



# Airports Commission's Initial Assessments – Consultation

Heathrow Airport's response

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## Introduction

Britain faces a choice. For 350 years the world's largest port or international airport has been in Britain. Today that competitive advantage is being gradually eroded. That is because of airport capacity – Heathrow is full. The Airports Commission process is the last and best chance for Britain to take action to maintain its global connections before it is too late.

Only Heathrow will connect every part of Britain to every part of the world. Heathrow will take British people and businesses further, delivering the jobs and economic growth we need. Crucially, as our proposals demonstrate, we can expand within environmental limits. We can deliver the promise of Heathrow across our local communities and the nation. We believe the Commission's evidence base, taken as a whole, supports these conclusions. Now the evidence is in, it is time to have the vision and courage to connect Britain to the growth it needs.

We support the Commission's extensive review of the need and options for delivering additional runway capacity in the UK. The Commission has to date carried out a well-structured and comprehensive review involving widespread engagement with all relevant parties. This has provided a unique opportunity to look afresh at the issues surrounding airport capacity and review the evidence base that will support any recommendation that the Commission makes later in 2015. Uncertainties will always exist. The Commission's challenge is not to predict the future with complete accuracy. Rather, it is to develop a reasonable solution that is robust in any scenario. We hope that the Commission's thorough, robust and independent review will provide the confidence the UK needs to make a clear and firm decision about growing our airports.

We therefore welcome the opportunity to respond to the Commission's consultation on its initial assessments of the three short-listed options for increasing the UK's airport capacity. This consultation represents an important milestone in the Commission's review, providing a final opportunity to comment on the Commission's wide ranging appraisal before it finalises its conclusions and presents a recommendation to Government. We support the comprehensive approach taken by the Commission in assessing the three options. This essentially comprises the sustainability assessments and business cases, which have been informed by each of the detailed appraisal modules. All of these are intended to set out how the short-listed options perform against the Commission's 29 objectives set out in its Appraisal Framework.

We agree with the Commission that these assessments will provide a useful foundation for any future National Policy Statement. But we would go further and suggest that they are fundamental to this very purpose. Expediting the preparation and designation of an Airports National Policy Statement is key to the timely delivery of new runway capacity. It is therefore critical that the Commission's assessments are robust. They must be capable of justifying any final recommendation by drawing clear distinctions between the performance of the options. And they must stand as a core part of the evidence base for any future policy decision.

We also believe that the principal purpose of this exercise should not be forgotten. The Commission's Terms of Reference require it to identify the steps needed to maintain the UK's global hub status. This is not therefore a search for any airport capacity but an exercise fundamentally focused on achieving this purpose. The performance of the short-listed options must ultimately be considered against this over-arching objective.

Our response directly answers the eight questions posed by the Commission in its consultation document. It sets out the conclusions that we have drawn as a result of both our own detailed work and the Commission's assessments. Overall, we support much of the Commission's analysis and its approach to the appraisal, although we identify areas where we consider there to be issues and gaps in the Commission's assessments. Where we see issues, we offer recommendations on how we believe the assessment could be strengthened and improved.

Our response is structured as follows:

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**Summary of Recommendations**

**Appendices**

- A. Masterplan V4.8 February 2015
- B. Cost Plan Summary (February 2015)
- C. Heathrow Property & Noise Compensation – Report on Consultation (Jul-Oct)
- D. Construction Delivery Review, Mace, February 2015
- E. Improved Noise Insulation Offer
- F. Improved Property Compensation Offer
- G. The systems approach to infrastructure and the role and limits of competition – with applications to airports, Dieter Helm, New College, Oxford, 11 December 2014
- H. Review of future airline models, JLS Consulting, February 2015
- I. Moody's Investor Services Report, A new runway will have mixed credit implications for London's airports
- J. Air Quality Strategy
- K. Blueprint for noise reduction – ten steps to reduce noise by summer 2015
- L. The cost saving to UK businesses from a Heathrow expansion, Frontier Economics, 4 December 2014
- M. The Promise of Heathrow



# Section 1

## Response to Question 1

Conclusions in respect of the  
three short-listed options

International Air





## Airport's Commission - Question 1:



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.



**Question 1: Conclusions in respect of the three short-listed options**

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We have carefully considered the Commission's extensive assessments and appraisals in respect of the short-listed options for airport expansion. They reveal a number of conclusions that strongly reinforce those from our own assessments and evidence. These conclusions point very clearly to Heathrow as the only option capable of meeting the Commission's Terms of Reference to maintain the UK's global hub status. The NWR proposal is also clearly the most deliverable and sustainable Heathrow option.

It is important to frame these conclusions in the context in which any new runway will be delivered:

## 1.1 Context for Britain's choice

### 1.1.1 Economic growth will be the next Government's number one priority

Stimulating strong and sustainable economic growth will be the next Government's number one priority. In a rapidly changing world, growth and prosperity are indispensable for social cohesion and the UK's future progress. Growth is not in opposition to social or environmental priorities but indispensable to achieving them. This will build on current Government priorities to support sustainable and balanced growth and enterprise, which includes doubling UK exports to £1 trillion by 2020 and attracting more inward investment.

Most economic growth over the next 40 years will come from Asia, North America and Latin America. At the same time, traditional markets in Europe face a lower growth future. This is why the UK needs better long-haul connections. The UK is in a global race to improve links with emerging economies and deliver the trade, jobs and economic growth that will otherwise go to our international competitors.

Direct air connections support economic growth. As an island trading nation, connectivity has been central to the UK's global trading position over the past three hundred years. Connectivity is now more essential than ever. One of the key factors to increasing trade with emerging markets is a direct flight, with up to 20 times more trade possible when there is one.<sup>1</sup> Maintaining the UK's position as an international aviation hub that can deliver the necessary connectivity to both established and emerging markets is vital to supporting economic growth. Delivering a solution that achieves this is central to the Commission's Terms of Reference.

### 1.1.2 Britain's position as a global aviation hub is under threat

While it may appear that the UK has good air connections today, it has suffered a relative decline when compared to its European and wider global competitors. Britain has not invested in the runways it needs for the future. The debate about new runway capacity in the UK has been beset by delay while competing European hub airports have pressed ahead and built the new runways they need. Our global hub at Heathrow is under threat, running at 98% capacity, while hub airports at Paris, Frankfurt and Amsterdam have spare capacity and are adding new flights to growth markets. Dubai and Istanbul are also investing huge sums to capture the hub connectivity Britain has enjoyed for so long. Data released in January 2015 indicates that Dubai has now overtaken Heathrow as the world's busiest international airport<sup>2</sup>.

### 1.1.3 Rebalancing the economy is a national priority

A combination of capacity constraints, particularly in the South, and poor connectivity, particularly in the Midlands and North, has exacerbated our unbalanced national economy. Done in the right way, new airport capacity in the

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<sup>1</sup> Frontier Economics, "Connecting for growth: the role of Britain's hub airport in economic recovery", September 2011

<sup>2</sup> <http://www.telegraph.co.uk/finance/newsbysector/transport/11372616/Dubai-overtakes-Heathrow-to-become-worlds-busiest-airport.html>

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south-east has the potential to benefit all areas of the country. For example, better connectivity at Heathrow can make Yorkshire a more attractive region for international investment if Heathrow has good high speed rail and air links to Sheffield and Leeds. The Airports Commission should consider the extent to which each of the proposed options can close the productivity gap by driving economic growth and investment across the UK.

### **1.1.4 We must continue to balance the economic benefits of expansion with our environmental impacts**

We take reducing aviation's impact on the environment very seriously. New technology and changes to operating procedures have substantially reduced the environmental impacts of aviation. Importantly, the Commission has recognised that Heathrow's expansion is compatible with the UK's climate change targets and would reduce the number of people exposed to aircraft noise compared to today. And it can be delivered within legally binding air quality limits. We are committed to reducing our environmental impacts, regardless of the decision on expansion.

Against this context, and taking into account both the Commission's appraisals and our own assessment work, we draw four principal conclusions:

- Expanding Heathrow is the only option that meets the Commission's Terms of Reference and is robust in any scenario;
- Expanding Heathrow will deliver greater benefits for the UK;
- Heathrow's expansion is deliverable;
- Heathrow's NWR option is the most sustainable solution at Heathrow.

We elaborate on these conclusions below.

## 1.2 Heathrow is the only option that meets the Commission's Terms of Reference and is robust in any scenario

### 1.2.1 The Commission should ensure that its recommendation is robust in any future scenario

The Commission rightly says that the development of the aviation sector is inherently difficult to predict (Consultation Document; para 2.22). The Commission is right to test options against several future scenarios rather than base its analysis on any single likely pattern of demand. Given the inherent uncertainty the Commission must ensure that its final recommendation is robust in any scenario.

Expanding Heathrow delivers against the Commission's Terms of Reference for maintaining the UK's position as Europe's most important aviation hub in any scenario. Expanding Gatwick does not. The detailed analysis by SEO Economic Research foresees an expanded Gatwick developing into a low-cost gateway under most scenarios.<sup>3</sup> In a future in which hub airports remain important, only Heathrow expansion will deliver a world-class UK hub. In a future in which point-to-point flying dominates, Heathrow expansion will also provide new point-to-point capacity where it is needed most, alongside spare capacity that already exists elsewhere.

By contrast, in a future in which hub airports are important, Gatwick's expansion as a low-cost gateway would see the UK cut off from emerging market growth. In a future in which point-to-point flying dominates, Gatwick expansion would deliver capacity but with significantly less benefit for passengers and the economy than could be delivered by expanding Heathrow.

Expanding Heathrow is the only option that is robust in any future scenario and the only option that can meet the Commission's Terms of Reference.

### 1.2.2 The most likely future scenario is one in which hub airports remain important

The Commission has assessed options against five different scenarios (Consultation Document; para 2.29). Each scenario does not have an equal chance of occurring. The Commission's evidence base would be strengthened by assessing the relative probability of each option and weighting its analysis accordingly.

International evidence suggests hub airports will remain important. The UK's European competitors have invested in their hub airports at Paris, Amsterdam, Frankfurt and Madrid so that they have, on average, capacity for about 700,000 flights a year. Dubai, Istanbul, Doha and Abu Dhabi are making major investments in new hub airports. Other leading economic centres such as Hong Kong, Seoul, Singapore and Chicago are explicit in their commitment to hub models. Cities like New York and Tokyo, which Gatwick cites as examples of cities with dispersed airport models, in fact demonstrate the dangers of split-hubs. Despite having a city and economy three times the size of London, Tokyo slipped from 1st to 7th in Asian city connectivity rankings in the three decades following Narita's opening in 1978. Over the same period, South Korea's Incheon airport in Seoul has become one of the world's most successful hub airports. Recognising the failure of the split hub the Japanese Government has reversed its policy and is now expanding Haneda and permitting international traffic at the airport. Global network airlines (including British Airways) have since switched services from Narita to Haneda. In the case of New York, despite three major network airlines operating from the city (American, Delta, United), New York is less well connected than it would be if it had a single hub airport. The global connectivity of these world cities relative to their size is relatively poor – a situation they are in part trying to remedy by rebuilding hubs.

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<sup>3</sup> SEO Economic Research, "Expanding Airport Capacity: Competition and Connectivity", page 15.

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If the UK decides to expand Gatwick rather than Heathrow then it will be the only major country in the world pursuing a policy for international connectivity which does not feature growing hub capacity.

We are not opposed in any way to the growth of regional or point to point airports like Gatwick – they will continue to play an important role in meeting demand. Those airports should have sustainable spare capacity to grow, as in fact they all do today. But meeting the Commission's Terms of Reference is not a simple binary choice between Heathrow and Gatwick. Both airports operate different business models serving different markets. Assuming the hub model remains important then the UK has no spare hub capacity unless Heathrow is expanded. Providing additional hub capacity is inextricably linked to maintaining the UK's status as a global aviation hub – this is fundamental to the Commission's Terms of Reference.

### **1.2.3 Low-cost long-haul is an unlikely scenario**

While point-to-point airports will always be important they do not provide a genuine alternative for long-haul airlines that fly to and from hub airports. Boeing 787 Dreamliners, once nick-named the "hub buster" have not, as predicted by Boeing's early literature, weakened the hub model at all. Quite the opposite, as demonstrated by the fact that 87% of orders for this aircraft have been from network carriers operating from hubs<sup>4</sup>. Already more Dreamliners fly from Heathrow than all other UK airports combined. Andrew Lobbenberg, airline and airport analyst for HSBC, describes B787s as "*the hub building aircraft*".

We are concerned that the Commission's 'Low Cost is King' scenario (Consultation Document; paragraph 2.29) contains unrealistic assumptions that one third of all long haul services operating from Heathrow switch to Gatwick on opening of a new runway ("Strategic Fit: Forecasts" document, paragraph 3.39). Government policy making should not be based on a premise that cannot realistically be envisaged at the current time. The 'Low-cost is King' scenario assumes the re-structuring of the airline sector in the London area to the low-cost market's advantage in a way which has not happened elsewhere in the world, and which Government cannot deliver probably even with draconian interventions. As such it is too implausible to be an appropriate basis for policy making.

The future is unpredictable. Some more long-haul direct flights may emerge with new airline models, however, there is little evidence for it today. Yet, in the South-East spare capacity exists at London City, Stansted, Gatwick and Luton (60%, 50%, 25%, and 5%<sup>5</sup> spare ATM capacity respectively). Airports across the rest of the country such as Birmingham and Manchester have plenty of spare capacity to serve new markets if the hub model becomes less important. Expansion at Heathrow would still be the best choice in this potential future as only Heathrow will deliver in all scenarios by providing the capacity where the market demands it and can support low-cost airlines.

### **1.2.4 Passenger and airline demand is for Heathrow**

Both UK and international network carriers and also low-cost airlines express a preference for expansion at Heathrow because the airport has unfulfilled passenger demand.

Heathrow has the strongest catchment area of any UK airport and pent up passenger demand that cannot be fulfilled by existing services. Demand for landing slots already outstrips supply, with airlines paying millions of pounds to trade slots.

easyJet's announcement that it wants to operate from a three runway Heathrow shows that capacity at Heathrow will deliver for low-cost airlines as well as network carriers. The Commission does not need to choose between the low-cost airline model and the hub model. Heathrow is the preferred choice of both.

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<sup>4</sup> CAPA, [www.centreforaviation.com](http://www.centreforaviation.com), June 2013

<sup>5</sup> We note that Luton's current margin of only 5% spare capacity will be lifted as a result of new planned terminal development.



**Question 1: Conclusions in respect of the three short-listed options**

## 1.3 Expanding Heathrow will deliver greater benefits for the UK

### 1.3.1 Heathrow will deliver more jobs and economic growth

The Commission's appraisal shows that expansion at Heathrow delivers significantly more jobs and more economic growth than Gatwick in any future scenario. The Commission puts the economic benefit of our of NWR scheme at Heathrow at £112-£211 billion. It says the value to the economy of choosing Heathrow over Gatwick could be as much as £97 billion. The Commission says expanding Heathrow could deliver up to 180,000 new jobs by 2050. In this scenario Heathrow expansion would deliver 130,000 more jobs than a new runway at Gatwick, including 70,000 more jobs in manufacturing. At its lowest range, the Commission's assessment shows that expansion at Gatwick could generate as few as 500 direct, indirect and induced jobs. We strongly support the Commission's analysis which draws a logical distinction between the benefits of the Heathrow and Gatwick options.

The table below shows the estimates by the Commission of the incremental GDP and employment generated by expansion of Heathrow and Gatwick respectively.

**Figure 1.1: Incremental GDP and employment generated by expansion of Heathrow and Gatwick**

	PV GDP impacts (exc. Construction) £ billion, 2014 prices		New jobs created by 2050 Estimated by SCGE model (including catalytic)	
	Heathrow NWR	Gatwick 2R	Heathrow NWR	Gatwick 2R
Assessment of need	147	89	179,800	49,000
Global growth	211	115	NA	NA
Relative decline of Europe	112	63	NA	NA
Low-cost is king	210	127	NA	NA
Global fragmentation	118	42	NA	NA

**Source: Airports Commission: Tables 2.14 of "Heathrow Airport North West Runway: Business Case and Sustainability Assessment", Tables 2.14 of "Gatwick Second Runway: Business Case and Sustainability Assessment"; PwC report for the Commission "Economy: Wider Impacts Assessment", Tables 23 and 41**

If we take the Commission's economic impacts analysis, expansion of Heathrow would generate roughly two-thirds more GDP than expansion of Gatwick, and more than three times as many new jobs. Beyond even this, we believe that the Commission's methodology materially under-estimates the differential between Heathrow and Gatwick's economic impact for three principal reasons:

- Around half of the GDP impact results from more international trade as a result of airport expansion.<sup>6</sup> The models deployed by PwC to estimate the trade impact: (a) do not distinguish between business and leisure passengers; and (b) make relatively little distinction between different regions of the world. In reality we would expect the trade effects to be driven by business passengers flying to new destinations not currently served with much frequency – where expansion of Heathrow would have the most impact;
- In addition, we have concerns with the way in which the Commission's modelling measures "connectivity" by destinations served on a daily scheduled service, or destinations served by all services. The latter (potentially including infrequent charter services) is totally inappropriate for estimating wider economic impacts from trade, and consequently will over-estimate the impact of Gatwick expansion. For example, in the "Assessment of Need" scenario, by 2050, carbon capped, Heathrow is forecast to serve 163 destinations on a daily basis and 198 for all services. By contrast, Gatwick is forecast to serve only 122 destinations on a daily basis (significantly less than Heathrow), but 258 for all services (significantly more than Heathrow).<sup>7</sup> Although it might be true that

<sup>6</sup> See PwC report for the Commission "Economy: Wider Impacts Assessment", Tables 14 and 32

<sup>7</sup> See Airports Commission "Strategic Fit", Tables 6.26, 6.28 and 6.32

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Gatwick will serve more destinations if infrequent charter services are included, this must not be allowed to distort the economic impact results;

- The second major component of the GDP impact is from higher transport economic efficiency.<sup>8</sup> Here again the difference between Heathrow and Gatwick is materially underestimated because of the way in which the Commission calculates the existing congestion premium at Heathrow. The Commission's calculations artificially fix the congestion premium at both Heathrow and Gatwick at zero in 2012, and effectively use this as a base in all subsequent calculations. Whilst this may be a reasonable assumption for Gatwick, it is wholly inappropriate for Heathrow that was clearly already capacity constrained in 2012, and has been so for the past decade.

The inescapable conclusion is that Heathrow will deliver far more jobs and growth than Gatwick.

### **1.3.2 Heathrow will deliver better international connectivity**

Heathrow will deliver better international connectivity than Gatwick. In particular, Heathrow is the only option that can deliver frequent and direct long-haul flights to long-haul destinations in those parts of the world that are growing most quickly.<sup>9</sup> By itself, this analysis is critically important. In addition, we believe that the Commission's modelling methodology artificially boosts the number of routes and connections by Gatwick under certain scenarios by "seeding" the model to force a hub operation (e.g. Sky Team) to locate at Gatwick. All of the major airline alliances have reiterated that they have no intention of shifting hub operations to Gatwick. If they do shift, it will be out of the UK to alternative hubs in Europe and beyond.

### **1.3.3 Heathrow will deliver better UK connectivity**

Heathrow will connect every part of the UK to global growth. Heathrow is best located to serve the whole of the UK, being closer to the largest centres of population and demand for air travel which are to the north and west of London. The 'centroid' of UK demand for Heathrow is approximately 10 miles to the north west of the airport. Heathrow is already located at the heart of the road network with direct access to the M4 and M25 as well as easy access to the M3, M40 and M1. People from across the country can reach Heathrow without crossing London. Our surface access strategy will place Heathrow at the heart of the rail network with connections north, south, east and west to provide easier and faster journeys to key economic centres across the UK.

Crossrail will deliver direct train services to the City, Canary Wharf and East London by 2019. Western Rail Access will reduce journey times to Slough, Reading, and South Wales by 2021. Southern Rail Access could deliver new rail connections to Clapham Junction, Waterloo and the wider South West Trains network. HS2 will transform journey times to the Midlands and the North in a way that simply cannot be achieved at Gatwick. This will transform the ability of people in the Midlands and the North to access flights to global markets, and make those regions much more attractive locations for businesses that value international connectivity. Heathrow will reduce journey times for more passengers and deliver higher mode shift onto public transport than Gatwick.

Heathrow can also offer a resilient surface access network, providing alternatives in times of disruption and choice to passengers. By contrast Gatwick would offer poor customer choice and resilience being served by just one motorway and one rail line. Its lack of long-haul flights and poor transfer product would leave UK passengers from across the country reliant on foreign hubs and infrequent services. Heathrow is better located geographically to connect to the whole of the UK. Gatwick is just for the South East. This is supported by the Commission's analysis that shows a considerably larger population within two and three hours public transport journey time of Heathrow (2 and 4 million people respectively) and significantly more economic benefits accruing outside of the South East from Heathrow's expansion.

Similarly across the UK, demand for flights to access the network of routes offered by Heathrow and other European hub airports like Amsterdam demonstrates the value of the hub and spoke model. It demonstrates the importance of Heathrow to regional airports in providing international long-haul connections. Responding to

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<sup>8</sup> See PwC report for the Commission "Economy: Wider Impacts Assessment", Tables 14 and 32

<sup>9</sup> On the Commission's own estimates, by 2050, the number of daily scheduled long haul destinations available from London is consistently higher across all scenarios for the Heathrow North Rest Runway, than for the Gatwick 2nd Runway. See "Strategic Fit: Forecasts", Tables 6.25 and 6.26, against Tables 6.27 and 6.26.

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repeated calls for access to Heathrow from across the country, for example from regional airports, Chambers of Commerce and the Scottish Government, Heathrow committed to provide funding for a National Connectivity Task Force. This Task Force, under the independent Chairmanship of Lord John Shipley, undertook a programme of research to complement the Commission's work on regional connectivity. The Task Force has presented recommendations on the practical, operational and policy mechanisms that should be implemented by the Government, airports and airlines to enable all regions, nations and Crown Dependencies of the UK to benefit from any increased capacity in the South East of England.

We have a limited ability to guarantee access for domestic routes into the hub. But we remain committed to working with Government, airlines and the regulator to ensure that expansion at Heathrow comes with provisions that adequately match demand for regional connectivity in the long term. For example, easyJet has announced that it would add routes to Inverness, Isle of Man and Jersey (currently not served by Heathrow) and add more flights to Glasgow, Edinburgh, Aberdeen and Belfast, increasing competition and choice. By serving routes across the UK, we believe it is possible to ensure the benefits to the UK of global connectivity through our hub airport are not focussed on London and the South East but balanced and distributed to all the economic centres of the country.

### **1.3.4 Heathrow will support more freight exports**

Expanding Heathrow will be better for the UK's freight exporters. Heathrow is Britain's most important port, handling more freight by value than Britain's two largest shipping container ports combined. Britain is the world's fifth largest exporter and the Government has set a target of doubling freight exports. Given this backdrop, we think it is vital that greater emphasis be placed on the importance of freight.

In the Commission's consultation, Gatwick's current air freight operation is described as "moderately sized" but greater scrutiny reveals that Gatwick's freight handling operation is a fraction of the size of Heathrow's and in no way comparable.<sup>10</sup> We would encourage the Commission to look again at certain statements in its consultation regarding freight. In particular, it is stated that "*few low-cost airlines carry bellyhold freight*" but that "*growth in low-cost long-haul may alter this to some degree*" but we cannot see any evidence within the Commission's work or elsewhere to support this. The fact that Norwegian's trans-Atlantic services from Gatwick carry virtually no freight suggests this is unlikely.

