TEMPro factor (refer to Maidstone Local Plan - Stage 2 - Initial Options Forecast Report, Jacobs, 2021a).
- The Do-Minimum (DM) scenario in the forecast year (2037) and future year (2050) includes traffic growth and future committed developments outlined in the Maidstone Local Plan (i.e. the future baseline scenario described in the Maidstone Local Plan - Extended Forecast Modelling Report; Jacobs, 2022).
- The Do-Something (DS) scenario in the proposed implementation year (2037) and future year (2050) includes traffic growth and future baseline developments considered in the DM scenario, plus an additional housing and employment developments included in the LP Scenario (as described in the Maidstone Local Plan- Extended Forecast Modelling Report; Jacobs, 2022).

2.3 Study Area

Changes in traffic in the Do-Something scenario were compared against the Do-Nothing scenario to define the affected Road network (ARN), which is shown in Appendix A. This is in accordance with Natural England (2018) which recommends that the screening thresholds should be applied to identify 'in-combination' effects.

2.4 Sensitive Receptors

Receptors representing the North Downs Woodland SAC within 200m of the ARN were included in the air quality assessment. Transect receptor points at 10m intervals were modelled, starting from the nearest point of the North Downs Woodland SAC to the ARN road, up to a maximum distance of 200m from the road edge. Transects for each of the designated ecological receptors are shown in Appendix A.

2.5 Summary of Methodology

The methodology set out within Maidstone LP Review Stage 2 Report (Jacobs, 2021b) was followed to assess nitrogen deposition at the North Downs Woodland SAC. However, towards the end of 2021, Defra released a new version of EFT v11 which has been incorporated into this assessment.

The detailed assessment of the potential air quality effects has been undertaken using the dispersion modelling software ADMS-Roads. It is an atmospheric dispersion modelling system that focuses on road traffic as a source of pollutant emissions and is a recognised tool for carrying out air quality impact assessments. Version 5.0 (March 2020) was used for this assessment.

Model verification adjustment factors for NOx were applied to the air quality modelling results. The factors applied to the results were taken from the Maidstone LP Review Stage 2 Report (Jacobs 2021b). Model calibration and adjustment is not discussed further in this assessment.

2.6 Magnitude and Significance

The predicted changes in nitrogen deposition were used to identify the potential for significant effects to occur at the habitat. With regard to nitrogen deposition, critical loads for designated ecological habitats in the UK have been published by the Centre for Ecology and Hydrology - and were obtained from the Air Pollution Information System (APIS) website (Centre for Ecology and Hydrology, 2021).

DMRB LA 105 (Highways England, 2019) states that if the change in nitrogen deposition is greater than 1% of the lower critical load and the total deposition is greater than lower critical load, then there is a potential impact. If this is the case, the information should be reviewed by the project ecologists to determine their significance and where practicable, mitigation should be proposed.

2.7 Assumptions and Limitations

The assessment provided within this technical note is based on information available at the time of writing.

As with any computer model that seeks to predict future conditions, there is uncertainty in the predictions made. Whilst being the best predictions available, elements of impact prediction such as the specific concentration of a pollutant at a given receptor are not precise and are always subject to a margin of error. These errors have been minimised and where necessary a cautious approach has been used.

3. Air Quality Assessment Results

This section considers the likely effects that the LP with the removal of Binbury Park could have on the North Downs Woodland SAC.

HRA Assessment

In order to provide an indication of whether LP with the removal of Binbury Park has the potential to impact nitrogen deposition, the change in nitrogen deposition has been estimated at the closest point within the SAC to the ARN and compared to the lowest critical load for the Designated Site. Where the change in nitrogen deposition (PC) is estimated to be > 1% of the lowest possible critical load, this has been used to indicate where changes in nitrogen deposition have the potential to affect the SAC. Likewise, where changes in nitrogen deposition are estimated to be less than this amount, then it has been assumed that any resulting impacts are unlikely to be significant.

2037

A summary of the results of this assessment for the DN-DS (in-combination impacts) and DM-DS (LP alone impacts) scenarios is provided in Table 3-1 and Table 3-2 respectively. Only receptors with potentially significant impacts are shown.

The results in Table 3-1 and Table 3-2 indicate that the site relevant critical loads are modelled to be exceeded and the increase in nitrogen deposition, as a result of the LP with the removal of Binbury Park, is greater than 1% of the site relevant critical loads for both the DN-DS (in combination) and DM-DS (LP alone) scenarios.

Within the in-combination (DN-DS) scenario, increases in nitrogen deposition greater than 1% of the site relevant critical load are seen across each transect receptor points for transects A and D and up to 80m and 30m respectively for transects B and C.

