

Air Quality Support for Review of ANPS

Review of Emissions Source Data and Trends (NO₂, NO_X, PM₁₀
and ammonia)

Department for Transport

June 2026

Quality information

Prepared by	Checked by	Verified by	Approved by
Laura Hewlett Graduate Air Quality Consultant	Izzy Reeves Air Quality Consultant	Anna Savage Technical Director Air Quality	Anna Savage Technical Director Air Quality

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	March 2026	Draft for comment	AS	Anna Savage	Technical Director
2	April 2026	Final	AS	Anna Savage	Technical Director
3	June 2026	Revised Final	AS	Anna Savage	Technical Director
4	June 2026	Updated Revised Final	AS	Anna Savage	Technical Director
5	June 2026	Final	AS	Anna Savage	Technical Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Department for Transport

Prepared by:

Laura Hewlett
Graduate Air Quality Consultant

AECOM Limited
69 Park Lane
Croydon CR0 1JD
United Kingdom

T: +44 (0)20 8639 3500
aecom.com

© 2026 AECOM Limited. All Rights Reserved.

AECOM Limited ("AECOM") has prepared this Report for the sole use of **Department for Transport** ("Client") in accordance with the terms and conditions of appointment (**ref no: 60775826**) dated **10th March 2026** ("the Appointment").

AECOM shall have no duty, responsibility and/or liability to any party in connection with this **Report** howsoever arising other than that arising to the Client under the Appointment. Save as provided in the Appointment, no warranty, expressed or implied, is made as to the professional advice included in this **Report** or any other services provided by AECOM.

This **Report** should not be reproduced in whole or in part or disclosed to any third parties for any use whatsoever without the express written authority of AECOM. To the extent this **Report** is reproduced in whole or in part or disclosed to any third parties (whether by AECOM or another party) for any use whatsoever, and whether such disclosure occurs with or without the express written authority of AECOM, AECOM does not accept that the third party is entitled to rely upon this **Report** and does not accept any responsibility or liability to the third party. To the extent any liability does arise to a third party, such liability shall be subject to any limitations included within the Appointment, a copy of which is available on request to AECOM.

Where any conclusions and recommendations contained in this **Report** are based upon information provided by the Client and/or third parties, it has been assumed that all relevant information has been provided by the Client and/or third parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in this **Report**. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from the Client and/or third parties.

Table of Contents

1.	Introduction	1
2.	Baseline and Background Concentrations	2
3.	Methodology	5
4.	Results	7
4.1	NO _x Results	7
4.2	PM ₁₀ Results	7
4.3	NH ₃ Results	8
4.4	Timing of Traffic Growth.....	8
5.	References	17

Figures

Figure 1	NO _x and NH ₃ projections with road type London Central (g/km/s)	8
Figure 2	NO _x and NH ₃ projections with road type London Inner (g/km/s).....	9
Figure 3	NO _x and NH ₃ projections with road type London Outer (g/km/s).....	9
Figure 4	NO _x and NH ₃ projections with road type London Motorway (g/km/s)	10
Figure 5	PM ₁₀ projections with road type London Central (g/km/s).....	10
Figure 6	PM ₁₀ projections with road type London Inner (g/km/s)	11
Figure 7	PM ₁₀ projections with road type London Outer (g/km/s)	11
Figure 8	PM ₁₀ projections with road type London Motorway (g/km/s).....	12
Figure 9	NO _x projections with road type Urban (not London) (g/km/s).....	12
Figure 10	NO _x projections with road type Rural (not London) (g/km/s).....	13
Figure 11	NO _x projections with road type Motorway (not London) (g/km/s)	13
Figure 12	PM ₁₀ projections with road type Urban (not London) (g/km/s)	14
Figure 13	PM ₁₀ projections with road type Rural (not London) (g/km/s)	14
Figure 14	PM ₁₀ projections with road type Motorway (not London) (g/km/s)	15
Figure 15	Passenger Uplift at Heathrow Airport due to Expansion.....	16

Tables

Table 1	Local Authority Monitoring within 200 m of the boundary of the airport expansion	2
Table 2	Defra background concentrations, range and mean concentrations within the boundary of both the airport expansion and current site	4

1. Introduction

The purpose of this note is to report on analysis conducted to review emissions assessments conducted to inform the 2018 Airport National Policy Statement (ANPS) (DfT, 2018) and to compare these with the latest emissions information to provide up-to-date information for the revised 2026 Heathrow Expansion NPS (HENPS). This review considers nitrogen dioxide (NO₂), Particulate matter (PM₁₀) and Ammonia (NH₃) and takes into consideration local background concentrations, current and historic vehicle emissions rates and levels of passenger activity over time.

The previous assessment of emissions from surface access modes used Defra's Emissions Factor Toolkit (EFT) version 7.0 (EFT7) (Defra, 2016). The methodologies, fleet projections, and emission factors embedded within EFT7 differ substantially from those in the current EFT2025_v13.1 (EFT13) (Defra, 2025)¹. The approach taken in this review has been designed specifically to isolate and understand the effects of these tool-based changes on projected vehicle emissions of nitrogen oxides (NO_x) and particulates (PM₁₀) in order to understand the likely direction of impacts if re-assessed using today's assumptions.

The previous assessment concluded that the operation of a new North West Runway (NWR) at Heathrow Airport would have an adverse impact on local air quality but that impact would not cause an exceedance of the UK's annual mean air quality objectives. The 2018 ANPS also stated that the NWR would not impact on modelled compliance with the EU Directive limit values. However, it acknowledged that, given the inherent uncertainties associated with air quality modelling, there remained a risk that the NWR could impact on compliance, and that the risk increased the earlier the assumed opening year. The risk was considered medium by 2030, when projected concentrations with the scheme was estimated to fall below 90% of the limit value in the core forecast scenarios and below 95% of the limit value in the baseline scenarios.

Throughout this assessment, both NO_x and nitrogen dioxide (NO₂) are discussed. NO_x refers to nitric oxide (NO) and NO₂, and its effects are more significant for ecological receptors through the deposition of nitrogen as a gas and in precipitation which can affect biodiversity, whereas NO₂ is harmful to human health and therefore is primarily assessed for impacts on human health. NO₂ is considered throughout the baseline and background concentrations section of this note as this is the pollutant more commonly monitored given its impacts on human health, including by local authorities, however the trends observed are likely to be very similar for NO_x. Similarly, later in this note, while only NO_x emissions are discussed for both the 2018 and 2026 assessments, the trends observed in these emissions hold true for NO₂ as well. For both NO_x and NO₂, their absolute concentrations will decrease with increasing distance from an emitting source and as this distance increases, the ratio of NO_x to NO₂ changes, with a greater relative proportion of NO₂ at further distances.

Ammonia (NH₃) emissions impacts were not previously assessed for the ANPS, but current best practice includes these emissions within Habitat Regulations Assessments (HRAs). Consideration of the scale and trends related to these emissions is also set out below.

It should be noted that this assessment focuses on the changing emissions factors data, background data and baseline monitoring data, since the publication of the 2018 ANPS, based on the agreed scope. It does not consider the implication of other factors that have changed since the 2018 ANPS was submitted that could also alter the findings of that previous assessment. Such factors include but are not limited to updated modelling software, updated NO_x to NO₂ conversion assumptions, availability of monitoring data, and the quality of monitoring data (e.g. laboratory performance).

¹ The analysis was conducted using the most recent EFT available at the time (v13.1). Although a newer version (v14.1) has since been released, a review of the emissions data indicates that the trends identified in this assessment remain consistent in the updated EFT v14.1.

2. Baseline and Background Concentrations

A review of existing baseline air quality around Heathrow Airport has been undertaken with NO₂, and PM₁₀ monitoring data between 2018 and 2024 from London Borough of Hounslow, Spelthorne Borough Council, London Borough of Hillingdon and Slough Borough Council sites close to the boundary of the airport expansion area provided in Table 1 (London Borough of Hounslow, 2025) (Spelthorne Borough Council, 2025) (London Borough of Hillingdon, 2025) (Slough Borough Council, 2025). To ensure the analysis remains representative of local conditions while maintaining a clear and focused study area, distance thresholds were applied. While the overall trend of declining pollutant concentrations is observed across a wider area, only sites within defined distances were included in this review. Diffusion tube sites within 200 m of the expansion boundary were selected to reflect conditions closest to the boundary, while automatic monitoring stations, fewer in number but providing more detailed measurements, were considered within 1 km to capture a slightly broader context.

