

**Richmond Heathrow Campaign**

Response to Consultation

by

Airports Commission

on

Additional runway capacity at  
Heathrow and Gatwick

3<sup>rd</sup> February 2015

## **Richmond Heathrow Campaign**

This submission is the response from the Richmond Heathrow Campaign (RHC) to the Airports Commission's *consultation on additional runway capacity at Heathrow and Gatwick (11 November 2014 to 3<sup>rd</sup> February 2015)*. Hereinafter we refer to the Airports Commission as the Commission. We do not consider that the contents of this submission are confidential and we have no objections to its publication.

### **Richmond Heathrow Campaign**

The Richmond Heathrow Campaign represents three amenity groups in the London Borough of Richmond upon Thames: The Richmond Society, The Friends of Richmond Green, and the Kew Society which together have over 2000 members. The members of our amenity groups are adversely affected by noise from Heathrow Airport's flight paths, particularly at night. Noise levels around Heathrow are too high and while the trend is for quieter aircraft the reduction in noise levels in recent years has been slow and offset by more flights. We favour a ban on air traffic at night at Heathrow. We are opposed to the introduction of mixed mode and to the development of additional runways at Heathrow. We nevertheless recognise the importance of air transport and the need to make a positive contribution to the Airport Commission's work.

### **Scope of Our Response**

We confine our response to the Heathrow Airport Limited (HAL) proposal for a north west runway and the Heathrow Hub Limited (Hub) proposal for an extended northern runway. We provide detailed responses on the following appraisal modules: noise, surface access, air quality, carbon emissions, safety, wider economy and financial deliverability. We do not have the resources or sufficient time to comment on bio-diversity, water and flood risk, place, community, quality of life and local economics (including direct employment and housing) all as defined by the Consultation.

RHC has submitted to the Commission both short/medium term proposals and longer term proposals which encourage better use of existing airport capacity so as to provide for, inter alia, passenger growth without runway growth over the foreseeable future. We have also responded to all the Commission's discussion papers.



[www.richmondheathrowcampaign.org](http://www.richmondheathrowcampaign.org)

*Q1: What conclusions, if any, do you draw in respect of the three short-listed options? In answering this question please take into account the Commission's consultation documents and any other information you consider relevant. The options are described in section three.*

RHC's overall conclusion is that Heathrow expansion either by way of a northwest runway or extended runway does not add value to the wider UK economy and by re-distributing passengers and flights from the regions results in economic dis-benefits. At the same time the environmental noise costs are substantial with disturbance extending to as many as 1.5 million people if noise levels were to be measured at WHO standard levels which RHC strongly recommends. We are particularly concerned at the lack of definition of future flight paths and respite that until resolved will blight much of west London for years to come.

RHC believes that the value of international transfers is substantially overstated and with it the single airport hub concept. We believe a dispersed model that makes best use of all five London airports without any new runways is the best solution. The fact that Heathrow's additional capacity is likely to be largely underwritten by re-distribution from the regions confirms our belief that no new runways are needed in the southeast, at least in the next 35 years examined.

We believe that five London airports should provide a viable competitive model that is superior to concentration at a single airport.

There is also great uncertainty in either Heathrow option being financed without requiring very substantial Government assistance. In addition, there is uncertainty regarding the impact of carbon emissions, air pollution and surface access congestion.

We believe consideration should be given to spending some of the money required for Heathrow's expansion on better surface access for all five London airports and suggest this would produce a better return for the money spent and materially improve passenger experience and needs.

*Q2: Do you have any suggestions for how the short-listed options could be improved, i.e. their benefits enhanced or negative impacts mitigated? The options and their impacts are summarised in section three.*

The Annexes attached to our response contain such comments as are relevant to this question.

*Q3: Do you have any comments on how the Commission has carried out its appraisal? The appraisal process is summarised in section two.*

- 3.1 There is a substantial volume of detail and we have found it difficult to follow the trail from the technical reports to the business and sustainability assessments and then the high level consultation document itself. Specifically:
- some of the technical reports do not integrate well (the silo effect),
  - it is difficult to follow the path upwards from the technical reports to the business and sustainability assessments,
  - it is difficult to follow the path downwards to the technical reports from the higher level reports,
  - the tangible topics, such as surface access, appear in a large number of assessment sections which results in extensive duplication but difficulty in amalgamating each topic

into a comprehensive and relatively simple conclusion.

- 3.1 The decision process has divided the expansion decision into two decisions - the need for a net additional runway and the choice of project. Unfortunately, this two stage process results in the second stage focusing on the incremental differences rather than the absolute value (cost/benefit) of each of the alternative projects. For example, the Commission has not completed a number of studies on flight paths, surface access etc but claims that the absence of detail does not invalidate a comparison between projects. That may be so in an incremental approach but not in an absolute approach. The absolute approach has been left behind at the interim report stage.
- 3.2 There has been insufficient time with limited resources to read let alone assess all the material.
- 3.3 There are significant gaps in the appraisal, some of which the Commission says it still working on, and others which seem to be missing altogether.
- 3.4 The Commission says (para 2.12) that it has led on the surface access but is therefore also appraising its own proposals.