Within the LP alone (DM-DS) scenario, increase in nitrogen deposition greater than 1% of the site relevant critical loads are seen within transects B and C up to 10m and 0m respectively from the ARN. Both transect receptor points are located adjacent to Boxley Road, which runs directly through the SAC.

2050

A summary of the results in Table 3-3 and Table 3-4 indicate that the site relevant critical loads are modelled to be exceeded and the increase in nitrogen deposition, as a result of the LP with the removal of Binbury Park, is greater than 1% of the site relevant critical loads for both the DN-DS (in combination) and DM-DS (LP alone) scenarios. Only receptors with potentially significant impacts are shown.

Within the in-combination (DN-DS) scenario, increases in nitrogen deposition greater than 1% of the site relevant critical loads are seen across each transect receptor point for transects A and D and up to 30m and 10m respectively for transects B and C.

Within the LP alone impact (DM-DS) scenario, increases in nitrogen deposition greater than 1% of the site relevant critical loads are seen within transect receptor points for transects B, C and D up to 30m, 10m and 0m respectively from the ARN. The increase is due to a growth in traffic flows in 2050 and the SAC running directly adjacent to the road network.

There is therefore potential for the LP with the removal of Binbury Park in 2037 and 2050, to result in significant adverse effects at these locations. The likely significance should be determined by a competent expert for biodiversity within the HRA.

Table 3-1: Modelled air quality designated habitat receptors for nitrogen deposition in 2037, for the HRA assessment between the DN and DS (in-combination) scenario.

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2037 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical Load (%)
			DN	DS			
ECO_A_0	SAC North Downs Woodlands#1	161.5	31.5	31.8	0.2	5	4.72
ECO_A_10	SAC North Downs Woodlands#1	171.5	31.5	31.7	0.2	5	4.43
ECO_A_20	SAC North Downs Woodlands#1	181.5	31.5	31.7	0.2	5	4.26
ECO_B_0	SAC North Downs Woodlands#2	0.1	30.9	32.1	1.2	10	12.34
ECO_B_10	SAC North Downs Woodlands#2	10.1	29.8	30.3	0.5	10	5.41
ECO_B_20	SAC North Downs Woodlands#2	20.1	29.5	29.9	0.3	10	3.48
ECO_B_30	SAC North Downs Woodlands#2	30.1	29.4	29.7	0.3	10	2.56
ECO_B_40	SAC North Downs Woodlands#2	40.1	29.4	29.6	0.2	10	2.01
ECO_B_50	SAC North Downs Woodlands#2	50.1	29.3	29.5	0.2	10	1.64
ECO_B_60	SAC North Downs Woodlands#2	60.1	29.3	29.4	0.1	10	1.41
ECO_B_70	SAC North Downs Woodlands#2	70.1	29.3	29.4	0.1	10	1.21

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2037 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical Load (%)
			DN	DS			
ECO_B_80	SAC North Downs Woodlands#2	80.1	29.2	29.4	0.1	10	1.06
ECO_C_0	SAC North Downs Woodlands#3	0.1	30.1	30.7	0.6	10	5.64
ECO_C_10	SAC North Downs Woodlands#3	10.1	29.5	29.8	0.2	10	2.27
ECO_C_20	SAC North Downs Woodlands#3	20.1	29.4	29.5	0.1	10	1.41
ECO_C_30	SAC North Downs Woodlands#3	30.1	29.3	29.4	0.1	10	1.04
ECO_D_0	SAC North Downs Woodlands#4	10.7	31.2	32.5	1.3	5	26.93
ECO_D_10	SAC North Downs Woodlands#4	20.7	30.6	31.6	1.0	5	20.37
ECO_D_20	SAC North Downs Woodlands#4	30.7	30.3	31.1	0.8	5	16.57
ECO_D_30	SAC North Downs Woodlands#4	40.7	30.1	30.8	0.7	5	13.98
ECO_D_40	SAC North Downs Woodlands#4	50.7	29.9	30.5	0.6	5	12.20
ECO_D_50	SAC North Downs Woodlands#4	60.7	29.8	30.3	0.5	5	10.76
ECO_D_60	SAC North Downs Woodlands#4	70.7	29.7	30.2	0.5	5	9.61

