

Air Quality around Heathrow Airport

Q1 2019 Briefing

Background

Heathrow Airport Ltd (HAL) began an air quality monitoring programme in 1993. Today HAL owns and operates one on-airport monitor and funds three other monitors around the airport. Data from these four continuous monitoring stations, as well as eight other continuous monitors operated by local authorities and DEFRA within 2km of the Airport, are shared and summarised on heathrowairwatch.org.uk.

Air quality management is a key priority for HAL and we continue to work in partnership with our key stakeholders – especially local authorities and national Government – to reduce emissions from all sources in the area in order to meet the EU & UK limit values. The main pollutants of concern around Heathrow are measured at all stations – nitrogen dioxide (NO₂) and particles (measured as PM₁₀ and PM_{2.5}).

Headlines

Key information for this quarter is:

- There were three exceedances of the hourly mean NO₂ concentration of 200µg/m³ recorded in Q1 at Heathrow LHR2. At relevant locations, 18 exceedances are allowed per year before the limit value is breached. LHR2 is not a location of relevant public exposure.
- There were three exceedances of the PM₁₀ daily mean concentration of 50µg/m³ recorded in Q1 at Heathrow LHR2 and Harlington, and there was one exceedance recorded at Green Gates and at Oaks Road. At relevant locations, 35 exceedances are allowed per year before the limit value is breached.
- The number of aircraft movements made by the newest aircraft (CAEP8) has increased to 33.4% at the end of Q1 and the percentage continues to rise (see Fig.2).