*Q4: In your view, are there any relevant factors that have not been fully addressed by the Commission to date?*

- 4.1 The Annexes attached to our response contain such comments as are relevant to this question.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

We attach 7 Annexes that examine:

Annex 1	Noise
Annex 2	Surface Access
Annex 3	Air Quality
Annex 4	Carbon Emissions
Annex 5	Safety
Annex 6	Wider Economy
Annex 7	Financial deliverability

*Q6: Do you have any comments on the Commission's sustainability assessments, including methodology and results?*

The Annexes attached to our response contain such comments as are relevant to this question.

*Q7: Do you have any comments on the Commission's business cases, including methodology and results?*

The Annexes attached to our response contain such comments as are relevant to this question.

*Q8: Do you have any other comments?*

We appreciate the substantial amount of work the Commission has undertaken in examining the issues.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

## **RHC CRITICISMS OF AIRPORT COMMISSION'S NOISE ASSESSMENTS**

The Commission's assessment of the impact of air traffic noise at Heathrow with existing runway capacity and with additional runway capacity is, in our view, far too narrow in its scope. Taken together with the insensitive recommendation by the Commission in its interim report for an increase in the number of movements at Heathrow pre-0600 in order to handle congestion post-0600, we fear that the Commission has simply not understood how much flight path noise affects overflown communities.

We therefore hope that the Commission, even at this late stage in its work, will act on the recommendations by the All Party Parliamentary Group on Heathrow and the Wider Economy in its recent report *Noise from Heathrow Airport*. In particular, it is essential to measure Heathrow against the World Health Organisation guideline noise values in order to offset an air of complacency within Government and the aviation sector that the scale of flight path noise as a problem has been reduced to near-insignificance.

### **Noise assessment indicators**

The noise assessments were based on two sets of long-term average noise indicators (LAeq), supplemented with an indicator of the number of movements above a specified noise level. The two sets of LAeq noise indicators were based on scales at intervals of 5 decibels and 3 decibels:

- The lowest measured values on the 5-decibel scale were 55 decibels for the daytime (0700-1900) and evening periods (1900-2300) and 50 decibels for the night time period (2300-0700) in order to produce the compound LDEN 24-hour assessment (with weightings for the evening and night period), as defined in the Noise Assessment Directive (Directive 2002/49/EC).
- The lowest measured values on the 3-decibel scale were 54 and 57 decibels for the daytime and evening periods (0700-2300) and 48 decibels for the night time period (2300-0700), as measured by the last Government in its assessments of the noise impact of a third runway at Heathrow.

As regards the 5-decibel scale, the Commission assessed only down to the values that are the minimum requirement for notification to the European Commission. But, so far as we are aware, the Directive does not stipulate that those values represent the onset of noise disturbance and impacts. The World Health Organisation *Guideline values on community noise* recommends limiting exposure in the 16-hour daytime period to 55 decibels in order to avoid serious annoyance and 50 decibels in order to avoid moderate annoyance; and in the 8-hour night period to 40 decibels in order to avoid sleep disturbance with open windows. We consider that the Commission should have assessed Heathrow down to the WHO guideline values, as recommended in *Noise from Heathrow Airport*.

As regards the 3-decibel scale, we regard its continued use to be confusing, following the adoption of the 5-decibel scale under the Directive. We also question whether its use is in conflict with the Directive. The Directive certainly authorises supplementary indicators, but it is difficult to see how a 3-decibel scale can be said to supplement a 5-decibel scale. The 3-decibel scale also has the disadvantage that it cannot measure the WHO guideline values. The argument that the 3-decibel scale is needed for long-term trends does not really stand up to scrutiny - the 3-decibel scale was introduced only in the early 1990s, with data for earlier years converted for purposes of long-term comparison. A similar conversion should now be made to the 5-decibel scale.

As regards the supplementary noise indicator, we recognise that identifying the number of movements is an innovation in noise assessments at Heathrow. The need for such an indicator was identified by Roy Vandermeer QC in his report on the Heathrow Terminal Five Public Inquiry Commission because he considered that average noise levels do not reflect the full reality of noise exposure from the flight paths or the impact of the sheer number of movements (i.e. all movements). But the Commission has been far too timid in its assessment of the number of movements. What is needed is an indication of the total number of movements that would take place on each flight path, as recommended in *Noise from Heathrow Airport*, not the number of movements above an arbitrary noise level aggregated across all the flight paths.

### **Assumptions about less noisy aircraft/operating procedures**

The last Government, in its assessment of the noise impact of a third runway at Heathrow, based its forecasts on conservative and optimistic assumptions about the future scope for less noisy aircraft and operating procedures. But the Commission appears to have satisfied itself with forecasts only for optimistic assumptions. The precautionary principle for environmental protection requires forecasts for more conservative assumptions, as the previous Government recognised.

The Commission has also ignored the effect of more precise flight path routings in intensifying the noise of the overflown communities, even if it brings relief to other communities.

### **Routing of flight paths**

The Commission's noise assessments are based on indicative flight path routes which may not ultimately be the routes that are adopted. We therefore support the call in *Noise from Heathrow Airport* for all potential flight paths to be identified, with a clear indication of the areas that would be overflown on a regular basis that are not currently, and number of people who would be affected.

