

Appendix 6.5: Ancient Woodland Assessment

Introduction

- 1.1. Waterman Infrastructure & Environment Limited has been instructed by Iceni on behalf of Picture Estates Limited (hereafter referred to as the 'Applicant') to undertake an air quality assessment of the impact of air emissions on ancient woodland within and close to the proposed residential-led development of land to the east of Mendip Way in northeast Stevenage, hereafter referred to as the 'Site'. The proposals are hereafter referred to as 'the Development'.
- 1.2. The adopted North Hertfordshire Local Plan 2011-2031 allocates the Site as a Strategic Housing Site for a new neighbourhood of approximately 600 homes (Policy SP18). The Site comprises seven arable fields/parts of arable fields, two fields / parts of fields used for grazing, and three woodland blocks, as well as an area of recreational land located under the pylon and overhead powerline corridor which leads east towards the Site from Mendip Way. The allocation site covers approximately 53.5 ha.
- 1.3. The Applicant intends to submit an outline planning application for the development of the Site to include:
 - up to 640 Market and Affordable homes;
 - construction of the Principle Access Road from Mendip Way;
 - up to 500 sqm retail, food and beverage, and medical and social floorspace;
 - up to 4 ha of non Green Belt land to make provision for a 2FE primary and possible 4FE secondary school; and
 - suitable parking infrastructure designed in line with local car parking standards.
- 1.4. One of the key principles of the Development is for the existing woodland to form the framework for the Site. Overall, the various pockets of ancient woodland across the Site will be retained with a minimum 15 m buffer which could be landscaped to enhance the quality and diversity of these woodland areas. There is one exception to this, along the central section of the access corridor where there will be a small incursion into the 15m buffer. However, it should be noted this area of woodland is already compromised as maintenance access to the overhead power lines is taken here.

Context

- 1.5. Ancient woodland is defined as area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites. The ancient woodlands within or close to the red line boundary of the Site are shown in **Figure 1**. The ancient woodlands within the Site identified during field surveys are retained in the outline masterplan.
- 1.6. Guidance from Natural England¹ only requires assessment where an ecological site lies within 200m of a road. Assessments can also be scoped out where the change of traffic flow as a result of a development is less than 1,000 annual average daily traffic (AADT). The AADT thresholds are used solely as a trigger for further investigation and are considered to be roughly equivalent to 1% of the critical load or level.

¹ Nature England, 2018, Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations.

- 1.7. NPPF paragraph 193² states that “*when determining planning applications, local planning authorities should apply the following principles ...c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists...*”.
- 1.8. North Hertfordshire Local Plan 2011-2031 Policy SP12 states that the green infrastructure, natural environment and landscape will be protected, enhanced and managed.
- 1.9. Residential development is often associated with an increase in road traffic that gives rise to emissions of nitrogen oxides (NOx) and ammonia (NH₃). These emissions can adversely affect the biodiversity of ancient woodlands, affecting in particular the diversity of lichens and bryophytes present in these habitats.
- 1.10. Deposition of nitrogen (N) can cause a fertilising effect leading to an increase in species which thrive in a nitrogen rich environment, and a decline in those species sensitive to nitrogen. In addition, N deposition can affect the acidity of the soil.

Critical Levels

- 1.11. To protect ecological sites critical levels, relating to the concentration of a pollutant in air, and critical loads, relating to the deposition of air pollution to the ground, have been set either through domestic regulations or through international bodies such as the United Nations Economic Commission for Europe (UNECE). These are provided by the UK Centre for Ecology and Hydrology (UKCEH) and the statutory nature conservation bodies, including Natural England, on the Air Pollution Information Service (APIS) website.
- 1.12. The relevant critical levels are shown in **Table 1** and N deposition critical loads **Table 2**.

