airportwatch

BRIEFING

Air pollution – and a new runway

What actions are needed to reduce air pollution around airports?

- **Air quality around airports should not be allowed to deteriorate**
- **Where air pollution breaches legal limits it must be urgently reduced; no increase in flight numbers should be permitted at any airport located in an area in breach of legal limits, until pollutants have dropped to below the limit**
- **Airport expansion should not be permitted if it would worsen air quality; it should be compatible with sustainable development as set out in Government planning policy**
- **The UK Government should call for the EU legal limits on air quality to be revised, to reflect the WHO's latest advice on protecting public health and work to achieve these air quality levels.**

Why air pollution is an important issue for airport expansion

Airports are significant sources of local air pollution (especially nitrogen oxides and particulates) with aircraft taking off, landing and taxiing, ground support vehicles and the airport's heating and energy plants all contributing to worsen air quality. However, in most situations the main contributor to local air pollution is emissions from road vehicles, especially those fuelled by diesel. A proportion of the road vehicles will be private cars, buses, taxis or freight vehicles accessing the airport.

While the UK's major airports have surface access strategies to encourage use of public transport, the majority of passenger and airport staff journeys to all of the UK airports is made through private transport. Cars make up around 75% of employee journeys and around 56% of passenger journeys to Gatwick Airport and 50% employee journeys and 59% for passenger journeys to Heathrow Airport[i]. The larger the airport, the more passengers and freight it handles, the higher the local air pollution is likely to be.In addition, large airports tend to attract business activity close to the airport, which also generates road journeys.

Which pollutants are involved?

Carbon dioxide is emitted by planes and road vehicles, but is not itself considered in assessing local air quality. The main gas causing reduced air quality is NO2 (Nitrogen dioxide), which is emitted when fuels are burned. [Together with NO (Nitric oxide) NO2 may be referred to as NOx]. The other main pollutant is particulates – tiny particles arising from fuel combustion – which are small enough to lodge deep in the lungs. They are often referred to as PM10 or PM2.5 (referring to the particle size in microns). Both NO2 and particulates can cause, and exacerbate, respiratory illnesses including asthma. The air may also contain unburnt hydrocarbons. In the context of airport related air pollution, the key pollutants with health impacts are NO2 and particulates.

What impact does air pollution have on health?

$NO_2$and particulate levels above those recommended by the World Health Organisation (WHO) are associated with greater risk of respiratory illnesses including asthma, as well as worsened heart conditions, according to the British Heart Foundation.NO2 inflames the lining of the lungs, and it can reduce immunity to lung infections. This can cause problems such as wheezing, coughing, colds, flu and bronchitis. An increased level of NO2 can have significant impacts on people with asthma because can cause more frequent and more intense attacks. Children with asthma and older people with heart disease are most at risk. Some sections of the population are especially sensitive.

It is difficult to calculate exact figures, but it is estimated that the number of premature deaths, due to air pollution from particulates and NO2 could be between 30,000 and 60,000 per year in the UK. The British

Heart Foundation says evidence shows that air pollution can make existing heart conditions worse and can cause heart attacks and strokes amongst vulnerable people. Some air pollution is carcinogenic and hits the most vulnerable and disadvantaged hardest.

Air pollution is the UK's biggest environmental cause of premature death (second only to smoking overall)[ii], killing 29,000 people prematurely a year from particulates alone[iii]. However if the effects of NO_2 are added, the number of premature deaths is expected to double[iv].

What is the current status of air pollution in the UK?

The European Union's Ambient Air Quality Directive 2008/50/EC sets out requirements on air quality for member states, with legal limits for pollutantsexpected to have been met by 2010[v]. Crucially,the UK failed to meet the EU legal limit for NO_2 by 2015 (following an extension of the original deadline) in 38 of the UK's 43 zones. The legal limit set by the EU is 40 µg/m3 NO2, and 25 µg/m3 for PM2.5, both measured over a year. However the WHO guidelines for protecting public health in Europe suggest the critical level for NO2 should be cut to 30 µg/m3.

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland outlines the UK's action plan for achieving air quality limits on pollutants that threaten health. EU limits on particulates are being achieved but not those recommended by the World Health Organisation to protect public health. Indeed, under current Government plans, the UK is not expected to meet legal limits for NO2 in three zones – including Greater London – until after 2030, twenty years after the original EU deadline.