We think it vital that the Commission undertake further work in this area and consult with the freight industry as soon as possible. We note, for example, that the Commission has not undertaken forecasts of future freight operations as part of its appraisal, neither has it undertaken any analysis of the impact a lack of freight handling facilities would have on time-sensitive industries such as pharmaceuticals, biotech, and food where air freight is often critical. Moreover, Heathrow's successful freight capability is inextricably linked to its hub operation. Flights to new and established economies support trade with those countries. In turn, the trade supports Heathrow's extensive long-haul network. Meeting the Commission's Term of Reference to maintain the UK's global hub status cannot be achieved without properly considering the role of freight as part of the solution.

### **1.3.5 Heathrow will better support the rebalancing of the UK economy**

Heathrow will deliver more benefits outside London and the South East than Gatwick. PwC's analysis for the Commission says Heathrow expansion could deliver up to £59.3-£114.0 billion of economic benefits to Scotland, Wales, Northern Ireland and the English regions (compared to £18.4-£61.2 billion in the case of Gatwick expansion).<sup>11</sup> The average benefit (across all scenarios<sup>12</sup>) to nations and regions outside London and the South East

<sup>10</sup> Compare "Gatwick Airport Second Runway: Business case and Sustainability Assessment" paragraph 1.41, against "Heathrow Airport North West Runway: Business case and Sustainability Assessment" paragraph 1.43. The Commission states "Gatwick Airport currently hosts a moderately sized air freight operation, handling 98,000 metric tonnes of freight during 2013, significantly less than Heathrow..." and "Heathrow Airport currently plays a vital role in the UK's air freight market, handling 1.42 million metric tonnes of freight during 2013."

<sup>11</sup> See PwC report for the Commission "Economy: Wider Impacts Assessment", Table 36.

<sup>12</sup> Note that this is just for illustration. We do not endorse giving equal weight to each scenario.

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of choosing Heathrow is put at £85.6 billion, compared to £36.7 billion for Gatwick. The rest of the UK would receive more than twice as much economic benefit by expanding Heathrow as by expanding Gatwick. The additional jobs, investment and trade generated across the country by Heathrow's expansion will mean that this is not just about growing London; it's about spreading the benefits across the UK.

The findings of PwC make intuitive sense. An expanded Heathrow would naturally integrate into the UK's overall evolving transport infrastructure, alongside HS2 and Crossrail, enhancing connectivity to international trade markets for the whole of the UK. The impact of Gatwick, on the other hand, would be much more heavily focused on a corner of South East England.

### **1.3.6 Heathrow will deliver greater fare reductions for passengers**

Failing to deliver capacity where it is needed will lead to higher fares for passengers. The report from SEO Economic Research<sup>13</sup>, published by the Commission as part of its consultation, explains that fares are already higher at Heathrow because of the existing capacity constraint.<sup>14</sup>

Heathrow has been full for ten years and this capacity constraint means supply has not been able to keep pace with demand. This has resulted in fares that are £95 more expensive today and could be £320 more expensive than if Heathrow had spare capacity by 2030. The Commission's appraisal is right to recognise that a reduction in excess demand at Heathrow will contribute to lower fares. The potential for Gatwick expansion to reduce fares will be lower than at Heathrow because excess demand at Gatwick is lower than that at Heathrow.

The SEO Economic Research report supports this view, and concludes:

*"In terms of a reduction of scarcity rents and connectivity gains, a UK consumer is likely to gain most by expanding Heathrow. With severe capacity constraints and high yield demand, the scarcity rents can be expected to be largest there. Hence, reduction of excess demand following Heathrow expansion is likely to reduce fares more than following Gatwick expansion. Furthermore, connectivity gains are likely to be highest for Heathrow expansion and growth of the hub carrier."* (page 15)

This is evidenced by easyJet's recent proposal to serve 49 markets from an expanded Heathrow which are already served by other airlines, again increasing competition and choice.

Gatwick's claim that creating two 2 runway airports (i.e. expanding Gatwick whilst preventing a third runway at Heathrow) will level the playing field for competition and reduce prices does not hold up to scrutiny. Gatwick currently has spare capacity, and so already has the opportunity to compete against Heathrow. Adding a second runway will make little difference – especially if Gatwick continues to focus on low cost traffic, with no effective hub operation (as the SEO Economic Research report suggests is the most likely outcome). Gatwick is now served by fewer long-haul destinations in 2014 than it was in 2008<sup>15</sup> (before its sale to the current owners), despite Heathrow being capacity constrained throughout that period. Competition would be maximised not by restricting Heathrow from building a third runway, but by allowing both Gatwick and Heathrow to best serve their distinctive markets.

The overall conclusion must be that price competition and choice are best served by expanding capacity at Heathrow to facilitate competition between airlines that operate there, rather than hoping for competition between Heathrow and Gatwick, that serve two fundamentally different markets.

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<sup>13</sup> Expanding Airport Capacity: Competition and Connectivity

<sup>14</sup> Page 40 states "At the moment, airlines at Heathrow extract considerable scarcity rents due to excess demand at Heathrow and price-capping of airport charges, charging fares substantially higher than marginal costs."

<sup>15</sup> In 2014, Gatwick operated 24 long-haul destinations compared to 33 in 2008. Long-haul is measured as distance  $\geq 2,200$  nautical miles, and with at least 100 departures a year. Source: OAG.

### **1.3.7 Heathrow will deliver higher quality passenger facilities**

Heathrow has a proven track record of delivering world-class facilities. Terminal 5 has been voted best airport terminal in the world for three years in succession at the SkyTrax world airport awards. Heathrow's investment in new passenger facilities has made the airport Europe's top rated hub airport for overall passenger experience. Heathrow's proposal will enhance its role as a world-class gateway for Britain and deliver a transfer product that will be competitive with the best that European hubs are able to offer. Automated baggage systems and an automated airside passenger movement system will enable rapid gate to gate connections across the airport without the need for passengers to pass through terminal buildings unnecessarily. This quality of experience for transfer passengers will be a key determinant of the success of any hub airport.

By contrast, Gatwick's proposal has no airside inter-terminal automated people movement or baggage systems, and will instead rely on a coaching operation for connections for any transfer passengers and a tug and dolly operation for connecting baggage. Both these systems will present a poor passenger experience and the latter will impact on the minimum connection times achievable. The floor space per passenger proposed at Gatwick is 30% less than even their current Terminals provide which are in turn more than 30% less than Heathrow's standard as showcased in Terminal 5 and Terminal 2. This lack of space will inevitably result in lower passenger experience and perception.

If Gatwick aspires to be a low cost short-haul operation airport then this level of provision, whilst challenging even their current standards, may be appropriate. It would however be quite inappropriate for any other airport model that might eventuate, particularly any hub type operation or one where long-haul flights formed a significant part of the expected schedule.



## 1.4 Expansion at Heathrow is deliverable

### 1.4.1 Heathrow is technically deliverable

We have now completed an in depth constructability study examining the precise steps required to deliver our NWR proposal. We have looked in detail at the engineering and phasing challenges involved with particular reference to:

- the construction of the tunnel required to take the M25 under the runway
- the construction of the new waterways, associated habitats and flood defences
- the construction of the changes to local roads including the A4 and the A3044
- the programme for the re-provision of the existing Energy from Waste plant
- the phasing of detailed changes to the on airport access arrangements in the new terminal area

This has given us further confidence that our new NWR scheme can be operational by June 2025 and the new Terminal 6 and its associated pier can be operational by Dec 2026. None of the individual components of the scheme presents any unique engineering challenge in themselves. Good benchmarks exist from a number of recent projects which have been used to inform and validate the periods we have assumed within the new construction schedule.

Our work on investigating the feasibility of the re-provision of the Colnbrook Energy from Waste facility is continuing. We are increasingly confident that a feasible solution can be found that will help to ensure that both the existing facility and its replacement can deliver waste management capacity without any interruption.

Our analysis of the construction schedule information provided by the promoters of the other options has applied similar principles. We conclude that there is considerable over-optimism in the dates for delivery of facilities in the schemes as described by their promoters. We acknowledge that the Commission has extended the dates for the ENR scheme but we believe that even these dates are unachievable for reasons we set out in our response to Question 5. Similarly, the Gatwick dates for delivery of the earlier phases of work seem to ignore some major constraints such as existing airport facilities and the current A23 alignment. Again, we expand on this in our response to Question 5.

### 1.4.2 Heathrow is financially deliverable

Heathrow is the largest 100% privately funded airport in the world with a track record of financing major infrastructure such as the £11 billion investment which includes Terminal 5 and Terminal 2. With an asset base of more than £15 billion and £2.75 billion in revenues, Heathrow is uniquely well positioned to fund a new runway. Our shareholders include three of the world's top sovereign wealth funds, major pension funds from the UK and overseas, a global infrastructure company, and one of the world's leading private infrastructure funds.

Heathrow has a well-established and resilient financing platform and an investment grade credit rating. We have over £11 billion in bonds outstanding, and have raised £5 billion in debt financing since the beginning of 2012. In addition, we benefit from significant capital support from a large number of global banks. This support currently includes provision of £2 billion in revolving credit facilities, as well as working capital facilities and hedging support.

Heathrow's strong financial market presence is critical to meet the funding needs of a multi-billion pound airport expansion. With a scalable debt financing platform, we are well placed to efficiently raise cost-effective capital to support expansion. Heathrow is currently among the top five corporate debt issuers of sterling bonds, representing slightly over 50% of its asset base, typically with maturities up to 30-40 years, and provided predominantly by pension funds and other institutional investors. We believe the market can absorb a 50% to 100% increase in exposure to Heathrow, whilst maintaining a supportive credit rating.

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Independent credit rating analysts at Moody's believe Heathrow's scheme is financeable and would be credit neutral.<sup>16</sup> By contrast, Moody's rate the financial risks of Gatwick's proposal as high and conclude that a recommendation for a new runway at Gatwick would be credit negative.

For any airport development to be privately funded there must be a clear business case for investors. The uncertainty of future demand is a key factor that affects risk for investors. Heathrow has a strong existing passenger and airline base from which to build a business plan; pent up demand for landing slots (with airlines willing to pay millions of pounds to acquire scarce slots today); and clear demand from airlines such as easyJet who do not operate from the airport. By contrast, Gatwick's passenger base is half that of Heathrow's and significant doubts have been expressed about its business case for expansion by its own customers.

### **1.4.3 Heathrow is deliverable with fewer people affected by noise than today**

We have designed our proposal so fewer people will be impacted by noise than today even with expansion – and the Commission has confirmed this would be the case<sup>17</sup>. Our proposed runway is now located further west to reduce the number of people affected by noise, and the approach is in part over the M4. The longer runway allows respite from noise for every community. Flight paths can also be designed to share noise more fairly, allowing 95% of those overflown to have respite for at least half of the time. Aircraft will fly steeper approach paths and touch down further along the runways so they are higher over local communities, reducing noise. All these operational measures will be combined with quieter planes and an investment of over £700million in an extensive sound insulation scheme comparable to those of other European hub airports. The scheme will extend to the 55dB Lden contour. Even when a range of different assumptions are used, the Commission agrees that *"When compared to current noise levels, fewer people are predicted to be affected across all metrics"*.

Early morning flights are a particular concern for people living close to the airport, some of whom are regularly woken by aircraft today. Our ability to rotate the runway used for early morning arrivals combined with the capability to land further down the runway and fly a steeper landing approach means there will be less noise from these flights for communities like Hounslow and Richmond with a three runway Heathrow than with a two-runway Heathrow. The Commission's noise analysis has confirmed a third runway would lead to a "positive impact" on night flight noise in the future. In order to secure trust with our local communities and ensure they are treated fairly we are supportive, in principle, of the concept of establishing a noise envelope in line with Government policy as set out in the Aviation Policy Framework. Such an envelope would ensure that improvements benefit both the airport in terms of increased flights, and the local community in noise reduction. We are also supportive, in principle, of an Independent Aircraft Noise Authority to oversee Heathrow's performance on noise. Our noise blueprint demonstrates how we are challenging ourselves and everyone we work with to be quieter sooner.

### **1.4.4 Heathrow is deliverable within air quality limits**

Heathrow has committed to a comprehensive mitigation strategy to address airport related emissions. Our mitigation strategy has been shown by detailed dispersion modelling to achieve compliance with air quality limit values. The Commission's analysis of air quality emissions does not yet account for the mitigation measures proposed by Heathrow, although it has confirmed that these are credible. The mitigation will address emissions from airport traffic and operations. Our surface access strategy will allow airport expansion without increasing airport related road traffic. We will incentivise staff and passengers to use the enhanced public transport network, create opportunities to make more efficient use of cars such as taxi backfilling, and will reduce staff car parking spaces. Our airfield operations will contribute fewer emissions from aircraft engines as next and future generation aircraft are introduced and the use of zero and low emission support vehicles dominates. We have also suggested the potential for introducing a congestion charge to help reduce the number of people travelling to the airport by car, should this be needed to manage traffic and emissions. We are confident that once the Commission has done its own dispersion modelling and incorporated the comprehensive mitigation measures we identify it will confirm

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<sup>16</sup> Moody's Investor Services, "New runway will have mixed credit implications for London's airports", 10 December 2014.

<sup>17</sup> Airports Commission: Heathrow Airport North West Runway: Business Case and Sustainability Assessment; paragraph 9.28

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that air quality limits around an expanded Heathrow will not be exceeded. We have a proactive air quality strategy today including working with partners such as the GLA and TfL and are developing aligned strategies to tackle the emissions from vehicles travelling from Heathrow into the city and vice versa. We will shortly be publishing an air quality blueprint setting out our plans to be cleaner sooner.

### **1.4.5 Heathrow is deliverable within carbon targets**

Equally important is addressing climate change impacts. The Independent Committee on Climate Change has confirmed that a 60% growth in passengers is consistent with meeting the UK's climate change targets<sup>18</sup>. The Airports Commission's Interim report also found that building and operating a third runway at Heathrow is compatible with the UK meeting its long-term climate change reduction targets. We support Sustainable Aviation's carbon road-map which shows how, with continuing refinements of aircraft engine technology, and increased take up of sustainable aviation fuels, the level of UK air traffic can more than double without increasing the direct emissions from those flights. The UK aviation industry is leading work with ICAO on emissions trading which when implemented internationally will further reduce net carbon emissions. With expansion at Heathrow we can prevent the exporting, or 'leakage' of emissions and economic benefits that would happen if British passengers fly via other overseas hubs. Allowing Heathrow to grow would also eliminate carbon emitted unnecessarily by aircraft holding on arrival to the constrained airport today. Our strategy to reduce carbon will also see us produce at least 60% less carbon from energy use to heat and power our airport.

### **1.4.6 Heathrow is deliverable with local and sub-regional benefits**

Expanding Heathrow presents a unique opportunity to drive sustainability benefits and enhancements throughout the local and sub-regional area. Heathrow's expansion can align with local and regional economic and spatial strategies by delivering the economic growth which these strategies have planned for and on which the quality of life of many communities and the prosperity of many businesses depend. The additional jobs and growth can support the social and economic infrastructure already in place. Improved local transport connectivity and sustainable travel opportunities can be exploited by local communities and airport workers, increasing social mobility and opportunity.

At the airport level, expansion will enable us to utilise the most technologically advanced infrastructure to reduce carbon emissions, energy consumption and waste. It will provide opportunities to reduce off-airport flooding, improve water quality management and enhance and connect green spaces around the airport for the benefit of local communities and biodiversity. The measures we are taking at the local level to mitigate the impacts of expansion and promote the opportunities of growth, including our much improved compensation schemes for local property owners and new jobs and apprenticeships, will contribute positively towards people's quality of life.

### **1.4.7 Heathrow is deliverable without requiring extensive new housing**

Heathrow already sits within the largest and most dynamic labour and property market in the UK. Heathrow's future one hour travel zone will increase in size with the advent of Crossrail, growing to encompass 38 boroughs and within them a very large existing pool of active job seekers. These people will have direct access to the employment generated by an expanded Heathrow. The UK enjoys some of the most flexible labour and property markets in the world allowing individuals to be able to move freely between jobs, between spells of employment and inactivity and between different areas of the UK. The UK economy is therefore able to cope with significant shifts in employment – both spatially and sectorally.

The working age population within these 38 boroughs is predicted to grow by 390,000 by 2030 adding further to the available labour pool. The normal characteristic of economically successful areas can also be expected to have

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<sup>18</sup> The Independent Committee on Climate Change, 2009; Meeting the UK Aviation target – options for reducing emissions to 2050.

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an effect with an increase in the level of employment from workers moving into existing homes in the area due to natural churn.

Given this labour pool, even the highest predictions for the jobs created at Heathrow represent only 10-15% of those predicted to be requiring employment in the relevant region and at the lower end 5-7%. Using the Commission's own SGCE alternative modelling approach the figures are approximately half to two thirds of this. We believe that it is therefore reasonable to assume that the market will find practical ways of providing the workforce that Heathrow would require from its surrounding areas without the need for the creation of new homes.

### **1.4.8 Heathrow is deliverable while treating local communities fairly**

We are committed to treating those most affected by a third runway fairly. In May 2014, Heathrow announced plans for a property compensation scheme offering 25% above unblighted market value compensation for the 750 homes that would be subject to compulsory purchase. Having listened to local residents following our autumn consultation on property and noise compensation (see section 2.3 and 2.4 for further details), we substantially extended this offer to cover homes that will be in close proximity to a new runway but will not be subject to compulsory purchase. Under the improved scheme, residents living in communities close to a new runway will now have the choice to either remain in their home or sell it to us at 25% above unblighted market value once the new runway is under construction.

Where Heathrow purchases a property from a homeowner we will refurbish and sound insulate the property before first offering it to those whose properties are subject to compulsory purchase but want to remain in the area and then second reselling it on the open market. This will give those people who want to leave the area the option of doing so but ensure those who remain still live in a functioning community. We will also work with the surrounding local authorities to consider how any affordable housing lost as a result of expansion can be re-provided around the airport, potentially through the re-use of properties sold to the airport.

We have also recently announced our much improved proposed noise mitigation scheme, again taking on board the feedback from our public consultation held in the autumn. We recognise that we need to do more to mitigate the impacts of aircraft noise on our communities, which is why we are now proposing a mitigation scheme that goes well beyond UK policy requirements. Should our NWR scheme be supported by Government, our simplified £700million scheme will provide the full costs of acoustic insulation for all eligible properties falling within the 60dB LAeq noise contour<sup>19</sup> and a £3,000 contribution towards insulation for all other properties falling within the 55dB Lden contour<sup>20</sup>. This responds to the calls from our harshest critics, including the Mayor of London, to develop a noise insulation scheme comparable to other European hub airports.

### **1.4.9 Heathrow is politically deliverable**

It is a myth to suggest that Heathrow expansion is not politically deliverable.

In the ten constituencies around Heathrow, 50% of people support expansion compared to 33% who oppose it (Populus, December 2014). Two of our adjacent local authorities now support Heathrow expansion and we continue to work with other authorities to address their concerns and maximise local opportunities. Furthermore, the Back Heathrow campaign has grown to over 80,000 supporters.

Beyond the airport's local communities, support across the country for Heathrow is growing. To date, 30 Chambers of Commerce; regional airports in Aberdeen, Glasgow, Leeds, Liverpool and Newcastle; Unite the Union and the GMB; trade associations including the EEF and FTA; and, businesses and business leaders across Britain are

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<sup>19</sup> Households experiencing greater 60 dB LAeq noise levels, as averaged during a typical 16 hour day (7 am -11pm) of easterly or westerly operations.

<sup>20</sup> This zone also takes into account those homes who experience noise greater than 57 dB LAeq noise levels, as averaged during a typical 16 hour day (7 am -11pm) of easterly or westerly operations.

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supporting Heathrow. Major business organisations including the CBI and BCC have also made clear their view of the importance of a hub airport to the UK.

Airlines too continue to demonstrate the importance of Heathrow. Major network airlines and alliances have publically stated support to expand Heathrow over other options. easyJet, Gatwick's biggest airline has indicated its preference for expansion at Heathrow. This follows moves by Vietnam Airlines, Air China, US Airways and Korean Air who have all left Gatwick for Heathrow since 2008.

In Parliament, 58% of polled MPs back a third runway at Heathrow compared to 13% who support Gatwick to solve the issues of hub airport capacity. 88% think a successful hub airport is critical to UK economic success, and 91% of those who back a third runway at Heathrow think it would gain Parliamentary approval. (Ipsos Mori, September 2014). And across the country, Local Enterprise Partnerships, Councils and politicians from all parties have written to the Commission to set out the benefits Heathrow expansion would create in their region.

There will always be opposition to major infrastructure projects, wherever they are built. Even given its different setting, Gatwick expansion is firmly opposed by local community groups, its local authorities and by an overwhelming majority of MPs around the airport.

The growing visibility of the majority support for Heathrow expansion across the airport's local communities is clear. In addition, there is growing agreement across the UK's business community that the Commission presents the last and best chance to secure Britain's status as a global hub; and, that Heathrow is the right solution. This support creates a political imperative to act on a recommendation from the Commission to build our proposal.



## 1.5 Heathrow's NWR option is the most sustainable solution at Heathrow

### 1.5.1 Only Heathrow's NWR scheme can deliver real noise respite from over-flight

The most important sustainable advantage of the NWR scheme is the ability to deliver real noise respite to local communities who are close to the airport (within 5 miles). Our guiding principle in selecting and developing its scheme has always been to ensure that there would be significant periods for each local community where there would not be aircraft overhead. Whether this respite would be delivered for a certain period each day or a certain number of days per week or month would be for local people to decide. Our ability to deliver it has been judged by us as being a fundamental element of any scheme which we might offer. This conviction on our part has developed as the result of much engagement with our local communities and we believe that this view is supported by the majority of those who live around the airport.

There is an inconsistency with the Commission's approach to the evaluation of total airport capacity in the NWR and ENR options which needs to be addressed in the next stage of its work.

The ENR proposes delivering respite from aircraft overflight to local communities based in practice on not using one of the three runways for 8 hours each day (4 hours of northern relief and 4 hours of southern relief – see our comments under Question 5: Operational Efficiency Analysis). Given that the operating day is approximately 16 hours long this in effect means the scheme delivers only half a new runway of capacity. In order for the Commission to conclude that the ENR option delivers 700k ATMs annually, and to ascribe the economic benefits associated with this capacity increase, they must also conclude that:

Either: the ENR scheme can only deliver a maximum of 2.5 hours respite per day and not 8;

Or: runway rates (i.e. number of aircraft using the runway) used for the ENR scheme evaluation are 20% higher than those used for the NWR scheme evaluation.

Having done extensive work with NATS Heathrow on future runway capacities we do not believe that the latter conclusion is credible. If it is believed to be credible, then the logical corollary is that the NWR scheme could therefore deliver 850,000 ATMs and 150 million passengers annually. If this were the case it would require a fundamental review of the NWR scheme benefits and impacts.

The first of the alternative conclusions, that ENR can only deliver 2.5 hours of respite a day with 700,000 ATMs, is therefore the more likely one. The Commission could still conclude that 8 hours of respite is possible as the ENR scheme solution suggests but only by reducing the annual ATM capacity of the ENR scheme to a maximum of 625,000. This would necessitate a fundamental change to the benefits and impacts of that scheme.

We believe that delivering only 2.5 hours respite per day across all communities is not supportable, particularly when the "Northern relief" respite offered is very limited in its nature with the communities under the northern runway still effectively being overflown. The Commission will need to decide which assumption they wish to make from those outlined above but our recommendation is that they assume that the respite claimed for the ENR option is not practically deliverable for those who live close to the airport. It is vital this assumption and its consequences are dealt with consistently.

### 1.5.2 The NWR scheme will affect fewer people with its noise footprint than the ENR scheme

The Commission's own analysis shows that fewer people are affected by noise with the NWR than with the ENR. Given that this is one of the most important factors to consider in airport expansion and the effort we have gone to produce a solution that minimises noise impacts, this is another crucial point of distinction between the options.