Table 1: Critical Levels

NOx (µg/m ³)	NH ₃ where lichens and bryophytes form a key part of the ecosystem integrity (µg/m ³)	NH ₃ (µg/m ³)
30	1	3

Table 2: Critical Loads for Nitrogen Deposition

Habitat Class	Critical Load (kgN/ha/yr)	
	Low Limit	High Limit
Broad-leaved, mixed and yew woodland	10	20

- 1.13. In the absence of specific information on the presences of nitrophobic species in the ancient woodlands it has been assumed that the lower NH₃ critical level applies. It should be noted that it is

² Ministry of Housing, Communities & Local Government, December 2024, National Planning Policy Framework.

standard practice to use the low critical load unless site specific information is available from ecological surveys.

- 1.14. There is not a simple critical load for the acid deposition flux as it depends on the contribution to acidity from other air pollutants, particularly sulphur compounds and is therefore a function of two variables: acidity associated with N deposition and acidity associated with non-N deposition. This assessment used the acidity critical load function on APIS.

Guidance

- 1.15. Assessment initially use screening criteria to determine where effects are likely to be not significant. Where screening criteria are exceeded, further work is triggered to determine whether there is likely to be an adverse effect.
- 1.16. There is a hierarchy of ecological sites, as recognised in the NPPF (paragraph 188). International sites³ and Sites of Special Scientific Interest (SSSI) are often considered using similar assessment criteria, although only international sites such as special protection areas (SPAs) and special areas of conservation (SACs) are covered by the Habitats Regulations. Less stringent assessment screening criteria apply to local nature sites, including ancient woodlands.
- 1.17. For local nature sites Natural England does not formally publish screening criteria. Published guidance from Natural England⁴ relates to the assessment of international sites and SSSIs. Screening criteria for local nature sites are, however published by the Environment Agency (EA)⁵ for the assessment of the impacts of air pollution on local nature sites for environmental permit applications.
- 1.18. For local nature sites, including ancient woodlands, the EA considers the impacts to be insignificant if the impact is less than 100% of a critical level or critical load, irrespective of the background levels. For international sites the threshold is 1%. Natural England often adopt a 4% screening threshold, particularly where there is lots of intensive farming in the local area.
- 1.19. The Institute of Air Quality Management (IAQM) have published guidance on the assessment of air quality impacts on designated nature conservation sites⁶, this adopts the EA's screening approach.

Baseline

- 1.20. The critical levels and critical loads are widely exceeded in England. In the area around the site the critical level for NO_x is achieved, as is the higher critical level for NH₃. In 2020-2022, background levels of NH₃ were around 1.23 µg/m³ according to APIS. The N deposition critical load for woodland is exceeded.
- 1.21. There are many sources of N in the air with a significant contribution due to the long-range transport of air pollution, including from countries outside the UK. The main source of NH₃ in the UK is agriculture, while the main sources of NO_x are combustion processes (such as road transport, and electricity generation). Emissions of NO_x from these sources are declining, but the

³ Since BREXIT the European sites are referred to as National Network sites. The term 'International Sites' also include RAMSAR sites designated under the international treaty for the conservation and sustainable utilization of wetlands.

⁴ Nature England, 2018, Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations.

⁵ Environment Agency, 2025, air emissions risk assessment for your environmental permit

⁶ IAQM, A guide to the assessment of air quality impacts on designated nature conservation sites (version 1.1)

damage to semi-natural habitats has already occurred, with N sensitive species lost in many sites. Emissions of NH₃ have remained more constant at a national level but have increased in areas of numerous intensive pig and poultry farms.

Assessment methodology

- 1.22. The air quality modelling is described in Appendix 6.2 of Chapter 6: Air Quality of the Environmental Statement.
- 1.23. For assessing the impacts on ancient woodlands the IAQM methodology⁶ was used, which adopts the Environment Agency's screening criteria, with relevant data obtained from APIS.
- 1.24. The emissions of NH₃ from road traffic were included in the dispersion model using the emissions factors from the CREAM calculator (version 2A), produced by Air Quality Consultants. For estimating the NO_x emissions, the approach described in Appendix 6.2 was used. The same traffic data and road network was used.
- 1.25. Emissions of NO_x are reducing; however, it has been assumed that there will be no change in the background NO_x or NH₃ concentrations from the APIS 2020-2022 estimates. This provides a conservative assessment.
- 1.26. Concentrations of NO_x and NH₃ were estimated at the closest point of each ancient woodland to the local road network for which traffic data was provided by the project's transport consultant, Woods Hardwick. The ecological receptor locations are shown in **Table 3** and illustrated in **Figure 1**.