The Commission's noise assessments forecast that with increased runway capacity at Heathrow there would be a reduction in the present-day overall number of people who would be affected by flight path noise. But possibly as many as a third of those who would be overflown with three runways are not overflown at present. The Commission should honestly admit that fact, rather than try to bury it in a general 'good news' gloss on the noise effects of expanded runway capacity.

## **Noise respite**

Noise from night flights is the most oppressive imposition of Heathrow's flight paths on the overflowed communities. We therefore support the call in *Noise from Heathrow Airport* for an end to night flights at Heathrow, with existing runway capacity or with additional runway capacity. We note the disagreement between the two proposals for expanded capacity as to whether night flights would be needed.

HAL has suggested that with a third runway it would be possible to provide respite from night flight noise by utilising all three runways and approach paths for those movements rather than the two existing two runways and approach paths. But respite for the existing communities would be at the expense of other communities.

As regards respite from daytime flight paths, we note the finding in *Noise from Heathrow Airport* that the benefits of runway alternation would be diminished with a third runway, and we support the call in *Noise from Heathrow Airport* for 8-hour runway alternation to be retained in the day period, with existing capacity and with any additional capacity.

## **Three runways at capacity**

We note the finding in *Noise from Heathrow Airport* that Heathrow with a third runway would be full by or before 2040, which would result in the re-emergence of resilience problems with three runways that would prompt calls for a fourth runway and/or more movements in the night period, both of which would have obvious adverse noise implications. The third runway would therefore be only an interim solution to the present congestion problems. More fundamental thinking about managing the growth in passenger numbers is necessary.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

#### **RHC RESPONSE ON THE SURFACE ACCESS**

1. RHC is concerned that the service levels in the Commission's consultation are inadequate, especially for air travellers with luggage etc. It appears there will be a significant shortage of seating capacity on the Piccadilly line and Crossrail in future years and quite possibly on the nearby roads.
2. The commission's study period is just 15 years to 2030 and yet significant growth in the number of Heathrow passengers is predicted after this period and should be taken into account.
3. There is little evidence in the Consultation to support the shift in modal shares (car, bus and rail) and the shift to public transport seems optimistic given the historic trends.
4. Accepting that some additional surface access capacity is planned (costing £5.7bn in 2014 prices), RHC questions whether this is sufficient to meet both Heathrow demand and background demand, particular given the substantial population growth predicted for London. TfL in May 2014 produced estimates for Heathrow's surface access costs ranging from £2.1bn to £17.6bn, depending on performance.
5. It is not clear what might be the cost of additional service provision and satisfaction of growing demand.
6. It is not clear what might be the cost in terms of road congestion, pollution, overcrowding and journey times and delays if adequate capacity is not provided.
7. RHC is concerned that there are gaps in the Commission's appraisal of surface access, and that although by admission the Commission is advancing further appraisal this is too late for consultation. In particular we refer to the absence of minor road analysis, freight analysis and dynamic transport analysis. Some of this is also needed to properly appraise the impact of expansion on air quality in the vicinity of Heathrow where there already unlawful exceedances.
8. Southwest rail access (SWRA) is included in the new capacity provision. This is a rail service via Staines and Richmond to Waterloo and is forecast to provide 17% of Heathrow's rail capacity. While we can see the advantages of an additional rail service to Heathrow, when this was previously considered, (termed Airtrack) a number of problems arose not least the extensive closure of rail crossings which result in harming road traffic.
9. RHC believe the answers to the above questions are needed and that further consultation is needed before the Commission makes its recommendations.



**RHC Response to the Airports Commission consultation on Air Pollution**

(Covers Q1, Q2, Q3 Q4 and Q5)

1. This paper sets out the response of the Richmond Heathrow Campaign (RHC) to the Airports Commission consultation, focussing on air pollution from the two options for Heathrow expansion. Other papers from the RHC respond to different aspects of the Airports Commission analysis.
2. Overall we have significant concerns over 3 areas in the Airport Commission's consultation paper:
  - analysis of air pollution impacts requires a different type of assessment from other appraisal models identified by the Commission since there are internationally agreed standards which cannot be breached without incurring adverse health and economic impacts. These standards must be met. They are absolutes which affect the deliverability of any proposal;
  - the health risks associated with air pollution still need to be fully assessed. They too have international standards which need to be included in any appraisal;
  - the increased demand for surface transport should be assessed in relation not just to any increase in aviation capacity but also to other locally planned growth with an impact on surface transport (housing and economic growth) in a defined area near to any airport. The Commission has not done this or identified the need to do so. Failure to do so will mean that the impact on air pollution of any one solution proposed cannot be assessed and compliance with internationally agreed standards cannot be planned.
3. We have considered air pollution against 5 of the questions posed in the consultation and provide comments below. At Appendix A are some key facts we have considered to support the comments we make below.

**Q1: What conclusions, if any, do you draw in respect of the three short-listed options?**

The current appraisal of air pollution is incomplete and has so far only concentrated on *national* effects. This omission makes it difficult for local communities to engage in the discussion effectively before the Commission makes its final recommendation and is a serious flaw in the consultation methodology. This aspect should be covered in a further public consultation so that all the information used by the Commission to inform its recommendation is transparent.

Even with the level of information currently available, it is clear that Heathrow expansion would bring greater *local* dis-benefits than Gatwick simply because of the numbers of people affected by

the increase in air and surface traffic. This needs to be fully factored into the appraisal and given sufficient weight in the final assessment.