### **1.5.3 Heathrow's NWR scheme can be delivered 3½ years earlier than the ENR scheme**

We believe that there are very real complexities inherent in the commercial arrangements necessary to move the ownership of the ENR concept to Heathrow Airport Ltd. These cannot be wished away. They are inherent in a proposal promoted by an external company with no ability to deliver it. This would delay the start of construction by at least 18 months. There are also additional physical complexities in the water infrastructure, motorway solutions and runway interface required by the ENR scheme which would require a further 2 years to be added over and above the NWR delivery programme. Together, these mean that at least 4 years need to be added to the ENR delivery programme in the most optimistic scenario. This will delay significantly the point at which the economic benefits for the UK begin to be unlocked. This is explained in more detail in Question 5.

### **1.5.4 The NWR scheme will cost little more than the ENR scheme**

In our detailed analysis of the ENR scheme cost plan, significant omissions have been found which will increase the cost of the ENR scheme to £18.3 – 19.5 billion by the Commission's methodology. Even if the Commission increase the NWR scheme cost by the amount indicated in 2.13 and add risk and optimism bias this means that the cost differential between the NWR and ENR scheme options is actually between £0.3 - 1.5 billion. Given that the surface access costs for the ENR scheme are more than £0.5 billion higher than our NWR scheme, this narrows the gap to the point at which it is no longer a major factor to consider in differentiating between the options. This weakens the business case considerably for a scheme that delivers fewer aircraft movements per annum and must therefore derive a smaller economic benefit for the UK, for airline customers and for investors.

### **1.5.5 The NWR scheme is the more sustainable solution at Heathrow**

We believe that if the Commission concludes on the strength of the arguments advanced that development at Heathrow is preferred to Gatwick, then, on the strength of the foregoing points, it should also conclude that our NWR scheme represents a more sustainable solution than the ENR scheme. We believe that it delivers more economic benefit for the same capital outlay, whilst at the same time reducing noise and delivering effective respite for local communities. The NWR will also be faster, with far fewer risks and complexities to deliver. If the Commission believe that Heathrow is the right answer then the NWR option is the right answer at Heathrow.

We ask that the Commission take into account our conclusions above in reaching its recommendation on which options best meets its Terms of Reference.



6:30	Istanbul	TK1992	C
6:35	Chicago	AA091	B
6:35	Tokyo	U404	D
6:40	Barcelona	B338	C
6:40	Bilbao	VY2435	F
6:45	New York	AA131	B
6:50	Copenhagen	AC9447	E
7:00	Dubai	EK030	C
7:00	Tehran	IR710	E
7:05	Amman	RJ112	D
7:15	Hong Kong	VS238	A
7:15	La Coruna	VY9851	F
7:30	Oslo	BD3790	E
7:35	Madrid	LA5721	F
7:35	Vigo	VY3204	F
8:00	Copenhagen	SK1516	E
8:00	Stockholm	BD3846	E

## Section 2

### Response to Question 2

Suggestions for how the short-listed options could be improved

## Airport's Commission - Question 2:



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





**Question 2: Suggestions for how the short-listed options could be improved**

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Our suggestions below relate only to our North West Runway (NWR) proposal. They highlight the many improvements we have made to our scheme and associated mitigation since our *Taking Britain Further*<sup>1</sup> submission to the Commission in May 2014. They follow extensive engagement with our local communities and stakeholders. Our revised compensation schemes relating to property impacts and noise mitigation set new benchmarks in UK infrastructure development and demonstrate our commitment to fairly balance the benefits of Heathrow's expansion against the negative impacts. We also set below out all the positive things we are doing now in terms of reducing air quality and noise emissions, and can do more of, should the Government support our NWR proposal.

Other issues raised in this section that we believe will improve our NWR scheme include:

- working with local authorities to address the loss of the homes as a result of the NWR scheme
- commitments about the benefits that can be expected from Heathrow's expansion
- reducing risk from delivering our NWR proposal
- reducing the costs of our scheme both now and moving forward and
- a commitment to further improvements through community engagement.

## 2.1 Scheme development

### 2.1.1 Airports Commission's approach

The Commission's Interim Report (paragraph 7.12) encourages promoters to engage with local residents, businesses and other stakeholders such as passengers and airport users to understand their views and incorporate them into our proposals where possible.

### 2.1.2 Our comments

Since our *Taking Britain Further* submission to the Commission in May 2014, we have refined and improved our scheme through positive engagement with local communities and key stakeholders.

The changes include introducing improvements to local traffic flows, creating more flood protection, enhancing local landscaping to provide better areas for recreation, and investigating potential locations for the Lakeside Energy from Waste facility (EfW) further away from residential buildings. These were made after listening to feedback from meetings held with local residents groups since our original plans were submitted to the Commission, with many of the latest improvements being influenced by specific comments from Spelthorne Borough Council, residents living in Stanwell and Stanwell Moor and their elected representatives.

Existing plans include provision around the airport of significant areas of new and enhanced parkland, which many residents welcomed. The updated plans will see this extended to the south of the airport, providing a connected 15 mile corridor of publicly accessible green space for local residents. As part of this 'green ring' Stanwell Park would be enhanced, providing better designed landscaping and increasing the amount of recreational land between Stanwell and the proposed car park to the south of the airport, which has been made smaller. To the north of the central terminal area, the long stay and business car parking has been consolidated adjacent to the airside-landside boundary, with ancillary airport land uses moving to the north and the airport boundary pared back to reflect that it is not essential for all of these facilities to be "on-airport", as is the case today. We have also reduced the amount of airport car parking shown to the south of the airport to allow the retention of some green areas with local historic connections and allowed for additional landscaping and bunding to hide car parking from residential areas adjacent to it.

Up to £500 million of the Heathrow NWR scheme funding would be allocated to river and greenspaces aspects. We will support the Environment Agency objectives for the River Thames Scheme ensuring that, where possible,

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<sup>1</sup> *Taking Britain Further*, Heathrow's plan for connecting the UK to growth, Heathrow Airport Ltd, May 2014

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Heathrow expansion will complement and enhance the benefits of the Scheme for those communities near Heathrow that are at risk of flooding.

The current proposal is for balancing ponds to be located south west of the airport near to the village of Stanwell Moor as shown at Appendix A. We would aim for them to enhance the amenity of the area through landscaping and design. We would also create a brand new park for local people - replacing the fields taken to accommodate the ponds - and create a new all-weather sports pitch for local residents. Alternative sites for adding green space are also being investigated.

Colnbrook and Poyle would benefit from the creation of a new bypass to replace the existing A3044, routing traffic around the villages and easing the congestion they currently experience. Congestion would further be alleviated for local communities and emissions reduced through widening parts of the airport's Southern Perimeter Road and a series of grade separated junctions introduced at certain roundabouts. We have committed to creating designated "HGV routes" from the M25, M3 and M4, to ensure that plans to create world-class consolidated cargo handling facilities, which would enhance Heathrow's role as the UK's most important port for high value goods, do not result in additional goods vehicles on unsuitable local roads.

Through continued engagement with the local community and stakeholder groups during future stages of the project, we will look to further refine and improve our NWR scheme. Our scheme, as presented, would still have a long way to go in the design process if it is supported by Government. The planning process alone is likely to take some 4 years during which there would be comprehensive engagement with local communities and a wide range of stakeholders about the details of any scheme. Our scheme is therefore by no means 'final' and we will look to make further refinements as this process continues and in response to engagement and consultation feedback.

Since our submission in May 2014, we have carried out a Construction Delivery Review in conjunction with Mace (Appendix D), a leading international construction and consultancy company. In summary, the review suggests that the original submission is both robust and deliverable within the timescales that we set out in May 2014. It has also highlighted certain areas where the schedule could be improved (such as the opportunity to deliver the new terminal and satellite buildings by Sept 2026, as a single phase, as opposed to our original proposal of Jan 2028, as a multiple phase).

Since September 2014 we have held a number of meetings with the operator of the Colnbrook Lakeside Energy from Waste (EfW) facility. These meetings have considered a range of relevant issues as we consider how the plant could be replaced. Particularly relevant at this early stage are the airfield safeguarding considerations relating to the flue height, the programme for the runway scheme to be built and the approach to securing planning consent. These discussions have highlighted a better location for the EfW facility which would sit on land already owned by the operator. We continue to collaborate with the operator and the local authority to work up more detailed plans for relocation of the facility.

**Question 2: Suggestions for how the short-listed options could be improved**

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### 2.1.3 Our recommendations

We recommend that the Commission:

- appraises our latest Masterplan, version 4.8, published on 29 October 2014 included at Appendix A which has been improved in the following areas:
  - airport boundary cut back by Sipson – site currently contains a number of hotels, offices, light industrial which serve the airport in part but do not have to be CPO'd and/or brought inside the airport boundary
  - EfW plant moved away from Stanwell back to site as close to its original location as possible
  - A3044 re-routed to avoid Poyle village centre
  - balancing ponds by Stanwell Moor re-shaped to avoid local amenities (e.g. football pitches)
  - additional landscape mitigation provided in Stanwell Moor and other locations around the south of the airport
  - long stay car parking/ancillary on Cemex site cut back to avoid Stanwell Place (manor house & estate) – will require further decking
  - plan shows more clearly the location of different types of land use (e.g. hotels, offices, industrial)
  - T2 Long Stay/Business parking consolidated on Northside for greater efficiency and lower PRT cost, away from Sipson. Ancillary replaces parking by Sipson.
- consider the Construction Delivery Review undertaken by MACE and included at Appendix D.



## 2.2 Building community trust on noise

### 2.2.1 Airports Commission's approach

The Commission's Interim Report (para 7.12) encourages promoters to engage with local residents, businesses and other stakeholders such as passengers and airport users to understand their views and incorporate into our proposals where possible.

### 2.2.2 Our comments

We have continued to listen to our local communities following our consultation in February 2014 and continue to engage through a regular programme of residents meetings and with local stakeholders. Noise is a key concern of our local communities. We have continued a programme of on-going dialogue with our community stakeholders and local residents in developing ways to further improve our proposals in respect of noise. Since our submission to the Commission in May 2014, upon which the Commission has based its noise assessment, we have announced five further packages of improvements to help develop trust and confidence in our proposals:

#### i. Noise Blueprint

Although Heathrow is now quieter than it has been at any time since the 1970's, we can do more and are committed to make on-going improvements. At Heathrow, we are continually working with our airlines, regulators and local communities to make the skies around Heathrow quieter for everyone.

Since our Taking Britain Further submission, we have continued our dialogue with our neighbours on what more we can do to tackle noise today, to send a clear signal that we are serious about being a better neighbour. From that dialogue, we have identified ten practical steps that we can take now and have brought those together in a "Blueprint for Noise Reduction" which we launched in November 2014. The Blueprint for Noise Reduction can be found in Appendix K. The steps are linked to actions in our current five-year Noise Action Plan, but involve a renewed senior-level focus and an acceleration of activity in key areas.

Some of these actions are within our direct control as Heathrow Airport, however the majority rely on engagement with our airline partners and with NATS. We have discussed the Blueprint at the Heathrow Leadership Group which brings together the CEOs of Heathrow, British Airways, Virgin and NATS as well as the CAA. Our Chief Executive has also written to his counterparts at the 40 airlines that can most support the actions in our Blueprint to set out how they can help and to request their support. The response has been very positive. To date around half of the airlines that we have contacted have responded and committed to work together to support our activity. Several airlines have committed not to schedule any Chapter 3 aircraft (the noisiest aircraft type, representing well under 1% of Heathrow movements) on Heathrow routes. Several operators of A320 aircraft have confirmed their plans to retrofit quiet technology to cut approach noise over London. British Airways has proved the concept of a "two-phase" approach with two early morning arrival flights, whereby the aircraft approach at a steeper angle of 4.5 degrees over London before joining the standard 3 degree approach angle at 1,500 ft (circa 5 miles from the airport). This means that the aircraft are significantly higher and therefore would bring significant noise benefits over parts of London. Further work is needed to confirm the timescales and feasibility of implementing this procedure for all early morning arrivals, notwithstanding this it shows a clear shared intent by Heathrow and its industry partners to tackle early morning arrival noise. It should also be noted that "two-phase" approaches are not currently assumed in our submission which if implemented would enhance our proposals still further.

We expect to receive responses from all of the carriers to which we wrote and will use that airline engagement as the foundation to drive performance improvements on noise. The table below sets out our progress towards delivering the Blueprint by Summer 2015:

**Question 2: Suggestions for how the short-listed options could be improved****Figure 2.1: Progress towards delivering our blueprint for noise reduction**

	Steps	Progress
1	Early phase out of noisiest planes (chapter 3)	<ul style="list-style-type: none"> <li>In 2014 Chapter 3 movements were 0.8% of the total at Heathrow</li> <li>Chapter 4 movements were over 99% of the total which compares with a European average of 84.4% (ICAO working paper CAEP-SG/20142-WP/34)</li> <li>First Heathrow A350 flight 12 January 2015</li> <li>From our airline engagement we are building a clearer picture of plans to replace Chapter 3 aircraft with newer, quieter types. For example; <ul style="list-style-type: none"> <li>Airline commitment to avoid scheduling chapter 3 aircraft on Heathrow routes</li> <li>Largest Chapter 3 operator committed to starting the phase out in early 2016</li> </ul> </li> <li>Currently reviewing the structure of our airport charges to consider how we further incentivise the quietest fleet</li> </ul>
2	Fitting quiet technology to A320s	<ul style="list-style-type: none"> <li>Several European carriers have committed to complete retro-fitting in 2015</li> <li>We are actively discussing with British Airways their plans to retrofit their fleet which is the largest at the airport representing 62% of A320 movements</li> </ul>
3	Campaign for quiet approaches	<ul style="list-style-type: none"> <li>Heathrow pioneered the procedure and we already see very strong performance</li> <li>We have established a minimum performance target and are focussed on engagement with carriers not meeting this standard</li> </ul>
4	Campaign to delay lowering of landing gear	<ul style="list-style-type: none"> <li>Field study conducted in late summer 2014</li> <li>Results indicated; <ul style="list-style-type: none"> <li>variability between wide-body and narrow-body aircraft</li> <li>differences between airlines operating same aircraft types</li> <li>different degrees of variance within airlines</li> </ul> </li> <li>Working with airlines to understand more about these variations and the potential interaction with speed compliance in order to identify improvements</li> </ul>
5	Exploring steeper angles of descent	<ul style="list-style-type: none"> <li>First proving flight of two segment approach 16 December 2014</li> <li>Further proving flights planned in early 2015</li> <li>Steeper approach trial scheduled to commence in autumn 2015</li> </ul>
6	Better distribution of night-time landing noise	<ul style="list-style-type: none"> <li>Working with NATS to agree target as part of joint sustainability plan to commence from April 2015</li> </ul>
7	Completion of schools' double-glazing programme	<ul style="list-style-type: none"> <li>44 schools due for completion in February 2015, two months ahead of schedule</li> </ul>
8	More adobe buildings in local primaries	<ul style="list-style-type: none"> <li>5 completed by Dec 2014</li> <li>Subject to planning permission plan to support completion of 5 new adobe buildings for primary schools by December 2015</li> </ul>
9	Bigger fines for noisy departures	<ul style="list-style-type: none"> <li>Implemented 27 October 2014; £500 for each decibel over the limit during normal operational hours (07:00 to 23:00); £1,500 for each decibel at the beginning and end of the day (the night shoulder periods; 0600 – 0700 and 23:00 to 23:30); and a night time surcharge of £4,000 for each additional decibel between 23:30 and 06:00.</li> </ul>
10	Campaign to reduce late departures	<ul style="list-style-type: none"> <li>Working to set a target</li> </ul>

**ii. SoundLab Aviation Noise Experience**

Sound and noise (defined as unwanted sound) are familiar to everyone. However conventional techniques for describing the impacts are not easily accessible and are often misunderstood – for example the decibel seems counter intuitive to many people. We have recognised the need to bring to life some of the proposed mitigation and operational proposals within our submission to help inform how this compares with the noise environment today.

SoundLab enables people to listen for themselves to changes in an acoustic environment by replicating the noise levels that would be experienced in a given location.

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This sophisticated technology has been developed by Arup over 15 years and used in the design of projects from world renowned concert halls and opera houses, like The Sage Gateshead and the recently opened Stormen concert hall in Bodo, Norway, through to major transport projects– like HS2.

Heathrow recognised the difficulties in enabling local residents and stakeholders to objectively understand the impacts of our proposals and commissioned ARUP to develop SoundLab for use in aviation and to inform stakeholders about our expansion proposals.

We have recorded the sound of an older generation plane (Boeing 747) and new generation aircraft (Airbus A380 and A350) to allow stakeholders to hear the difference made by new aircraft technology, aircraft flying higher and the impact of noise insulation.

We have initially invited a number of local stakeholders to visit SoundLab and experience for themselves what our expansion proposals will mean to them. The list of invitees is set out below although not all have yet attended at the time of writing:

**Figure 2.2: Stakeholder Invitations to visit SoundLab**

Name	Organisation/Role
Sir Howard Davies	Airports Commission
Ricky Burdett	Airport Commission
Prof Dame Julia King	Airports Commission
Sir John Armitt	Airports Commission
Vivienne Cox	Airports Commission
John Stewart	HACAN
Tim Johnson	Aviation Environment Federation
Cllr Steve Curran	Leader of Hounslow Borough Council
Lord True	Leader Richmond Council
Cllr Burbage	Leader Royal Borough of Windsor & Maidenhead Council
Cllr Ray Puddifoot,	Leader Hillingdon council
Cllr Ravi Govindia	Leader Wandsworth council
Cllr Amritpal Mann	London Borough of Hounslow
Cllr Julian Bell	Leader Ealing Council
Cllr Robert Anderson	Leader Slough Council
Seema Malhotra MP	Feltham and Heston
Zac Goldsmith MP	Richmond Park and North Kingston
Fiona McTaggart MP	Slough
John McDonnell MP	Hayes and Harlington
Adam Afriyie MP,	Windsor
Kwasi Kwarteng MP	Spelthorne
Dominic Grieve MP	Beaconsfield
Vince Cable MP	Twickenham
Mary Macleod MP	Brentford and Isleworth
Virendra SharmaMP	Ealing and Southall
Steve Pound MP	Ealing North
Philip Hammond MP	Runnymede and Weybridge

We have also invited the members of the Heathrow Airport Consultative Committee. The Committee discuss all matters concerning the development or operation of the airport which have an impact on its users and on the people living and working in areas affected.

**Question 2: Suggestions for how the short-listed options could be improved**

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Every demonstration has been quality assured based on the best information available to us. What is heard is calibrated before each and every SoundLab session and has been externally peer reviewed to give further voice to our commitment to providing credible and objective information for planned infrastructure projects where noise impact is an important issue.

If the Heathrow NWR option is recommended we intend to further develop the capabilities of SoundLab to continue to facilitate open and transparent dialogue with community stakeholders.

**iii. Community Noise Forum**

We understand the importance of trusted data to inform an open and honest dialogue on noise management issues. This has been highlighted recently as a result of a number of airspace trials that have taken place at Heathrow as part of the Europe-wide programme to modernise airspace. As a result of feedback during these trials we acknowledged a need to provide confidence in the data and analysis used to assess noise impacts and have responded by establishing the Community Noise Forum.

This group will hold its first meeting in March 2015 and will focus on two key concerns

- independent assurance of the noise and flight tracking systems
- how best to communicate with local residents on airspace change issues.

The group consists of representatives from local authorities, community organisations, CAA, NATS, DfT, airlines, HACAN and Heathrow. The purpose of the group will be to keep residents and stakeholders informed on airspace planning including future trials; improve understanding of members on airspace issues; inform the communications approach to trials and public consultations; and build trust in the data externally.

**iv. Independent Aircraft Noise Authority**

We understand the need for community stakeholders to have an independent overview of environmental impacts and aircraft noise issues in particular. We remain supportive, in principle, of an Independent Aircraft Noise Authority to help provide the assurance and balanced overview that the noise environment is being effectively managed.

We recognise that more work is needed to identify the exact nature and terms of reference of such a body in order that it is seen as having value by all interested stakeholders. The independence of the authority will be a key aspect in order for it to be supported by all stakeholder groups. There is a need to review existing roles and responsibilities to avoid duplication with other bodies and to ensure that clear future accountabilities are established which provide the transparency and assurance stakeholders require.

We are aware of a number of different applications of this concept in other countries which we have researched in order to provide input into a future government consultation into how an Independent Aircraft Noise Authority might work.

**v. Noise Envelopes**

Like the need for an Independent Aviation Noise Authority, we acknowledge how important it will be for communities to have some certainty in relation to future noise impacts. The concept is discussed in CAA paper CAP 1129 that explores *'the definition of a noise envelope concept which can be applied to airports looking to increase their capacity'*. Central to this review is that such an envelope meets the following criteria:

- is aligned to the Government's overall noise policy
- helps achieve a balance between growth and noise reduction
- incentivises noise reduction at source through airline fleet evolution.

With this in mind we are supportive of the concept of developing a noise envelope. We are confident that an envelope can be designed that meets the criteria above and allows growth while reducing noise and responding to local concerns. For example, we envision that a system could be established to deliver periods of predictable respite for communities, or one which is based upon a noise quota points system. The quota of points would be managed for a set period of time with penalties applied for exceeding the allowed quota and rewards for early achievement

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of targeted improvements. This could provide both an incentive to the industry to drive quieter technology and provide a noise limit to reassure overflowed communities.

### **2.2.3 Our recommendations**

We recommend that the Commission:

- acknowledge the engagement work to date and consider how to further develop stakeholder trust using initiatives such as the ARUP SoundLab and the setting up of the Community Noise Forum into their appraisal
- notes our Blueprint for noise reduction (Appendix K)
- continue to consider the concept of noise envelopes to regulate aircraft noise in their appraisal work.
- continue to consider the role of an Independent Aviation Noise Authority

## 2.3 Improved Noise Insulation Offer

### 2.3.1 Airports Commission's approach

The Commission's Interim Report (para 7.12) encourages promoters to engage with local residents, businesses and other stakeholders such as passengers and airport users to understand their views and incorporate into our proposals where possible.

### 2.3.2 Our comments

We have continued to consult and engage with our stakeholders, including the local community, to find ways to further improve our proposals. In July 2014, we launched a 12 week consultation to seek views on how we should address the issues of property and noise compensation in the event that the Government support our NWR scheme. In particular, we wanted to hear people's views on the principles that should inform our property and noise insulation schemes.

We approached the consultation without any pre-conceived ideas of what our schemes should look like. We set up a small working group, which included local residents, to understand and consider what we should be consulting on. Our public consultation<sup>2</sup> subsequently sought views on a number of issues from eligibility for a home-loss payment to defining noise compensation zones. The feedback from the consultation and public exhibitions was invaluable and is set out in detail in the Report on Consultation attached at Appendix C.

In respect of noise compensation, four key themes emerged from the consultation feedback:

- People should be treated equally whether they are already exposed to noise or newly exposed
- People living close to the new runway should be compensated for the change in their general environment over and above any potential new noise impact
- Support for the principle that people affected by higher noise levels should receive a greater level of compensation
- The noise contours we use should better reflect the actual noise level experienced.

We have responded to that feedback by reviewing our noise insulation offer (initially set at £250million) and developed a revised proposal that will apply to all homes within two newly designated insulation zones, regardless of whether they experience noise now under existing flight paths or will be newly affected by noise from a new runway.

The revised noise insulation offer goes well beyond UK policy requirements, significantly expands on Heathrow's previous proposals and is comparable, by extending to the 55dB Lden contour, to other schemes offered by other European hub airports including Schiphol, Madrid, Charles De Gaulle and Frankfurt. We estimate that over £700 million could be spent on noise insulation through this package<sup>3</sup>. This represents almost a trebling of our initial package of £250 million set out in our May 2014 submission to the Commission and an increase of over £610 million from the previous proposals for a third runway.