Table 3: Critical Loads for Nitrogen Deposition

	Receptor	X, Y coordinates
E1	Harbour Close Wood	524938, 228123
E2	Parsons Green Wood	525621, 227752
E3	Tile Kiln Wood	525747, 227772
E4	Claypits Wood	525576, 228398
E5	Brooches Wood	526052, 227587
E6	New Spring	525999, 227664
E7	Nine Acre Spring	526346, 227595
E8	Longdell Wood	526357, 227860
E9	Claypit ills Spring	526561, 227222
E10	Warrens Green Wood	526338, 228368
E11	Park Wood	526309, 228893
E12	Newberry Grove	526741, 227 586
E13	The Warren	527333, 227636

- 1.27. The N deposition fluxes, expressed as kgN/ha/year at the ancient woodlands were estimated from the predicted concentrations using deposition velocities for forests as shown in **Table 4**.

Table 4: Critical Loads for Nitrogen Deposition

Deposition velocity (m/s)	
NO _x	NH ₃
0.003	0.03

Developmental Impacts

- 1.28. The predicted impact of the Development on the ancient woodlands are shown in **Table 5** for NO_x.

Table 5: Predicted Impact of Development on NO_x concentrations

	Receptor	APIS 2020-2022 baseline (µg/m ³)	Development contribution (µg/m ³)	Impact as % of critical level	Impact greater than 100% of critical level?
E1	Harbour Close Wood	11.5	0.3	3%	No
E2	Parsons Green Wood	12.9	0.4	4%	No
E3	Tile Kiln Wood	12.9	0.4	4%	No
E4	Claypits Wood	11.2	0.2	2%	No
E5	Brooches Wood	12.1	0.5	5%	No
E6	New Spring	12.9	0.4	4%	No
E7	Nine Acre Spring	12.1	0.2	2%	No
E8	Longdell Wood	12.1	0.2	2%	No
E9	Claypit Hills Spring	10.9	0.4	4%	No
E10	Warrens Green Wood	10.9	0.2	2%	No
E11	Park Wood	10.9	0.2	2%	No
E12	Newberry Grove	12.1	0.2	2%	No
E13	The Warren	10.8	0.1	1%	No

1.29. The predicted impact of the Development on NH₃ concentrations are shown in **Table 6**.

Table 6: Predicted impact of Development on NH₃ concentrations

	Receptor	APIS 2020-2022 baseline (µg/m ³)	Development contribution (µg/m ³)	Impact as % of critical level	Greater than 100% of critical level?
E1	Harbour Close Wood	1.26	0.01	1%	No
E2	Parsons Green Wood	1.23	0.03	3%	No
E3	Tile Kiln Wood	1.23	0.03	3%	No
E4	Claypits Wood	1.24	0.01	1%	No
E5	Brooches Wood	1.22	0.03	3%	No
E6	New Spring	1.23	0.03	3%	No
E7	Nine Acre Spring	1.22	0.01	1%	No
E8	Longdell Wood	1.22	0.01	1%	No
E9	Claypit Hills Spring	1.22	0.02	2%	No
E10	Warrens Green Wood	1.23	0.01	1%	No
E11	Park Wood	1.23	0.01	1%	No
E12	Newberry Grove	1.22	0.01	1%	No
E13	The Warren	1.22	0.01	1%	No

1.30. The predicted impact of the Development on the nutrient N deposition is shown in **Table 7**.

Table 7: Predicted impact of Development on N deposition

	Receptor	APIS 2020-2022 baseline (kgN/ha/yr)	Development contribution (kgN/ha/yr)	Impact as % of critical load	Greater than 100% of critical load?
E1	Harbour Close Wood	27.16	0.3	3%	No
E2	Parsons Green Wood	26.98	0.4	4%	No
E3	Tile Kiln Wood	26.98	0.4	4%	No
E4	Claypits Wood	27.06	0.2	2%	No
E5	Brooches Wood	26.85	0.5	5%	No
E6	New Spring	26.98	0.4	4%	No
E7	Nine Acre Spring	26.85	0.2	2%	No
E8	Longdell Wood	26.85	0.2	2%	No
E9	Claypit Hills Spring	26.96	0.4	4%	No