**Q2: Do you have any suggestions for how the short-listed options could be improved, i.e. their benefits enhanced or negative impacts mitigated?**

Local air quality levels around Heathrow already exceed internationally agreed standards. Measures to address this should be put in place now, including the impacts of surface transport. This would help demonstrate the deliverability of mitigation measures. Expansion can only make the risks to compliance worse and it is not clear how the Commission envisages compliance with international standards will be met.

Failure to meet international standards has two potential effects: (a) unacceptable health impacts for the local population and (b) potential fines and limitations on ATMs imposed through legally binding international agreements. These would have knock-on effects for the business case for expansion at Heathrow.

There is a clear possibility that the full potential of expansion will not be realised because of the inability to meet air quality standards. This needs to be fully assessed. The current risks identified by the Commission to meeting air quality standards (fleet turnover does not deliver the reductions in emissions needed; people don't move to public transport in the numbers needed; international standards are tighten) are not fully in the control of the airport operator and mean a high risk to the ability to make use of the expanded capacity proposed.

**Q3: Do you have any comments on how the Commission has carried out its appraisal?**

A baseline needs to be established of the current position for health impacts from air pollution. These may already be unacceptable against international measures. Any expansion scenario must show how international standards for air quality and health will be met and sustained in relation to the baseline position.

An assessment also needs to be made, for comparison, of the community benefits of no expansion at Heathrow in terms of ease of compliance with international standards for air pollution and consequent health outcomes.

**Q4: In your view, are there any relevant factors that have not been fully addressed by the Commission to date?**

A comprehensive Health Impact Assessment needs to be undertaken using international and national good practice standards. It also needs to be made clear what weight will be given to health impacts in the final appraisal of options.

In terms of the appraisal framework applied by the Commission there should be an objective under "People" relating to the need to minimise health risks, to internationally recognised standards, from air and noise pollution. Similarly there should be an objective under the deliverability module relating to the need to meet internationally agreed standards on air and noise pollution since any

solution which does not meet these standards cannot be planned. There will also be consequences from failure to meet standards for the business model which should be factored in to the appraisal.

**Q5. Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?**

You state that the solution adopted will need to be a trade-off between topics since no one solution will be able to tick all the boxes. This ignores the fact that some parameters are non-negotiable as they are constrained by internationally agreed standards.

Clarity is needed on how the different parameters will be balanced and what relative weight will be given to local as well as national impacts, negative or positive, of any expansion.

You have not considered the cumulative impact of air pollution from (a) increased ATMs (b) increased road surface transport to and from the airport and (c) developments planned locally (housing, business) which will increase road transport movements. Given that limits on air pollution are absolutes enshrined in legislation, these impacts need to be assessed together in order to make any solution deliverable.

### Key Facts

#### Significance of air pollution impacts

The pollutants within the UK which are the greatest threat to human health are the gas, nitrogen dioxide (NO<sub>2</sub>), and particulates (PM<sub>10</sub> and PM<sub>2.5</sub>). NO<sub>x</sub> is the greatest threat to ecosystems. NO<sub>x</sub> is a term for all nitrogen oxides, which include NO<sub>2</sub> and NO (Nitric Oxide).

NO<sub>2</sub> is known to be hazardous to those particularly susceptible to changes in air quality such as asthmatics. NO<sub>2</sub> is usually also seen as a precursor to more harmful particulates, such as PM<sub>10</sub> and PM<sub>2.5</sub>. These are more harmful because they can penetrate deep into the lungs causing cardiovascular problems. NO<sub>x</sub> is a pollutant that impacts on sensitive habitats and vegetation as it has the potential to alter nutrient availability and cause acid rain.

Close proximity of the emission source to the 'sensitive receptor', such as schools, care homes and hospitals, causes poor air quality because there is less opportunity for dispersion of emissions between the source and receptor resulting in greater concentrations of pollutants.

#### Sources of pollution

The sources of NO<sub>x</sub> and particulates include aircraft engines, brake and tyre wear, auxiliary power units, ground support equipment, and road traffic. The Commission says the primary source of increased NO<sub>x</sub> emissions is aircraft engines, but these are generated at elevated heights during the take-off and landing cycle, significantly reducing their impact on local air quality at ground level. This results in emissions of NO<sub>x</sub> from road transport around the airport in populated areas becoming a more significant factor for health impacts.

#### Relevant control standards

The National Emission Ceilings Directive 2 (NECD) sets national emissions ceilings to reduce the likelihood and effect of trans-boundary pollution.

Local air quality is evaluated by comparing concentrations of pollutants against EU ambient air quality directive limit values (EULVs) or air quality objectives (AQOs) set at locations where exposure harm to human health and ecosystems is thought to occur.

At the national level the comparison is of the emissions released to the atmosphere set against the National Ceiling Directive Limits (NECD). EU Limit Values are legally binding EU parameters that must not be exceeded by Member States and were required to be met by 2010. A proposal to amend the NECD is under preparation and should set emission ceilings to be respected by 2020 for the four already regulated substances and for the primary emissions of Particulate Matter (PM<sub>2.5</sub>) as well. Monitoring is undertaken by National Government.