Recent developments

The Supreme Court ruled in April[vi]that the Government must produce a new and more ambitious action plan by the end of 2015 for bringing air pollution within legal limits. The UK has been in breach of air pollution laws for some time and the Government had hoped being within legal limits by 2030 would be enough. The Supreme Court ruling means that to make rapid improvements, the Government must consider measures such as low emission zones, congestion charging and other economic incentives.

Legal air quality limits must be met everywhere, without exception, and as soon as possible under EU Directive 2008/50/EC

What is the level of air pollution around the UK's major airports today?

In a recent consultation, the Airports Commission provided up to date air quality monitoring data for locations around Heathrow and Gatwick[vii]. Several monitoring locations close to Heathrow Airport were found to have breached the EU legal limit for NO_2between 2009 and 2014. A combination of local traffic, the proximity of two major motorways and airport related sources contribute to the area around Heathrow being described as an air pollution hot spot[viii].

Research published in 2012 found that nitrogen oxides emissions from aircraft around Heathrow had not decreased over the previous ten years[ix]. A reason provided by the Government's environment department, Defra, for continued failure in the UK to comply with legal limits is that new standards for diesel engines have failed to deliver the reductions in NO_2 pollution predicted[x].

Around Gatwick, background levels of NO_2 are lower than around Heathrow. However,certain monitoring stations have measured pollution close to the legal limit and there was a breach at one location in 2014 according to Airports Commission data, contrary to claims made by the airport.

How many more people are likely to suffer worse air quality with a new runway?

Even after the unrealistic expectations of lower traffic levels and futuristic clean engines are factored in, the report by Jacobs for the Airports Commission[xi]still projects an increase in pollution levels. For the Heathrow north-west runway would mean around 47,000 homes having increased pollution, compromising the health of around 121,377 people and costing £10.8m [Jacobs report Page 173] through increased numbers of hospital appointments.

The equivalent figures for the Heathrow Hub northern runway are around 39,000 homes, compromising the health of around 100,389 people and costing £4.2 million through increased numbers of hospital appointments.

The equivalent figures for a second Gatwick runway are around 21,000 homes, compromising the health of around 51,328 people and costing £4.0 million through increased numbers of hospital appointments.

Would a new runway mean legal limits for air quality would be breached?

There is a clear risk of a breach in legal limits in air quality following expansion at Heathrow or Gatwick. The risk is heightened if improvements forecast in diesel vehicles do not materialise and the UK Government does not implement an ambitious enough action plan. Modelling released by Defra under a Freedom of Information request revealed that a*two runway* Heathrow is forecast to have the second worst air pollution in the UK in 2030[xii].

In a recent consultation, the Airports Commission forecasts that there is a risk that a third runway at Heathrow would delay compliance with the EU legal limits on air quality. In other words, unmitigated Heathrow expansion could contribute to the area having the worst pollution in the UK. Gatwick was also modelled as being in a 'high' risk category of breaching the legal air quality limit following expansion.

However, the Airports Commission's assessment of future air pollution has the fatal flaw that it relates only to levels in 2030. Neither runway is likely to be operating till 2025 at the earliest, so by 2030, levels of traffic would not have had time to build up to their levels when the runway is fully used. The levels of air pollutants would therefore be expected to become worse after 2030. The Commission also ignores the extra road traffic due to the increase in catalytic and induced employment, and increased air freight. All are expected to add a large number of additional vehicle journeys – for Heathrow or Gatwick.

The Airports Commission is aware that a runway at Heathrow or Gatwick would have a negative impact on air pollution[xiii], contradicting UK planning policy for sustainable development in the National Planning Policy Framework. Prior to the Supreme Court decision, it was thought that the airports would be able to suggest mitigating measures to downplay the barrier air pollution could be to a new runway. However, the Supreme Court decision highlights that any decision on a Heathrow or Gatwick runway could be legally challenged unless the Government's new plans are sufficiently ambitious to reduce emissions below the legal limit and leave enough headroom to for the negative impact of an extra runway.

Airport expansion should not be permitted if it would worsen air quality; it should be compatible with sustainable development as set out in Government planning policy

Would a new runway comply with the requirement to maintain good air quality?

