Air Quality around Heathrow Airport

Q1 2016 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 was one exceedence of the hourly mean NO_2 limit value at the LHR2 monitoring station. 18 exceedences are allowed per year before the limit value is breached for a given location.
- There were four exceedences of the daily mean PM_{10} limit value at Harlington site. 35 exceedences are allowed per year before the limit value is breached for a given location.
- A summary of Heathrow's 2016 Blueprint for Reducing Emissions (published in March) is presented below
- The number of aircraft movements made by more modern aircraft (CAEP4 and newer) to date in 2016 was over 94% and the percentage of the newest aircraft (CAEP8) continues to rise (see Fig. 1).

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 exceedences of the hourly NO_2 and daily PM_{10} limits.

Data capture for all pollutants at all HAL-funded monitoring sites was >90% in the quarter except for NO_2 data capture at the LHR2 site due to a communications failure for a week at the end of February and at the Harlington site due to an instrument pump failure for three weeks in February. Both issues have since been corrected and end of year data capture for NO_2 at all sites is expected to exceed 90%.

Table 1. Q1 data capture and exceedences of hourly NO_2 and daily PM_{10} at HAL-funded monitoring sites

Monitoring station	NO_2 data capture	PM_{10} data capture	$PM_{2.5}$ data capture	Hourly NO_2 exceedences in Q (ytd)	Daily PM_{10} exceedences in Q (ytd)
Heathrow LHR2	88.4%	99.5%	99.5%	1 (1)	1 (1)
Harlington	75.6%	99.8%	93.8%	0 (0)	4 (4)
Green Gates	98.4%	99.3%	99.3%	0 (0)	3 (3)
Oaks Road	99.1%	99.9%	99.9%	0 (0)	1 (1)

Emission Reduction Efforts

Heathrow has successfully reduced annual ground-based nitrogen oxides (NOx) 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.

2016 Blueprint for Reducing Emissions

Last year, we developed *Heathrow's 2015 Blueprint for Reducing Emissions*, a 10-point plan to reduce emissions from all airport sources of ground-based NOx in 2015, focusing on our four main sources of ground-based NOx: aircraft activity, airport traffic, airside vehicles, and heating. To build on the success of last year's Blueprint and continue to reduce emissions further we launched *Heathrow's 2016 Blueprint for Reducing Emissions*. The 2016 Blueprint comprises the top 10 actions we are delivering this year to reduce emissions and help improve local air quality. It is available by clicking the link above or by visiting heathrowairwatch.org.uk.

CAEP standard of aircraft movements

Through its Committee on Aviation Environmental Protection (CAEP), the International Civil Aviation Organization (ICAO) sets new emissions 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 NOx.

Fig. 1 shows the proportion aircraft movements at Heathrow based by CAEP standard. The proportion of flights made by newer, cleaner aircraft (CAEP4 or better) through Q1 2016 increased to just over 94% and CAEP8 only movements increased to just under 19%. 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.1. Total aircraft movements since 2010 by CAEP standard