Air Quality around Heathrow Airport

Q2 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 (NO_2) and particles (measured as PM_{10} and $PM_{2.5}$).

Headlines

Key information for this quarter is:

- There were no exceedances of the hourly mean NO_2 concentration of 200µg/m^3 recorded in Q2. 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 PM_{10} daily mean concentration of 50µg/m^3 recorded in Q2 at all four sites. 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 33.7% at the end of Q2 and the percentage continues to rise (see Fig.2).

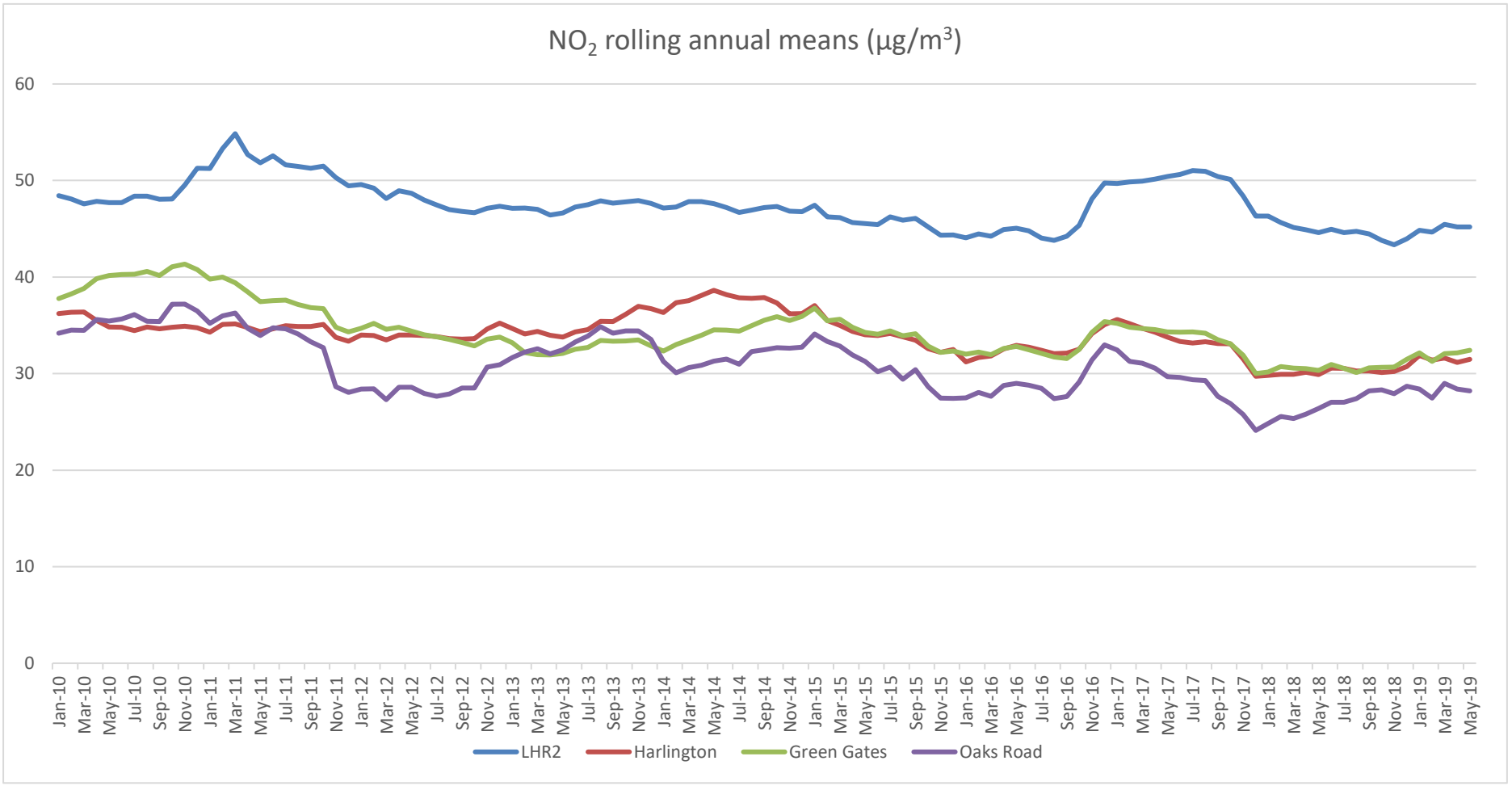
Year-to-date monitoring

NO_2, PM_{10}, 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 NO_2 is 200µg/m^3, not to be exceeded more than 18 times per calendar year. The daily mean limit value for PM_{10} is 50µg/m^3, 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 NO_2 and daily PM_{10} concentrations. Data capture for all pollutants at all HAL-funded monitoring sites was 100%. Fig.1 provides the NO_2 rolling 12-month means since 2010.

Table 1. Annual rolling means for June 2019, Q2 data capture and exceedances of relevant hourly NO_2 and daily PM_{10} concentrations at HAL-funded monitoring sites

	June 2019 annual rolling means (2018 annual means) (μgm^{-3})			Data capture in Q2 (%)			Exceedances in Q2 (ytd)	
Monitoring station	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$	NO_2 (Hourly)	PM_{10} (Daily)
Heathrow LHR2	45.2 (43.3)	14.2 (14.2)	9.1 (9.1)	100	100	100	0 (3)	3 (6)
Harlington	31.5 (30.2)	15.8 (15.4)	9.7 (9.3)	100	100	100	0 (0)	3 (6)
Green Gates	32.4 (30.7)	13.5 (13.7)	8.7 (8.7)	100	100	100	0 (0)	3 (4)
Oaks Road	28.2 (27.9)	15.3 (15.3)	9.9 (9.7)	100	100	100	0 (0)	3 (4)

Fig.1. NO_2 rolling annual means at HAL funded sites since 2010 (µg/m^3)



Emission Reduction Efforts

Heathrow successfully reduced annual ground-based nitrogen oxides (NO_x) emissions by 430 tonnes (16%) between 2009 and 2013[1] 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 33.7% at the end of Q2 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.

[1]http://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