

The Mayor of London's response to the Airports Commission consultation on shortlisted options

Air Quality

Supplementary Note 06

February 2015

Key findings

- The impacts of Heathrow options are defined as 'significantly adverse', while Gatwick is 'adverse'. For all shortlisted options there remains a risk that both local air quality objectives and EU threshold limits are at risk of being exceeded.
- The Commission's air quality assessment is not yet sufficiently advanced to make an informed recommendation as to whether any of the Commission's shortlisted options can meet the Commission's objectives. The Commission's work comprises stage 1 of their two-stage process.
- Most of the necessary outcomes to determine scheme impacts are not available, and the level of assessment is often less than that in the promoter's submissions.
- It is not clear how effective the proposed mitigation measures will be in reducing the overall air quality impacts of the shortlisted options.

Key recommendations for further work

- The Commission should complete the air quality assessment as defined in the Appraisal Framework, following the stated methodology. This will include dispersion modelling, and the assessment of surface access emissions using a dynamic traffic model.
- The Commission's assessment should additionally generate: pollutant concentrations for each scheme, total concentrations, deposition values, changes in population exposure, and abatement cost based monetisation.
- The Commission should forecast local air quality impacts post-mitigation. This will allow it to assess performance against its objective to '*improve air quality consistent with EU standards and local planning policy*'.

A: Key observations

1. The impacts of Heathrow options are defined as 'significantly adverse', while Gatwick is 'adverse'. These categorisations are reduced to 'adverse' and 'neutral' respectively, on the basis of mitigation, the effects of which are uncertain.
 - 1.1. Based on emissions increases only, the Commission conclude for both Heathrow schemes that scheme performance is likely to be 'significantly adverse' in relation to the objective of improving air quality consistent with EU standards and local planning policy requirements. This is downgraded to 'adverse' on the basis of mitigation proposed by scheme promoters, though these have not been tested in terms of their impact or adequacy. For Gatwick the same principle applies, but from grades of 'adverse' to 'neutral'.
 - 1.2. The Commission's risk assessment is based on bandings which jump from 'likely to high' to 'low to unlikely'. Given the limited assessment, a jump from 'high' to 'low' is potentially so steep, that it will hide impacts requiring further investigation and mitigation.
 - 1.3. The Commission's assessment identifies that for all shortlisted options there remains a risk that both local air quality objectives and EU threshold limits are at risk of being exceeded.
2. The Commission's assessment is incomplete
 - 2.1. The Commission's assessment is not sufficiently advanced to assess performance against its objective to *'improve air quality consistent with EU standards and local planning policy'*. Only the first stage of a two stage assessment has been undertaken, meaning that a number of important metrics required to assess the overall air quality impact have not been provided, mitigation of the impacts shown has not been demonstrated (just assumed), and the level of detail is often less than that in the promoters submissions.
 - 2.2. The Commission's technical reports are incomplete. Only the first stage of a two stage assessment is presented for national and local impacts, meaning that half of the national metrics, and 20% of the local metrics required by the Commission's Appraisal Framework have not been provided.
 - 2.3. For those metrics that have been generated, local impacts do not follow the stated methodology and are not based on the input data described in the Commission's Appraisal Framework.
 - 2.4. The Commission's assessment does not include: scheme dispersion modelling, a reliable surface access emissions using a dynamic traffic model, or an adequate emissions inventory to International Civil Aviation Organisation (ICAO) 'sophisticated'

level (affects both national and local emissions calculations which would all be superseded).

- 2.5. The Commission's assessment does not generate: scheme concentrations, total concentrations, deposition values, changes in population exposure, abatement cost based monetisation, or the cost of mitigation.
- 2.6. In light of the necessary Stage 2 assessments not being undertaken, the Commission's analysis within the Business Case and Sustainability Appraisal for each shortlisted option at this stage is limited and does not allow for the full air quality impacts from each option to be made or indeed an informed recommendation to be reached.
- 2.7. The Commission's analysis in the technical report nor the business case or sustainability assessment does not include an overview of the impacts of the initial and mature phases of the scheme introduction and does not take account of potential mitigation solutions (just provides a qualitative comment on those provided by promoters).
- 2.8. Furthermore, according to supplementary Green book guidance where monetised dis-benefits are over £50million (as for all schemes here) and there is risk on non-compliance with the EU limit values (as here), then abatement cost estimates methods should be used. As these would be noticeably higher than those using the current method, these would worsen the scale of the air quality impacts.

