



Mott MacDonald Response to the Airports Commission Consultation

Introduction

Mott MacDonald welcomes the Airports Commission's examination of the need for additional airport capacity in the UK and the opportunity, through this consultation, to provide feedback on the shortlisted runway options that the Commission is considering. It is a hugely complex challenge of great national importance for the UK. However it is a challenge which needs to generate a clear recommendation which can lead swiftly to a politically-supported decision that enables the successful promoter to deliver the chosen scheme with confidence and in a timely manner. Without such a clear outcome, neighbouring countries, which are already taking advantage of the UK's prolonged indecision, will benefit further at this country's expense.

Mott MacDonald has its origins and its headquarters in the United Kingdom and is now a £1.5 billion engineering, management, environment and development consultancy employing 15,000 staff globally. It is one of the world's largest service providers in this field. Mott MacDonald has been employed by a wide range of government, aviation and environmental clients to use our ingenuity to identify long-lasting sustainable solutions which balance the needs of all stakeholders.

We are currently undertaking work at the world's largest and most prestigious airports including Hong Kong, Singapore and London Heathrow. Through this cutting edge global experience, Mott MacDonald can bring extensive international and deep local understanding to bear in order to help support the Airports Commission's decision making process. Mott MacDonald hopes that this response will assist the Commission in its systematic search for the best solution to the challenge of providing sustainable additional runway capacity for the UK.

Mott MacDonald openly declares that its Aviation and Transport Planning teams have acted for some years as consultants to Heathrow Airport Limited in the development of its North West Runway proposal, but in making this corporate response to the Airport Commission's consultation, Mott MacDonald is seeking to draw on its corporate knowledge to deliver an informed, objective, professionally balanced opinion that it hopes the Commission will find helpful.

Overall Approach of the Airports Commission (Q3)

Mott MacDonald is supportive of the overall approach taken by the Airports Commission, including the need to bring all of the many different complex considerations for the different options together into a broad economic and sustainability assessment, from which to make a decision. Mott MacDonald is very conscious of the extensive amount of information which has rightly been considered by the Commission, and supports this comprehensive approach.

Mott MacDonald's Approach to the Consultation Response

Whilst the detail in the submission will no doubt be critiqued at length by promoters, supporters and non-supporters of the schemes, Mott MacDonald's approach to the consultation response is to use its experience to filter all of this detailed information so as to draw out the fundamental features that it considers differentiate each of the three schemes and that are likely to be pivotal in helping the Airports Commission to reach its conclusions. Having identified what we believe are the key differentiating factors for Heathrow North West Runway (promoted by Heathrow Airport Limited), Heathrow Extended Runway (promoted by Heathrow Hub) and Gatwick Second Runway (promoted by Gatwick Airport Limited), we go on to describe how Mott MacDonald considers that these can be balanced in the overarching business case and sustainability assessment in order to reach a conclusion (Q1).

Heathrow North West Runway (proposed by Heathrow Airport Limited)

Business Case (Q7)

Heathrow Airport is the UK's largest and, until recently, the world's largest international airport. It is a constrained airport where demand far outstrips the available capacity. A simple metric which demonstrates this is the price which a combined pair of landing/departing slots commands on slot exchanges between airlines on the "grey" market. A recent example from June 2014 is \$31m which Cyprus Airways secured for a pair of slots that it sold to American Airlines. This is unparalleled in any other airport.



The Airports Commission's assessment of need considers 10 different demand scenarios, including a future carbon traded and carbon capped environment. Mott MacDonald places great significance



on the Airports Commission's finding that, in all ten of its scenarios, there is sufficient demand to fill a third runway at Heathrow to full capacity.

In Mott MacDonald's opinion, this demonstrates clearly that, from an Aviation industry perspective, Heathrow is the right airport in the right place for further development. This view is further strengthened by the strong and broadly-based airline support for a third runway at Heathrow, many of which have publicly backed a third runway. These include not only full service carriers such as British Airways and Virgin Atlantic, but also low cost carriers such as easyJet.

Heathrow Airport is conveniently located for passengers and businesses alike, with 20% of the UK's population living within 60 minutes of the airport and 120 out of the top 300 businesses by turnover in the UK having head offices are within 15 miles of Heathrow. This compares with just 10 of the top 300 businesses located within 15 miles of Gatwick.