This table shows that, in general, NO₂ concentrations have decreased since 2018, with no exceedance of the annual mean objective at any of these monitoring sites in 2024, with the last exceedance recorded in 2020. Additionally, PM₁₀ concentrations generally decrease since 2018, with no exceedances of the relevant annual mean objectives ('AQO- Annual mean µg/m³') at any site between 2018 and 2024.

There are no Defra managed monitoring sites, either automatic sites part of the Automatic Urban and Rural Network (AURN) or diffusion tube sites part of the UK Urban NO₂ Network (UUNN), close to the boundary of the airport expansion.

Table 1 Local Authority Monitoring within 200 m of the boundary of the airport expansion

Site ID	X, Y	Site Type	Local Authority	Pollutant	AQO-Annual mean (µg/m³)	Monitored NO2 / PM10 Concentration (µg/m³)							
						2018	2019	2020	2021	2022	2023	2024	
HS7 – Hatton Cross	509334, 174997	Automatic, Urban Background	London Borough of Hounslow	NO2	40	28	27.3	17	18.2	20	19	20	
				PM10	40	21	20	18	19	23	20	22	
HAT A, B, C – Myrtle Avenue	509334, 174997	Diffusion Tube, Background	London Borough of Hounslow	NO2	40	29.9	27.2	17.5	21.4	27.0	21.5	20.7	
BAA-OAKS Heathrow Oaks Road	505729, 174496	Automatic, Urban Background	Spelthorne Borough Council	NO2	40	1	1	16.8	18.1	20.3	20.0	18.2	
				PM10	40	1	1	12.7	12.3	13.2	12.1	11.9	
SP48 – Riverside Road, Stanwell	506010, 174516	Diffusion Tube, Kerbside	Spelthorne Borough Council	NO2	40	1	1	21.3	23.0	24.1	25.3	19.3	
SP63 – Northumberland Close	506442, 174275	Diffusion Tube, Urban Background	Spelthorne Borough Council	NO2	40	1	1	24.7	25.5	25.8	26.0	22.8	
SP65 – Spout Lane	504469, 175169	Diffusion Tube, Kerbside	Spelthorne Borough Council	NO2	40	1	1	21.2	22.5	23.4	22.5	18.7	
LHR2 – London Heathrow	508600, 176700	Automatic, Airport	Hillingdon Borough Council	NO2	40	43	42	25	25	30	32	29	
				PM10	40	15	14	13	11	11	13	11	
SIPS – Hillingdon Sipson	507325, 177282	Automatic, Urban Background	London Borough of Hillingdon	NO2	40	30	30	19	19	24	23	22	
HIL1 – London Harmondsworth	505561, 177661	Automatic, Roadside	London Borough of Hillingdon	NO2	40	25	28	18	16	19	18	16	
				PM10	40	23	18	15	16	14	16	13	

Site ID	X, Y	Site Type	Local Authority	Pollutant	AQO-Annual mean (µg/m ³)	Monitored NO ₂ / PM ₁₀ Concentration (µg/m ³)						
						2018	2019	2020	2021	2022	2023	2024
HIL4 – London Harmondsworth Osiris	505671, 177605	Automatic, Urban Background	London Borough of Hillingdon	PM10	40	14	16	14	15	13	14	12
T55 – Heathrow Green Gates	505207, 177072	Automatic, Airport	London Borough of Hillingdon	NO ₂	40	30	31	19	20	26	21	18
				PM10	40	13	14	13	12	12	13	12
LHRBR – Heathrow Bath Road	508279, 176949	Automatic, Roadside	London Borough of Hillingdon	NO ₂	40	-	-	44.5	34	36	36	32
				PM10	40	-	-		14	14	16	13
HIL - London Hillingdon	506951, 178605	Automatic, Urban Background	London Borough of Hillingdon	NO ₂	40	46	45	28	25	28	25	23
				PM10	40	-	-	-	-	-	14	13
HI3 - Hillingdon 3 - Oxford	509557, 176994	Automatic, Roadside	London Borough of Hillingdon	NO ₂	40	35	33	22	25	29	27	27
				PM10	40	19	24	24	23	20	22	18
T54 - Heathrow Oaks	505729, 174496	Automatic, Airport	London Borough of Hillingdon	NO ₂	40	28	26	17	19	20	20	18
				PM10	40	14	15	15	13	12	13	12
HILL11 – Harmondsworth Green	505736, 177752	Diffusion Tube, Roadside	London Borough of Hillingdon	NO ₂	40	28.5	25.3	20.3	18.2	21.9	20.1	18.0
HILL12 – Heathrow Close Longford	504851, 176770	Diffusion Tube, Roadside	London Borough of Hillingdon	NO ₂	40	36	33.0	22.4	23.0	28.2	24.0	21.8
HILL16 – 49 Zealand Avenue	505920, 177188	Diffusion Tube, Roadside	London Borough of Hillingdon	NO ₂	40	38.6	37.7	25.4	26.4	31.0	28.0	25.8
HILL39 – Pinglestone Close/Bath Road A4	506000, 176969	Diffusion Tube, Roadside	London Borough of Hillingdon	NO ₂	40	-	45.7	29.2	29.1	37.1	32.6	27.0
HILL40 – Sipson Close/Sipson Road	507316, 177576	Diffusion Tube, Roadside	London Borough of Hillingdon	NO ₂	40	-	35.5	23.6	23.4	26.6	27.8	24.1
SLH 8 – Slough Lakeside 2	503569, 177385	Automatic, Industrial	Slough Borough Council	NO ₂	40	26	27.6	19.1	18.1	19.9	17.2	16.1
				PM10	40	13.7	15	14	12.4	14.5	12.6	12.5
SLH 9 – Slough Lakeside 2 (co-located Osiris)	503569, 177385	Automatic, Industrial	Slough Borough Council	PM10	40	14.8	14	16.7	12.6	18.3	13.8	12.7
SLO 7 – Colnbrook By-Pass	503196, 177349	Diffusion Tube, Industrial	Slough Borough Council	NO ₂	40	35	32.8	23.8	23.5	25.3	20.1	19.0
SLO 12 – Lakeside Road	503877, 177459	Diffusion Tube, Industrial	Slough Borough Council	NO ₂	40	40.7	39.5	26.6	22.3	24.4	19.8	18.9

Defra produces background maps which provide estimates of background concentrations of specific pollutants. Background concentrations are the proportion of the total concentration of a pollutant once explicit local sources, such as roads, chimney stacks etc, are removed, leaving solely the proportion which is transported into an area from further away or from diffuse sources. These background maps are regularly updated by Defra based on recent monitoring data and projections including the EFT. The latest version of the background maps has a 2021 base year which projects concentrations for each year between 2021 and 2040 (Defra, 2021). A previous version of the background maps is required to obtain the 2018 concentrations, these come from the 2018 based background maps (Defra, 2018). The data from both versions of the background maps show that average

background concentrations of NO₂ and PM₁₀ are below the relevant objectives in all years from 2018 to 2040 and show a notable reduction over this time period. The 2018, 2025, 2030 and 2040 background concentrations within the boundary of both the expansion area and current site are summarised in Table 2.

Table 2 Defra background concentrations, range and mean concentrations within the boundary of both the airport expansion and current site

Year	NO ₂ concentrations (µg/m ³)			PM ₁₀ concentrations (µg/m ³)		
	Minimum	Mean	Maximum	Minimum	Mean	Maximum
2018	22.70	35.00	41.62	15.88	16.68	18.09
2025	14.90	24.73	30.85	12.47	13.42	15.03
2030	12.66	23.21	29.85	12.11	13.06	14.66
2040	10.92	22.38	29.73	11.66	12.59	14.21

3. Methodology

To provide a consistent reference point across the assessments carried out in 2018 and 2026, a nominal traffic flow and speed was selected to represent emissions on the most affected road within the network. The speed on this link was assumed to be 40 mph / 64.4 km/h. This simplified, controlled input allows observed differences in outputs to be attributed primarily to the contrasting assumptions in the tools available between the two assessment years, rather than traffic conditions.