This proposal sets out two distinct zones, an inner zone where 100% of the costs of insulation would be provided and an outer zone where a contribution towards acoustic insulation would be offered. In both zones any insulation would be based on an independent assessment of need with the range of suppliers and products limited to those specified by Heathrow Airport Ltd. The offer is subject to development consent being granted for a third runway and CAA approval to include the cost in the RAB. We also note that in comparison with European schemes, there is direct government funding of these schemes. The scheme would commence in 2024 and be completed in 2043 and consist of 5 phases beginning with communities most affected by aircraft noise.

Under the proposed scheme, homes in the inner zone closest to the airport with higher levels of noise stand to have the full costs of noise insulation covered by the airport. This area would include households experiencing noise greater than 60dB 16 hour LAeq during an easterly and/or a westerly period of operations.

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<sup>2</sup> <http://your.heathrow.com/consultation/about/property-compensation/>

<sup>3</sup> This is based on our "respite" airspace option which maximises respite from noise for local communities.



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In addition, up to £3,000 towards noise insulation would be offered to homes in the outer zone further away from the airport, the boundary of which would be drawn based on the 55dB Lden contour. This contour is the preferred measure of noise used by the European Union and the Mayor of London. This outer zone also takes into account those homes which experience noise greater than 57dB 16 hour Leq noise levels during an easterly and/or westerly period of operations.

A third party assessment, free of cost to homeowners, would be made to determine the extent of each home's needs within the eligible insulation zones. Heathrow's insulation package could include:

- acoustic double glazing in windows
- ceiling overboarding in bedrooms
- loft insulation and ventilation.

In total, over 160,000 homes could be eligible for insulation in areas as far to the west as Windsor and to the east as far as Richmond. Over 35,000 homes in Hounslow alone would be eligible for full costs of the noise insulation package, with all homes in Heston and Cranford eligible. Similarly, all homes within the towns and villages of Wraysbury, Datchet, Sipson, Harlington, Colnbrook, Brands Hill and Stanwell Moor would be covered by the inner zone of the scheme.

At this stage it is not possible to determine definitive boundaries to identify where the inner and outer zones are. This is due to the range of variable factors such as airspace design and future aircraft performance which will affect the exact size and shape of future contours.

### **2.3.3 Our recommendations**

We recommend that the Commission:

- include Heathrow's improved noise insulation offer into the Commission's appraisal.  
(See Appendix E)

## 2.4 Improved Property Compensation Offer

### 2.4.1 Airports Commission's approach

The Commission has undertaken their sustainability assessment based on our submission of May 2014. The Commission's Interim Report (para 7.12) encourages promoters to engage with local residents, businesses and other stakeholders such as passengers and airport users to understand their views and incorporate these into scheme proposals where possible.

### 2.4.2 Our comments

We also recognise blight is an important issue to those beyond the immediate airport boundary. During our public consultation on property and noise compensation between 21st July and 12th October last year, local residents and those interested in Heathrow's expansion, told us that:

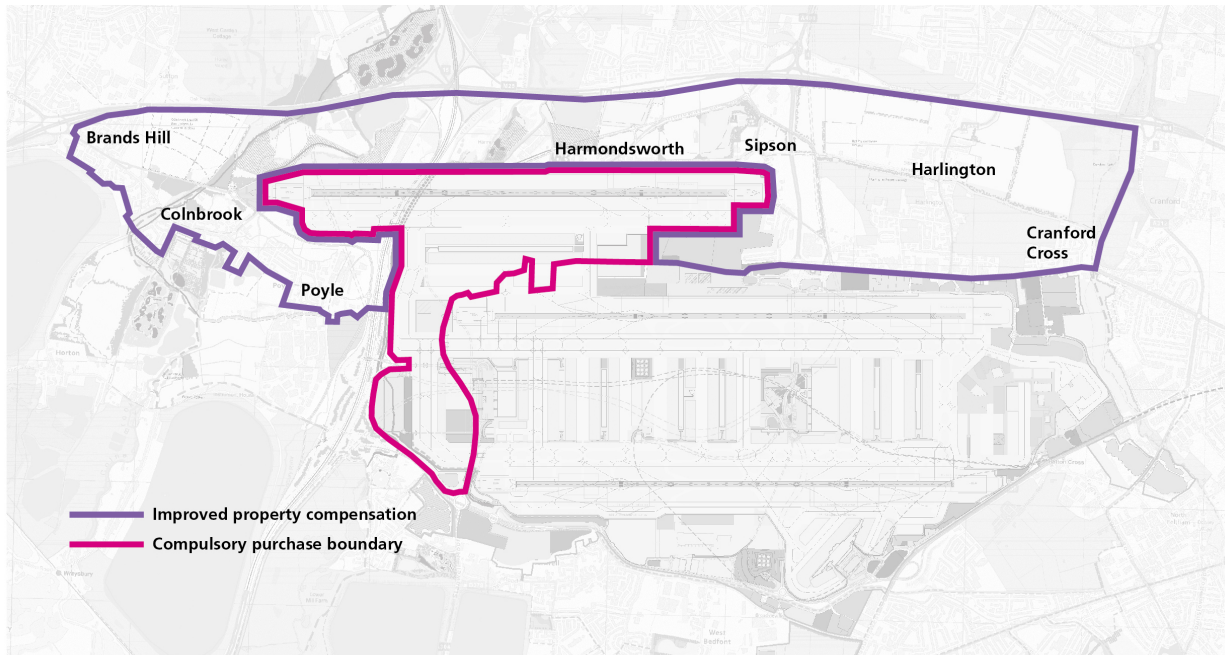
- they welcome the proposal to offer 25% above market value compensation plus legal fees and stamp duty costs on homes that will be compulsorily purchased
- they want the airport to recognise that a new runway will have an impact beyond just noise on homeowners close to the new boundary of the extended airport
- they are concerned that property prices will be blighted in the areas close to the new airport boundary
- they want to avoid a situation where their neighbours or homeowners on adjacent streets are entitled to different compensation
- some people in this area will want to remain in their homes if the airport is expanded, while others will want the option of moving out of the area.

A copy of the report on our public consultation can be found in Appendix C.

In response to this feedback and continued dialogue with our local communities and local authorities, we recently announced an improved property compensation package to accompany our NWR scheme. Under the improved scheme, residents living in communities close to our new NWR, but not subject to compulsory purchase, will have the choice to either remain in their home or sell it to us at 25% above market value during the construction and early operation of the new runway.

Homeowners within the defined boundary broadly encompassing Poyle, Colnbrook, Brands Hill, Harmondsworth, Sipson, Harlington and Cranford Cross will be eligible for the improved scheme. Properties in Longford and parts of Sipson and Harmondsworth would be covered by the previously announced compulsory purchase scheme.

Figure 2.3: Improved Property Compensation Boundary



By announcing the scheme at this stage, we hope to avoid blight to property prices and keep the local property market buoyant in the intervening period before any runway might be built.

Those responding to our consultation also said they want local villages to retain a local community feel in the event the runway does go ahead and they want those residents who are displaced to have the option to stay in the local area. In response to this we have decided that where we purchase a property from a homeowner, we would refurbish and noise insulate the property before first offering it to those whose properties are subject to compulsory purchase but who want to remain in the local area. Secondly, we will also offer local councils the option to purchase properties that are within their borough boundaries. The majority of the remainder will be resold on the open market. This will give those people who want to leave the area the option of doing so; it will enable those whose properties are compulsory purchased to stay in the local area; and for those that remain, they can still expect to be part of a functioning community.

Our improved offer will be subject to development consent being granted for Heathrow expansion and to regulatory approval by the CAA. Approximately 3,750 homeowners' properties would be eligible for purchase under the revised scheme.

### 2.4.3 Our recommendations

We recommend that the Commission:

- include our revised property compensation package into its appraisal. (See Appendix F)

## 2.5 Air Quality Mitigation

### 2.5.1 Airports Commission's approach

The Commission has not yet concluded its work on assessing the impacts of the scheme upon air quality. The work that it has completed to date does not take into account our proposed mitigation measures. The Commission itself has regards these mitigation measures as "credible".

### 2.5.2 Our comments

Reducing harmful emissions from vehicles and industrial sources is a significant challenge facing many areas of the UK and Europe. The quality of the air in areas throughout the southeast of the country is a particular focus with a range of measures needed to improve it. The challenge being faced by the local authorities charged with improving air quality and meeting air quality limits in the areas around Heathrow will directly benefit from the mitigation measures proposed within the scheme.

Mitigation measures addressing airport-related emissions include:

- Our surface access strategy: this will ensure that there will be no increase in airport related road traffic through initiatives to incentivise staff and passengers to use the enhanced public transport network, and create opportunities to make more efficient use of cars such as taxi backfilling and improving the surrounding cycle network, which will benefit nearby residents as well as people at Heathrow (described in more detail, in our response to Question 5). Freight movements will be reduced by for example increasing on-airport capacity, which in turn will reduce the number of shuttle movements. Surface access road and motorway links have additionally been designed to protect air quality at sensitive locations as far as possible.
- Working with members of the Clean Vehicle Programme and Sustainability Partnership, actions will continue to be implemented to reduce emissions from the airside fleets, incorporating electric, hybrids, bio fuels and hydrogen powered vehicles. At the same time, technology in landside vehicles and aircraft will improve as technologies improve and emission standards tighten.
- Incentivising cleaner aircraft engine technology through emissions based landing charges to ensure continued introduction of the next and future generation of aircraft.

As a result, Heathrow-related vehicles on the roads will not increase into the future, both vehicle and aircraft fleets serving the airport will be cleaner, and the surrounding community will benefit from both the associated improvements to air quality and infrastructure surrounding the airport.

These combined interventions will build upon Heathrow's on-going leadership of air quality improvements:

- Through working with the Heathrow Area Transport Forum (HATF), we operate award-winning commuter initiatives, including the world's largest single site car share scheme and the UK's only airport free travel zone for public transport.
- We are additionally committed to ensuring the best in aircraft technology and efficiency. Currently over 94% of Heathrow's aircraft fleet are ICAO Committee on Aviation Environmental Protection standard 6 or better, with a working commitment in place to reduce emissions during operations, for example through reducing taxiing and APU run times. This is being achieved in cooperation with NATS. Actions in our Noise Blueprint will further increase the proportion of Chapter 4 aircraft.
- We are also actively working to improve vehicle technology, with five new hybrid buses being purchased this year, joining the ten already in service on the popular 7-series bus network which links Maidenhead, Slough, Staines and Windsor with Heathrow Airport. This was joint funded by the Government's Green Bus Fund, First group and ourselves.

We will build on our existing leadership of air quality improvements in the aviation sector and beyond, providing tangible benefits to the surrounding community, passengers and the workforce. Air pollution at present in the vicinity of the airport is dominated by contributions from non-airport road traffic and background levels of air pollution blown into the area from Greater London and the rest of the UK.

We set out further comments on air quality at sections 4.4 and 5.6.

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### 2.5.3 Our recommendations

We recommend that the Commission:

- ensures that our air quality mitigation measures to address air quality emissions are factored in to its assessment
- consults on the results of the detailed air quality assessment once it has been undertaken

## 2.6 Housing

### 2.6.1 Commission's approach

The Commission has considered the potential impact on housing provision of the growth in jobs due to Heathrow expansion. In doing this it has interpolated the greatest number of jobs that may be created (112,000), on a one to one basis, into a worst case number of homes that may be required to be built. It then allocates 63% of these to 14 boroughs around Heathrow and concludes that up to 70,000 new homes may be required within the 14 boroughs.

The Commission refers to a number of potential mitigating factors and states that these may well mean that in practice no additional homes are required at all:

- jobs would be taken up by existing jobseekers in the travel to work area
- new people with the right skills will move into existing homes in the area
- new people with the right skills will move into homes that are currently planned
- there are and will be more homes with more than one airport worker living in them.

However, it does not illustrate the impact of these mitigating factors with accompanying numbers or provide a view on where the most likely outcome is in the range they have proposed of between 0 - 70,000 homes being required.

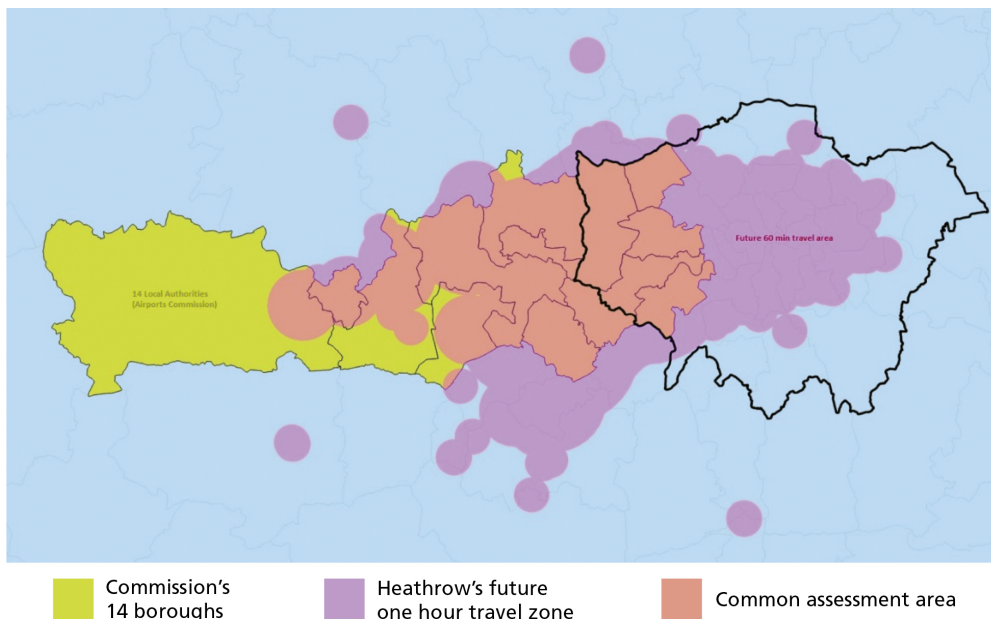
### 2.6.2 Our comments

A significant rate of growth at Heathrow is already accounted for in the growth projections that the Local Authorities are using to predict future requirements for housing and in reality the jobs delivered by Heathrow expansion are simply one of the many employment opportunities that their additional future residents will require. Expanding Heathrow is therefore directly consistent with and important to planning strategies, rather than a challenge to them. The question is not where will they live, but where will they work and the answer is Heathrow.

The Commission state that the 14 boroughs they have selected allow for the growth in Heathrow's travel zone driven by Surface Access improvements, amongst which we presume Crossrail will be a major factor. Our first main concern with the Commission's methodology is the lack of congruence between the 14 boroughs used by the Commission for their assessment and the one hour isochrones for Heathrow, within which current evidence shows, 75% of airport related employment is likely to occur. This is illustrated on the diagram below:-

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Figure 2.4: Comparison of Commission's assumptions on one hour travel zone with HAL's assumptions



Heathrow's future one hour travel zone will encompass 38 boroughs which is a much larger group of local authorities than the 14 the Commission has selected. This puts nearly 9 million people within a 60min public transport journey of the airport. Not only will this will reduce any potential impact of additional homes on each of them to a greater extent than envisaged by the Commission but far more importantly it encompasses a much larger existing and future labour pool who will have access to the employment generated by an expanded Heathrow. The population within the 1 hour isochrones will increase by almost two million people due to the proposed surface access improvements.

The table below demonstrates the additional labour force in the one hour travel zone resulting from:

- The increase in employment rate from the current rate (63% in 2013); Government policy target is 74%
- The growth in working age population currently predicted by 2030.

Figure 2.5: Table showing growth in working age population to 2030 within Heathrow's one hour travel zone

	60 mins		Total Additional Jobs at Heathrow by 2030 (Commission's Report)	Percentage of Additional Labour Pool taken up by growth at Heathrow
Additional labour pool	2013	2031		
<b>Employment Rate goes up to 75%</b>	667,000	794,000	47,400 -112,380	6%-14%
<b>Employment Rate goes up to 80%</b>	950,000	1,131,000	47,400 -112,380	4%-10%

We will look to work with our local authorities to ensure that the additional jobs created by expansion at Heathrow will in the first instance go to local people who can get to work by public transport.

The UK enjoys some of the most flexible labour and property markets in the world. Individuals are able to move freely between jobs, between spells of employment and inactivity and between different areas of the UK. The UK



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economy is therefore able to cope with very large shifts in employment – both spatially and sectorally. Heathrow sits within the largest and most dynamic labour and property markets in the UK. We can therefore reasonably expect that the market will find perfectly acceptable ways of providing the workforce that LHR and the surrounding area needs.

In addition, there would be an increase in the level of employment from workers moving into existing homes in the area and economically inactive people (retired persons etc.) gradually moving out, which is a normal characteristic of economically successful areas.

An example of the way in which this flexibility works is a pilot who buys a house from a retired couple who move to Eastbourne; or a WH Smith worker from Hayes who works in Uxbridge and takes a job at Heathrow. Their job in Uxbridge then gets taken by someone from Pinner who works in Harrow and their job in Harrow gets taken by an unemployed person in Wealdstone.

Once these factors are accounted for, it is clear that the additional employment created by growth at Heathrow makes up only a very small proportion of the “spare” labour pool and as a result is unlikely to generate demand for significant additional housing, or, as a consequence, significant additional associated social infrastructure.

It is clearly unrealistic to assume that there are no homes containing more than one Heathrow worker. Our current data on Heathrow workers shows that 17% of homes in the local area with a Heathrow worker have more than one worker in the household.

**Mitigating housing loss**

It is our intent to work with our local boroughs to ensure that, where appropriate, we can assist in the delivery of additional affordable homes / social housing. Assisting with the funding of brownfield site development could enable schemes for sites identified for future social/affordable residential use to come forward. This will serve to mitigate the local impacts of direct housing loss caused by the airport expansion (approximately 15% of the 750 homes lost are social housing).

An example of where this has worked in practice is at Hinckley Point C, where the S106 agreement included a “Housing Fund” of £3.5m to provide financial support for initiatives designed to deliver affordable housing capacity and to mitigate potential adverse effects on the local housing market. We have allocated money within our cost plan for this and we are committed to funding assistance equivalent to £5,000 per dwelling for at least 750 new social/affordable homes. We are currently in consultation with Local Authorities on future projects that may present opportunities in this area.

**Managing the Property Compensation scheme**

In considering how we would deal with any homes which might be sold to us under our property compensation offer scheme, we will give first priority to those residents who currently live in the 750 homes that would be demolished to make way for the airport expansion. In this way we can ensure that no one is forced to move a significant distance away from their current location.

The next priority will be to ensure that those Local Authorities who wish to purchase properties for their own use where they fall within their borough boundary. The correct structuring of this arrangement has the potential to more than reprovide any social housing lost within the 750 homes demolished but also to provide a significant proportion of additional social housing in the local area.

The nature, scale and distribution of this is clearly a matter for consideration by the relevant local authorities but our intent is to work with them to ensure that those in housing need are able to be rehoused in the local area.

We are also investigating the use of some of this housing on a temporary basis to provide accommodation for construction workers who would need to live in the local area during the building of the project. This would be a preferable alternative to the creation of caravan parks for this purpose with all the attendant issues these tend to create.

### 2.6.3 Our recommendation

We recommend that the Commission:

- align their boroughs impacted with the boroughs in Heathrow's future one hour travel zone, i.e. increase from 14 to 38
- assess the impacts of the housing mitigation measures that they list on the additional homes that may be required to show a more likely range of outcomes, or outcome
- assess any mitigated upper end housing demand number as being delivered across 38 boroughs rather than 14
- assess the mitigating effects of our commitment to funding assistance equivalent to £5,000 per dwelling for at least 750 new social/affordable homes

## 2.7 The Promise of Heathrow

### 2.7.1 Airports Commission's approach

The Commission has encouraged promoters to engage with local residents, business and other stakeholders in developing their proposals.

### 2.7.2 Our comments

We agree with the Commission that the economic benefits of additional airport capacity at Heathrow will be transformational. We wanted to show how those benefits will translate into real jobs for real people and that everyone in the UK, no matter where they live will see the benefits of Heathrow expansion and have access to the business support and employment opportunities we can deliver. With this aim, last September we set out five new promises that set out what our local communities and indeed the whole of the UK can expect from an additional runway at Heathrow:

1. The promise of new apprenticeships and skills - Heathrow expansion will double the number of apprenticeships across the airport to 10,000 and extend programmes to champion employability skills training in schools.
2. The promise of new jobs - Heathrow expansion will create more than 120,000 new jobs and has the potential to end youth unemployment in the five local Heathrow boroughs.
3. The promise of connecting every economic centre in the UK to growth - Heathrow expansion will help rebalance the UK economy by connecting all of the UK's regions and nations to growth markets.
4. The promise of new trade and exports - Heathrow expansion will enable a significant increase in UK exports to close the gap between the UK and our European competitors.
5. The promise of a cleaner and quieter Heathrow - Heathrow expansion will keep CO2 emissions within UK climate change targets, meet local air quality limits and cut the number of people affected by noise by at least 200,000 (when measured against the 57dB LAeq contour).

We chose these priorities because they are the ones that matter most for our local communities and for Britain's future success. We spoke to a number of national organisations and businesses as well as our local stakeholders to help us understand their own objectives and their future priorities

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### 2.7.3 Our recommendations

We recommend that the Commission:

- note that the expansion of Heathrow would offer a unique chance to deliver specific benefits to the local, regional and national economies as set out in our Promise of Heathrow<sup>4</sup> publication (attached at Appendix M)

## 2.8 Energy from Waste facility

### 2.8.1 Commission's approach

The Commission's consultation document identifies the requirement to demolish and reprovide the Colnbrook Lakeside Energy from Waste (EfW) facility for our NWR scheme. The Commission describes the risk that this poses to the NWR delivery schedule as "high".

### 2.8.2 Our comments

We are working with the owner of the EfW facility and Slough Borough Council to understand how the re-provision of the plant could best be managed to meet the constructability and schedule requirements of a third runway whilst ensuring continuity of operation in meeting the long-term waste management needs of the local area.

A site has been identified for a potential replacement facility and a joint feasibility study is being prepared. The land is already owned by Grundon, thereby removing a potential obstacle to its replacement. The site is directly accessed off the realigned A4 and therefore would represent no change to existing vehicle access arrangements. NATS have given an initial opinion that the site is suitable for accommodating the height of flue stack required (75m).

Our detailed Construction Review Study has identified that the facility can stay insitu until mid 2023 giving the best possible chance for its replacement to take place without the loss of operation from the existing facility whilst at the same time allowing the new runway to be completed on schedule in June 2025.

The facility's replacement is estimated to require 3-4 years including commissioning. Our intent now is to work with Grundon to devise a detailed scheme for its replacement so that in the event our NWR is supported by Government, the necessary consent process could be started without delay.

### 2.8.3 Our recommendations

We recommend that the Commission:

- modify its assessment of the risks that the re-provision of the energy from waste plant presents to the deliverability of the Heathrow North West Runway to 'low'

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<sup>4</sup> The Promise of Heathrow, Heathrow's Vision for Growth, Heathrow Airport Ltd, Sep 2014

## 2.9 Southern Rail Access

### 2.9.1 Airports Commission approach

As part of its surface access appraisal, the Airports Commission has established a list of projects that they expect to be delivered by 2030. This is split between a 'core baseline' made up of schemes that are committed and an 'extended baseline' of projects that are likely to be delivered irrespective of expansion of airports.

In its analysis the Commission has not included Southern Rail Access in the list of projects. Therefore, the capital costs of constructing the proposals as well as operating costs such as rolling stock and maintenance have been included in the costs of Heathrow's NWR scheme.

