Air Quality at Heathrow Airport

Q3 2015 Briefing

Background

Heathrow Airport Ltd (HAL) began an air quality monitoring programme in 1993. Today HAL owns and operates one on-airport monitor and three other monitors around the airport. Data from HAL's four continuous monitoring stations, as well as eight other continuous monitors operated by local authorities and DEFRA in the vicinity 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:

- The format and information of the quarterly briefings has been updated to focus on year-to-date monitoring performance and relevant emissions reduction efforts; analyses of historic trends to annual metrics can be found in the 2015 Q1 briefing.
- Year-to-date data capture for all HAL monitoring sites remains >90% for all pollutants measured.
- There were no exceedences of the daily average PM_{10} limit value at any of the HAL monitoring sites in Q3 2015. 35 exceedences are allowed per year before the limit value is breached for a given station.
- Progress made implementing Heathrow's Blueprint for Reducing Emissions was (published in April) is presented below
- The number of aircraft movements made by more modern aircraft (CAEP4 and newer) to date in 2015 was 93.6% 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 all of HAL's monitoring sites. In addition, ozone is measured at the Harlington station. Data capture rates must be >90% over a calendar year in order for a given monitor to provide useable annual averages. The daily limit value for PM_{10} is 50µg/m^3 averaged over 24 hours, 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 PM_{10} exceedences.

Data capture for all pollutants at the LHR2 monitoring site was <90% in Q3 due to a power failure at the station that has since been corrected. Despite this, year to date data capture at LHR2, as well as HAL's three other monitoring sites is remains above 90% for all pollutants monitored.

Table 1. Q3 data capture and daily PM_{10} exceedences at HAL monitoring sites

Monitoring station	NO_2 data capture	PM_{10} data capture	$PM_{2.5}$ data capture	Daily PM_{10} exceedences in Q3 (ytd)
Heathrow LHR2	78.1%	87.0%	87.0%	0 (2)
Harlington	96.1%	98.6%	98.6%	0 (3)
Green Gates	94.8%	99.1%	99.1%	0 (2)
Oaks Road	98.1%	99.7%	99.7%	0 (4)

Emission Reduction Efforts

Heathrow has successfully reduced annual ground-based nitrogen oxides (NOx) emissions by 430 tonnes (16%) between 2009 and 2013 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.

Blueprint for Reducing Emissions

In April, we launched *Heathrow's Blueprint for Reducing Emissions*, a 10 point plan to reduce emissions from all airport sources in 2015. The Blueprint focuses on our four main sources of ground-based NOx: aircraft activity, airport traffic, airside vehicles, and heating. The following provides a summary of progress made against the commitments and targets outlined in the Blueprint.

Aircraft activity

- Usage of pre-conditioned air (PCA) through Q3 has already reached a 34% increase over total usage from 2014, more than double the 15% increase target published in the blueprint.
- Movements of older 'Pre-CAEP' aircraft continue to decrease, now just under 5.6% of total year-to-date (see Fig. 1)

Airport traffic

- After an initial meeting to formulate scope and timeline for a West London Air Quality Plan held with TfL, DEFRA, DfT and local authorities, HAL participated in a 8 Jul meeting to share details and data from Heathrow transport and emissions models.
- HAL commenced surveys and maintenance of its existing 21 electric vehicle charge points in short-stay car parks to support on-going development of a replacement, relocation, and expansion plan
- Initial data from HAL's private hire coach park was evaluated for a potential tiered parking fee based on emissions.

Airside vehicles

- The electric vehicle and charging point data gathering trial kicked off on 24 Sept with six companies trialling various electric ground support equipment in addition to cars and small vans.
- Telematics have now been installed on all HAL airside vehicles and a pilot study is being considered to understand link telematics data with real time emissions performance.

Energy

- Boiler house 448 continues operation on low-temperature, low-NOx replacement boilers remain on track for installation in early 2016.

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 Q3 2015 remains; at over 93%, while CAEP8 only movements increased slightly to just under 17%. 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.

Fig.1. Total aircraft movements since 2005 by CAEP standard