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2037 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical Load (%)
			DN	DS			
ECO_D_70	SAC North Downs Woodlands#4	80.7	29.7	30.1	0.4	5	8.75
ECO_D_80	SAC North Downs Woodlands#4	90.7	29.6	30.0	0.4	5	7.88
ECO_D_90	SAC North Downs Woodlands#4	100.7	29.6	29.9	0.4	5	7.25
ECO_D_100	SAC North Downs Woodlands#4	110.7	29.5	29.9	0.3	5	6.67
ECO_D_110	SAC North Downs Woodlands#4	120.7	29.5	29.8	0.3	5	6.16
ECO_D_120	SAC North Downs Woodlands#4	130.7	29.5	29.8	0.3	5	5.75
ECO_D_130	SAC North Downs Woodlands#4	140.7	29.4	29.7	0.3	5	5.35
ECO_D_140	SAC North Downs Woodlands#4	150.7	29.4	29.7	0.3	5	5.01
ECO_D_150	SAC North Downs Woodlands#4	160.7	29.4	29.6	0.2	5	4.66
ECO_D_160	SAC North Downs Woodlands#4	170.7	29.4	29.6	0.2	5	4.37
ECO_D_170	SAC North Downs Woodlands#4	180.7	29.4	29.6	0.2	5	4.14
ECO_D_180	SAC North Downs Woodlands#4	190.7	29.3	29.5	0.2	5	3.86

Table 3-2: Modelled air quality designated habitat receptors for nitrogen deposition in 2037, for the HRA assessment between the DM and DS (LP alone) scenario.

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2037 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DM) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical Load (%)
			DM	DS			
ECO_B_0	SAC North Downs Woodlands#2	0.1	31.8	32.1	0.4	10	3.51
ECO_B_10	SAC North Downs Woodlands#2	10.1	30.2	30.3	0.1	10	1.44
ECO_C_0	SAC North Downs Woodlands#3	0.1	30.5	30.7	0.2	10	1.87

Table 3-3: Modelled air quality designated habitat receptors for nitrogen deposition in 2050, for the HRA assessment between the DN and DS (in-combination) scenario.

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DN	DS			
ECO_A_0	SAC North Downs Woodlands#1	161.5	31.8	31.8	0.1	5	1.38
ECO_A_10	SAC North Downs Woodlands#1	171.5	31.7	31.8	0.1	5	1.27
ECO_A_20	SAC North Downs Woodlands#1	181.5	31.7	31.7	0.1	5	1.21
ECO_B_0	SAC North Downs Woodlands#2	0.1	32.2	32.8	0.6	10	6.42
ECO_B_10	SAC North Downs Woodlands#2	10.1	30.3	30.6	0.3	10	2.68

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DN	DS			
ECO_B_20	SAC North Downs Woodlands#2	20.1	29.9	30.1	0.2	10	1.67
ECO_B_30	SAC North Downs Woodlands#2	30.1	29.7	29.8	0.1	10	1.21
ECO_C_0	SAC North Downs Woodlands#3	0.1	30.7	31.1	0.3	10	3.45
ECO_C_10	SAC North Downs Woodlands#3	10.1	29.8	29.9	0.1	10	1.35
ECO_D_0	SAC North Downs Woodlands#4	10.7	32.4	32.9	0.5	5	9.95
ECO_D_10	SAC North Downs Woodlands#4	20.7	31.5	31.9	0.4	5	7.60
ECO_D_20	SAC North Downs Woodlands#4	30.7	31.0	31.3	0.3	5	6.16
ECO_D_30	SAC North Downs Woodlands#4	40.7	30.7	30.9	0.3	5	5.24
ECO_D_40	SAC North Downs Woodlands#4	50.7	30.4	30.7	0.2	5	4.55
ECO_D_50	SAC North Downs Woodlands#4	60.7	30.3	30.5	0.2	5	4.03
ECO_D_60	SAC North Downs Woodlands#4	70.7	30.1	30.3	0.2	5	3.57

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DN	DS			
ECO_D_70	SAC North Downs Woodlands#4	80.7	30.0	30.2	0.2	5	3.22
ECO_D_80	SAC North Downs Woodlands#4	90.7	29.9	30.1	0.1	5	2.93
ECO_D_90	SAC North Downs Woodlands#4	100.7	29.9	30.0	0.1	5	2.70
ECO_D_100	SAC North Downs Woodlands#4	110.7	29.8	29.9	0.1	5	2.47
ECO_D_110	SAC North Downs Woodlands#4	120.7	29.8	29.9	0.1	5	2.30
ECO_D_120	SAC North Downs Woodlands#4	130.7	29.7	29.8	0.1	5	2.07
ECO_D_130	SAC North Downs Woodlands#4	140.7	29.7	29.8	0.1	5	1.90
ECO_D_140	SAC North Downs Woodlands#4	150.7	29.6	29.7	0.1	5	1.84
ECO_D_150	SAC North Downs Woodlands#4	160.7	29.6	29.7	0.1	5	1.73
ECO_D_160	SAC North Downs Woodlands#4	170.7	29.6	29.6	0.1	5	1.55
ECO_D_170	SAC North Downs Woodlands#4	180.7	29.5	29.6	0.1	5	1.50

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DN) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DN	DS			
ECO_D_180	SAC North Downs Woodlands#4	190.7	29.5	29.6	0.1	5	1.38

Table 3-4: Modelled air quality designated habitat receptors for nitrogen deposition in 2050 for the HRA assessment between the DM and DS (LP alone) scenario.