Using this nominal link data, NO_x, particulate matter with an aerodynamic diameter of 10 micrometres or less (PM₁₀), and ammonia (NH₃) emissions were calculated for the years 2025–2050. The following scenarios were assessed:

- 2026 assumptions for road-traffic NO_x and PM₁₀²
- 2018 assumptions for road-traffic NO_x and PM₁₀³; and
- 2026 assumptions for road-traffic NH₃⁴.

All scenarios used projected 24-hour annual average daily traffic (AADT) flows and heavy duty vehicle (HDV) percentages and were run at 5-year intervals (2025, 2030, 2035, 2040, 2045, 2050). AADT flows are the total volume of traffic on a road across a year, divided by 365 to represent average daily traffic flows. HDVs refer to lorries over 3.5 tonnes, buses and coaches, the HDV percentages reflect the proportion of the AADT which is composed of HDVs. Each 5-year interval was evaluated for all relevant London road types (London Central, London Inner, London Outer, London Motorway) to reflect the location of the proposed Heathrow Airport expansion, additionally all England road types (Urban, Rural and Motorway) were assessed as the original road types used are unknown and Heathrow Airport's position at the edge of London. Whilst the focus of this comparison is on 2030 emissions, as these were used as the basis of the previous assessment, further future year emissions have been included in this review and those for 2025 have been included in order to understand predicted trends within each dataset.

A central premise of this methodology is that the major structural differences between datasets used within the 2018 assumptions and 2026 assumptions are expected to influence emissions outputs. These include:

- Updated fleet composition: the tool used in the 2026 assumptions incorporate fleet assumptions updated in line with the March 2024 National Atmospheric Emissions Inventory (NAEI) programme, reflecting recent policy, electrification uptake, and Euro standard turnover. Overall, this represents an improvement in the emissions profile, with a cleaner vehicle fleet leading to lower pollutant emissions.
- This is particularly notable within London. Since the introduction of central London ULEZ in 2019 and its expansion to inner London in 2021 and London-wide in 2023, there has been a substantial and accelerated turnover of the vehicle fleet (GLA, 2025). Older, more polluting vehicles, especially pre-Euro 4 petrol cars and pre-Euro 6 diesel cars and vans, have been removed from the network far quicker than was assumed in the 2018 assessment. The 2026 assumptions reflect current compliance levels, meaning that the fleet is now dominated by vehicles meeting at least Euro 6/VI standards. As a result, the average vehicle assumed to be travelling on London roads is younger, cleaner, and subject to more stringent emissions controls than in the 2018 assumptions.
- The 2026 assumptions also reflect the rapid uptake of low-emission and alternative fuel vehicles. Electric vehicle adoption has occurred faster than previously forecast, particularly for cars, taxis, buses, and light goods vehicles operating in urban areas. London's policies have played a key role here, including requirements for zero-emission capable taxis, large-scale electrification of the bus fleet, and procurement strategies within commercial fleets that favour electric or plug-in hybrid vehicles (TfL, 2025). 2026 assumptions therefore include a higher proportion of battery electric and hybrid vehicles at earlier model years than the 2018 assumptions, alongside a more pronounced decline in diesel cars.

² This scenario was assessed using EFT2025_V13.1 (Defra, 2025), this version of the Defra published Emission Factor Toolkit (EFT) was the most recent version available at the time of this assessment.

³ This scenario was assessed using EFT2016_V7.0 (Defra, 2016), this version of the Defra published EFT was the most recent version available at the time of the previous assessment in 2018.

⁴ This scenario was assessed using CREAM_V2A (Air Quality Consultants, 2025), this tool was not available at the time of the previous assessment therefore NH₃ was only assessed in the 2026 assessment.

- In addition, Euro standard turnover is assumed to occur more quickly. 2026 assumptions incorporate faster scrappage of Euro 5 and early Euro 6 vehicles and a higher representation of later Euro 6d-TEMP and Euro 6d vehicles for cars and vans, and newer Euro VI phases for heavy-duty vehicles. This reflects both regulatory pressure and fleet renewal driven by urban access restrictions and operating costs. Together, these changes result in faster reductions in exhaust NO_x and particulate emissions at the fleet level, while increasing the relative contribution of non-exhaust sources such as tyre and brake wear in later years.
- Revised speed-based emission factors: the 2018 assumptions are based on Computer Programme to Calculate Emissions From Road Transport (COPERT) v4.11 (Emisia, 2014), whereas the 2026 assumptions incorporate COPERT v5.8 (Emisia, 2024), which includes updated real-world emissions behaviour, particularly for post-Euro 6 vehicles.
- The tools used in the 2018 assessment relied heavily on laboratory type-approval data, which underestimated emissions under urban, stop-start driving, particularly for diesel vehicles. COPERT v5.8 incorporates extensive real-world testing, including Real Driving Emissions (RDE) and Portable Emissions Measurement System (PEMS) data, and distinguishes more clearly between Euro 6 sub-classes. This shows that early Euro 6 diesel vehicles emit substantially more NO_x in urban conditions than previously assumed, with significant reductions only evident for later Euro 6d and 6d-TEMP vehicles. As a result, the 2026 assumptions produce higher and more realistic urban NO_x emission estimates than the 2018 assumptions, improving alignment with monitoring data. Updates are also made for petrol vehicles and HDVs, improving representation of particulate emissions and low-speed urban operation. Overall, the changes lead to more credible emissions predictions and highlight the importance of zero-emission vehicles rather than relying solely on progressive Euro standard turnover.
- Extended fleet projections: the tools used in the 2018 assessment only provides fleet projections to 2030, while the tools used in the 2026 assumptions can extend to 2050, potentially enabling full-period modelling and integration of later-stage decarbonisation trends. This is not explored within this piece of work but is a notable difference between the versions of the tools used within each assessment and the future trends have been included for information.

By running both versions side-by-side with identical inputs, the methodology explicitly tests whether historical conclusions remain reasonable given these substantial updates, rather than assuming that older projections align with the current understanding of fleet evolution.

The resultant emissions trajectories from the 2018 and 2026 assessments are compared directly to identify:

- whether earlier assessments are likely to have over- or under-estimated emissions,
- the scale and direction of change introduced by updated fleet projections and emission factors, and
- whether conclusions from the earlier assessments remain valid under current evidence.

4. Results

4.1 NO_x Results

For all London road types and England road types, NO_x projections in the 2018 assessment are higher in the assessment year of 2030 than those projected in the 2026 assessment. This suggests that the NO_x emissions used to inform the 2018 assessment would have been conservative. As a result, model outputs may have overestimated the road NO_x contribution in modelled 2030 scenarios.

For all road types excluding London Inner and London Outer, there is not a large difference between the 2018 and 2026 assumptions of 2030 emissions. However looking forward, the 2026 assessment shows a large decrease from 2030 to 2035 before levelling out. On the other hand, for London Inner and London Outer, there is a larger difference between the 2030 emissions from the 2018 and 2026 assumptions, with a smaller drop off predicted from 2030 to 2035 in the newer dataset.

It is concluded that the indicative analysis suggests that, based on current evidence, the Government's conclusions for NO₂ impacts for the 2018 ANPS can be applied to the position as at 2026 (subject to the uncertainties identified in the analysis). The 2018 ANPS concluded that the operation of a new NWR would not cause an exceedance of the UK's annual mean air quality objective and would not impact on compliance with the EU Directive limit value. The fact that the 2030 emissions projected in 2018 are higher than those projected in 2026 suggests that predicted concentrations and impacts of NO_x-related pollutants using current projections would be no worse than those reported in the 2018 ANPS, however, this should be balanced with recognition that other assumptions on traffic volume, speed on the relevant real-world roads and congestion, as well as other elements of the modelling suite have not been reassessed as part of this review. It should also be noted that any bias associated with road traffic emissions will, to some extent, be reduced by model verification. This is the process by which modelled road traffic contribution outputs are adjusted for bias through comparison with measured air quality data.