3. The Commission's level of detail is often less than that in the promoters submissions

- 3.1. The methodology and assumptions stated in the Commission's technical report relate to the Stage I assessment only. Given that most promoters undertook a stage 2 assessment, then more appropriate assumptions were available but not used by the Commission, increasing uncertainty.
- 3.2. Where Stage I assumptions are used, many of these are generic at this stage and do not make use of available and more appropriate local data from the existing airports. Using such data would have the advantage of increasing reliability and reducing uncertainty ranges in any findings.

4. The Commission's air quality assessment has several other weaknesses

- 4.1. The Phase 2 air quality appraisal should calculate emissions from each scheme's airport, as well as the associated surface access connections. Whilst emissions have been calculated and compared to National Emissions Ceiling Directive Limits, for the important source of surface access traffic to the airport, these only include simplistically calculated levels, which assume a uniform traffic flow composition, and

that traffic travels at the speed limit.

- 4.2. Whilst an initial assessment of the impact of the proposals on emissions has been made, even excluding the fact that air quality has not been assessed, this emissions assessment is itself not compliant with the assessment framework as:
 - this is limited by the use of the 'static' traffic model, and
 - Aircraft emissions estimates use reference values for the landing and take off cycle (LTO) – which are not airport specific and available data on emission rates and Times in Mode;
 - LTO emissions based on simple indicative plane types (passenger and cargo) – this does not follow required ICAO level of detail;
 - airside emissions take no account of future technological improvements such as fixed electrical ground power (FEGP),
- 4.3. The risk of exceeding the National Emissions Ceiling Directive targets has been assessed however any increase in the duration of the exceedence due to the proposals has not been considered. Neither have the potential health impacts been considered, including the population exposure per unit emission.
- 4.4. Whilst the changes in emissions have been monetised, they have not considered the full impact pathway (excluding buildings, acute and chronic exposure, and ozone).
- 4.5. The Commissions assessment assumed that airport emissions are dispersed broadly within the confines of the airport but this is counter to best practice which shows demonstrable signals out to up to 1.4km from the airport source.
- 4.6. As a minimum, modelling should be conducted for initial operations and mature operations phases. Full assessment of mature (eg. fully-utilised or near-full utilisation) phases have not been undertaken. This would mean for example the assessment of potential changes in infrastructure (such as alterations to the M23 slip road for a Gatwick runway).
- 4.7. Future development that may add or remove public exposure within the study areas has not been assessed. This is particularly important in the vicinity of Heathrow, where significant population and employment growth, or changes in land use could occur.
- 4.8. Construction impacts have not been recorded – no detail on length of time, or mitigation is provided – just the assumption that best practice will be followed.

B: Does the Commission’s assessment constitute a robust approach?

To be robust, the option appraisal must entail a complete assessment. It must also be consistent across all the options, with the Commission’s previous analysis, with best practice in the appraisal of large infrastructure projects – including principles of HM Treasury Green Book – as well being aligned with the Commission’s own Appraisal Framework. The table below sets out a summary of the extent to which the Commission’s assessment meets these requirements.

Table 1: Does the Airports Commission’s assessment constitute a robust approach

Criteria	Met?	Comments/examples
Approach to Assessment		
Aligned with Airports Commission Appraisal Framework?	No	Necessary second stage assessment has not yet been undertaken. Only half of national metrics and fifth of local metrics.
Consistent approach to assessment: <ul style="list-style-type: none"> Between options? With previously considered options? With best practice/Green Book? 	No	Necessary second stage assessment used in relation to other large scale infrastructure projects has not yet been undertaken.
Assessment complete (evidence gaps addressed, suitable geographic/temporal scope)?	No	It is not possible to assess full air quality impacts in absence of second stage assessment and testing of mitigation
Assumptions		
When multiple scenario or assumption sets used, has the most appropriate been identified – or worst case scenario tested?	No	<p>Tested ‘do minimum’ (without airport expansion) and ‘do something’ (with airport expansion) scenarios for 2030, 2040 and 2050.</p> <p>For emissions, assessed Scheme Promoters passenger throughput forecasts – mppa (million passengers per annum) versus Carbon Capped Scenario.</p> <p>Not used with mitigation cases, or cumulative cases.</p>
Analysis: impacts and conclusions		
Risks fully stated and impact reflected in conclusions?	No	Extent of air quality impacts are unknown and potential mitigation approaches are yet to be tested by the Commission.
Understanding of net/cumulative impacts?	No	The assessment is unable to permit cumulative impacts to be understood – it does not generate: scheme/total concentrations; deposition values; changes in population exposure; abatement cost

	<p>based monetisation; numerically demonstrated mitigation for the scheme itself – let alone cumulative effects.</p> <p>Neither the technical report nor the business case nor sustainability assessment includes assessment of the initial or mature phases of scheme introduction.</p> <p>Excludes any account of future developments in study area.</p>
--	--