#### Current compliance

The Commission says the UK met the NECD 2010 target for NO<sub>x</sub>; achieving emissions of 1,151 kilotonnes (Kt) per annum compared to a target of 1,167 Kt per annum. It has continued to meet the target through to the latest reported year (2012) with emissions of 1,062 Kt per annum.

The UK met the Gothenburg targets in 2012. The Gothenburg Protocol<sup>13</sup> is part of the Convention on Long-Range Trans-boundary Air Pollution which is itself an international agreement to protect human health and the environment from air pollution by control and reduction of local and long-range air pollution. In 2012 Member States, including the UK, agreed a set of revisions to the Protocol to reduce targets for national emissions of the four pollutants, along with Particulate Matter (PM<sub>2.5</sub>), for 2020 and beyond. The UK has agreed to reduce its NO<sub>x</sub> emissions relative to 2005 (1580 Kt) by 55% in 2020 (711 Kt), similarly PM<sub>2.5</sub> (81 Kt) emissions will be reduced by 30% (57 Kt).

The Gothenburg Protocol National emissions regarding NO<sub>x</sub> are forecast to be in compliance up to 2030 including a northwest or extended runway but PM<sub>2.5</sub> in 2030 are expected to be in exceedance by 103.63% of target for both the NWR and ENR cases.

At the local level the comparison includes emissions, dispersion and concentration of pollutants at the local EULVs and AQOs. The AQOs are nationally set policy targets established by the Air Quality Strategy for England, Scotland, Wales and Northern Ireland often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale. Monitoring is undertaken by local authorities. The air quality Limit Values set by European and transposed into national law as Air Quality Objectives are based on recommended guideline values from the World Health Organization.

The Commission says that for 2030, projected local monitoring data shows that at locations along the M4 at London Hillingdon, approximately 1.8km from the existing site boundary, annual mean NO<sub>2</sub> concentrations are predicted to be a likely risk of exceeding the NO<sub>2</sub> AQO of 40µg/m<sup>3</sup>; the dominant source of emissions at this site is from road traffic. While at other locations within the study area, the risk is low to unlikely.

Regarding particulates at the local level, the Commission says that while there is no well-established method for projecting local PM<sub>10</sub> monitoring data to future years, concentrations are anticipated to decline as can be seen in national background mapping and emission factor projections. It is therefore reasonable to conclude that there will also continue to be no risk of exceeding PM<sub>10</sub> AQOs in the future.

#### Mitigation for compliance

At the national level, for PM<sub>2.5</sub>, the Commission says the principal source of PM<sub>2.5</sub> is aircraft fugitive brake and tyre wear and APUs and therefore this is where airport related emission reduction management for PM<sub>2.5</sub> should be focused.

At the local level, for NO<sub>x</sub>, the Commission says mitigation of road traffic emissions may be required along Bath Road, the A4 and the M4, Hillingdon. Such mitigation will be dependent on the magnitude of any potential impacts at this location and the viability of its implementation, but may include traffic management and/or rerouting.

Due to the increase in harmful emissions forecast to result from both the NWR and ENR schemes the Commission judges that without mitigation measures the scheme performance is *significantly adverse* in relation to the objective of improving air quality consistent with EU standards and local planning policy requirements.

However, the Commission recognises that its assessment models a level of traffic in 2030 in excess of that proposed by the scheme promoter, and that the scheme promoter has proposed a range of mitigations to improve air quality performance which the Commission's baseline modelling has not captured. As such, the Commission considers there is the potential for the air quality impacts of the scheme to become *adverse*, rather than significantly adverse, in comparison to the 'do minimum' case, but notes that this assessment is in the context of wider action to tackle the broader problem of road traffic emissions in the Heathrow area and that substantial and forceful measures may be required to bring about this result. The Commission will be carrying out further work to better quantify the local impacts and the extent to which mitigation will improve performance for example through dispersion modelling of emissions.

#### Mitigation modelling risks

The air quality modelling undertaken by the Commission is said to derive from the surface access modelling, including the proposed additions to road and rail capacity, and to take into account less polluting vehicles and aircraft and regulations established to mitigate pollution. It has not taken into account mitigation the promoters might introduce. There are shortcomings in the surface access modelling and these will feed through to the air quality assessment. This includes the 2030 cut-off which the Commission suggests is sufficient because air quality will improve thereafter. Arguably this might only be the case if road use were static after 2030. But this ignores the assessment that Heathrow terminating passengers could increase by 50% after 2030. The assessment also appears to exclude freight and the results depend on questionable assumptions about surface access modes and replacement of the aircraft fleet. The assumption that pollution from aircraft does not affect people and natural habitat outside the airport perimeter is questionable.

The Commission has planned a second stage for modelling air quality and, inter alia, this will include dynamic traffic modelling (e.g. including the effect of speed and congestion), dispersion between source and receptor and local roads, none of which have been completed in time for the Consultation. Furthermore, the monitoring equipment at a number of sites in the vicinity of Heathrow is not able at present to properly measure particulates. These gaps in the data and modelling could have significant impact on the assessment of the expansion projects not just in relation to a 'do-minimum' case but in absolute exceedances against legal limits. There is also a significant risk that the Gothenburg agreement and other targets may be tightened significantly.