### 2.9.2 Our comments

In its Interim Report, the Commission recommended that Network Rail undertake a detailed study to find the best option for enhancing rail access into Heathrow from the south. The DfT has since asked Network Rail to complete a study which will report in summer 2015 on its outcomes. As part of the terms of reference for this study, Heathrow has been asked to form part of the steering group for the study as an observer.

A Southern Rail Access to Heathrow Market Study report has been prepared on behalf of Network Rail and is expected to be published imminently. This concludes that Southern Rail Access generates a significant amount of demand and revenue even for a two runway scenario. The most valuable markets are routes to Waterloo (via the Windsor Lines) and Woking.

This creates a strong case for the project being delivered whether Heathrow expands or not and for it being included in the extended baseline, particularly given that schemes at a similar stage of development on the Brighton Main Line have been included in the extended baseline for Gatwick. As a minimum this would rule out the need for airport funding towards a depot, operational and maintenance costs.

Removing these unnecessary costs will reduce the overall costs of our proposal and improve the business case.

We comment further on this matter in section 5.4.1.

### 2.9.3 Our recommendations

We recommend that the Commission:

- include southern rail access in the surface access extended baseline
- remove the capital and operational costs of the southern rail access scheme from the Heathrow NWR business case

## 2.10 M4 Junctions 3-12 SMART Motorway

### 2.10.1 Airports Commission approach

Appraisal module 4 sets out the Commission's assessment of surface access. Section 5 of the report on the Heathrow NWR includes the 'roads assessment' which considers the impact of the proposals on the strategic road network. This concludes that the M4 between J3 and J4 would need to be widened as a result of the proposed expansion of the airport. It also concludes that M4 J2 to J3 and J4 to J4b may require widening to accommodate the expected traffic flows.

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Since the Commission undertook its appraisals, the Highways Agency has undertaken a public consultation on its proposed M4 Smart Motorway between J3 and J12. The consultation documents included a 'Preliminary Environmental Information Report' which sets out the outputs of their traffic modeling. Table 2.2 on Page 2-8 of the report shows that the M4 between J3 and J5 would continue to operate within the capacity limits set by the Commission in its appraisal up to 2037. A comparison of the flow to capacity ratio is provided below taking the Highways Agency assessment against the Commission's 2R scenario:

**Figure 2.6: Comparison of the flow to capacity ratio of M4 J3 to J4**

Road link	Ratio of flow to capacity (busiest direction)	
	HA (2037)	AC (2030 + two runway)
M4 J3 to J4	89%	105%
M4 J4 to J4b	79%	84%

This shows that there are some significant differences in the expected flow to capacity ratios between the Highways Agency and Commission's assessments. The Commission's analysis appears to have over-estimated the likely flow to capacity ratio on the M4. In our detailed assessment of the appraisal we have highlighted some concerns around the assumptions used for the roads assessment. This is set out further in our response to Q5 in section 5.4.2. Our own assessment and the Highways Agency's analysis show that there is significant doubt as to whether the M4 will require further widening beyond that proposed for the M4 Smart Motorway project. This analysis should be considered by the Commission in forming its final recommendation.

We have worked closely with the Highways Agency to develop our proposals for the strategic highway network. This has enabled a solution for placing into tunnel a 600m section of the M25 that facilitates expansion of the airport. Working together we have reached an in principle agreement on the proposals for access to the airport from the strategic road network and our surface access strategy.

The Highways Agency has not at this stage asked for capacity increases on the M4. It is recognised however that further detailed modelling, based on new traffic surveys, will be required as part of any planning application to establish the detailed impacts on the M4 and the M25 and whether our proposals might need to be refined to mitigate any impacts. We have agreed with the Highways Agency that we will work collaboratively a Joint Board has been established going forward.

The Board will oversee a number of projects to jointly develop solutions that meet the needs of users of the airport and the road network, including our plans for expansion and improving passenger experience today. As above, removing these unnecessary costs from our NWR scheme will improve the business case and reduce negative local impacts.

**2.10.3 Our recommendations**

We recommend that the Commission:

- incorporate the recently published Highways Agency traffic modeling for the M4 J3-12 SMART motorway scheme into its assessment
- remove the need for widening the M4 and remove the associated surface access costs for the Heathrow NWR business case

## 2.11 M25 Junctions 10-16

### 2.11.1 Airports Commission's approach

Appraisal framework module 4 sets out the Airports Commission assessment of surface access. Section 5 of the report on the Heathrow NWR includes the 'roads assessment' which considers the impact of the proposals on the strategic road network. This section sets out the surface access costs associated with the expansion proposals including a £400 million cost (excluding optimism bias) for the tunneling and associated works on the M25.

### 2.11.2 Our comments

The Commission's analysis predates the Chancellor's 2014 autumn statement that set out a £15 billion plan to triple levels of spending by 2020 to increase the capacity and condition of England's roads. Included within the plans is a series of improvements to the M25 between J10 and J16 that will seek to smooth traffic flow and increase capacity at key pinch points.

The works include upgrading to smart motorway and substantial widening of junction 11 (Chertsey) to provides for 4 lane running through junctions on the M25 between junction 10 and junction 16 leading to five lane smart motorway. DfT are also progressing a study of the longer term strategy for this section of the motorway network. This shows recognition that works would be required to the M25. Therefore, some of the costs of the works to the M25 should be funded by Government and this should be reflected in the surface access appraisal.

### 2.11.3 Our recommendations

We recommend that the Commission:

- incorporate the Chancellor's commitments regarding the improvements of the M25 Junctions 10-16 in the 2014 autumn statement into their appraisal
- reconsider the apportionment of costs of the M25 works related to Heathrow's expansion

## 2.12 Local transport improvements

### 2.12.1 Airports Commission's approach

The Airports Commission Appraisal Framework Module 4 sets out a surface access appraisal for Heathrow NWR option. Section 3 of the report sets out the headline demand forecasts for passengers and employees. The appraisal uses the current mode share split between public and private transport for employees.

### 2.12.2 Our comments

We have developed a surface access strategy that will improve public transport to the airport for both passengers and employees. In our submission to the Commission in May 2014 we set out the key elements of our surface access strategy. The Commission has assessed the impact of the strategy on passengers but has not fully considered our commitments to reduce the number of employee trips by car.

Improved rail access will increase use of rail by employees, complementing the bus network rather than replacing it. Our submission included improvements to bus routes, particularly to the south and west where there are fewer routes and less frequent services as well as reducing access to car parking over time. We have modelled the potential effects of this on travel patterns using our HESAM model. Further details of this are included in our response to Q5 in section 5.4.3.



## Question 2: Suggestions for how the short-listed options could be improved

We have continued to engage with local authorities to develop our surface access strategy. This has focused on local transport improvements that will improve access to the airport for local communities and airport workers. There is continued positive dialogue with a number of local authorities including Slough, Spelthorne, Hounslow and Ealing to develop more detailed proposals to improve access to the airport. Our proposals include:

- Working with local authorities to develop and deliver a cycle network for Heathrow that integrates with the wider cycle network to better serve locations including Southall, Feltham, Staines, Ashford, Slough, Colnbrook and Poyle;
- Changes to bus routes from the west to improve connectivity and provide 24 hours services to Slough and to better serve residential areas of Colnbrook and Poyle;
- Improved frequency of bus services to the south to serve Spelthorne and Runnymede including introduction of 24 hour operation.

Our approach in developing proposals with local authorities will help to deliver better solutions with greater benefits for all transport users. This, supported by the modelling undertaken as part of our submission in May 2014 (set out in further detail in section 5.4.3) provides us with confidence that the trend of reduction in employee car driver mode share will continue.

### 2.12.3 Our recommendations

We recommend that the Commission:

- updates its surface access appraisal to include mode shift by employee, making use of the Heathrow modelling outputs that show an increase in public transport use from 36.9% today to 49.1% in 2030

## 2.13 Cost Plan

### 2.13.1 Airports Commission's approach

The Commission has added 5% more risk and 20% Optimism Bias (OB) to our current cost plan figures. This represents an increase of £3.6 billion.

We believe that this is too high for the reasons that we have set out in previous correspondence with the Commission and that an OB figure of 8.5% (aggregate) is more reasonable given that this is a privately funded project and our previous track record of delivering major infrastructure projects such as Terminal 2 and 5 to budget. This would represent a £1.25 billion uplift on our cost plan figure of £14.7 billion (not including surface access elements) rather than the £3.6 billion suggested by the Commission.

### 2.13.2 Our comments

As with any major project of this nature, we have taken the opportunity to refine and update our cost plan to reflect the changes since our May submission. The major changes to the cost plan have included:-

- Re-measuring and re-benchmarking 85% (by value) of the elements in the cost plan
- The addition of recent changes to the masterplan listed above in Section 2.1 – e.g. new green spaces etc.
- The re-baselining of the cost plan to Q3 2014 prices
- The movement of money from the base cost of certain items into the project specific category
- The addition of the costs of the two compensation schemes recently announced (property and noise insulation)
- The identification of £50 million of savings highlighted by the re-measuring and benchmarking exercise

Overall this has resulted in an increase in the cost plan of £885 million and reflects the increased mitigations that we have now incorporated into our scheme. It is our assertion that that any required uplift to the cost plan is

**Question 2: Suggestions for how the short-listed options could be improved**

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already accommodated in the Commission's OB methodology and that this figure is also consistent with our suggested alternative rate for OB. The updated cost plan summary is shown in Appendix B.

### **2.13.3 Our recommendations**

We recommend that the Commission:

- utilise our latest cost plan in its final appraisal, a summary of which is contained in Appendix B
- apply a maximum of 8.5% Optimism Bias to the cost plan reflecting the justifications set out in our previous correspondence and as restated in section 5.13.1 of this response
- assume that the uplift to the May 2014 cost plan for NWR is contained within their already identified optimism bias

## **2.14 Further scheme development**

### **2.14.1 Airports Commission's approach**

The Commission has considered the delivery of the whole of the scheme and core elements together to produce a total funding requirement to 2050. It reflects the overall plan proposed by our submitted scheme.

### **2.14.2 Our comments**

We recognise the importance of overall affordability not only to our shareholders but also to our airlines. Should Heathrow be recommended, we will embark on a detailed and rigorous review to ensure that the scheme that we develop is in line with airline requirements. There is no doubt that with an enhanced level of engagement with the airline community following Government support, there will be further efficiencies and design improvements.

In response to airline feedback, we will look again at alternative post third runway investment scenarios, with different levels of investment dependent on airline demand. Lower investment scenarios will lead to lower charges, and this will be explored with airlines.

As an indication of the potential for alternative scenarios, very preliminary estimates suggest options to significantly reduce the peak charge from our base predictions. This might also result in an average charge at the same level as today throughout the 2020s to 2040s. Such scenarios would require significant alterations to investment plans for the existing airport and thus clearly require extensive consultation with airlines.

### **2.14.3 Our recommendations**

We recommend that the Commission:

- acknowledge the limited level of airline engagement to date and that in conjunction with our airlines there will be further opportunities to refine our scheme and identify cost savings during scheme development

## 2.15 Meaningful community engagement

### 2.15.1 Airports Commission's approach

The Commission's Interim Report (para 7.12) encourages promoters to engage with local residents, businesses and other stakeholders such as passengers and airport users to understand their views and incorporate into our proposals where possible. Its delivery Discussion Paper (para 3.3) notes the local consultations run by Heathrow during 2014 to inform the development of our scheme. The Commission's Delivery Appraisal Module (para 5.29) also makes reference to our strategy to engage with local communities, local authorities and businesses.

### 2.15.2 Our comments

We welcome the Commission's recognition of the public engagement and consultation that we have embarked on as part of our NWR proposal, and how this has built on our ongoing community engagement programme. We continue to believe that meaningful community engagement must play a fundamental part in the delivery of new runway capacity. We are committed to engaging openly and constructively with our stakeholders.

We hope that our consultations carried out during 2014 have demonstrated this commitment by listening to our communities and responding to their concerns. As already set out in this document (see section 2.1) we have made a number of changes to our a scheme to take on board local concerns following extensive consultation and engagement, and we have announced hugely improved property and noise compensation schemes. We have consulted, listened and then acted. And we will continue to do so.

Should the Commission and the Government support our NWR scheme later this year, we will engage and consult further as we continue to refine our scheme towards a planning application. While we may not be able to achieve consensus we do expect our stakeholders to feel that they have had every opportunity to be engaged in the process, that they have been listened to and that we have sought to shape our proposals in light of their feedback. We fully anticipate that we can make further improvements to our scheme design, to our mitigation proposals, to how we engage with our stakeholders, and to the level of trust they have in us to act as a responsible airport operator.

We contrast our approach to approaches previously taken at Heathrow and that of Gatwick. Gatwick has seen consultation more as a reactive process to compete with Heathrow's commitments, and to retrospectively support its proposals. This can be illustrated by the announcement of a financial compensation scheme in March 2014 without any prior consultation, and a subsequent 6 week consultation on its two preferred runway schemes, which ended after Gatwick had submitted its updated scheme design to the Commission.

### 2.15.3 Our recommendations

We recommend that the Commission:

- consider the credibility of promoter's proposals to genuinely engage with local communities and stakeholders to improve their proposals and reflect how scheme promoters have already achieved this during the Commission's process to date

# Section 3

## Response to Question 3

Comments on how the Commission has carried out its appraisal



### Airport's Commission - Question 3:



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





**Question 3: Comments on how the Commission has carried out its appraisal**

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We generally support the evidence based approach that the Commission has undertaken, both for the initial assessments included within this consultation and its overall approach in the various stages of its work. We have welcomed the opportunities for and the breadth of consultation, as well as the exhaustive nature of the assessments and topics considered, including the quantitative and qualitative analyses underpinning them.

We do have a number of concerns. The principal one is that the Commission's assessment lacks any overarching consideration of the performance of the short-listed options against its Terms of Reference – a point that we believe is fundamental to the Commission's remit.

## 3.1 Assessment against the Airports Commission's Terms of Reference

### 3.1.1 Airports Commission's approach

The Commission's appraisal assesses the short-listed options against the 29 objectives established in its Appraisal Framework. The performance of the options against these objectives is first considered in the 16 appraisal modules and then summarised in each option's business case and sustainability assessment. The Commission's Consultation Document further summarises the performance of the options against its objectives.

### 3.1.2 Our comments

We broadly support the Commission's overall approach to assessing the short-listed options but it is unclear how the Commission's appraisal directly takes account of its overall Terms of Reference.

The Commission's Terms of Reference<sup>1</sup> require it to report on its assessment of the evidence on the nature, scale and timing of the steps needed to maintain the UK's global hub status. This is supported by the Commission's Appraisal Framework (reference para 1.2 of its scope of the Strategic Fit Appraisal Module at Appendix A) which sets out how its appraisal... *"in its assessment of how each proposal may facilitate connectivity in line with the assessment of need, will consider carefully how airlines may respond to each potential airport capacity expansion proposal. This will include looking at what kind of connectivity outcomes may be delivered and under what circumstances. This analysis will then inform the Commission's assessment of how each of the proposals meets its objectives for new aviation capacity...and supports its terms of reference, including maintaining the UK's status as an international hub for aviation"*.

Assessing the performance of the options against the Appraisal Framework objectives is of course critically important. But more fundamentally, and in light of the outputs from the Commission's appraisal, the principal purpose of the Commission's remit must also subsequently be tested. By not doing so, the Commission's appraisal will have failed to draw a conclusion on what is essentially the whole purpose of this exercise, i.e. "to maintain the UK's status as an international hub for aviation". In its current form, the Commission's appraisal does not do this, despite the intent set out within the Appraisal Framework.

Explicitly introducing the concept of maintaining the UK's position as Europe's most important hub is essential because it will fundamentally affect the conclusion of the appraisal. The report by SEO Economic Research ("Expanding Airport Capacity: Competition and Connectivity", 2014) looks at the most likely responses of airlines to expansion of either Heathrow or Gatwick under the different scenarios defined by the Commission. The report makes it quite clear that expansion of Heathrow would contribute to this objective since the most likely airline response would be growth of the hub carrier, whilst expansion of Gatwick is more likely to lead to a low cost gateway.

It is clear from the appraisal that only Heathrow, as the UK's hub, is capable of definitively delivering the long-haul global connectivity that will most benefit the whole of the UK, and give the UK the best chance of competing both

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<sup>1</sup> <https://www.gov.uk/government/organisations/airports-commission/about/terms-of-reference>



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across Europe and globally. On those terms alone, Heathrow must be considered to be the only option that can satisfy the Commission's Terms of Reference.

### **3.1.3 Our recommendations**

We recommend that the Commission:

- clearly sets out the performance of each of the short listed options against the Commission's Terms of Reference in the respective Business Cases i.e. how do the options maintain the UK's status as an international hub for aviation.

## **3.2 Assessment of risk within the Commission's scenario approach**

### **3.2.1 Airports Commission's approach**

The Commission rightly recognises uncertainty in its forecasts for the economy as a whole, and the aviation sector in particular. It does this by reference to four alternative scenarios, in addition to its original forecasts for the "Assessment of Need". Three of these relate principally to the macro-economic environment ("Global growth", "Relative decline of Europe" and "Global fragmentation"), and the fourth to the development of the sector ("Low-cost is King").

### **3.2.2 Our comments**

Although the Commission's scenarios describe uncertainty, it is not clear how risk revealed by the Commission's different scenarios is handled within the Commission's appraisal – particularly in the Business Case. As we have argued in response to Q1, Q5 and Q7, Heathrow Airport expansion provides a more consistent and robust business case than Gatwick, when compared across the Commission's range of scenarios. The major benefit of Gatwick's case is dependent on continued growth for low cost airlines (specifically the "Low-cost is King" scenario). Heathrow's case, on the other hand, has strength across all scenarios.

In the "Low-cost is King" scenario, and notwithstanding our concern about the credibility of this scenario as set out in response to Q1, Heathrow can provide capacity for low cost and direct long haul airlines. By contrast, Gatwick is unlikely to grow as a hub airport, even if this is what the market most demands. The expert report by SEO Economic Research ("Expanding Airport Capacity: Competition and Connectivity", 2014), and published by the Commission, finds that the airline response to Gatwick expansion results in either a low cost or low cost-gateway airport – a hub operation at Gatwick is unlikely even in the scenarios where hub capacity expansion is what the market most demands:

*"The lower yields at Gatwick and suboptimal peak-hour capacity also make the establishment of a competing hub operation at Gatwick less likely." (SEO Economic Research, Page 16, and also repeated on Page 90)*

Opting for Gatwick expansion poses a significant risk to hub development.

### 3.2.3 Our recommendations

We recommend that the Commission:

- explicitly takes account of Heathrow's ability to meet the Commission's Terms of Reference across all its scenarios, and Gatwick's inability to do this; and
- explicitly account for the risk demonstrated by its scenarios within its final appraisal.

## 3.3 Demand forecasts and carbon emissions

### 3.3.1 Commission's approach

The Commission has taken an approach of testing two extremes for the handling of carbon emissions in its demand forecasts, through developing a "carbon-capped" and a "carbon-traded" forecast. The first is based on an absolute limit on emissions from flights departing UK airports in line with the level recommended by the Committee on Climate Change as a planning assumption to hit the UK's overall 2050 carbon targets. The second is based on carbon trading in a liberal global carbon market. The Commission rightly notes that "The future will almost certainly lie between these two points."<sup>2</sup>

### 3.3.2 Our comments

We are committed to play its role in reducing carbon emissions and avoiding dangerous climate change. Through the Sustainable Aviation Carbon Road-Map published in 2012 the UK aviation industry has set out how a combination of new technology, more efficient operations and sustainable alternative fuels will allow around a doubling of air traffic while maintaining absolute emissions at around today's levels.

The Committee on Climate Change has found that there is potential for aviation demand to increase while maintaining emissions from aviation at 2005 levels and also meeting the UK Government's long-term goal to reduce CO<sub>2</sub>. The Committee's most likely scenario is that a 60% increase in demand is possible. The Committee has recommended that the Government adopt a planning assumption for aviation that emissions in 2050 are at around 2005 levels.

The global aviation industry has also set a goal to halve aviation's net emissions by 2050 compared to 2005 levels. A global market-based measure is key to achieving that goal. We are strong supporters of carbon trading as the most economically efficient and environmentally effective market-based measure. We have supported aviation's inclusion in the EU Emissions Trading Scheme as a first step towards a global solution. Work is underway through the International Civil Aviation Organisation to develop a global market-based measure. Through our global trade body ACI-World we continue to support that work. As members of the Prince of Wales's Corporate Leaders Group on climate change we continue, with other leading UK and global businesses, to advocate the need for carbon pricing and to support steps to deliver it through the United Nations Framework Convention on Climate Change.

Given the context set out above, we support the approach that the Commission has taken to handling carbon emissions in its demand forecasts through developing both "carbon-capped" and "carbon-traded" forecasts. The former is based on an absolute limit on emissions from flights departing UK airports in line with the planning assumption recommended by the Committee on Climate Change. The latter is based on carbon trading in a liberal global carbon market. We believe that these scenarios represent a robust test of the impact of future carbon policy and pricing on demand for aviation. The Commission's work shows that demand for air travel from Heathrow remains robust under both the carbon-capped and carbon-traded scenarios.

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<sup>2</sup> "Strategic Fit: Forecasts", paragraphs 4.7 to 4.9.

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The Commission rightly notes that “The future will almost certainly lie between these two points.”<sup>3</sup> We support that view although we believe that a future in which market-based measures are used to reduce aviation’s net emissions is strongly preferable and also more politically deliverable than alternatives. Emissions trading represents the most economically efficient and environmentally effective way to reduce emissions. The allocation of carbon permits ensures that the environmental outcome is delivered. Market-trading ensures that it is delivered in the most efficient way. The marginal cost of abatement is higher in aviation than in many other sectors, so a trading scheme allows aviation to play its part by investing in emissions cuts in other sectors where they can be delivered much more cheaply.

Furthermore, as we set out in our response to the Commission’s discussion paper on aviation and climate change in 2013, unilaterally constraining aviation and a hub airport is economically inefficient. Aviation delivers more than twice the economic value per tonne of carbon compared to other sectors. Heathrow’s unique long-haul routes generate over twice the economic value per tonne of carbon compared to other UK airports.

### 3.3.3 Recommendation

The Commission should emphasise that its “carbon capped” and “carbon traded” forecasts represent a robust test of the impact of future carbon policy and pricing on demand for aviation.

## 3.4 Assessment Years

### 3.4.1 Airports Commission’s approach

The Airports Commission has undertaken its appraisal of each module using a combination of assessment year outputs as set out below:

**Figure 3.1: Assessment Years**

Module	Year
GDP	2060
Catalytic jobs	2050/60
Direct and indirect jobs	2030/50
Surface Access	2030
Ground noise	2030/2040
Air noise	2030/2040/2050
Air Quality	2030/2040/2050

### 3.4.2 Our Comments

We believe that providing such a combination of assessment years is not helpful in properly assessing the benefits and impacts across the three schemes.

<sup>3</sup> “Strategic Fit: Forecasts”, paragraph 4.9.

**Question 3: Comments on how the Commission has carried out its appraisal**

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### **3.4.3 Our Recommendations**

We recommend that the Commission:

- presents all of its appraisal information in a consistent assessment year or years to enable a comparison to be made across appraisal modules.

## **3.5 Definition of Mitigation**

### **3.5.1 Airports Commission's approach**

The Airports Commission does not clearly define mitigation in its appraisal nor is it referenced in its Glossary of Terms.

### **3.5.2 Our Comments**

Mitigation is a term that is normally used to refer to measures that avoid or reduce potential adverse effects. It is distinct from compensation, which is the term that is most relevant to many of the measures that we are proposing (i.e. to compensate for the loss of sites/habitats/species that will be affected by the proposed development).