4.2 PM₁₀ Results

For road types London Central (Figure 5), London Inner (Figure 6), and London Outer (Figure 7), as well as Urban (not London) (Figure 12) and Motorway (not London) (Figure 14), projections of PM₁₀ are higher in the 2018 assessment than those in the 2026 assessment in 2030. This suggests that for PM₁₀ under these road types, the 2018 assessment was conservative.

For road type London Motorway (Figure 8) and Rural (not London) (Figure 13) however, projected PM₁₀ concentrations are lower in 2030 in the 2018 assessment than in the 2026 assessment. This suggests that the 2018 assessment may not represent a worst-case assessment in relation to PM₁₀ emissions on motorways in London or on rural roads outside of London. Whilst this may mean that sensitive receptors close to motorways in London and rural roads outside of London experience a greater impact than predicted as part of the 2018 assessment works, it should be noted that vehicle emissions and traffic flows are only part of the assessment that have changed. An older set of Defra modelled background concentrations were used in the 2018 assessment and the model was verified using air quality monitoring data available at that time.

In conclusion, PM₁₀ emissions factors are now lower in five out of seven road types assessed when compared to the 2018 ANPS. Of the road types where this is not the case, there will have been fewer receptors located adjacent to Rural (not London) roads compared to other road types, given the location of the scheme. Receptors located adjacent to London Motorway roads will typically be setback further than those on other London road types, suggesting that greater impacts are likely to have occurred at receptors adjacent to those roads. The higher background PM₁₀ concentration used to inform the 2018 ANPS will also contribute to a potential overestimate of annual mean PM₁₀ concentrations in the 2030 scenarios.

Taking all this into account, the indicative analysis suggests that, based on current evidence, the Government's conclusions for PM₁₀ impacts for the 2018 ANPS can be applied to the position as at 2026 (subject to the uncertainties identified in the analysis). The 2018 ANPS concluded that the NWR would not cause an exceedance of the UK's annual mean air quality objective for PM₁₀, nor would it impact on modelled compliance with the EU Directive limit value for PM₁₀. The fact that the 2030 PM₁₀ emissions projected in 2018 are higher than those projected in 2026 for most road types that affect the majority of receptors in that assessment suggests

that predicted concentrations and impacts of PM₁₀ using current projections would be no worse than those reported in the 2018 ANPS. Again, it should also be noted that any bias associated with road traffic emissions will, to some extent, be reduced by model verification.

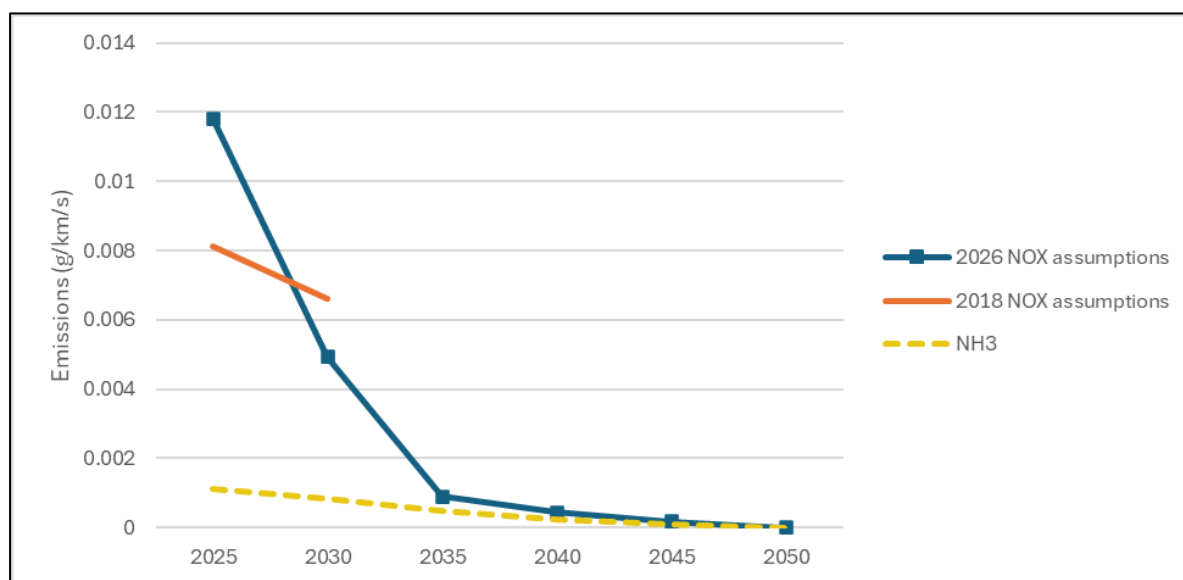
4.3 NH₃ Results

Whilst not presented in the 2018 assessment, NH₃ emissions are included in the 2026 review to provide additional understanding of emission concentrations. A general decreasing trend can be observed for all road types over the full projection period (2025-2050) (Figure 1, Figure 2, Figure 3 and Figure 4).

4.4 Timing of Traffic Growth

The 2018 assessment included an assumption that all growth would occur in 2026, in line with the assumed opening date of the expanded airport at that time, whilst current projections show a steady increase over time, with the final capacity increase coming in 2054. The predicted trends in passenger growth⁵ are shown in Figure 15. Whilst this revised trend does show higher increases in passenger numbers at the end of the growth period, exceeding the total previously predicted, this is likely to be offset by the significantly lower increases earlier in the plan period, when per vehicle emissions are predicted to be higher.

Figure 1 NO_x and NH₃ projections with road type London Central (g/km/s)



⁵ Passenger growth sourced from DfT Aviation Model outputs. To note the passenger growth shown reflects total passengers and some of these will be transfer passengers who do not require surface access via road, this is therefore just shown to give an indication of the change in overall activity and timing of passenger growth at Heathrow since 2018