The European Court of Justice has recently ruled that the UK must comply with NO<sub>x</sub> limit values as soon as possible and the EU is seeking to fine the Government for breaches. It seems that the risks of exceedances and the consequences have been underestimated by the Commission and even more so the promoters of the two Heathrow expansion schemes. Furthermore, mitigation may prove insufficient.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

## **RHC COMMENTS ON CARBON EMISSIONS FROM HEATHROW EXPANSION**

1. RHC are concerned that the Commission, while undertaking carbon emission analysis appears to defer to other bodies such as the Climate Change Committee for resolving the issue of aviation's contribution to climate change.
2. The Commission's forecasts understate the emission estimated by the DfT and an explanation is required.
3. The table below details the Commission's forecast of Total UK passenger numbers in 2050 for the five scenarios in the carbon capped (CC) and carbon traded (CT) cases. There were 218 million passengers in 2011. The do minimum and Heathrow NWR expansion cases are shown.

UK Passenger numbers mppa in 2050 (Source Commission forecasts)										
	AON CC	GG CC	RDE CC	LCK CC	GF CC	AON CT	GG CT	RDE CT	LCK CT	GF CT
Without expansion	386	361	374	361	393	411	457	418	458	397
NWR expansion	369	342	365	343	366	436	495	435	494	420

4. The Climate Change Act limit on aviation carbon emissions in 2050 is 37.5 mt. The Climate Change Committee estimate the maximum number of passengers that would avoid the limit being breached is 389 mppa and the Commission estimate 370 mppa.
5. In the carbon capped scenarios the limit is more or less met but in preceding years the carbon is higher and the emissions are cumulative. Furthermore, the Commission have not explained what policies might be adopted to meet the cap and should do so. In the traded scenarios the gross carbon emissions are traded but the feasibility of a functioning trading scheme is far from certain.
6. The carbon calculations do not at present take into account radiating force which could double the impact of the emissions.
7. The impact of Heathrow on other airports through the functioning of the carbon constraint is to limit their growth significantly.
8. Other sectors of the economy are likely to be under pressure to meet their carbon targets and any excess from aviation could seriously harm other sectors.
9. The Commission has not set out the national impact of aviation carbon emissions and surely should do so.
10. A significant portion of the use of an additional runway at Heathrow will serve long haul UK resident leisure passengers. There is the question of their carbon footprint.
11. There is a risk that growth will be constrained even more than currently predicted by the impact

of carbon emissions and that this could seriously dent the appetite of potential funders for the expansion.



*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results*

## **RHC SAFETY CONCERNS AND ISSUES AT HEATHROW**

### Introduction

1. We briefly consider issues under three headings:
  - a. the design currently underway for London's airspace with which Heathrow's flight paths will need to be integrated,
  - b. HAL's northwest runway option, and
  - c. Hub Limited extended runway option.

We have discussed the issues with people familiar with flight operational issues. We understand from the Consultation that safety assurances may not be provided until after an expansion comes into operation. We believe this is far too late and that the safety issues need to be given greater priority and addressed more fully before the Commission makes any recommendation and before the Government makes any decision.

2. First we make the following general comments:
  - a. Heavy aircraft have greater inertia, and take up a larger turn radius than smaller aircraft.
  - b. All aircraft are required to stabilise in the approach configuration no later than 1000ft above the runway elevation and must be fully stabilised by 500ft. In normal operations flight crews aim to be fully stabilised by 1200ft. On a 3 degree glide slope this is typically at 4nm from the touchdown point of the runway (often marked by an outer marker beacon or delineated by Distance Measuring Equipment (DME) or GPS on the pilot's display.
  - c. Aircraft power and therefore noise and exhaust gas emissions increase as the gear and flaps are lowered for landing. It is noted that aircraft approaching to land at Heathrow lower their landing gear at different distances from touchdown as a result of numerous factors including, individual airline operator requirements, flight crew experience and ability, weather conditions and the stability of the approach.
  - d. The increase in risk from 50% more aircraft is disproportionately greater due to greater density of airspace use.
  - e. Both Heathrow schemes promote steeper glide slopes so as to reduce the impact of noise on those people under the flight paths. But there safety issues relating to increasing the descent glide path/slope into Heathrow.
    - Increasing the ILS glide slope reduces the flight crew's ability to control speed in the later stages of the descent and will increase the number of unstable approaches resulting in an increase in missed approaches (go-arounds). Allied to this will be an increase in deep landing events which in the case of the extended runway 27R would increase the risks of a collision between aircraft landing and those awaiting take-off further down the runway.
    - It is doubtful that any meaningful noise reduction benefit could be derived without reducing safety margins to an unacceptable level by increasing the final descent glide path. Increases in angle of descent beyond 3 degrees cannot in all reality be introduced

at a busy international airport where large heavy transport aircraft operate without a reduction in safety margins.