### **3.5.3 Our Recommendations**

We recommend that the Commission:

- clearly distinguishes between mitigation and compensation.





An aerial photograph of an airport terminal and its surrounding parking lots. The terminal is a large, modern building with a glass facade and a curved roof. It is surrounded by several large parking lots filled with cars. The image is overlaid with a semi-transparent purple rectangle in the upper right corner, which contains white text. The text reads: "Section 4", "Response to Question 4", and "Factors that have not been addressed by the Commission".

# Section 4

## Response to Question 4

Factors that have not been addressed by the Commission



## Airport's Commission - Question 4:



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



**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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We see a few relevant factors that have not been addressed in the evidence published. They focus on aspects of the strategic case, noise, air quality and surface access assessments and the need to explicitly consider political deliverability. These are in addition to the specific comments on the need for further work noted elsewhere.

## 4.1 Strategic Fit

### 4.1.1 Assessment against national policy

#### 4.1.1.1 Airports Commission's approach

The Commission's Strategic Fit Analysis Appraisal Module "Fit with Wider Spatial and Socio-Economic Development Strategies" considers the short-listed options against relevant local, regional and national policies and strategies. In respect of national policy, it considers the options against the National Planning Policy Framework (2012), the 2013 National Infrastructure Plan and the Aviation Policy Framework (2012).

#### 4.1.1.2 Our comments

It is surprising that only the three national policy statements and strategies referred to above are considered by the Commission.

In the case of Heathrow, and taking into account its role as the UK's hub airport, the positive effects of expansion will be spread across the UK, ranging from an agglomeration of jobs in the local and regional economies, to catalytic employment and economic growth impacts in the UK's regions. Many of the airport's benefits will derive from improved transport connectivity at the local, regional, national and international level.

Heathrow is already a multi-modal interchange served by the rail and London Underground networks and the busiest bus and coach hub in the UK. It is located at the heart of the strategic road network, and with committed rail connections and opportunities to improve local and regional transport connectivity, Heathrow can be at the heart of the UK transport network. With our proposed surface access strategy, which is largely supported by wider investment, Heathrow's role in the transport network will only grow.

We would have therefore expected to see some consideration of the short-listed options against, for example, national transport policies and strategies for road and rail, including HS2. Integrating Heathrow firmly into the rail and HS2 networks provides a unique opportunity to think more broadly about the wider transport system we want for the UK. Accessing the connectivity to an expanded Heathrow can create further opportunities for transport investment and integration, including opportunities to use the airport as a strategic interchange and facilitating cross-airport connectivity.

We would also expect to see consideration of the wider benefits of the Government's proposals for an HS2 spur to the airport in the context of an expanded airport. Whilst the Jacobs report titled 'Surface Access: HS2 Spur to Heathrow Airport' considers the potential airport demand, it does not consider how this could form part of a wider transport strategy for the UK.

The Government has previously made clear its support for a direct HS2 link to Heathrow (January 2012 Policy Paper High Speed Rail: Investing in Britain's Future – Decisions and Next Steps), noting the opportunities that this will bring for growth and investment in the Midlands and the North, and the further incentive this would provide for other transport improvements. In light of the Government subsequently postponing any further work on the spur until after it had considered the Commission's findings in 2015 (January 2013 Command Paper Investing in Britain's Future - Phase Two: The route to Leeds, Manchester and beyond ) it would seem pertinent for this to be more fully addressed in the Commission's appraisal.

### 4.1.1.3 Our recommendations

We recommend that the Commission:

- broaden its consideration of an expanded Heathrow against the national policy context, taking into account national transport and economic strategies, including the proposals for HS2
- be innovative in its advice to Government on how an expanded Heathrow might best be integrated into the wider transport networks to ensure that economic benefits can be shared more widely across the UK
- recommend, in its advice to Government, that the Highways Agency, Network Rail and DfT work with the promoter of the preferred option to develop an integrated transport strategy that includes airport connectivity at its core

## 4.2 Local Economy Impacts

### 4.2.1 Location of key industrial clusters

#### 4.2.1.1 Airports Commission's approach

The local economy analysis undertaken by the Commission has looked at the catalytic impact on local economies, and particularly agglomeration effects (e.g. "Local Economy Impact", Section 1.3), but misses a more detailed analysis of key industrial clusters. We address this issue in the analysis below.

#### 4.2.1.2 Our comments

To supplement the work of the Commission, we have commissioned research into the structure of local economies in the UK, and the extent to which areas have concentrations of certain business sectors significantly above the UK average. Where an area has two to three (or more) times the proportion of jobs in a sector compared to the UK's economy as a whole, we can consider this a cluster. This approach is used to identify the catalytic sectors, having discounted direct on-airport employment.

The area immediately around Heathrow (approximately 1-2 miles) has clusters that include:

- jobs in national or international HQs
- scientific research and development
- computer programming and consultancy and
- information services.

Slightly further afield, but still within the influence of Heathrow, the Thames Valley and M3 have:

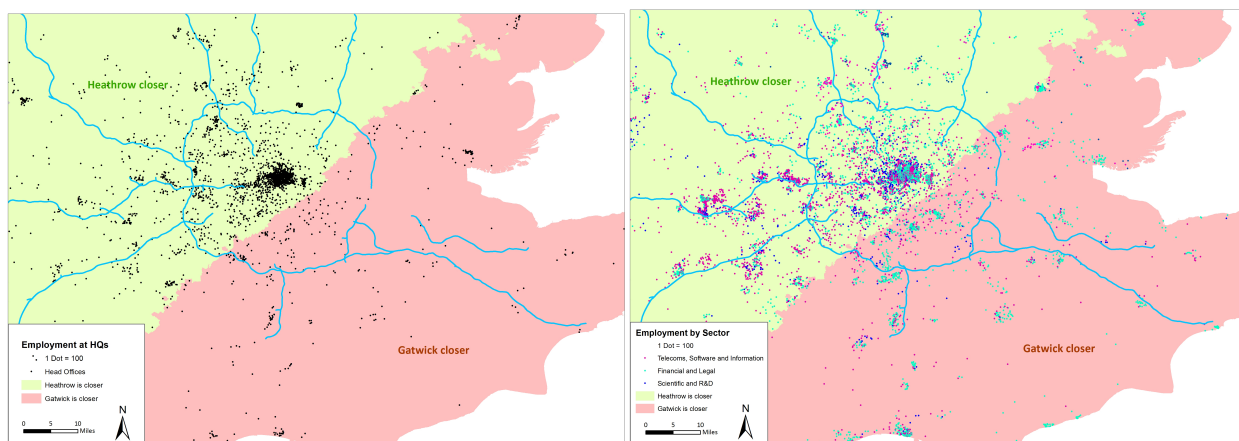
- around three times the national average of jobs in national or international HQs and
- significant concentrations of finance, telecoms, software, business, legal and service clusters.

This is unique to Heathrow – Gatwick does not have similar clusters. The figures below show:

- the distribution of jobs at head offices in relation to both Heathrow and Gatwick
- the distribution of jobs in key catalytic sectors particularly reliant on air connectivity (IT, financial and legal, and scientific and R&D).

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

In both cases the closest airport (by travelling time) is shown by the pink and yellow shaded areas. It is immediately obvious that many more head offices, and key employment sites, are closer to Heathrow.

**Figure 4.1: Distribution of head offices and key catalytic jobs in relation to Heathrow**

The figure below shows the significant clusters in the Thames Valley and M3 LEPs (on the left), compared this to the clusters in the Coast to Capital LEP. The former are close to Heathrow; the latter are close to Gatwick. The sectors that are concentrated close to Heathrow are high-value, FDI and trade dependent, and have significant representation of UK and International HQs. This compares to a much greater proliferation of the public sector and lower value service industries around Gatwick.

**Figure 4.2: Concentration of Jobs (Locational Quotient), by Sector, in LEP Areas influenced by Gatwick and Heathrow Airports**

Enterprise M3			Coast to Capital		
Sector	Jobs	LQ	Sector	Jobs	LQ
47: Retail trade, except of motor vehicles and motorcycles	77,000	6.4	47: Retail trade, except of motor vehicles and motorcycles	89,000	7.2
85: Education	72,000	5.9	85: Education	79,000	6.4
56: Food and beverage service activities	48,000	4.0	86: Human health activities	58,000	4.7
86: Human health activities	46,000	3.8	56: Food and beverage service activities	51,000	4.1
46: Wholesale trade, except of motor vehicles and motorcycles	40,000	3.3	46: Wholesale trade, except of motor vehicles and motorcycles	34,000	2.8
62: Computer programming, consultancy and related activities	40,000	3.3	84: Public administration and defence; compulsory social security	32,000	2.6
70: Activities of head offices; management consultancy activities	26,000	2.2	87: Residential care activities	29,000	2.3
43: Specialised construction activities	24,000	2.0	88: Social work activities without accommodation	24,000	2.0

Thames Valley Berkshire		
Sector	Jobs	LQ
47: Retail trade, except of motor vehicles and motorcycles	44,000	6.0
85: Education	42,000	5.6
62: Computer programming, consultancy and related activities	41,000	5.6
46: Wholesale trade, except of motor vehicles and motorcycles	30,000	4.0
86: Human health activities	24,000	3.3
56: Food and beverage service activities	23,000	3.1
70: Activities of head offices; management consultancy activities	17,000	2.3
61: Telecommunications	17,000	2.3

Thames Valley Buckinghamshire		
Sector	Jobs	LQ
47: Retail trade, except of motor vehicles and motorcycles	22,000	6.6
85: Education	21,000	6.3
46: Wholesale trade, except of motor vehicles and motorcycles	18,000	5.3
86: Human health activities	14,000	4.0
56: Food and beverage service activities	12,000	3.5
62: Computer programming, consultancy and related activities	8,000	2.3
70: Activities of head offices; management consultancy activities	8,000	2.3
81: Services to buildings and landscape activities	7,000	2.0

Key		
Influenced by Public Sector		
High Value, Influenced by FDI		
Influenced by Trade		

Expansion at Heathrow would enhance existing businesses and the foundations already laid would enable growth of a similar nature to occur – far more than would be done by expansion of Gatwick.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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It is important to remember that the impact of key clusters goes well beyond the geographical region in which they are located. For example, Nissan's European Design Centre based at Paddington is deliberately located within easy access of Heathrow, but the benefits of Nissan's presence extend across the UK to its manufacturing base in Sunderland.

#### **4.2.1.3 Our recommendations**

We recommend that the commission:

- explicitly take account of the proliferation of high value trade and FDI dependent companies around Heathrow compared to the public service and lower value service industries around Gatwick in its Local Economic Impact assessment

## **4.3 Noise**

### **4.3.1 Mitigation**

#### **4.3.1.1 Airports Commission's approach**

The Commission's assessment does not appear to fully evaluate Heathrow's noise mitigation proposals or future airspace options.

#### **4.3.1.2 Our comments**

In Paragraph 9.24 of its Sustainability Assessment the Commission has concluded that our scheme will have a 'significantly adverse' (we assume this to mean 'highly adverse' as per the Commission's performance measurement levels) impact. In paragraph 9.27 it notes aspects of our proposed mitigation and suggests that with further developments in this area, the noise impact could be brought closer to 'adverse'. But there is no statement or clarification of what mitigation would need to be incorporated into Heathrow's proposals to achieve this. Nor does the Commission take into account the full range of potential options for airspace design and operations that are available as part of the Heathrow scheme, such as 3.5° approach angle, or the potential benefits of providing periods of respite.

#### **4.3.1.3 Our recommendations**

We recommend that the Commission:

- clarify what aspects of our mitigation have been considered in the assessment and to what extent they have been incorporated into the proposal to achieve 'adverse'
- clarify whether any of the airspace options we submitted form part of this mitigation

## 4.3.2 Night noise impacts and respite

### 4.3.2.1 Airports Commission's approach

The Commission focuses on improvements in national and local night noise impacts but does not express any views on the provision and value of respite as a mitigation measure.

### 4.3.2.2 Our comments

It is not clear how the improvement in the number of people exposed to night noise (even when comparing a future three runway airport to a future two runway airport), has been considered by the Airports Commission. (See our comments under 4.3.1)

We note that the Commission recognises improvements in night noise when comparing 'Do Something' to 'Do Minimum' scenarios. However, we are unsure how much weight has been placed on this in the Commission's evaluation. This is important, as night noise is a primary concern for the local community.

The Commission's assessment focuses on an airspace option for reducing the 'total number of people' exposed to aircraft noise. Heathrow's 'maximise respite' option is also tested, however, only a discussion of the results is provided. Again, no clear direction is given on whether the Commission believes maximising respite is a better proposal than minimising the total number of people exposed. Our feedback from community stakeholders suggests that providing periods of respite from noise is an important factor.

### 4.3.2.3 Our recommendations

We recommend that the Commission:

- should express a clear view on the value of noise respite in its final appraisal particularly in relation to night noise and quantify this where possible

## 4.4 Air Quality

### 4.4.1 Incomplete Assessment

#### 4.4.1.1 Airports Commission's approach

We note that the Airports Commission has not yet made available its more detailed air quality dispersion modelling. This work is currently being undertaken.

As per our comments in Section 6, we consider that the air quality performance of each option cannot be assessed until the Commission has completed the detailed dispersion modelling assessment.

#### 4.4.1.2 Our comments

Dispersion modelling allows for greater clarity and more accurate conclusions of the actual environmental impact of emissions. By not incorporating this, the work completed at this stage does not allow for a full and fair comparison between the promoters schemes. The scale of impacts and risks associated with each option are identified, but there are no detailed conclusions drawn. Furthermore, the presentation of the high-level air quality modelling that has been completed at this stage by the Commission may be prejudicial to the case for expansion at Heathrow.

We do not consider that a full consultation can take place with respect to air quality at this stage, as the Commission's air quality assessment was not completed ahead of the consultation period.



**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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We welcome the acknowledgement in the consultation documents that, prior to reaching any final recommendations, the Commission intends to supplement its current assessment with more detailed dispersion modelling. We believe that this will provide greater assurance in respect of the air quality implications of each proposal and the scope of mitigation measures put forward.

We would ask the Commission to consider the following points:

**Air Quality methodology**

Heathrow's submission to the Airports Commission was based on a full air quality impact assessment using detailed independent emissions forecasting and dispersion modelling. This work was completed using methodology consistent with the conclusions and recommendations of the air quality expert panels set up in 2004 by the Department for Transport to contribute to the Government's Project for the Sustainable Development of Heathrow (PSDH).

The overall objective of the PSDH air quality work programme was to reduce uncertainty in the assessment of air quality around Heathrow so the debate about capacity expansion could be based on an agreed set of air quality impact data – rather than circular arguments on whether the data was correct. The resulting DfT Report of the PSDH Air Quality Technical Panels<sup>1</sup> sets out conclusions and recommendations on how best to assess air quality and the effectiveness of mitigation at the airport in future years, including the modelling tools and assumptions to be used.

The approach and assumptions that underpin the assessment of our NWR scheme follow the recommendations of PSDH. They are also endorsed by the Heathrow Air Quality Working Group which has been established since April 2003. The group meets quarterly and is chaired by Heathrow and attended by London Boroughs of Hounslow, Hillingdon, and Spelthorne, Slough Borough Council, the Environment Agency and British Airways. The refinements to air quality assessments over the past 20 years have provided a model that the local authorities, with whom we work on air quality matters on a day to day basis, consider to be robust and reliable.

**Mitigation**

The Commission has omitted to consider our detailed air quality mitigation proposals within its assessment. We welcome the acknowledgement in the consultation documents that, prior to reaching any final recommendations, the Commission intends to supplement its current assessment with more detailed dispersion modelling, as set out in the Appraisal Framework. That would provide greater assurance in respect of the air quality implications of each proposal and the scope of mitigation.

As well as scheme design features, a number of measures have been incorporated by us into the future operation of a three-runway airport to reduce emissions of air pollutants. We have committed to a comprehensive mitigation strategy that has been shown by detailed dispersion modelling to lead to compliance with the air quality limit values at sensitive receptors around the airport.

The measures proposed which the Commission states are 'credible', yet have not been considered so far in the Commission's quantitative assessment, include amongst others:

- Cleaner aircraft technology including applying emissions based landing charges to incentivise the lowest emitting aircraft
- Cleaner aircraft operations in the sky for example from displaced runway thresholds and steeper approach glide slopes
- Cleaner aircraft operations on the ground via Airport Collaborative Decision Making to reduce taxi and aircraft holding times
- Cleaner airside vehicles and providing infrastructure on airport for low and zero emission vehicles
- The Airport's Surface Access Strategy to ensure no more Heathrow-related vehicles on the roads than today.

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<sup>1</sup> Project for the Sustainable Development of Heathrow; Report of the Airport Air Quality Technical Panels, DfT July 2006.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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We will take action to ensure mitigation measures are successfully applied to surface transport and airfield operations. We would like to provide further assurance to the Commission of the type of initiatives that will support the outcome:

- **Staff car journeys** – The number of airport employees that drive to work alone has reduced by 10% as a result of the car share scheme in operation. We are set to continue to reduce the number of our employees who have car parking spaces, for example by establishing a needs-based approach to issuing car parking passes. Such measures are set to continue to reduce emissions from staff-journeys to and from the airport. Staff travel to work will also be impacted by schemes introduced by the Greater London Authority, which is endeavouring to decrease emissions from the London-wide vehicle fleet. The Ultra Low Emissions Zone (ULEZ) will play a key role in this should it be approved. Mayor-backed schemes such as the 'diesel scrappage' are also likely to have a significantly positive impact on reducing emissions from journeys to and from Heathrow. Drivers of the most polluting diesel vehicles could be given up to £2,000 to scrap their vehicles as part of the proposals. From January 2015, all new diesel vehicles will have to be Euro 6 compliant, a standard that aggressively targets the emission of nitrous oxides. Emissions from diesel vehicles are therefore set to reduce into the future, even in the absence of schemes such as 'diesel scrappage'.
- **Ultra Low Emission Zone** – The Mayor is proposing to create an ultra low emission zone (ULEZ) in 2020 where almost all the vehicles running during working hours are either zero or low emission. The ULEZ would apply to all vehicles driving within the area currently covered by the London congestion charge zone, requiring them to meet new exhaust emissions standards. Other measures that will apply London-wide include:
  - A requirement that all taxis and new private hire vehicles presented for licensing from 2018 would need to be zero emission capable
  - A reduction in the age limit for all non zero emission capable taxis from 2020 from 15 to 10 years (irrespective of date of licensing)
  - Investment in the TfL bus fleet so that all double deck buses operating in central London will be hybrid and all single deck buses will be zero emission (at source) by 2020.

If approved, the ULEZ will take effect from 2020, bringing with it several benefits to our proposal. The changes to TfL buses, taxis and private hire vehicles would have an immediate impact and would have added benefit around the Airport when combined with our measures to increase the public transport share of staff and passengers. The changes to other vehicles would have an indirect effect though an overall improvement in the vehicle fleet. This would be brought about by a combination of factors including; directly by the requirement for vehicles driving in the ULEZ area, the displacement of relatively clean vehicles already operating in Central London, and through the anticipated stimulation of the low and zero emissions vehicle market.

- **Landside buses** – Heathrow is currently home to the UK's largest bus and coach station. To encourage the use of low emissions technology we may introduce an emissions based departure charge for coaches. Our landside bus fleet will additionally see improvements in emission reductions as a result of GLA backed London-wide schemes, as will the entire vehicle fleet. The GLA and TfL plans for ULEZ will reduce emissions from buses across London and not just in the ULEZ geographical area. We have already demonstrated a clear commitment to decreasing the emissions from the bus fleet by introducing new hybrid buses to the 7-series network serving Slough and Maidenhead. This commitment compliments that of the GLA, to combat transport related emissions by reducing journeys and improving technology. The expansion of Heathrow will further enhance such London-wide initiatives, and will act alongside them as part of the regional strategy to reduce emissions and improve air quality. We are already a primary driving force on air quality improvements in our local area and taking forward the proposed mitigation measures will continue to build our position in leading positive changes.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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#### 4.4.1.3 Our recommendations

We recommend that the Commission:

- undertakes detailed air quality dispersion modelling to inform a robust assessment on air quality
- consults on the results of the detailed air quality assessment once completed
- recognises the maturity of the methodology developed for assessing air quality at Heathrow over the years and, where appropriate, incorporate the methodology developed from the PSDH air quality programme into its own further work on air quality
- includes the mitigation measures proposed by Heathrow in its air quality assessment

### 4.4.2 Heathrow's track record

#### 4.4.2.1 Airports Commission's approach

To date only high-level air quality modelling of our proposal has been undertaken. This modelling, as presented, only allows a comparison of the scale of impacts and risks associated with each option; it does not offer any detailed conclusion.

#### 4.4.2.2 Our comments

The Commission's assessment has not taken into account our successful track record in leading and driving air quality improvements with stakeholders over recent years, and the evidence of our ability to deliver air quality improvements in the future.

Continuing to play our part in improving local air quality around Heathrow is a central part of our sustainability strategy, Responsible Heathrow 2020. Our on-going and planned activity to reduce emissions in and around Heathrow is set out in our current *Air Quality Strategy 2011-2020*<sup>2</sup>. This Air Quality Strategy builds on the progress that has been made at the airport to reduce emissions from its operations since our first Air Quality strategy and action plan in 2002, and sets out actions to further cut emissions from the airport over the next 10 years. We keep these actions under review and regularly assess their effectiveness. The measures in our strategy are designed to complement the efforts being implemented by the local authorities in the area, the Mayor of London's Air Quality Strategy and national initiatives.

In delivering our air quality strategy we've been able to reduce our total ground-based emissions of nitrogen oxides (NOx) by 16% in the period 2009 – 2013 even though the numbers of people and aircraft using Heathrow have increased. For example NOx emissions from airside vehicles and ground support equipment have reduced by 28% and from the airport's heating plant we've made a 70% saving. While the proportion of wide body aircraft at Heathrow is projected to increase and affect respective aircraft emissions, we are still dedicated and on-track to meet our commitment to reduce total ground-based NOx by 5% by 2020 from 2008/9 levels.

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<sup>2</sup> [http://www.heathrowairport.com/static/Heathrow/Downloads/PDF/air-quality-strategy\\_LHR.pdf](http://www.heathrowairport.com/static/Heathrow/Downloads/PDF/air-quality-strategy_LHR.pdf)

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

The table below illustrates the reduction in ground based NO<sub>x</sub> emissions at Heathrow from 2008/9 to 2013.

**Figure 4.3 – Ground based NO<sub>x</sub> emissions at Heathrow 2008/9 - 2013**

Source category	2008/9 (tonnes NO <sub>x</sub> )	2013 (tonnes NO <sub>x</sub> )	Difference (%)
<b>Aircraft – ground level <sup>a</sup></b>	1633.60	1524.36	-7
<b>Ground Support Equipment</b>	260.50	186.79	-28
<b>Road network <sup>b</sup></b>	429.22	386.82	-10
<b>Airport Heating plant</b>	283.60	85.78	-70
<b>Other <sup>c</sup></b>	18.41	12.03	-35
<b>Total</b>	2625.33	2195.78	-16

<sup>a</sup> Including taxiing, APU, and engine testing emissions

<sup>b</sup> Total for emissions from airport-related trips on major road network within the 9kmx 9km rectangular study area

<sup>c</sup> Includes car parking and fire training emissions

The Heathrow Air Quality Working Group has been meeting quarterly since April 2003 to drive the air quality agenda at Heathrow. The group is chaired by ourselves and attended by the London Boroughs of Hounslow, Hillingdon, and Spelthorne, Slough Borough Council, the Environment Agency and British Airways. All members govern the air quality actions.