There are other strong economic factors militating in favour of further development at Heathrow – the Airports Commission's own assessments show 3-4 times more jobs being created with an additional runway at Heathrow than would be generated by an additional runway at Gatwick. Similarly, there is clearly significantly greater current and future propensity for growth of freight traffic at Heathrow.

Combining all of these factors, the Airports Commission has identified that the Heathrow Airport North West Runway will generate overall UK GDP benefits in the region of £112bn - £211bn. Mott MacDonald considers this to be a metric of the highest significance in drawing a balanced conclusion to the question of where best to locate an additional runway.

Mott MacDonald notes that the Airports Commission assesses that construction costs for a North West runway would be higher than other options, with an estimated cost of £16bn-£18bn. Having written the original Optimism Bias 'Green Book' for the Treasury, Mott MacDonald subscribes fully to the principle of applying Optimism Bias and Risk premiums to early stage cost estimates. However, Mott MacDonald recognises that Heathrow Airport Limited has gained extensive, in-depth experience of major construction at Heathrow over the past 15 years whilst undertaking the development of Terminal 5 and then Terminal 2, and that the experience gained on these projects has directly informed the build-up of Heathrow's cost estimates for construction. Mott MacDonald notes the Airports Commission's remark that the difference between its cost estimates and those of Heathrow Airport Limited is due primarily to the application of Optimism Bias. Mott MacDonald is concerned that the Airport Commission's application of 20% Optimism Bias plus 20% Risk is an excessively cautious amount of contingency to add to the base construction costs, given Heathrow Airport Limited's unusually robust understanding of its cost base.

Sustainability Appraisal (Q6)

Whilst there are greater accessibility benefits for passengers at Heathrow, the location of Heathrow Airport means that there are more people impacted from an environmental perspective than would be the case at Gatwick.

Aircraft Noise

Aircraft noise is the issue that most frequently makes the headlines in the media, and Heathrow self-evidently lies in a more densely populated area of the country compared to Gatwick. The number of people impacted by noise is of a different magnitude; over two hundred thousand at Heathrow compared to a few thousand in the 57 LAEq contour at Gatwick. However, when one compares the runway system impacts (i.e. 3 runways at LHR + 1 runway at LGW vs 2 runway at LHR + 2 runways at LGW) and how this changes from today, then the difference is much less apparent.

Mott MacDonald notes that the Airports Commission concurs with Heathrow Airport Limited's assessment that a 3 runway Heathrow with a new North West runway will have reduced noise levels in the 57 LAEq contour compared to today's two runway Heathrow (e.g. from c250k people today to c220-240k people with three runways). Clearly this is still several magnitudes above the noise impacts of a second runway at Gatwick (from c3k people today to 5-12k people). The North West plan does, however, have considerably fewer people in the 57 LAEq contour than the Extended Runway scheme (295k-305k people), as well as providing greater periods of respite. In part, this is because the location of the North West runway enables aircraft to approach and depart over less densely populated areas of London along the M4 corridor.

Air Quality

Local air quality pollution is higher around the Heathrow site, by comparison with Gatwick. The Airports Commission's appraisal indicates some potential air quality exceedances on the M4 corridor to the north of the airport. However, it must be noted that most of the emissions in this area will be associated with vehicular traffic on the M4, of which only a relatively small proportion is directly related to travel to/from the airport. Mott MacDonald has actively helped Heathrow Airport to develop credible surface access strategies that are designed to result in no additional car trips to/from the airport with a three runway Heathrow. Mott MacDonald is confident that a combination of improved public transport connectivity and the introduction of targeted traffic control measures can enable this to be achieved. Notwithstanding this strategy, Mott MacDonald is clear that joint work with the Highways Agency to optimise air quality along the M4 corridor to the north of Heathrow is something which should be encouraged for the benefit of all.

Mott MacDonald notes that in the Airports Commission's overall Sustainability appraisal, which takes a broad range of factors into account, the overall assessment for Heathrow and for Gatwick appears to be fairly evenly balanced.



Heathrow Extended Runway (promoted by Heathrow Hub)

The Heathrow Extended Runway concept is a novel idea which has considered from first principles how a runway operates and whether there is an alternative concept which can achieve the same outcome as conventional thinking. Thinking creatively about these issues in this way challenges accepted norms and is a real positive. Mott MacDonald agrees that the Commission has been right to explore this concept in more detail.