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DM) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DM	DS			
ECO_B_0	SAC North Downs Woodlands#2	0.1	32.2	32.8	0.6	10	5.75
ECO_B_10	SAC North Downs Woodlands#2	10.1	30.4	30.6	0.2	10	2.36
ECO_B_20	SAC North Downs Woodlands#2	20.1	29.9	30.1	0.1	10	1.47
ECO_B_30	SAC North Downs Woodlands#2	30.1	29.7	29.8	0.1	10	1.06
ECO_C_0	SAC North Downs Woodlands#3	0.1	30.7	31.1	0.3	10	3.19
ECO_C_10	SAC North Downs Woodlands#3	10.1	29.8	29.9	0.1	10	1.24

Receptor	Ecological Transect	Minimum Distance to Road (m)	Total Nitrogen Deposition Rate 2050 (Maximum) (kg N/ha/yr)		Change in Nitrogen Deposition (DS-DM) (kg N/ha/yr)	Site Relevant Critical Load (kg N/ha/yr)	Change in Nitrogen Deposition in Relation to Lower Critical load (%)
			DM	DS			
ECO_D_0	SAC North Downs Woodlands#4	10.7	32.9	32.9	0.1	5	1.21

4. Conclusions

Detailed air dispersion modelling has been undertaken to predict changes in air quality at ecological receptors within the North Downs Woodland SAC. The assessment took account of APIS background deposition rates to provide predicted nitrogen deposition rates in the North Downs Woodland SAC.

The site relevant critical loads are modelled to be exceeded and the increase in nitrogen deposition, as a result of the LP with the removal of Binbury Park, is greater than 1% of the site relevant critical load for both the DN-DS (in combination) and DM-DS (LP alone) scenarios, in both 2037 and 2050.

Within the in-combination (DN-DS) scenario in 2037, increases in nitrogen deposition greater than 1% of the site relevant critical load are seen across each transect receptor points for transects A and D and up to 80m and 30m respectively for transects B and C.

Within the LP alone impact (DM-DS) scenario for 2037, increase in nitrogen deposition greater than 1% of the site relevant critical loads are seen within transects B and C up to 10m and 0m respectively from the ARN. Both transect receptor points are located adjacent to Boxley Road which runs directly through the SAC.

In 2050, within the in-combination (DN-DS) scenario, increases in nitrogen deposition greater than 1% of the site relevant critical loads are seen across each transect receptor point for transects A and D and up to 30m and 10m respectively for transects B and C.

Within the LP alone impact (DM-DS) scenario, increases in nitrogen deposition greater than 1% of the site relevant critical loads are seen within transect receptor points for transects B, C and D up to 30m, 10m and 0m respectively from the ARN. The increases are due to a growth in traffic flows in 2050 and the SAC running directly adjacent to the road network.

There is therefore potential for the LP with the removal of Binbury Park, to result in significant adverse effects at these habitats. The final determination of significance for designated ecological habitats should therefore be made by a competent expert for biodiversity.

5. References

Cambridge Environmental Research Consultants Ltd (2020). ADMS-Roads dispersion model. Version 5.0.

Centre for Ecology and Hydrology (2021). Air Pollution Information System (APIS), Designated Site Information and Critical Loads data. [Online]. Available at: www.apis.ac.uk. Accessed April 2022.

Conservation of Habitats and Species Regulations 2010.

Defra (2021a). Local Air Quality Management (LAQM) Technical Guidance (TG16). April 2021.

Defra (2021b). Emissions Factor Toolkit v11. Available at https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/. Accessed April 2022.

Highways England (2019). Design Manual for Roads and Bridges (DMRB) LA 105 Air Quality. Highways England, Transport Scotland, Welsh Government and The Department for Infrastructure. November 2019.

Jacobs (2021a). Maidstone LP Stage 2 Initial Options Forecast Report.

Jacobs (2021b). Maidstone LP Review Stage 2 Report.

Jacobs (2022). Maidstone Local Plan- Extended Forecast Modelling Report.

Natural England (2018). Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, V1.4 Final. June 2018.

Natural England (2021). MAGIC website [online]. Available at: https://magic.defra.gov.uk/About_MAGIC.htm. Accessed April 2022

Appendix A. Figures

Figure 1: Air Quality Study Area and Ecological Transect Receptors.