The Airports Commission's Appraisal Framework had a stated objective of improving air quality consistent with EU standards and local planning policy requirements. The EU Air Quality Directive, states in its Preamble that: "Air quality status should be maintained where it is already good, or improved."[xiv]

This is spelt out in Article 12 of the Directive: "In zones and agglomerations where the levels of sulphur dioxide, nitrogen dioxide, PM10, PM2,5, lead, benzene and carbon monoxide in ambient air are below the respective limit values specified in Annexes XI and XIV, Member States shall maintain the levels of those pollutants below the limit values and shall endeavour to preserve the best ambient air quality, compatible with sustainable development."

In view of the Supreme Court decision that the Directive must be implemented by the UK Government, it would appear that a decision to go ahead with plans for a new runway which did not 'preserve the best ambient air quality' might well be found to be illegal.

What mitigation actions can airports use to reduce air pollution?

To cut pollution, airports can make small operational changes air-side, such as taxiing with one engine, use of electric vehiclesmoving some operations to the centre of the airport etc. However, the increase in air

traffic following expansion would far outweigh any marginal improvements in operational procedures.The report by Jacobs for the Airports Commission expresses doubt on many of the scheme promoters' anticipated mitigation measures.[xv] The airports have outlined plans to increase access to the airports by sustainable transport modes. Suggestions for reducing pollution impacts include possible congestion charges around the airports and re-routing key roads to remove pollution hot spots (dispersing pollution).

However, the Airports Commission's analysis has so far been inconclusive about the options for reducing airport related air pollution. In relation to options for modal shift, the Commission only stated "it is not clear whether this is achievable."[xvi]

AirportWatch is an umbrella movement uniting the national environmental organisations, airport community groups, and individuals opposed to unsustainable aviation expansion, and its damaging environmental effects, including climate change & noise.

If you would like more information, or to discuss the issues, please get in touch.
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Briefing from AirportWatch (June 2015).
Briefings on other aspects of the runways debate are available at **http://tinyurl.com/MP-Briefings**

[i] Airports Commission Appraisal Framework Module 4. Surface Access assessment by Jacobs
[ii] Healthy Air Campaign - air pollution, the problem: http://healthyair.org.uk/the-problem/
[iii] Committee on the Medical Effects of Air Pollutants/COMEAP – 29,000 premature deaths attributed to long-term exposure to man-made particulate air pollution per annum: https://www.gov.uk/government/publications/comeap-mortality-effects-of-long-term-exposure-to-particulate-air-pollution-in-the-uk
[iv] Independent effects of NO2 are expected to double premature deaths figures: http://erj.ersjournals.com/content/early/2014/02/20/09031936.00114713.abstract and http://www.airqualitynews.com/2014/12/05/uk-nitrogen-dioxide-mortality-figures-due-next-year/
[v] More details about the EU requirements and legal limits on air quality is available on http://healthyair.org.uk/the-problem/
[vi]http://ukhumanrightsblog.com/2015/04/30/supreme-court-no-excuses-uk-must-comply-with-eu-air-pollution-law/
[vii] Airports Commission Module 6: Air Quality Local Assessment by Jacobs (pages 158-160)
[viii] London Assembly (2012) Plane Speaking: Air and noise pollution around a growing Heathrow Airport http://www.london.gov.uk/sites/default/files/Heathrow%20airport%20-%20Final%20version_0.pdf
[ix]Carslaw and Beevers (2012) Characterising and understanding emission sources using bivariate polar plots and k-means clustering
[x] Defra (2014) Updated projections for Nitrogen Dioxide (NO2) compliance http://uk-air.defra.gov.uk/assets/documents/no2ten/140708_N02_projection_tables_FINAL.pdf
[xi]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/426241/air-quality-local-assessment-report.pdf
[xii] Defra (2015) https://www.gov.uk/government/publications/50-highest-modelled-nitrogen-dioxide-no2-concentrations
[xiii]https://www.gov.uk/government/consultations/airports-commission-air-quality-assessment
[xiv]http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF
[xv]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/426241/air-quality-local-assessment-report.pdf
[xvi] Airports Commission Module 6: Air Quality Local Assessment by Jacobs (pages 73 and similar 51)