Developing an Extended Runway concept at Heathrow would bring about benefits and impacts on a similar scale to the North West Runway concept. There are, however, a number of notable differences.

Business Case (Q7)

Firstly the concept of extending a runway to create two in-line runways is new. Whilst there are a number of airports around the world which have highly staggered runways and others with closely spaced runways, the in-line concept has no known precedents and there would be significant additional safety and regulatory processes which would need to be completed to assure the safe operability of the concept. In addition to ensuring that geometric rules are adhered to, human factors, for instance pilot perception, need to be taken into account. There is a risk that these may not be capable of satisfactory resolution in a timely manner, such that there could be a risk to the programme to get the additional runway capacity built and licensed for use by 2025.



The concept as drawn, using current ICAO SOIR regulations, would make the in-line runways dependent, which will have an impact upon capacity. The runway length limitations of the northern runway pair and the need to cross more aircraft in the air will increase Air Traffic Controller workload and may also pose a capacity risk.

The Extended Runway proposes to offer respite by operating just two runways for 8 hours of the operational day (approximately half of the operational day). So in simple terms with the Extended Runway there would be two and a half runways at Heathrow as opposed to three full runways with the Heathrow North West Runway. As a result Mott MacDonald considers that the capacity of the Heathrow with the Extended Runway would be considerably less than with the North West Runway – approximately 100,000 ATMs per annum fewer with the Extended Runway representing a capacity loss of 15-20mppa by contrast with the North West Runway. This would result in the Extended Runway concept not being able to meet any of the longer term demand scenarios which the North West Runway could meet.

Mott MacDonald believes that the capital cost of the Extended Runway concept has been underestimated and that the difference between the Extended Runway scheme and the North West scheme is nearer to £1bn as opposed to £5bn. For instance, the Extended Runway scheme does not appear to have sufficient costs allowed for river diversions, automated people mover systems (despite the quoted Minimum Connection Times for that scheme and the North West scheme being the same), or for other essential land uses such as long stay parking and supporting ancillary functions.

We concur with the Airports Commission's judgement that the costs in the appraisal should assume that a conventional on-airport Terminal 6 is constructed, rather than an off-airport processor. Whilst Mott MacDonald supports the creation of good public transport interchange with HS2 and mainline rail, we consider it simpler to bring as much public transport as possible to the airport, rather than attempting to take the airport to (some of) the public transport, with the concomitant challenges of:

- ▶ Getting all modes of public transport to an off-airport processor e.g. London Underground;
- ▶ Potentially confusing wayfinding to a remote site for those passengers that do arrive by road;
- ▶ Extended airside transportation links for passengers and bags from a 40 mppa remote terminal through a landside environment.

Sustainability (Q6)

The Extended Runway concept was shortlisted by the Airports Commission as it was felt that there could be additional noise benefits, over and above the North West Runway masterplan. However, it is now evident from metrics such as the 57 LAEq contour, that the number of people affected increases from 250k people today to 295-305k people, whereas the North West Runway masterplan reduces the population within the contour to around 220-240k people. This is because the North West runway is aligned with the M4 corridor which has fewer people living underneath the flight paths compared to the existing runways, and also the ability of the North West Runway masterplan to inset the landing threshold on each of the runways. Other environmental assessment areas are similar in terms of impact to the North West Runway masterplan. Therefore as a result, Mott MacDonald's view is that the Extended Runway masterplan has fewer sustainability benefits than the North West Runway masterplan.

Gatwick Airport Second Runway (promoted by Gatwick Airport Limited)

Mott MacDonald sees Gatwick Airport as a highly successful, vibrant airport that is visibly thriving in its role handling a mix of primarily low cost and leisure services. For many Mott MacDonald staff, it is very conveniently located just fifteen minutes south of our Croydon headquarters on the Brighton main line. We welcome Gatwick's continued growth, but we see this as desirable, sustainable growth within its own market sector, not as a credible competitor for the nation's Hub airport, which is Heathrow.

Subject to meeting sustainable national carbon targets, we believe that both Heathrow and Gatwick have strong justification in seeking to develop additional runway capacity in the fullness of time. However, the Commission has made it clear that it believes there is sufficient demand for only one net new runway before 2030 and hence is seeking to determine which site or option is best for that single new runway.