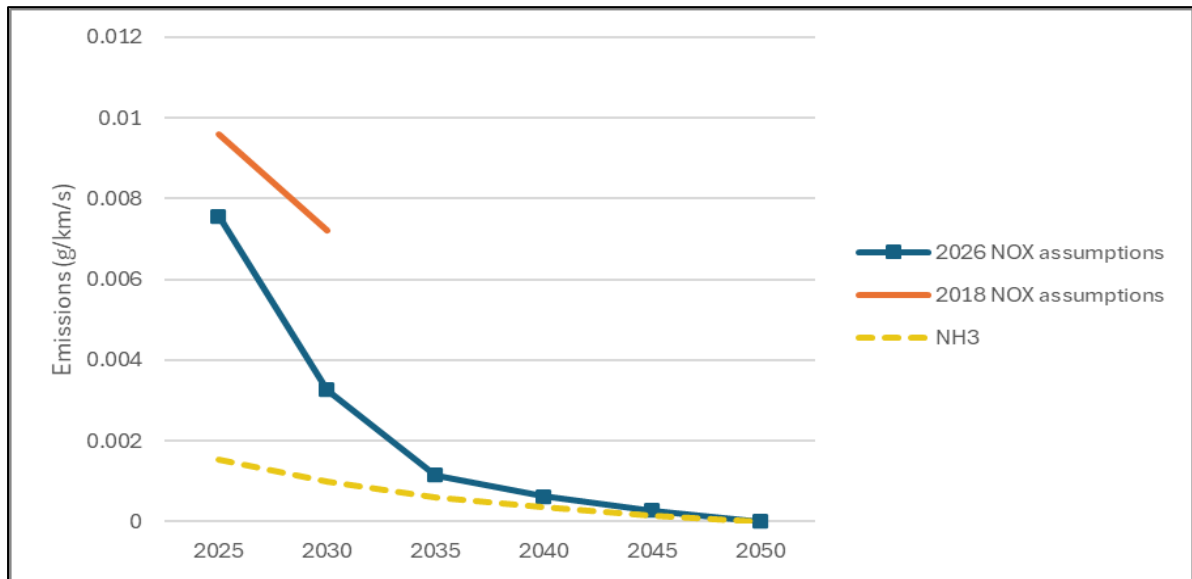
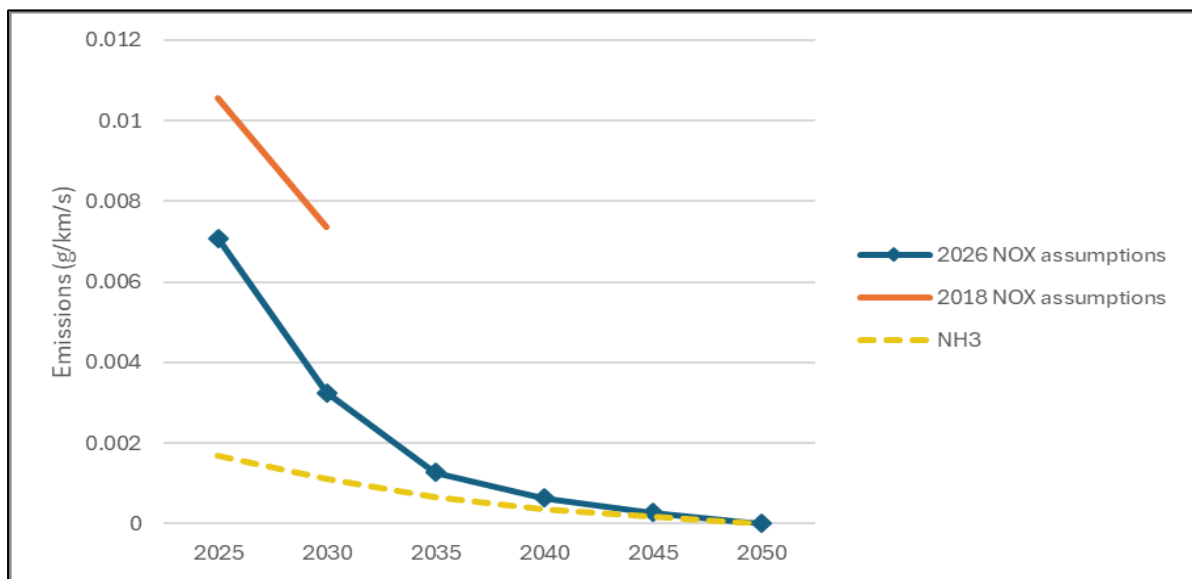
Figure 2 NO_x and NH₃ projections with road type London Inner (g/km/s)**Figure 3 NO_x and NH₃ projections with road type London Outer (g/km/s)**

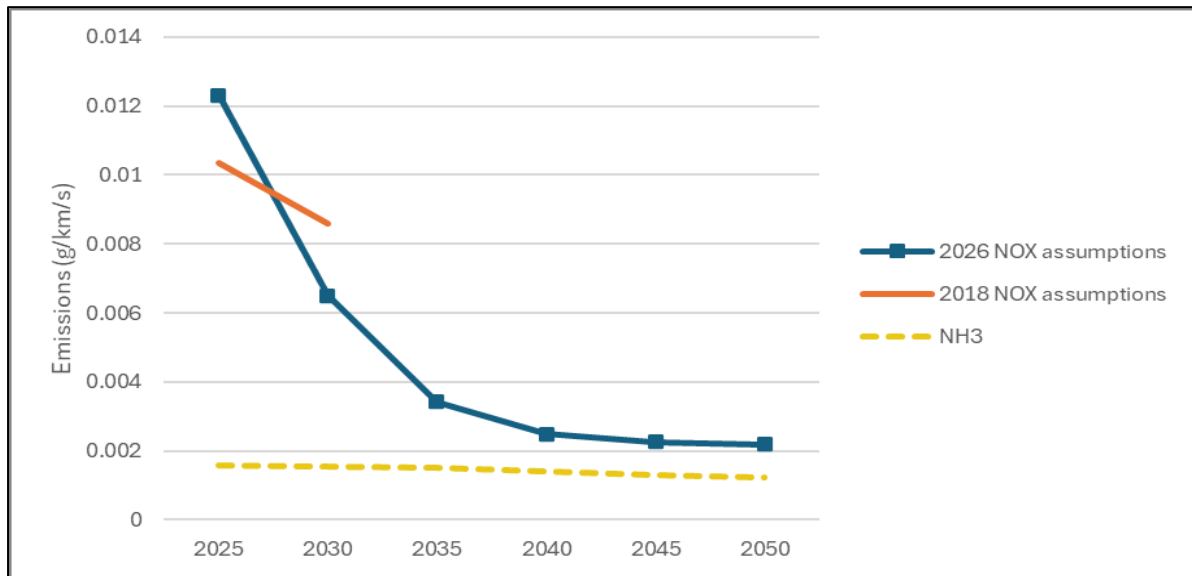
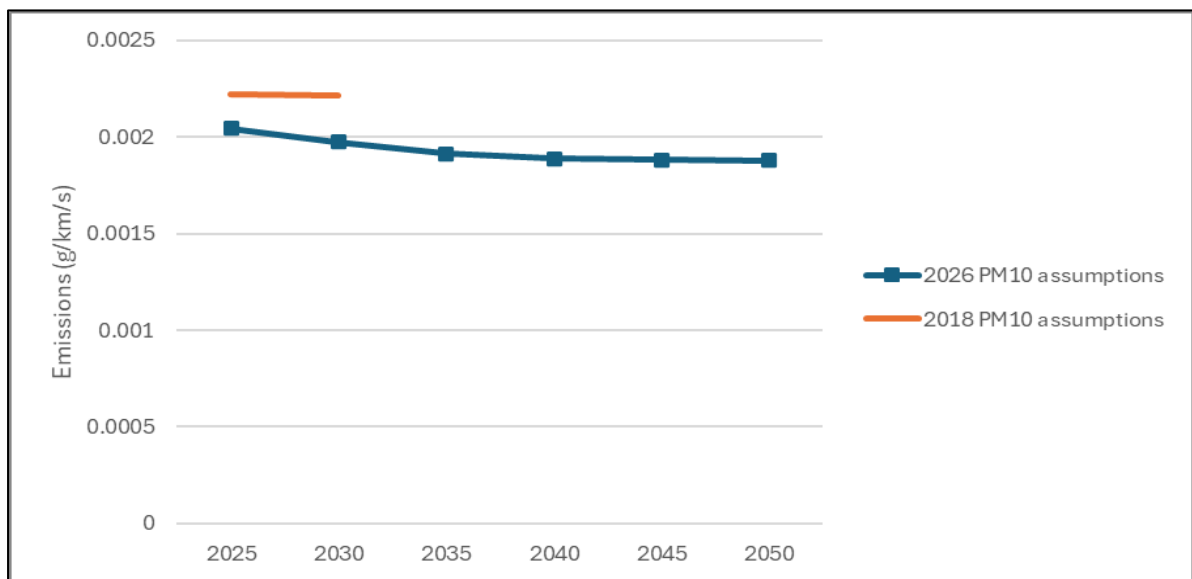
Figure 4 NO_x and NH₃ projections with road type London Motorway (g/km/s)**Figure 5 PM₁₀ projections with road type London Central (g/km/s)**