### **Approach and Landing**

3. HAL have proposed curved arrival flight paths and we understand that the extended runway option would also be a candidate for curved flight paths. Extended straight-in approaches provide the easiest, most economical, environmental and safest operation to landing heavy aircraft at a busy airport. They also produce the maximum landing flow rate. Any deviation from this straightforward method increases the possibility for operational errors, incidents and accidents. The level of risk increases as the complexity of the arrival procedures increase, the weather conditions, flight crew experience, airborne systems integrity, navigational instrument integrity and a combination of these and other lessor factors.
4. Multi-runway and multi-mode operations produce additional safety related issues as the complexity of the arrival and departure procedures increase.
5. Missed approaches are a particular concern with multi runway operations as the risk of aircraft mishandling and air proximity incidents will increase. It should be noted that there have already been a number of near catastrophic incidents of this type at Heathrow. The risks will increase with additional runways.

### **Northwest runway Option**

6. We have already referred to issues arising from the introduction of curved flight paths, increase in number of flights and a greater glide slope.

### **The extended single runway Option - simultaneous use take offs and landings**

7. We have already referred to issues arising from the introduction of curved flight paths, increase in number of flights and a greater glide slope.
8. It has been acknowledged that there is no example of this type of runway layout anywhere in the world. Consequently it should be seen as an experimental method rather than as a well tried and tested layout for an airport. Such an experiment at one of the busiest airports in the world is a brave plan which carries unknown and untested additional safety risks. Initial reaction to this type of runway use is highly sceptical.
9. Deep landing aircraft and botched missed approaches (Go around) run the risk of collision with aircraft waiting for take-off clearance further down the runway and with aircraft that might have just commenced their take off on the extended part of the runway.
10. Reduced visibility approaches carry even greater risk as do aircraft completing unstable rushed approaches. These are relatively common and there is no reason to think that incidents of this type will reduce significantly in the future.
11. Weather, poor visibility, cross winds, unstable air, wind shear, cumulonimbus activity and fog are aggravating factors which increase the risk of accidents on this type of multi use runway.
12. Additional factors include pilots mis-identifying the touchdown point on the runway for that of the take-off end half way down this multi-use runway.

13. It should be acknowledged that whilst these risks exist, actual incidents would be rare and accidents rarer still. However, these risks are real, are known and in the long term must be taken into account during the planning stage and must be enumerated. It would not be acceptable to ignore or trivialise these risks. They are in addition to those present in single use normal runway operations and in the worst case scenario have the potential to result in a collision between two A380 aircraft with a total load of up to 1200 passengers.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

#### **RHC RESPONSE ON THE WIDER ECONOMY**

1. The Commission's forecasts to 2050 for passengers, flights and destinations strongly indicate no benefit to the UK wider economy from the expansion of Heathrow, particularly in the carbon capped cases. There is no incremental growth. This is borne out by the All Party Parliamentary Group on Heathrow and the wider economy in its report titled 'The Wider Economy – Impact of Heathrow Airport's expansion on the number and distribution of UK passengers and destinations'
2. Moreover, the expansion of Heathrow is met by reduced growth at other airports and in particular the regional airports, with potential negative economic consequences.
3. The absence of growth in the number of total UK destinations, as predicted by the Commission under all of the scenarios, does not improve connectivity at a national level. Furthermore, with a prediction by the Commission for static flight numbers for the UK, the destination frequency remains unchanged, which again fails to improve connectivity at a national level.
4. The above APPG report points out how only very few 'thin' international routes have any international transfers (seven in 2011) and that it is difficult to see much benefit from the transfer helping route viability. Rather they increase the frequency of the most popular routes and, while not denying the value of frequency, there must surely be diminishing returns on the very high frequency routes. Furthermore, there is the question as to whether a new runway at Heathrow should be built with the result that international transfers be allowed to increase by as much as 19 mppa compared to the case without expansion. This is a substantial part of the runway capacity and RHC argue there is no economic benefit, especially as the international transfers are exempt from Air Passenger Duty.
5. The Commission's brief is to examine the scale and timing of any requirement for additional capacity to maintain the UK's position as Europe's most important aviation hub. It seems from the above forecasts for the UK as a whole and areas other than the southeast that this aim will not be met by expanding Heathrow.
6. If these forecast outcomes are then applied to the PWC model discussed in the Commission's technical report 'Economy: Wider impacts Assessment' it seems likely that most, if not all, of the value to the wider economy predicted by the PWC report vanishes. The values range from PV £112 to £210bn. But the main 'Effects', i.e. Passenger flow, Productivity, Frequency, and Transport economic efficiency, evaporate in the absence of UK passenger growth and greater connectivity. The negative effects of Heathrow expansion on the regions could even result overall in a negative impact on the wider economy.

7. The PWC report itself points out that the economic values cannot be compared to the costs as in a cost benefit analysis because the benefits arise across the wider economy and the investment and costs in the wider economy are not estimated and offset against the benefits. This is a one sided evaluation and while not dismissing the model's potential, the outcomes can be very misleading and substantially overstate the net benefits of expansion at Heathrow.
8. As it is, even PV £112 to £210bn, although seeming very large, are actually only increase GDP by 0.3% and 1.2% over 60 years and arguably are within the margin of error of a new untested economic model.
9. RC is concerned that the PWC economic model does not appear to have been fully calibrated.
10. It appears from the PWC report that much time has been spent on the developing a model but without properly assessing the model's input assumptions coming out of other work by the Commission.
11. As a measure of wider economic benefit for comparison with environmental costs of Heathrow expansion, RHC firmly believe the PWC estimates of values are far too high and the model needs to be re-run with input assumptions developed using the Commission's forecasts for UK passenger growth etc. But as mentioned above, even then without taking into account investment costs over the wider economy required to realise the benefits it is not clear what use is the model.