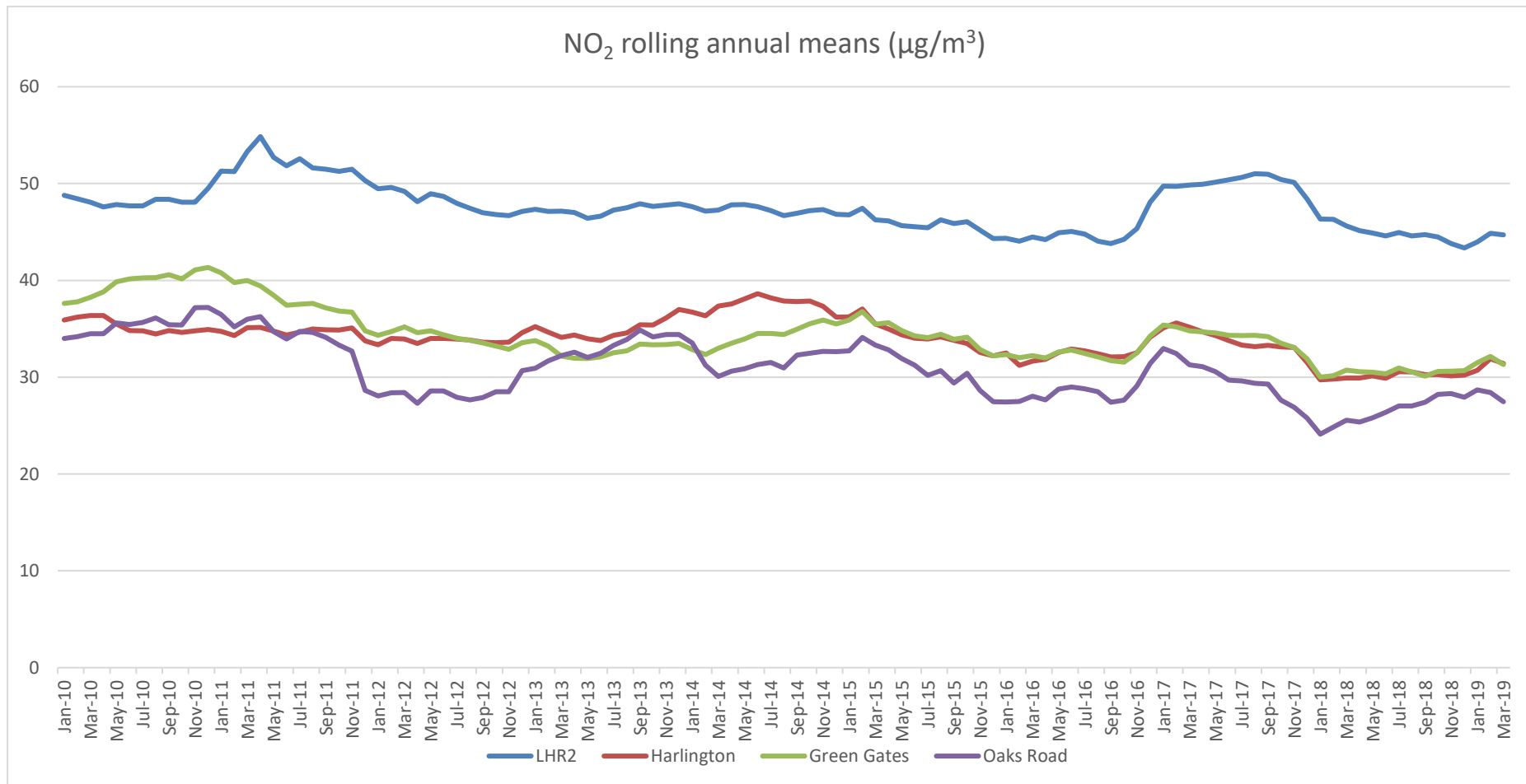
Year-to-date monitoring

NO₂, PM₁₀, and PM_{2.5} are measured at HAL-funded monitoring sites. In addition, ozone is measured at the Harlington station. For a strict comparison against air quality objectives, data capture should be >90% over a calendar year. The hourly mean limit value for NO₂ is 200µg/m³, not to be exceeded more than 18 times per calendar year. The daily mean limit value for PM₁₀ is 50µg/m³, not to be exceeded on more than 35 days per calendar year. Table 1 provides a summary of measured data capture from HAL's four monitoring sites as well as year-to-date exceedances of the relevant hourly NO₂ and daily PM₁₀ concentrations. Data capture for all pollutants at all HAL-funded monitoring sites was 90% or higher. Fig.1 provides the NO₂ rolling 12-month means since 2010.

Table 1. Annual rolling means for March 2019 and quarterly data capture and exceedances of relevant hourly NO₂ and daily PM₁₀ concentrations at HAL-funded monitoring sites

Monitoring station	March 2019 annual rolling means (2018 annual means) (µgm ⁻³)			Data capture in Q1 (%)			Exceedances in Q1 (ytd)	
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂ (Hourly)	PM ₁₀ (Daily)
Heathrow LHR2	44.7 (43.4)	14.4 (14.2)	8.8 (8.6)	100	100	100	3	3
Harlington	31.4 (30.2)	15.9 (15.4)	9.6 (9.8)	100	100	100	0	3
Green Gates	31.3 (30.7)	13.8 (13.7)	8.4 (8.2)	100	100	100	0	1
Oaks Road	27.5 (27.9)	15.4 (15.3)	9.5 (9.1)	100	90	90	0	1

Fig.1. NO₂ rolling annual means at HAL funded sites since 2010 (µg/m³)



Emission Reduction Efforts

Heathrow successfully reduced annual ground-based nitrogen oxides (NO_x) emissions by 430 tonnes (16%) between 2009 and 2013¹ as part of our commitment to playing our part in improving local air quality. These reductions have been achieved through a combination of efforts to reduce emissions from every major source, including aircraft, vehicles, and heating.

CAEP standard of aircraft movements

Through its Committee on Aviation Environmental Protection (CAEP), the International Civil Aviation Organization (ICAO) sets new emission standards for aircraft engines – including for NO_x. Engine models which were certified on or after 1 January 2014 must meet CAEP8, the latest standard for NO_x.

Fig.2 shows the proportion of aircraft movements at Heathrow based by CAEP standards. The proportion of flights made by newer, cleaner CAEP8 aircraft increased from 28.6% in 2018 to 33.4% at the end of Q1 2019. The trend is expected to continue as airlines proceed in replacing their older, higher emission aircraft and Heathrow's NO_x emission landing charges and engagement encourages the use of best-in-class aircraft.

¹http://www.heathrowairwatch.org.uk/documents/Heathrow_Airport_2013_Air_Quality_Assessment_Detailed_Emissions_Inventory.pdf

Fig.2. Total aircraft movements since 2010 by CAEP standard