Examples of our collaborative approaches to reduce both air quality and carbon emissions at and around Heathrow include;

- Promoting cleaner transport both to and around the Airport – our Heathrow Commuter scheme helps people use sustainable transport options such as cycling and carsharing. Heathrow car share is the largest single site scheme in the world with over 2500 active members. We've also delivered the Personal Rapid Transit which moves passengers between the business car parks and terminal 5 replacing 70,000 bus journeys per year.
- Cleaner vehicles airside – we are reducing emissions from vehicles operating in and around the airport by using new, cleaner technologies. 850 vehicles, over 10% of the fleet at Heathrow are now electric.
- Reducing emissions from aircraft both on the ground and in the air – investments in airfield taxiways and terminal infrastructure as well as improved aircraft flow management techniques are reducing taxi times and emissions from aircraft. We're also working with airlines to ensure the Heathrow fleet is the cleanest in the world targeting 98% CAEP/6 compliance by 2030.

### **Emerging findings related to air quality and ending the Cranford Agreement.**

A very recent further example of where Heathrow can demonstrate continuing compliance with air quality limits relates to our proposal to introduce scheduled easterly departures from the northern runway.

We have appealed to the Secretary of State following Hillingdon Borough Council's refusal, on noise and environmental grounds, of our application for enabling works to the northern runway.

In relation to this, we are undertaking additional analysis to better understand the timescales for achieving compliance with air quality objectives at residential receptors in the vicinity of the airport. Some of these near Longford could be impacted by aircraft and airport emissions within the new departures procedures. Preliminary findings suggest that despite these potential impacts compliance will still be achieved in local communities such as Longford before 2020. Again the only remaining areas at risk of exceedance are immediately adjacent to major trunk roads such as the M4 or M25. The percentage of airport related traffic on the M4 at Heathrow is c.25% illustrating these areas are part of a broader issue. These further findings again show that whilst the airport has a role to play it is not necessarily the main contributor to pollution trends and that it is highly feasible to consistently achieve limits as a result of ongoing improvements.

This analysis of Cranford Agreement impacts is expected to conclude shortly. We will make the findings public as part of the Cranford planning appeal process. We will draw the Commission's attention to the findings once available.

#### 4.4.2.3 Our recommendations

We recommend that the Commission:

- recognise Heathrow's track record and achievements made in reducing emissions to date when considering the effectiveness of the mitigations proposed by Heathrow

## 4.5 Surface access

### 4.5.1 Resilience

#### 4.5.1.1 Airports Commission's approach

In April 2014, the Airports Commission set out its appraisal framework and approach for its Phase 2 assessment work. The surface access appraisal module suggested that an assessment of surface access resilience would be undertaken:

*"Reliability and resilience of all surface access transport modes, public and private. This will consider multiple methods to access the airport to avoid a single point of failure and to ease points of strain."*

The detailed appraisal module reports make reference to this issue but it is not clear how this has been translated into the consultation summary document, sustainability assessment or business case.

#### 4.5.1.2 Our comments

We have developed a resilient and robust strategy to ensure that a loss of any particular service or route will not unduly impact passenger experience and minimise the impact on capacity of the wider network. In fact the Jacobs Appraisal states:

*"...These two new routes will offer improved resilience over the present situation. If one route is closed by an incident, the other routes should be unaffected..."*

The same cannot be said for the Gatwick proposal, which is heavily reliant on the Brighton Main Line and M23 motorway. Without these routes, there is insufficient capacity to cope with the demand of an expanded airport. In fact, this significant risk is highlighted in the Jacobs report but does not feature in the consultation document:

*"...Given Gatwick's current reliance on the BML for rail connections to London and much of the rest of the UK, we feel this represents a potential long term risk to airport expansion plans..."*

*"...Discussions with the HA indicated that there is a particular concern over the heavy reliance of Gatwick on the stretch of the M23 between junctions 8 and 9 for strategic road connectivity..."*

The Commission's analysis demonstrates this with 85% of Gatwick rail demand using the Brighton Main Line to the north of the airport. Only 3% of this is towards Reading and Guildford on the North Downs Line, with 82% on services towards London. Conversely, Heathrow demand is spread across the Great Western Main Line (Crossrail, Heathrow Express), Piccadilly Line and Southern Rail services.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?****Figure 4.4: Rail demand distribution for Heathrow & Gatwick**

Airport	Infrastructure	% demand
Gatwick	Brighton Main Line (North)	85%
	Brighton Main Line (South)	15%
Heathrow	Great Western Main Line (East)	43%
	Great Western Main Line (West)	10%
	Piccadilly Line	29%
	Southern Rail Access	17%

**4.5.1.3 Our recommendations**

We recommend that the Commission:

- undertakes an assessment of surface access resilience for each of the shortlisted options as set out in the appraisal framework and includes this in the assessment of how each option meets Surface Access Objective 2

**4.5.2 Delivery risks****4.5.2.1 Airports Commission approach**

Proposals for improvement to the Brighton Main Line are included in the extended baseline for the surface access appraisal module but the risk to their delivery is not adequately assessed.

**4.5.2.2 Our comments**

The extended baseline includes nine separate improvements to the Brighton Main Line that are not currently funded and carry high levels of uncertainty because they are at a very early stage of development. This represents a significant risk to the programme and delivery for Gatwick expansion and should be properly recognised in the appraisal.

If these schemes do not go ahead, there would need to be other proposals taken forward to accommodate airport users. As such, there could be significant additional surface access costs which would not necessarily be covered by the Government. This issue should be considered further by the Airports Commission before a recommendation is made.

**4.5.2.3 Our recommendations**

We recommend that the commission:

- includes the risk to delivery of surface access in its business case



### 4.5.3.1 Bus and coach network

#### 4.5.3.1 Airports Commission's approach

The surface access appraisal includes detailed analysis of the rail and road networks but makes limited reference to the future bus and coach network in its appraisal.

#### 4.5.3.2 Our comments

The bus and coach networks are critical to the operation of an airport for both passengers and employees. There are almost six million passengers a year using bus or coach to access Heathrow and a quarter of all airport employees use local buses to get to work. It offers an alternative to rail, is attractive to different users and able to serve locations which cannot be served easily by rail.

Heathrow has the busiest bus and coach station in the UK with over 500,000 annual movements and an extensive network that has developed over time. It provides connections to parts of the UK that are not well served by rail. Developing this network is an important part of our strategy, where we will continue to work with operators to fill gaps in connectivity and improve existing services. In 2014 alone, there has been an increase in services to Swansea, Cardiff, Bristol and Plymouth as well as a new connection to Aldershot.

We will also continue to provide financial support for improvements to the local bus network through our public transport levy. We currently spend around £2 million a year in funding to support bus services to and from Heathrow. This will mean more 24-hour and early morning services, increased frequency on key routes and new routes to serve gaps in the network. In particular, we are seeking to improve bus access from the south and west to key locations in Slough and Spelthorne. We are also investigating options to extend the Free Travel Zone into more local communities. This will benefit employees as well as local communities that will be able to access the airport more easily for both flights and to access the wider surface access network.

When considering the surface access objectives, the Commission should consider the whole surface access strategy, not just rail improvements. We are concerned that the Commission has under-estimated the importance of bus and coach and has not considered this sufficiently in its analysis.

#### 4.5.3.3 Our recommendations

We recommend that the Commission:

- ensures that it has properly assessed the impact of improvements to the bus and coach network as part of its assessment of future mode share for airport workers and catchment analysis

## 4.6 Delivery

### 4.6.1 Heathrow has broad support for its proposals

#### 4.6.1.1 Airports Commission's approach

The Commission has considered the overall level of risk associated with each scheme's ability to deliver a new runway. While the specific risk of political deliverability is not explicitly mentioned in the Commission's consultation documents, it is inevitably an important consideration for the Commission.

#### 4.6.1.2 Our comments

As with any major infrastructure project, the politics of airport expansion are as important a consideration as its practical delivery. The Commission is more than aware of the political history surrounding airport expansion, most recently the decision of the Coalition Government in 2010 to rule out BAA's previous proposals for a short third runway at Heathrow.

Since then, the expansion debate in general, as well as our own proposals and approach, has changed significantly. The result is a new political context which means it is no longer accurate to suggest that expansion at Heathrow is not politically deliverable.

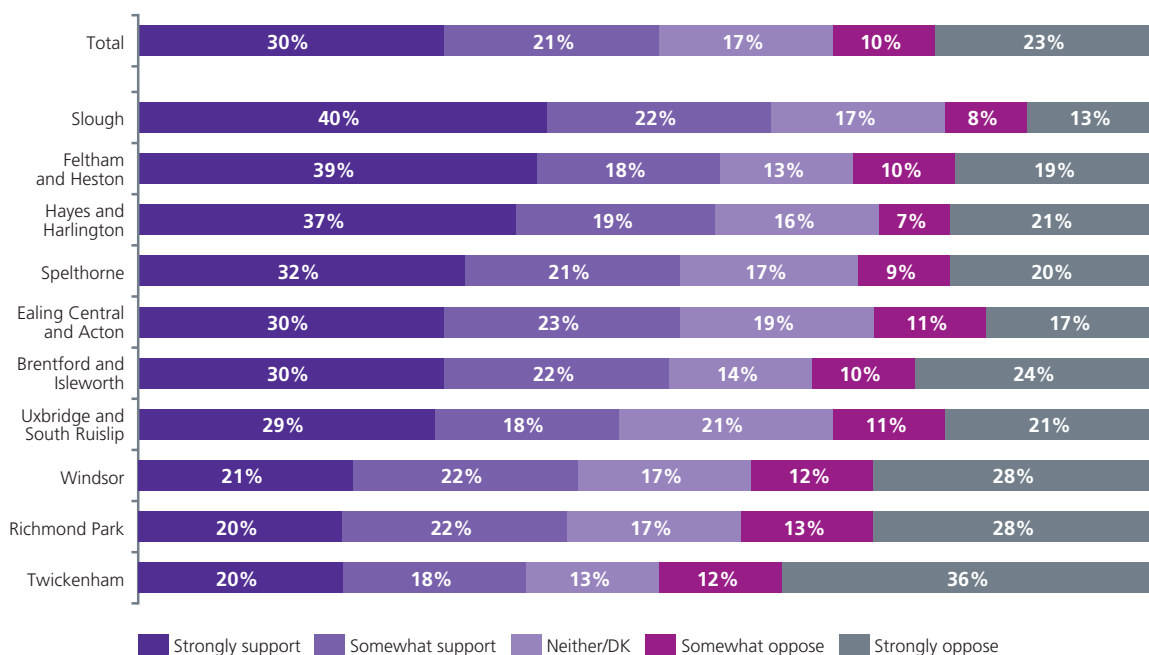
Specifically, there are two factors which make expansion at Heathrow today politically deliverable:

First, a significant shift in the views of the local communities around the airport as a result of the new approach we have taken both to our proposals and in our efforts to build meaningful dialogue about the airport's local impacts and benefits.

This has included working hard to develop new proposals which include a third runway further west than previous proposals and committing to a world-class compensation package to help address the noise and property effects of the airport on our local communities.

We have also held detailed discussions with Ealing, Hounslow, Slough and Spelthorne Councils about how we can ensure that residents of these boroughs and the businesses located in them can benefit to the fullest extent possible from the opportunities that Heathrow expansion would bring. We, and they, are clear that those who would be most impacted by expansion, must see the greatest benefits. We hope that other local authorities such as Hillingdon and Windsor & Maidenhead will hold similar discussions with us if expansion at Heathrow is recommended.

Today, this new approach has resulted in over 50% of our neighbours in the communities around Heathrow saying they support expansion. By comparison, 33% oppose it (Populus December 2014). At the same time, the Back Heathrow campaign, set up in 2013 to provide a voice for those who support Heathrow expansion has now grown to over 80,000 supporters. In further contrast to 2010, local MPs including Fiona Mactaggart (Slough) and Kwasi Kwarteng (Spelthorne), as well local councillors across the West London and Thames Valley areas have set out their support for Heathrow expansion publicly.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?****Figure 4.5: Levels of support for Heathrow expansion in constituencies around Heathrow**

**Source: Populus polling; December 2014**

Second, the growing support for Heathrow expansion across the country. Section 8.3 provides a broader sense of this support, which in summary includes:

- Recent polling at Westminster showing that 58% of MPs backing a third runway at Heathrow as their preferred option to increase airport capacity (Ipsos Mori, September 2014).
- Politicians across the country who have publicly pledged their support for Heathrow, including Louise Ellman MP, Graham Brady MP, Catherine McKinnell MP and Lord Adonis.
- 30 Chambers of Commerce and regional airports in Aberdeen, Glasgow, Newcastle, Liverpool and Leeds.
- The majority of businesses in London (54% according to a ComRes survey from June 2014 commissioned by the LCCI).
- Major trade associations who recognise the importance of Heathrow to their members, including the manufacturers' organisation EEF, the Freight Transport Association and British American Business.
- Unite the Union and the GMB, two of Britain's biggest unions.
- The CBI, who have made clear their view of the importance of a hub airport to the UK.
- Airlines, including Gatwick's biggest customer easyJet, and international airline association IATA.

Major infrastructure projects must always overcome their political challenges. This is as much the case at Heathrow as it is at Gatwick where there exists opposition from their local communities, local authorities and the overwhelming majority of their local MPs.

Following the new approach we have taken to developing and discussing Heathrow's new proposals, there now exists a context in which Heathrow is politically deliverable. Moreover, we believe growing local and national support demonstrates for the first time a political imperative for Heathrow expansion as our last and best opportunity to secure Britain's future in the global race for generations to come.

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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### **4.6.1.3 Our recommendations**

We recommend that the Commission

- reflect this evidence of growing support both locally and nationally for Heathrow expansion and the context of an equivalent but surmountable political challenge facing all proposals in your final deliberations
- support the need to continue dialogue with local communities beyond the Commission's work to understand their views and take them into account to help mitigate the impacts of expansion and maximise the benefits

**Question 4: Are there any relevant factors that have not been fully addressed by the Commission?**

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# Section 5

## Response to Question 5

Comments on how the Commission has carried out its appraisal of specific topics





## Airport's Commission - Question 5:



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?



Our comments in this section relate to the Commission's detailed appraisal modules. The headings used for each section identify the option and the module that we are commenting on. For simplicity, we have grouped our comments by the Heathrow NWR, Heathrow ENR and Gatwick assessments.

**Sections 5.1 to 5.15 relate to our NWR scheme.**

**Sections 5.16 to 5.25 relate to the Heathrow ENR scheme.**

**Section 5.26 onwards relates to the Gatwick scheme.**

We have comments and recommendations on a number of the detailed topics addressed by the Commission.

We find much of the assessments robust and valuable. In response to Question 5 we therefore focus upon specific topics where we would recommend adjustments or additional evidence to create more accurate assessments. We do not comment on every appraisal module.

**Key issues raised in respect of the assessment of our NWR scheme include:**

- The Commission's approach to its scenario analysis and the risk inherent in the scenarios;
- The need to reflect Heathrow's unique circumstances in its economic analysis;
- Surface access baseline measures, apportionment of costs, employee mode share and catchment analysis;
- Consideration of our noise assessment assumptions and mitigation in the Commission's analysis;
- The lack of dispersion modelling and consideration of our mitigation in the commission air quality analysis;
- Unnecessarily high optimism bias applied to our capital cost figures.

**Key issues raised in respect of the Heathrow ENR scheme include:**

- The runway capacity of the completed scheme verses the level of noise respite claimed;
- An under-estimate of the scheme's capital cost and its delivery programme;
- The operational challenges of a remote hub station terminal;
- An unrealistic estimate of the planning consent process.

**Key issues raised in respect of the Gatwick scheme include:**

- How Gatwick's low-cost gateway model and smaller connectivity gains are reflected in the Commission's modelling;
- The impacts of expansion on Gatwick's local labour market;
- The need to calculate the impact of airport charge increases on the fares at each airport;
- An under-estimation of the Gatwick scheme's capital costs and its financial risks;
- The operational challenges and risks inherent in the scheme, including the size of the Midfield Terminal Building, taxiway designs and minimum connection times;
- Recognition of the impacts of the operational challenges and construction complexities on the delivery programme

## Heathrow NWR scheme

# 5.1 Heathrow NWR; Strategic Fit Analysis – Capacity, connectivity & competition

## 5.1.1 Scenario approach

### 5.1.1.1 Airports Commission's approach

The Commission takes a scenario based approach to analysing future outcomes for airport expansion options. The Commission has considered five different scenarios:

- Assessment of need – This scenario is consistent with the forecasts underpinning the Commission's assessment of need. Future demand is primarily determined by central data projections (for example GDP and global oil prices).
- Global growth – This scenario sees higher global growth in demand for air travel in the future, coupled with lower operating costs.
- Relative decline of Europe – There is higher relative growth of passenger demand in emerging economies in the future, compared to growth in the developed world.
- Low-cost is king – High levels of global growth in demand see the low-cost carriers strengthening their position in the short-haul market and successfully capturing a substantial share of the long-haul market.
- Global fragmentation – This scenario sees lower global growth and economies closing themselves off by adopting more interventionist national policies.

The exact details under each scenario depend on the expansion options considered. For example, under 'Global Growth' it is assumed that if Gatwick were to have a second runway, then SkyTeam would move its operations from Heathrow to the expanded Gatwick.

Under each scenario, and for each expansion option, the Commission has estimated:

- The number of passengers; and
- The number of destinations served.

For the number of destinations served the Commission has taken a two-tier approach that reports:

- Daily connections – i.e. there must be at least 365 departures per year; and
- 'All services' – these are not necessarily daily connections but must meet a minimum threshold.

The Commission also reports the number of destinations broken down by long haul and short haul. However, no further breakdown is provided. It also does not specify unique connections, as distinct from ones already offered from other London airports.

### 5.1.1.2 Our comments

This general approach is appropriate given the range of uncertainties with the evolution of the sector. While we agree that scenario analysis is an important way of testing the robustness of specific conclusions, we have a number of significant reservations about how the Commission has gone about its task.

These reservations can be summarised in four parts:

#### **The multiple scenarios fail to establish a "central" or median scenario, and indicate likelihood of alternative scenarios**

While the Commission's approach emphasises the extent to which any expansion option needs to be as "future-proof" as possible, it is misleading to appear to put equal weight on a range of scenarios that are clearly not equally

likely to occur. In particular, the challenges in developing low-cost long haul services from an "alternative hub" (which we discuss in Section 5.26.1) must reduce the plausibility of the "Low-cost is king scenario".

To clarify the Commission's arguments, it should identify a scenario that represents, in its judgement, the median or central scenario in the range of outcomes that could foreseeably occur. It should also clearly indicate which scenarios are less likely to occur, or pose the greatest implementation challenges (for example, the development of low-cost long haul within the "Low-cost is king" scenario).

In this regard the Assessment of need scenario appears to be the appropriate central choice. The interpretation of all the results changes significantly when considering the Assessment of need scenario in this context.

### **The way scenarios mix macro-economic and operational assumptions**

The Commission's scenarios mix macro-economic and operational assumptions in ways that serve to obscure rather than clarify the key sensitivity factors on which the Commission's results turn.

It is perfectly appropriate for the Commission to consider the sensitivity of its findings to different assumptions about the operating models adopted by each airport after the development of a new runway. However, these operating sensitivity assumptions should be separated from the macro economic assumptions and tested independently.

For instance, the present "mix and match" approach does not allow the reader to separate the impact of faster global economic growth from the impact of the development of low cost carriers in long haul aviation markets.

### **The operational scenarios chosen are subjective, and in some respects unlikely**

While it is right to test the different options against alternative operating scenarios, the Commission should set out a clear rationale for the sensitivities tested and a balanced analysis of the circumstances that might make each sensitivity plausible.

The possibility for the substitution of services between Heathrow and Gatwick should be carefully analysed, not merely imposed by assumption. From past evidence it is clear that the aviation markets do not see capacity at Heathrow and Gatwick as interchangeable. Despite runway capacity being available at Gatwick, there is very little evidence of appetite to locate long haul services there. This is evidenced, for example, by Air China and Vietnam Airlines decisions in the last six months to move their services to Beijing, Hanoi and Ho Chi Minh City from Gatwick to Heathrow. Preference for long haul flights from Heathrow is already embodied in the calibration of Department for Transport's (DfT) National Air Passenger Allocation Model (NAPAM) model. The Commission should be extremely careful of basing operational sensitivities on untested hypotheses about how the market might work.

Specific assumptions that the Commission has made which should, at the very least, be more explicitly justified include:

- The movement of one third of all long haul services to Gatwick on the opening of a new runway in the Low cost is king scenario. The Commission should consider the realistic likelihood of such a move, given significant evidence of the difficulties of applying the low cost model to long haul services. High profile failures to sustain such services from London in this segment include Laker Airways, Oasis Hong Kong Airlines and Air Asia X. We recognise that we are currently seeing another experiment in this field with Norwegian. However, this is as yet on a very small scale and far from sustaining an established and commercially viable model. It is unwise to build analysis of the runway options on business models that have so far consistently failed. Moreover, airline operators have consistently demonstrated their lack of willingness to move services away from the hub at Heathrow, because of the loss of network benefits that this would entail.
- Low cost carriers (LCC) at Gatwick becoming feeder services for long haul in the Low cost is king scenario. There is only limited experience of this happening, and while some further developments along these lines seem plausible, the Commission should analyse the consistency of such an assumption with the core elements of the LCC operating model and what LCC's might also lose in the process. Furthermore, if this were to happen, the outcome would be equivalent to that of a network carrier from the point of view of the passenger. In such a world it seems more likely that operators would emerge at an established hub with an attractive network of long haul carriers able to provide onward flights for passengers. Again we note that there is no actual experience of airlines adopting such a model to date. This is one of the issues addressed in the JLS Consulting paper "Projections on Future Airline Business Models and Response to International Transport Forum Report- Expanding Airport Capacity: Competition and Connectivity" (January 2015) – see Appendix H.

- London becoming simply a feeder station for Dubai for long haul services to the East in the Relative decline of Europe scenario. It is unclear how it can be assumed that the market abandons direct services from London to these core markets in a scenario where economic growth in Europe remains sufficiently strong such that there is demand to retain direct services. If such a scenario were to happen it would raise obvious issues of dominance and competition policy. This issue is also addressed in Section 5 of the JLS Consulting paper (Appendix H)
- SkyTeam moving its services to Gatwick under the Global Growth scenario. While recognising that "SkyTeam" in this scenario symbolises an assumption about an alliance moving to Gatwick, rather than a specific proposal, it is nevertheless unclear if this scenario is intended to establish Gatwick as a second hub or simply to provide additional feeder services to another hub. While the latter might be realistic, it is very unlikely that a network carrier with an established hub elsewhere in Europe would open a second hub at Gatwick with the consequent loss of potential network benefits from interconnecting services, as well as fixed cost duplication.

### **The approach to modelling the use of Gatwick is subjective and may inflate implied economic benefits**

In a number of scenarios the Commission has manually adjusted the results of the NAPAM model to increase the volume of services offered from Gatwick once a new runway has been developed. The Commission describes this process it describes as "seeding" (see, for example, "Strategic Fit", paragraph 3.31 which states "Seeding is the process whereby for specified years ATMs user input frequencies are used rather than being calculated within the model in response to demand and then being tested for viability"). Therefore, "seeded" ATMs are not necessarily consistent with demand or the commercial viability of the route.

There are two issues with this process. First, the Commission should be clear about the rationale and justification for over-ruling the results of the NAPAM allocation model. If the DfT's carefully calibrated choice model does not predict services being operated from Gatwick then any variation should be clearly justified.

Furthermore, while the Commission has "seeded" routes at Gatwick it appears to have assumed that these services also continue at Heathrow. On the face of it this seems to arbitrarily create more passengers in the London system for the Gatwick runway option than for the Heathrow options. It is unclear how the Commission justifies this assumption, which seems to have the result of artificially exaggerating the total traffic, and so total economic benefits facilitated by a Gatwick runway. We recommend the Commission reviews and amends this apparent distortion in the methodology.