Given that binary choice, Mott MacDonald would highlight the following key considerations that it believes that the Commission should weigh heavily in making its final recommendation:

Business Case (Q7)

Airports exist as an essential means of facilitating the movement of passengers on and off aircraft flown by airlines. It is the airlines that fly passengers to their destinations and it is airline economics that dictate whether an airline offers a service to passengers from one airport to another – subject



to the airport capacity being there to enable them to do so. Airports cannot drive or dictate the market, but lack of capacity can constrain the market's development.

Stansted Airport is a prime example of the susceptibility of an airport to airline economics. Its traffic has waxed and waned over the past ten years due to the business decisions of the airlines operating from Stansted, facilitated by the availability of unutilised capacity at other competing airports. The London system as a whole has not been short of point to point capacity, including at Gatwick, but it has clearly been short of Hub airport capacity at a constrained Heathrow for many years.

It is therefore highly telling that there is clearly considerably more airline support for a third runway at Heathrow than a second runway at Gatwick. Indeed, Gatwick's two largest customers, easyJet and British Airways, which currently account for over 60% of traffic at Gatwick, have both publicly stated they do not support a second runway at Gatwick but do support a third runway at Heathrow.

Whilst airlines and alliances will undoubtedly change over the course of time, there is a fundamental risk that if a second runway at Gatwick is selected as the preferred option, some point to point airlines will not be willing to accept higher landing charges to pay for it and will move to unutilised capacity at other UK south east airports, whilst other full service carriers, unable to establish viable connections through a constrained Heathrow, will choose to do so at an overseas Hub airport such as Paris or Amsterdam.

Some of the early studies by the Commission looked into this issue of Hub airports - could London only support a single Hub airport, or could it support a Dual or Split Hub? At the time Boris Johnson was (rightly in Mott MacDonald's view) unequivocal that London could only support a single Hub airport – to the extent that he correctly positioned this as a binary choice: either further development at Heathrow, or close Heathrow and develop another site as the nation's Hub airport (with his preference clearly for the Thames Estuary, with all its many challenges). In Mott MacDonald's experience, we would come back to this question of Single or Dual/Split Hub as an absolutely essential issue for the Commission to address clearly as it forms its final recommendation.

In Mott MacDonald's view, history shows clearly that a Dual/Split Hub at Heathrow and Gatwick does not work. The 'second force' of BUA and Caledonian Airways (which became British Caledonian) at Gatwick could not compete successfully with BEA and BOAC (which became British Airways) at Heathrow - and ultimately British Caledonian failed financially. When British Airways rescued British Caledonian by merging it into British Airways, it promoted the 'Hub without the Hubbub' at Gatwick passionately and transferred services from Heathrow to Gatwick to seek to strengthen the Gatwick Hub proposition. However, even when underwritten by its financial strength as the dominant national flag carrier, British Airways could not make this second hub operation viable financially and it converted its operation at Gatwick to the long haul leisure and short haul point to point products that one sees today, returning many of the transferred services back to its Heathrow hub.

Gatwick's contention is that the world of airline economics is changing, that 'hub by-passing' aircraft will now make conventional Hub airports relics of a bygone age, that Gatwick is riding the tide of the new reality and should therefore be the site of the new runway in order to harness this momentum.



It is Mott MacDonald's view that hub by-passing aircraft have been around for thirty years, ever since the development of the A310 and B767 as the first generation of twin engine long haul and ultra-long haul wide body aircraft. These have been followed by the A330 and B777, whilst the latest generation of aircraft such as the A350 and B787 are a continuation of this trend.

Throughout those thirty years, direct point to point hub by-passing services have indeed been developed and have prospered, and long may that continue, but over that same period the strength and financial attractiveness of the world's major Hub airports has also strengthened immeasurably, as evidenced by the hard economic reality of the price of a slot pair at Heathrow today. In Mott MacDonald's view, the airline economics are clear, and the Commission should not be swayed by the vigour and passion of Gatwick's presentation, it should be persuaded by the layer upon layer of hard evidence that supports the development of additional Hub airport capacity at Heathrow.

In Mott MacDonald's opinion, these factors are clearly demonstrated in the assessment carried out by the Airport Commission which shows that there is significantly greater uncertainty and risk attached to the extent of future demand at Gatwick. The Commission's 10 forecast scenarios display a wide range of potential future demand at Gatwick, from as low as 60mppa to as high as 96mppa (or just 15mppa above a 45mppa single runway operation up to as much as 51mppa over and above the 45mppa single runway operation). By contrast, at Heathrow all 10 forecast scenarios show consistently that Heathrow can and will fill a third runway.