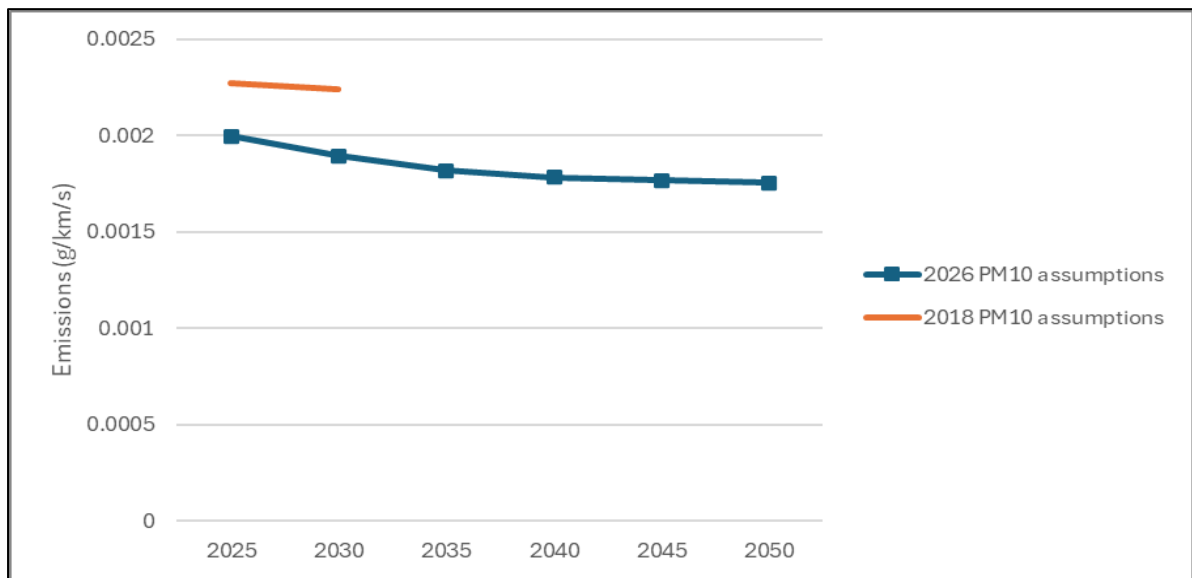
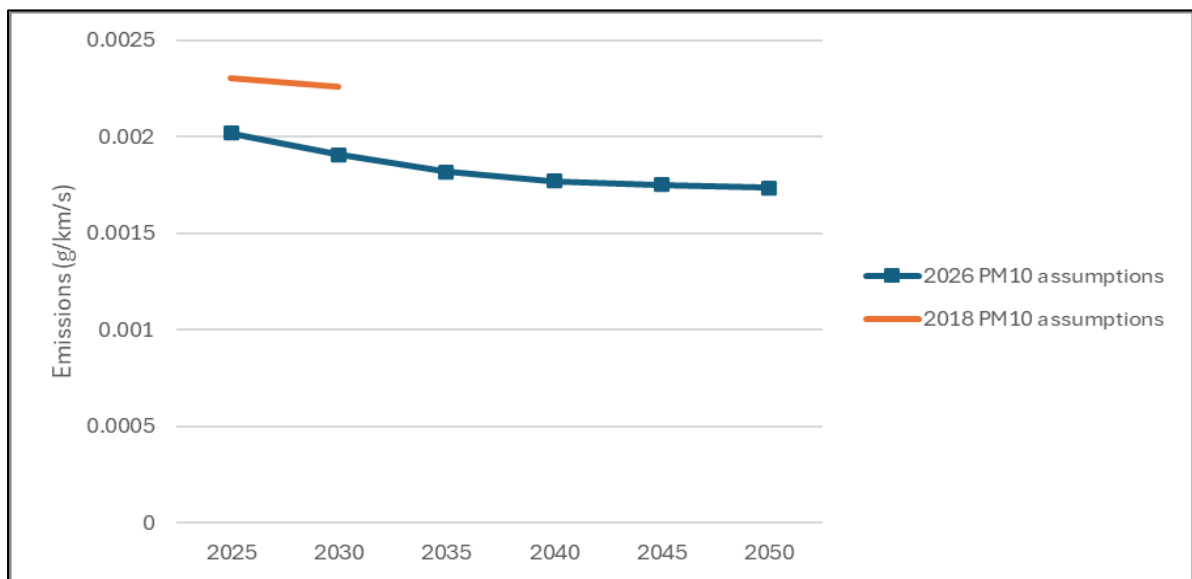
Figure 6 PM₁₀ projections with road type London Inner (g/km/s)**Figure 7 PM₁₀ projections with road type London Outer (g/km/s)**

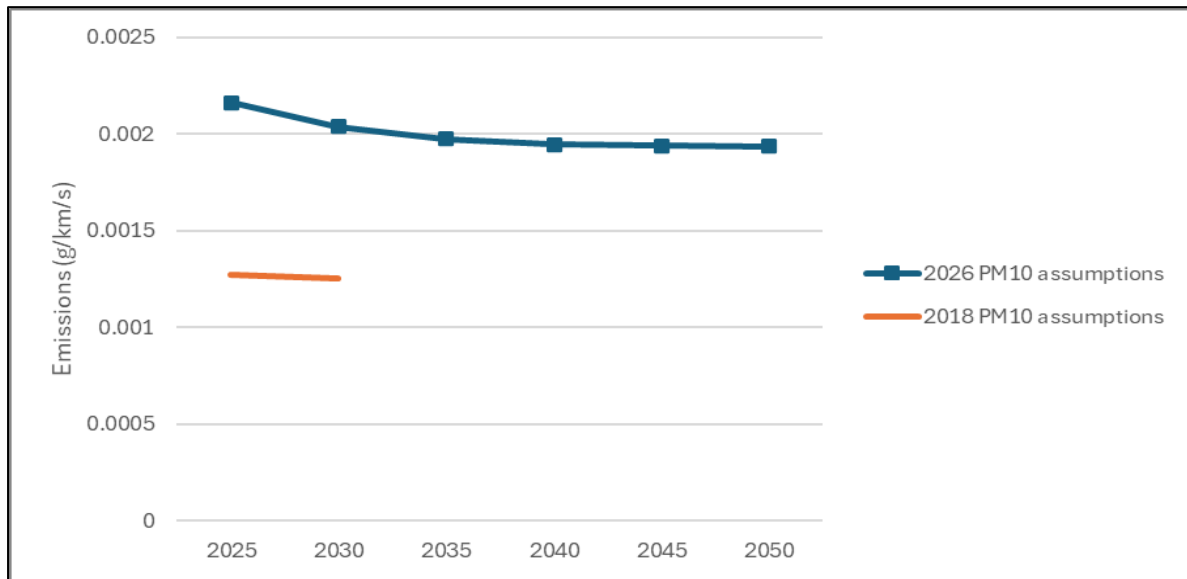
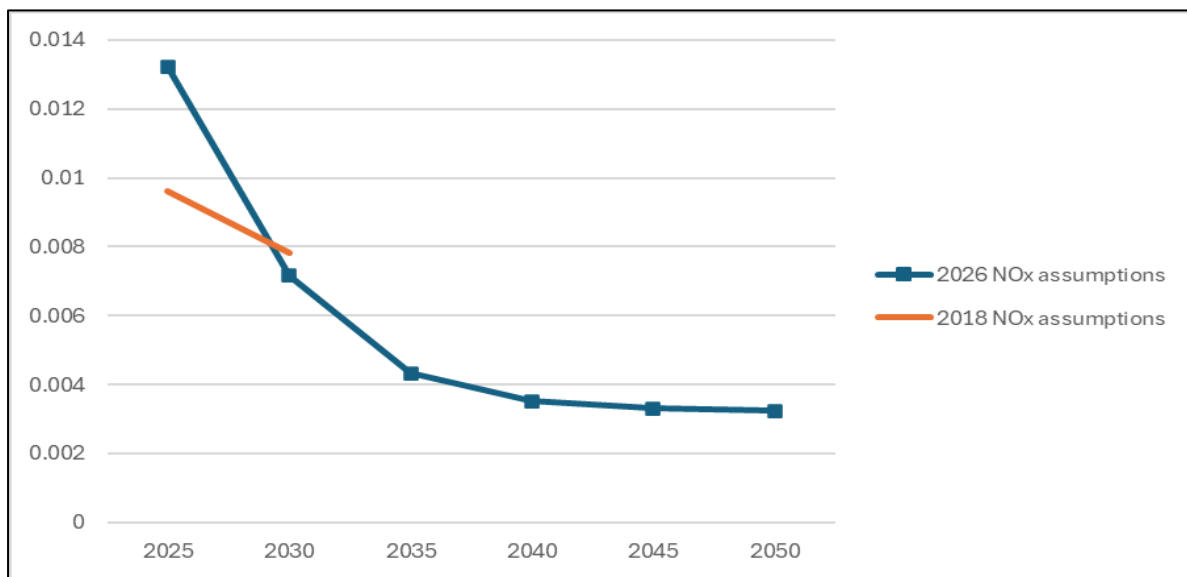
Figure 8 PM₁₀ projections with road type London Motorway (g/km/s)**Figure 9 NO_x projections with road type Urban (not London) (g/km/s)**