*Q5: Do you have any comments on how the Commission has carried out its appraisal of specific topics (as defined by the Commission's 16 appraisal modules), including methodology and results?*

## **RHC COMMENTS ON FINANCING HEATHROW EXPANSION**

We refer to the Consultation document titled - 13. Cost and Commercial Viability: Funding and Financing prepared by PWC and in particular para. 3.4.7 Financing implications.

1. The HAL NWR scheme could require an increase in the maximum debt and equity outstanding in the order of £29.9bn and £8.4bn respectively. Furthermore, in order to refinance bonds as they reach their scheduled maturity, HAL would need to access a significant amount of financing over the assessment period to 2050.
2. It is unlikely that the GBP bond market alone would have sufficient liquidity to fund this scheme. Therefore, HAL would likely need to issue bonds in a number of different currencies to access such liquidity as well as access to foreign exchange hedging instruments. It is noted that HAL's bond programme currently includes GBP, USD, EUR, CAD and CHF bonds.
3. The quantum of debt and equity financing required for the HAL proposal should be considered in the context of the wider debt and equity markets. The scheme could put HAL on a similar scale to Network Rail (with long-term debt of c. £35bn) and beyond that of National Grid (c.£25bn), both of which also operate in regulated environments. It should be noted, however, that the HAL NWR scheme is a single infrastructure project compared with the incremental enhancements made to an already significant network of assets for Network Rail and National Grid. The HAL NWR scheme also increases HAL's debt balance to a similar level of that of BP, which holds the largest debt balance of any UK corporate (excluding financial entities) with c.£40bn in long-term debt.
4. Of these comparable entities, Network Rail's outstanding debt is guaranteed by the UK government. This guarantee made it easier for Network Rail to access a large quantum of financing. From April 2014 Network Rail has borrowed directly from the UK Government rather than issuing debt in its own name. The HAL NWR scheme would also create an asset base that should be considered alongside a number of other regulated markets, including water (c.£60bn<sup>14</sup>) and rail (c.£50bn<sup>15</sup>).
5. Furthermore, the total size of investment grade bonds issued by UK corporates in 2013 was c.£46bn (2014, to date: £37bn).
6. While the financing for the HAL scheme is to be raised over an extended period, this includes around £28bn from 2022 to 2027 and just under £25bn from 2031 to 2035. In any given year the debt funding requirement peaks at around £6bn, or 13% of the 2013 total bond issuances; much larger than the biggest individual bond issue by a UK corporate since 2013 (around £3.5bn issued by Vodafone, which also has an A- credit rating). A list of all UK corporate bond issuances over £1.5bn since the beginning of 2013 can be found in the consultation document Appendix 4.
7. A major challenge for Heathrow relates to the quantum of finance required. The scale of the finance to be raised will mean that the financing will have to command returns sufficient to

attract a wide range of investors and be structured in a way to ensure it is of sufficient credit quality.

8. In order to place the quantum of equity required by the scheme, the actual rate of return may prove to be different to the 9% nominal, pre-shareholder tax rate of return assumed in the Consultation report. Similarly, the actual gearing of the company and level of investment grade debt available would only be determined at the time. Both could only be ascertained once the project risks, regulatory structure, prevailing costs and revenue forecasts and likely levels of demand are better understood.
9. The ability of HAL's existing investors to meet the full equity requirement or their strategy to broaden the shareholder base would need to be considered. The HAL NWR scheme requires dedication of large amounts of both debt and equity capital by individual investors and any concentration restrictions would need to be considered. The appetite and capacity of investors (both existing and new) would be an important factor in determining the price at which financing is available.
10. The Commission's forecast scenarios do not suggest a high level of demand risk. It is important to note, however, that the projected weighted average aeronautical charges range from £27 to £31 per passenger for the assessment period would represent a significant increase from current levels and would be high relative to other global and European comparators.
11. All of the above puts the HAL NWR scheme at the highest end of the range of financing for infrastructure projects and is unprecedented for privately financed airports. Achieving such levels of financing would likely be challenging and very much dependent on the factors outlined above. Furthermore, accessing such a quantum of capital may have an impact on the pricing of both debt and equity. Consultation may inform further analysis of the market capacity and appetite for such levels of financing, including debt, equity and any subsequent hedging requirements.
12. RHC believes that, given the outline above, a substantial part of HAL's financing would require Government support if not in actual funds then as guarantees.
13. The financing of a private enterprise by Government in the amounts RHC believes are required would be unprecedented. It raises major issues of state aid and whether the Government would itself have the capacity given its own funding requirements and needs from other sectors of the economy. The commitment from Government would have to be at an early stage in the next few years and not wait until the actual major spend occurs. It seems doubtful that assumed financing cost will be sufficient to cover the financial risks and Government fee for providing financial support.
14. It is difficult to see how Government support could be justified. A significant proportion of the additional runway capacity would be for UK resident leisure passengers on long flights. Also, based on the Commission's forecasts much of the demand will in fact be a re-distribution of growth otherwise available to regional airports who have existing spare capacity. Furthermore, other airports might well seek redress under unfair competition rules.