Gatwick is located further than Heathrow from the centre of gravity of south east air passenger origins/destinations and further than Heathrow from the centre of gravity of business travel demand. This relative remoteness, combined with the variability of demand at Gatwick, perhaps explains why the Airports Commission's economic appraisal shows that the overall GDP economic benefits at Gatwick would be approximately half that of Heathrow (some £80bn less).

Whilst Mott MacDonald would expect that it would be cheaper to construct a second runway at Gatwick, as construction unit rates would be slightly less, Mott MacDonald has concerns that the current assessments of cost and programme at Gatwick mask hidden complexities that have not yet been fully appreciated and have therefore not yet been taken fully into account, for instance provision of sufficient, diverse and truly resilient surface access infrastructure (Q2). Such savings in capital costs as there may be at Gatwick, are dwarfed by the magnitude of the difference in economic benefits. This disparity is exacerbated when the uncertainty surrounding the Gatwick traffic figures is weighed in the balance.

Sustainability (Q6)

From a Sustainability perspective, it is clear that Gatwick is a considerably different proposition to either of the Heathrow concepts for a number of reasons, not least including the location of the site, the traffic which it serves, the benefits which it could realise and the environmental impacts it creates.

The aircraft noise issues are the corollary of those set out above for Heathrow, in that Gatwick self-evidently lies in a less densely populated area of the country compared to Heathrow. The number of



people impacted by noise is of a different magnitude; a few thousand people within the 57 LAEq contour at Gatwick compared to over two hundred thousand people at Heathrow. However, when one compares the runway system impacts (i.e. 3 runways at LHR + 1 runway at LGW vs 2 runway at LHR + 2 runways at LGW) and how this changes from today, then the difference is much less apparent.

Clearly the Sustainability appraisal is a very much broader consideration than the single issue of aircraft noise, and Mott MacDonald notes that, according to the Airport Commission's own sustainability assessment, when all the elements of the appraisal are taken into account, the overall Sustainability appraisals for Heathrow and for Gatwick appear to be fairly evenly balanced.

Mott MacDonald's Overall Conclusions (Q1)

Mott MacDonald concludes that the choice between a Heathrow or Gatwick site for a new runway would appear to come down to whether the clear business case benefits at Heathrow are stronger than any sustainability benefits at Gatwick.

Heathrow preferred to Gatwick

The analyses of the Airports Commission indicate that there are significantly greater business case benefits for the Heathrow options by comparison with the Gatwick option. The Commission's sustainability assessments appear to show a broadly comparable sustainability case across all 3 options at a runway system level, including taking into account the relative population densities around each of the airports.

Mott MacDonald therefore concludes that the Heathrow site is a stronger option for the provision of additional runway capacity than Gatwick.

North West Runway preferred to Extended Runway

The Airports Commission's assessments show, at a summary level, that the Heathrow North West Runway delivers large economic benefits allied with environmental impacts that, whilst not insignificant, are in some instances (e.g. aircraft noise), better than today.

By contrast, the Extended Runway scheme has inherently greater operational risks, exhibits an enduring reduction in capacity, and has greater noise impacts. Furthermore, Mott MacDonald anticipates that its cost estimate will increase to be close to that of the North West Runway scheme.

For these reasons, Mott MacDonald considers that the Extended Runway scheme will ultimately generate materially lower economic benefits than the North West Runway proposal.



Mott MacDonald therefore concludes that the North West Runway scheme is a stronger option for the provision of additional runway capacity than the Extended Runway scheme.

Next Steps

Mott MacDonald recommends that the Airports Commission and UK Government should support expansion at Heathrow through the development of a new North West Runway and should provide a regulatory policy framework that will allow this to be brought forward as soon as possible.

The UK has been losing traffic and business for many years to European countries where their airports have been allowed to grow in a sustainable way. The evidence of the Airports Commission demonstrates that Heathrow can also grow in a sustainable manner. Mott MacDonald considers that any further delay that prevents growth is not sustainable from a UK economic perspective, and therefore calls urgently on all those in a position of political power to act decisively and positively in favour of a North West Runway at Heathrow at the earliest opportunity.

Mott MacDonald

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