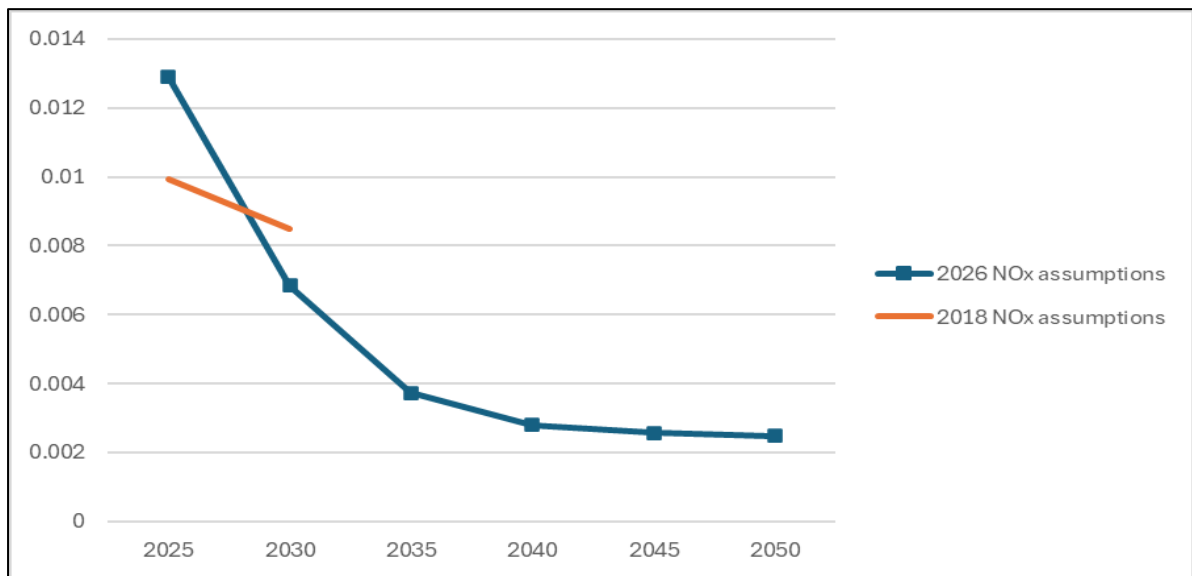
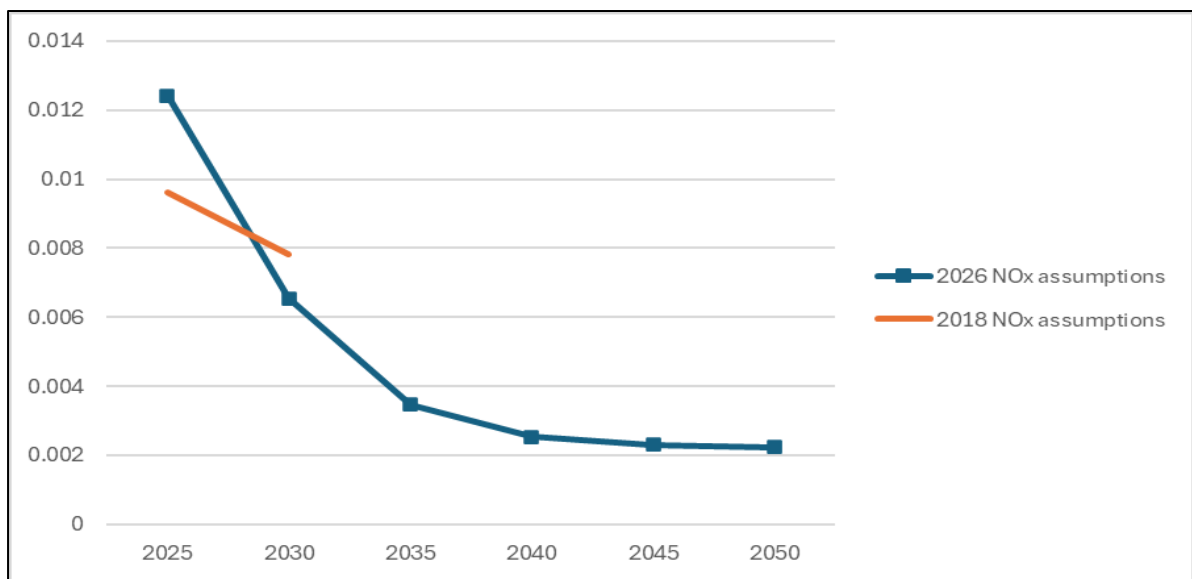
Figure 10 NO_x projections with road type Rural (not London) (g/km/s)**Figure 11 NO_x projections with road type Motorway (not London) (g/km/s)**

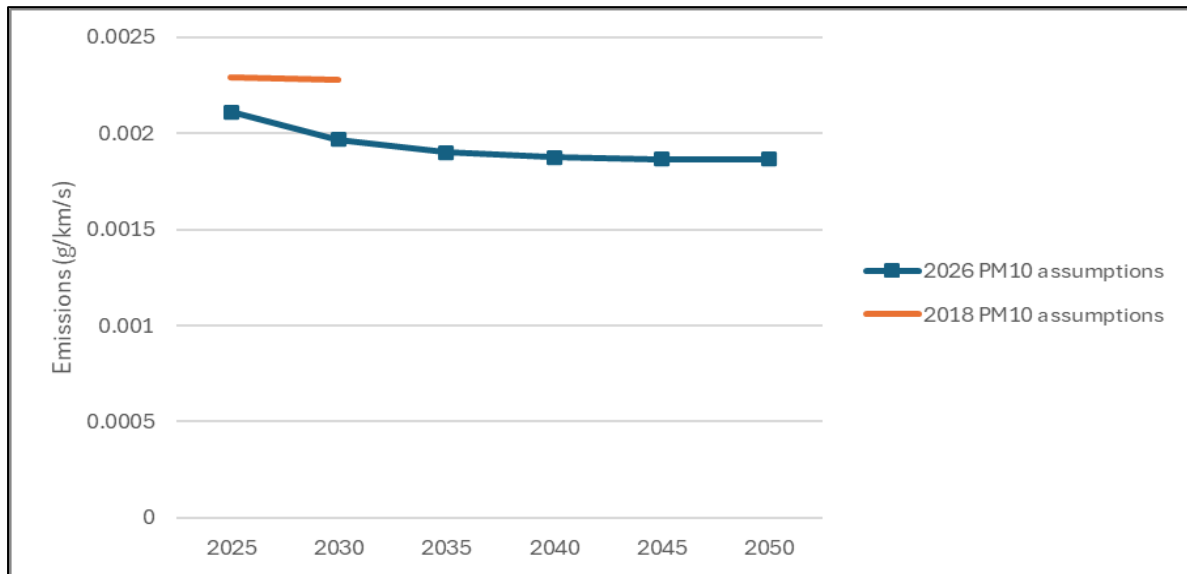
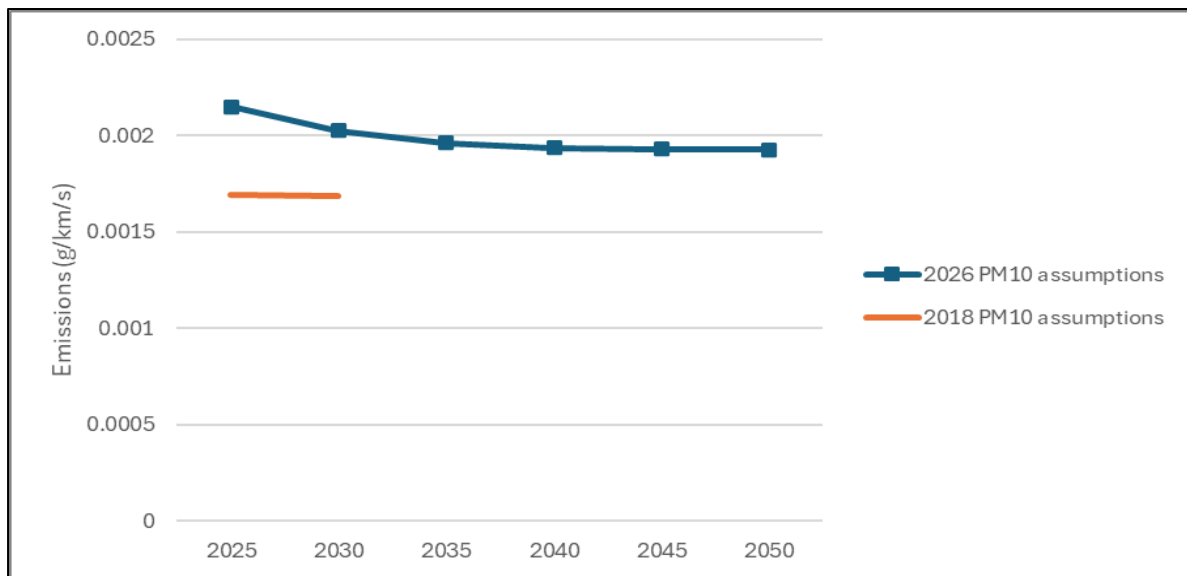
Figure 12 PM₁₀ projections with road type Urban (not London) (g/km/s)**Figure 13 PM₁₀ projections with road type Rural (not London) (g/km/s)**