E10	Warrens Green Wood	26.96	0.2	2%	No
E11	Park Wood	26.96	0.2	2%	No
E12	Newberry Grove	26.85	0.2	2%	No
E13	The Warren	26.72	0.1	1%	No

1.31. The predicted impact of the Development on the acid deposition is shown in **Table 8**.

Table 8: Predicted impact of Development on N deposition

	Receptor	APIS 2020-2022 baseline (kgN/ha/yr)	Development contribution (kgN/ha/yr)	Impact as % of critical load function	Greater than 100% of critical load?
E1	Harbour Close Wood	2.03	0.02	2%	No
E2	Parsons Green Wood	2.02	0.03	1%	No
E3	Tile Kiln Wood	2.02	0.03	0%	No
E4	Claypits Wood	2.02	0.01	0%	No
E5	Brooches Wood	2.00	0.03	2%	No
E6	New Spring	2.00	0.03	1%	No
E7	Nine Acre Spring	2.00	0.02	1%	No
E8	Longdell Wood	2.00	0.02	1%	No
E9	Claypit Hills Spring	2.01	0.03	2%	No
E10	Warrens Green Wood	2.01	0.01	0%	No
E11	Park Wood	2.01	0.01	0%	No
E12	Newberry Grove	2.00	0.01	1%	No
E13	The Warren	1.99	0.01	1%	No

1.32. The impact of the emissions from the road traffic associated with the Development on NO_x and NH₃ concentrations are below 5% of the critical level. The Development contribution to nutrient N and acid deposition are also below 5% of the critical loads.

Conclusion

1.33. Following the guidance from the IAQM and Environment Agency the screening criterion used to assess whether there will be a significant impact is 100% of the critical levels and critical loads. As the Development's contribution is a maximum of 5% of a critical level or load it is considered that the Development will not give rise to a significant impact on the ancient woodlands within and close to the Site.

Professional Experience

Claire Holman BSc (Hons), PhD CSci CEnv FEnvSc FIAQM

- 1.34. Claire, a director of Kalaco, has over 40 years of experience of air quality management. She has advised national governments in Europe, Asia and Africa, as well as the European Commission, on a range of strategic air quality and climate change issues. Claire has contributed to the development of IAQM professional guidance, including on the assessment of air quality impacts on nature conservation sites. She is the honorary President and a former chair of the IAQM, has been a member of a government air quality review group, and advised the Department for Transport on their cleaner vehicles and fuels research programme.

Kieran Laxen MEng (Hons) MEnvSc MIAQM

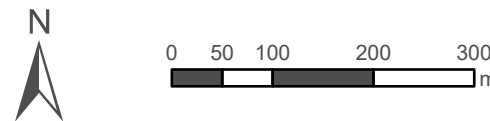
- 1.35. Kieran is a director and the founder of Kalaco. He has 16 years' experience of air quality and during this time has worked on hundreds of projects, including port schemes, road schemes, residential and commercial developments, industrial processes, energy from waste sites, and infrastructure projects. He has extensive experience of ambient air quality monitoring and dispersion modelling for planning and permit applications. Kieran is the Institute of Air Quality Management Vice Chair and is leading the development of professional guidance documents on dispersion modelling, greenhouse gas assessment and air quality assessment for planning. He developed KALACO's meteorological data services, processing Met Office data and creating numerical weather prediction (NWP) data.

Figures

Figure 1: Application Site Plan and Ecological Receptor Locations
(ref: WIE19867-102_GIS_TN_1A)



- Planning Application Boundary
- Ancient & Semi-Natural Woodland
- Ancient Replanted Woodland
- Ecological Receptor Locations



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