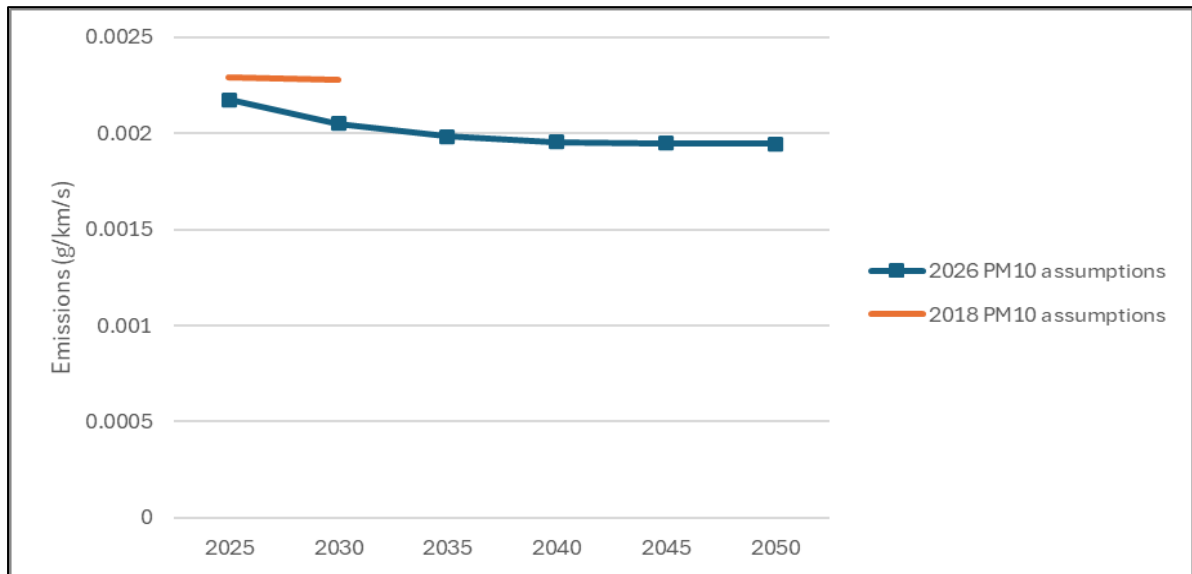
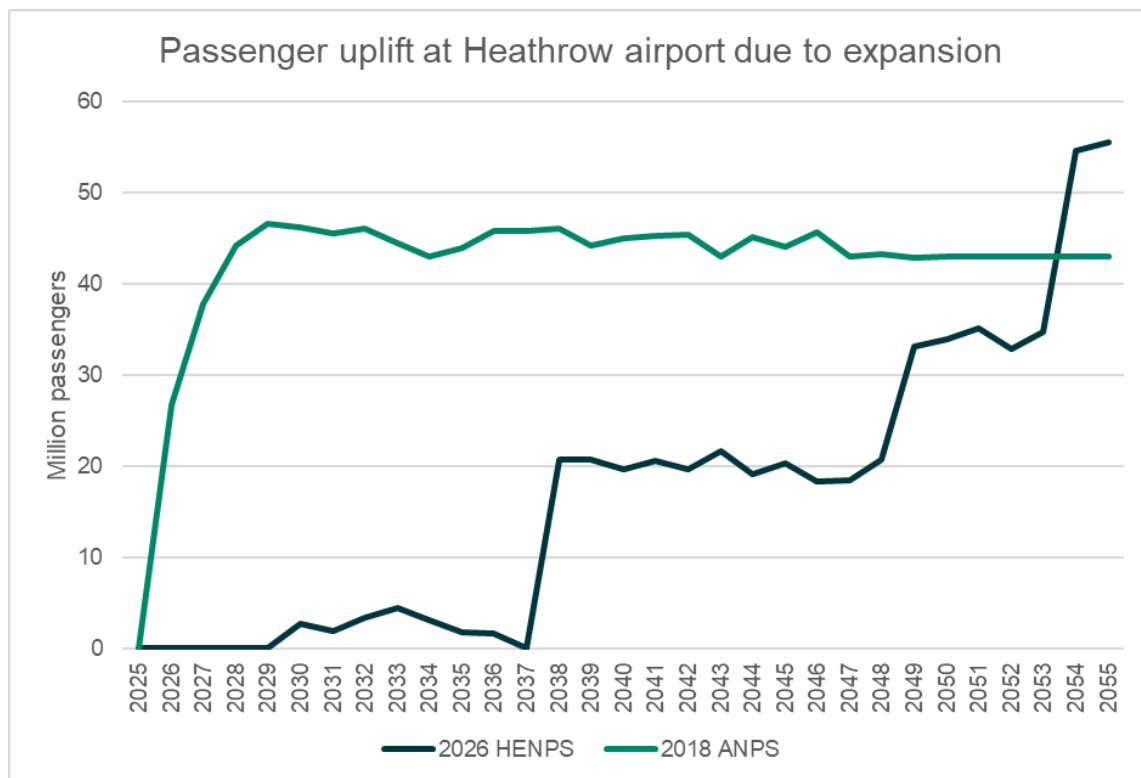
Figure 14 PM₁₀ projections with road type Motorway (not London) (g/km/s)

Figure 15 Passenger Uplift at Heathrow Airport due to Expansion

5. References

- Air Quality Consultants. (2025). *CREAM V2A*.
- Defra. (2016). Emissions Factors Toolkit v7.0.
- Defra. (2018). *Background Mapping data for local authorities - 2018*. Retrieved from <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>
- Defra. (2021). *Background Mapping data for local authorities - 2021*. Retrieved from <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>
- Defra. (2025, April). Emissions Factors Toolkit v13.1 User Guide.
- DfT. (2018, June). Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England.
- Emisia. (2014). Update of the Air Emissions Inventory Guidebook - Road Transport 2014 Update.
- Emisia. (2024, October). Guidebook and COPERT updates 2024.
- GLA. (2025). *London-wide Ultra Low Emissions Zone - One Year Report*.
- London Borough of Hounslow. (2025). *Air Quality Annual Status Report for 2024*.
- London Borough of Hillingdon. (2025). *Air Quality Annual Status Report for 2024*.
- Slough Borough Council. (2025). *Air Quality Annual Status Report for 2024*.
- Spelthorne Borough Council. (2025). *Air Quality Annual Status Report for 2024*.
- TfL. (2025, October). London's Electric Vehicle Infrastructure Strategy - 2025 Update.