### **5.1.1.3 Our recommendations**

We recommend that the Commission:

- separates the macro-economic scenarios from operational scenarios:
- treat the operational scenarios as a sensitivity around a range of plausible macro-economic scenarios
- does not manually seed routes in NAPAM in the central operational scenario (i.e. route viability should be calculated on the basis of best available information today, without manual, subjective, intervention)
- explicitly recognise that some scenarios are more likely than others, particularly the "Low-cost is King" scenario which relies on the development of untested low-cost long haul services from a secondary "hub"
- adds more analytical rigour and evidence needs to be introduced to the scenarios. For example, the assumption that with no runway development, Heathrow evolves into a point-to-point airport, needs to be reconciled with the evidence that to date the proportion of transfer traffic has been at least stable. The assumption that transfer traffic gets displaced appears to have little empirical basis. Also, the Commission should revisit its assumption on 'seeding'. Under the "Global Growth" LGW 2R scenario, it is assumed that SkyTeam relocates from Heathrow to Gatwick. However, the number of ATMs at Heathrow remains unchanged. It is assumed that "other carriers fill the SkyTeam slots". We think that this creates a significant bias in the results in favour of Gatwick relative to Heathrow

## **5.1.2 Connectivity analysis**

### **5.1.2.1 Airports Commission's approach**

The Commission has used the National Air Passenger Demand Model (NAPDM) to forecast the number of passengers travelling to, from, or through the UK at a national level. It has then used NAPAM to allocate the demand to over 30 of the largest UK airports and four foreign hubs (Paris, Amsterdam, Frankfurt and Dubai). The allocation considers various factors that determine how passengers choose between different airport options – e.g. the range of destinations available, transport costs of getting to the airport, and flight frequency. However, exact details of the Commission's connectivity analysis are unclear.

The Commission has published estimates of the number of short-haul and long haul connections provided through Heathrow and Gatwick in its various scenarios. The Commission states these figures with little additional commentary around the significance of differences in the connectivity provided by Heathrow and Gatwick.

### **5.1.2.2 Our comments**

In general, we agree that connectivity projections need to be developed using a consistent tool. NAPAM is an appropriate tool if applied correctly. However, there are a number of issues with the way in which NAPAM has been used and the associated analysis namely:

- Frequency of connections
- Uniqueness of connections in relation to other London airports
- The ultimate need for The Commission to reach a view over the relative substitutability of capacity at Heathrow and Gatwick, for long haul services in particular.

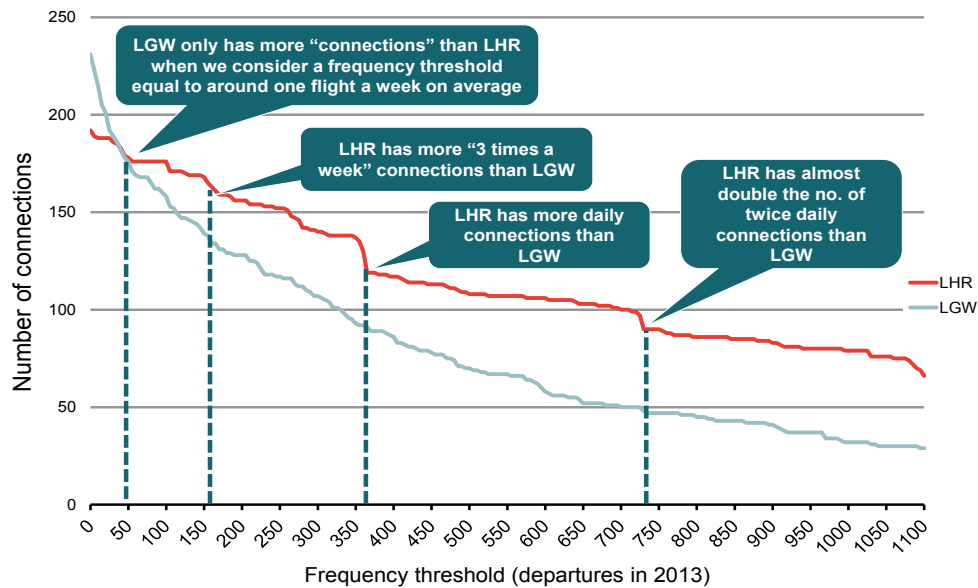
#### **Frequency of connection**

The Commission publishes two sets of tables, one showing daily connections and the other "all services". In our view the total connection figures are of little relevance. It is generally accepted that relatively high frequencies, approaching daily services, are required for connectivity to create material wider economic benefits.

Figure 5.1, below, illustrates that Heathrow provides a far greater range of destinations at high frequencies than does Gatwick. For services offered twice daily or more, the number of connected routes at Heathrow is roughly double that at Gatwick.



Figure 5.1: Number of "connections" measured, defined at different annual frequencies



Source: OAG data (2013)

The observation that Gatwick might offer more destinations than Heathrow is dependent on including a tail of very low frequency routes offered less than once per week on average. Figure 5.1 shows clearly that for all regular services, especially daily and more frequent, Heathrow provides far more connections than Gatwick.

#### Uniqueness of connections, long haul in particular

The Commission does not highlight how many of the routes offered from Heathrow or Gatwick would most likely be unique to that airport, in the sense that they are destinations not offered from any other London airport. Furthermore, especially in the case of long haul destinations, whether there is even a likelihood of them being offered elsewhere. This is essential, because not all connections bring the same level of economic value. The economic value to the UK of creating new direct flights to important growing markets such as China is significantly greater than simply duplicating services already offered at other London airports to short haul European destinations.

Our analysis of 2013 OAG data indicates that Gatwick offered 30 unique daily destinations of which only six are to long haul destinations. This compared to Heathrow, which offered 66 unique daily connections of which 50 are to long haul destinations.

This further emphasises the differentiation between the two airports. Given the existing congestion at Heathrow and spare capacity elsewhere, the Commission needs to address clearly the reasons why Gatwick has failed to develop significant long haul services in the past and what factors could realistically change this prospect in the future. Lack of capacity at Gatwick does not appear to be a major concern given the persistence of spare capacity there over many years.

#### To what extent is new capacity at the two airports equally good for long haul services?

Frontier Economics' analysis of future demand (see Appendix L) identifies circa 65 new unique destinations not served from London which could sustain connections of at least 3 services a week, by 2030 if there were sufficient runway capacity. Of these, c. 50 destinations are long haul. 33 destinations would reach the threshold for a daily service (24 of these are long haul).

To illustrate this point Frontier Economics have used their own connectivity model to assess the impact of splitting the London hub operation on long haul connectivity. They consider the maximum daily connections that could be sustained in 2030 by Heathrow and Gatwick combined if there were no runway constraints under the central macro-economic assumptions. Frontier Economics then compare the feasible connections under the Heathrow NWR

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scenario with two Gatwick scenarios. One where the hub operation is split across both airports and one where the hubs are coordinated to maximise long haul traffic on individual routes by removing the overlap between routes.

This analysis shows that unconstrained demand in 2030 could be sufficient for 211 daily connections from the combined airports of which 82 would be long haul, virtually all unique (i.e. not served by any other London airport).

Even with a third runway at Heathrow the system could eventually be constrained: 199 of these connections would be feasible, 78 long haul.

**Figure 5.2: Daily connections sustained by different hub configurations for Heathrow and Gatwick**

	Unconstrained	LHR 3R & LGW 1R	2 x 2R hubs: East & West	2 x 2R hubs: Symmetric
Connections	211	199	167	135
<i>of which short haul</i>	129	121	97	91
<i>of which long haul</i>	82	78	70	44
Unique connections	145	136	111	79
<i>of which short haul</i>	64	59	42	36
<i>of which long haul</i>	81	77	69	43

**Source: Frontier Economics**

Figure 5.2 shows that splitting the hubs symmetrically would reduce daily connections significantly (to 135) and halve the number of feasible daily long haul connections.

However, splitting the hubs symmetrically is an extremely inefficient way of arranging hub capacity, because all traffic is split and network effects are reduced to a minimum. To address this, the East/West scenario considers an allocation of routes that maximises frequency on the long haul routes, by dividing traffic between the two airports by destination.

However, Figure 5.2 shows that this still involves a significant loss of connectivity due to the loss of network effects. Daily connections are still far lower than can be sustained by the Heathrow option (167 compared to 199) as are long haul connections specifically (70 compared to 82). The reason that hubs split in this way are less efficient is because connecting traffic is still diluted across the two hubs. And furthermore, the combined hub loses the capacity to serve East-West transfer traffic (e.g. USA to India).

We stress that these simulations are not operating models of the airport or airlines, rather estimations of the maximum connectivity that can be sustained with different hub configurations.

The question the Commission needs to address is, without the benefit of network effects, what is the likelihood of an airline operator wishing to risk establishing new daily services to destinations such as Chennai, Addis Ababa, St. Petersburg or less frequent services to places like Tashkent, Ho Chi Minh City and Santiago?

While the Commission's numbers clearly predict that the Heathrow runway options sustain a greater number of daily long haul destinations, our view is that the Commission underestimates the difficulty of sustaining such routes at a point to point airport (e.g. Gatwick) and has not really provided any significant evidence to support why this situation will differ in the future.

### 5.1.2.3 Our recommendations

We recommend that the Commission:

- ensure that the benefits of Gatwick expansion are not exaggerated by distinguishing more clearly routes that are:
  - additional to London – and so will genuinely add to London's connectivity
  - relevant for business passengers as opposed to tourism
  - to emerging markets where new connections will add greatest value
  - form a view on the substitutability of services between Heathrow and Gatwick, given that Gatwick will lack a hub infrastructure
- measure connectivity on a daily basis, or at least a 3 times a week basis; discounting connectivity of less frequent services, thus ensuring that Gatwick's infrequent services are not given undue weight in the economic impact results

## 5.1.3 Strategic risk

### 5.1.3.1 Commission's approach

The Commission rightly recognise uncertainty in its forecasts for the economy as a whole and the aviation sector in particular. It does this by reference to four alternative scenarios, in addition to its original forecasts for the "Assessment of Need". Three of these relate principally to the macro-economic environment ("Global Growth", "Relative decline of Europe" and "Global fragmentation"), and the fourth to the development of the sector ("Low-cost is King").

### 5.1.3.2 Our comments

The main purpose of the scenario analysis is to test the outcomes of a policy in respect to uncertainty over realisation of the different scenarios. Although the Commission's scenarios describe uncertainty, it is not clear how risk revealed by the Commission's different scenarios is handled within the Commission's appraisal.

Heathrow expansion provides a more consistent and robust business case than Gatwick, when compared across the Commission's range of scenarios.

The Commission has published a technical report by SEO Economic Research, *Expanding Airport Capacity: Competition and Connectivity*, 2014<sup>1</sup>. The striking conclusion of this report is that:

*"Overall, hub carrier growth following Heathrow expansion and development of Gatwick into a low-cost gateway following Gatwick expansion are the most likely airline responses under the various macroeconomic scenarios developed by the Airports Commission."*

The SEO report findings clearly point to the fact that:

- With Heathrow expansion, there is the choice of expanding either hub operations (e.g. under the "Global Growth" scenario) or point-to-point (under the "Low-cost in king" scenario);
- Whereas under Gatwick expansion, low cost, or low cost gateway, are the only likely responses across all scenarios.

Across all scenarios, Heathrow expansion maximises connectivity, whilst also providing more space for low cost traffic if that is the way the sector develops. Expansion of Gatwick will result in low-cost gateway irrespective of

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<sup>1</sup> SEO Economic Research is affiliated to the University of Amsterdam, and carries out independent applied economic research. This report was carried out in the context of the OECD International Transport Forum.

scenario. So expansion of Heathrow, unlike expansion of Gatwick, can deliver value across all scenarios. Gatwick represents the Commission making a strategic gamble on particular market evolution. Expanding Heathrow is the low risk strategic option.

Beyond this basic risk assessment not all scenarios are equally likely. Strategically, hubs are very likely to be a major part of future connectivity. The hub model is well-established, and articulated by the SEO Economic Research report published by the Commission:

*"Hubs are factories to create route density."*

*"The network economies associated with hub-and-spoke operations stimulate hub carriers to concentrate network growth on a single hub in each region. Hubbing advantages become disproportionately larger with a growth network (Burghouwt 2014). For the hub carrier, operating a concentrated hub-and-spoke system in one of the main elements of its business concept. It needs a base where it can operate such a system, which implies concentrations of as many flights as possible at one single airport. This enables the hub carrier to create maximum hub connectivity and to attract additional connecting traffic, higher load factors to its flights, more frequencies on existing destinations and/or to develop new destinations. Hubs allow network carriers to create route density. Further growth of the network of the hub carrier will result in a non-linear increase of connections via the hub, triggering again more demand, higher load factors, new destinations and higher frequencies." (page 48)*

*Heathrow is the only hub in the [London] system, but its lack of peak-hour capacity and the relatively limited slot share of the hub carrier does not allow BA to operate a full-fledged wave-system for arrivals and departures, resulting in a connectivity deficit relative to hub airports of a similar size elsewhere." (page 42)*

The SEO Economic Research report also notes a clear specialisation in the London airport system:

*"The London aviation market is segmented over a constellation of different airports. The capacity constraints at various airports, the market orientated approach of its airports and the different geographical and infrastructure characteristics of the airports have over time resulted in a clear specialisation of the London airports in terms of airlines and passenger market segments." (page 42)*

The liberalised airport market has resulted in this specialisation, making any attempt to develop Gatwick as a hub airport (or even a low cost gateway to connecting traffic) an extremely unlikely outcome.

The major benefit of Gatwick's case is dependent on continued growth for low cost airlines (specifically the "Low-cost is King" scenario). Heathrow's case, on the other hand, has strength across all scenarios. In the "Low-cost is King" scenario, Heathrow can provide capacity for low cost airlines. By contrast, Gatwick cannot grow as a hub airport, even if this is what the market most demands. The expert report by SEO Economic Research finds that the airline response to Gatwick expansion results in either a low cost or low cost-gateway airport – a hub operation at Gatwick is unlikely even in the scenarios where hub capacity expansion is what the market most demands:

*"The lower yields at Gatwick and suboptimal peak-hour capacity also make the establishment of a competing hub operation at Gatwick less likely." (SEO Economic Research, Page 16, and also repeated on Page 90)*

Opting for Gatwick expansion poses a significant strategic risk to further development of London's hub capability.

### 5.1.3.3 Our recommendations

We recommend that the Commission:

- should explicitly take account of Heathrow's ability to meet objectives across all the Commission's scenarios and Gatwick's inability to do this. We recommend that this element of strategic risk is explicitly included within the Commission's appraisal

## 5.2 Heathrow NWR: Economy Impact Analysis

### 5.2.1 Economic case

#### 5.2.1.1 Airports Commission's approach

The economic case built by the Commission divides into two complementary micro and macro-economic analyses. Looking through these two distinct lenses highlights different aspects of the economic case:

- The aggregate of benefits and costs on individual passengers and others affected by the airport expansion proposals (micro-economic) – essentially an economic welfare analysis. The critical element of this analysis is the shadow cost (or congestion premium) of the runway capacity constraint at each airport. The Commission's approach appears to be to assume that this cost was zero in an arbitrary base year, and estimate how this premium will rise as the airports become increasingly congested (or de-congested following expansion). The Commission then assumes that the economic welfare benefit of any reduction in congestion premium (following expansion) is off-set by a reduction in airline profits through lower fares;
- The wider impact on the UK economy through the catalytic productivity boost given by better trade and foreign direct investment (FDI) links (macro-economic).

Both show a considerably greater economic benefit arising from Heathrow compared to Gatwick expansion.

#### 5.2.1.2 Our comments

Although we support the general approach taken by the Commission, we have three significant concerns:

- the estimation (or assumption) of the congestion premium or shadow costs within the micro-economic welfare analysis, which we argue is materially under-estimated for Heathrow due to the Commission's assumption that the congestion premium for Heathrow is zero in an arbitrary base year;
- the assumption that the economic welfare benefit of reductions in the congestion premium are off-set by reductions in airline profits;
- the importance of the macro-economic analysis distinguishing between productivity benefits of routes that will build international trade and investment, compared to essentially tourist routes, and routes to European markets where trade links are already fully developed.

#### Micro-economic welfare analysis

Congestion or shadow costs are central to the micro-economic appraisal of passenger and producer benefits. The Commission helpfully describes shadow costs as follows:

*"Shadow costs represent the extra cost of flying required to reduce passenger demand to a level within an airport's runway or terminal capacity. It can be thought of as a congestion premium, representing a fare increase to passengers or general inconvenience of using an overloaded airport". (Heathrow Airport Extended Northern Runway: Business Case and Sustainability Assessment, page 35, footnote 20)*

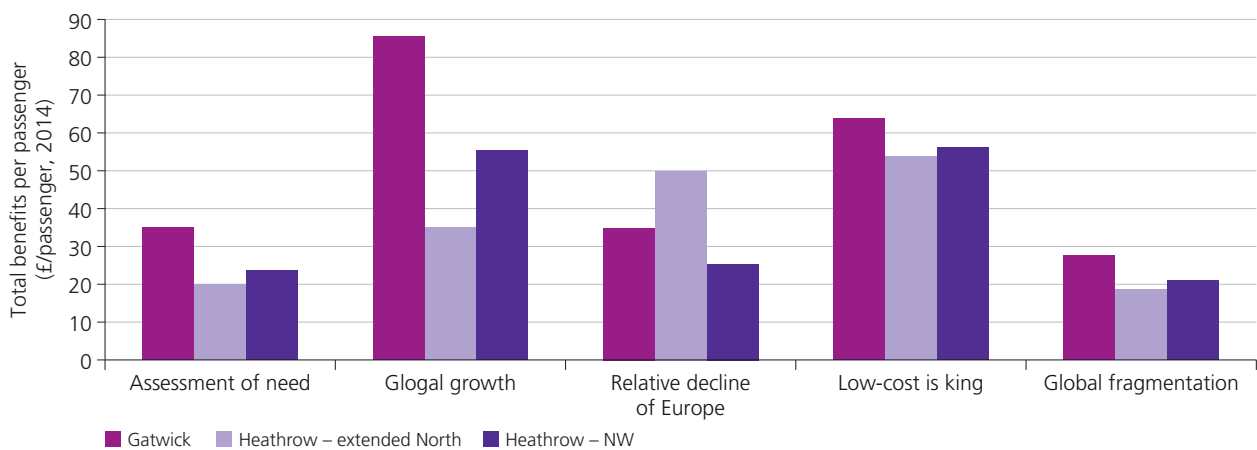
We have two concerns with the way that the Commission have estimated shadow costs / congestion premium:

- It has been significantly under-estimated for Heathrow;
- The Commission's analysis has treated a reduction in the shadow price as an actual price reduction that reduces off-sets airline profits, and so results in no overall economic gain. The market may see this effect in part but it is by no means the only or predominant effect.

We explain both these points below.

**The Commission under-estimates the congestion premium for Heathrow**

The method the Commission uses is not entirely transparent, but the results suggest that the benefit from congestion reduction for a new runway at Gatwick are higher per passenger than at Heathrow, as seen in the graph below.

**Figure 5.3: Benefits per passenger (gross shadow costs and frequency benefits)**

**Source: Frontier Economics based on the Commission's results**

This runs counter to the market characteristics that clearly demonstrate excess demand at Heathrow Airport is far higher than at Gatwick (e.g. slot values, load factors and fare levels for comparable services at each airport). Frontier Economics have shown in previous econometric analysis that the fare premium at Heathrow is substantially higher than at Gatwick today and in the future.<sup>2</sup> More evidence for this point is provided in the accompanying report by Frontier Economics (see Appendix L).

While the method used by the Commission to estimate the initial or existing congestion premium is not totally clear, we believe that it effectively assumes a zero shadow cost in a particular base year of the NAPM model for both Heathrow and Gatwick. The finding of Frontier Economics shows clear evidence to show that there would already have been a sizable shadow cost for Heathrow at any such date.

**The congestion premium is not wholly a transfer from airline profits**

Secondly, as airports increase capacity the Commission treats shadow cost reductions as pure price reductions which benefit passengers but also reduce airline profits. This has a dramatic effect on the economic benefit of Heathrow expansion, reducing the benefit by £31.6 billion under, for example, the "Assessment of Need" scenario. Thus, a potential £48 billion benefit is reduced to only £16.4 billion (based on Table 2.3, page 36, "Heathrow Airport Extended Northern Runway: Business Case and Sustainability Assessment"). Similar reductions in economic benefit are shown across all other scenarios.

Some shadow costs reductions will be reflected in fare reductions paid by passengers. For these the impact of removing the capacity constraint is that passengers benefit from the additional consumer surplus, but this is offset by a reduction in producer surplus accrued by airlines or the airport (if the latter were not price capped).

The Commission's document does suggest that not all shadow costs will be reflected in higher prices. (see page 34, "Heathrow Airport Extended Northern Runway: Business Case and Sustainability Assessment"), but does not reflect this in their numerical results.

In fact, as Frontier Economic show, a significant proportion of the congestion premium (or shadow cost) is currently lost in operational inefficiencies for airlines and airports as well as inefficient costs borne by passengers. This implies

<sup>2</sup> Frontier Economics, "Impact of airport expansion options on competition and choice", April 2014.



congestion savings are a more significant welfare benefit overall than the Commission is currently recognising. In particular, the Commission fails to include in its analysis:

- The greater proportion of business passengers at Heathrow, who have a higher value of time and hence bear greater costs arising from excess journey times and delays.
- Air traffic flow management (ATFM) delay costs – which is surprising, given that the Helios estimations, used intensively by the Commission for stack and ground delays, identifies the relationship between ATFM delays and capacity constraints at airports. We estimate that delay costs from ATFM's are around £22m per annum. In addition, the Commission ignores the ATFM delays generated at origin airports due to congestion at Heathrow.
- Reactionary delays – the Commission appears to consider only primary delays (both tactical and strategic). However, a significant source of delay is reactionary. The literature finds that each minute of primary delay generates between 0.6 (ITA, 2000)<sup>3</sup> and 0.8 (University of Westminster, 2011)<sup>4</sup> minutes of reactionary delay. As a result, if reactionary delays are not taken into account, total delay costs would be significantly underestimated by the Commission's analysis. Given the greater number of flights originating from Heathrow, reactionary delay costs associated with Heathrow are likely to be higher than those associated with Gatwick.
- Other costs that are a result of congestion such as passengers missing connections and cancellations and associated compensation payments, baggage missing connections. Such costs are considerably higher at Heathrow than Gatwick given its larger proportion of transfer passengers.

As well as these conceptual issues with the framework, the Commission's analysis is based on the Helios paper<sup>5</sup> that uses data from 2007. More recent information is available from Eurocontrol on stack<sup>6</sup> and ground<sup>7</sup> delays during 2012 and 2013. The 2007 data may not reflect the extent to which Heathrow currently differs from other large European airports as a consequence of operating at or near capacity. Therefore, the increase in stack and ground delays due to congestion are quite likely to be underestimated in the Commission's analysis.

Moreover, the Commission fails to recognise the distributional impact of congestion premiums. Congestion creates a rent that airlines, airport or others are able to extract from consumers in the form of higher ticket prices. Reduction of this rent could reduce airline profits per passenger, but the benefit to passengers of reduced prices cannot be considered as directly negated by a reduction in airline profits. Given the choice of benefit to passengers through price reductions compared to benefit to airline or airport profits, more weight in the assessment must be given to price reductions.

Overall, we therefore conclude that analysis of the benefits of reducing congestion at Heathrow and Gatwick is subject to a number of methodological issues that need to be corrected to develop a true picture of the benefits.

### **Macro-economic analysis, including wider economic benefits**

The S-CGE (Spatial Computable General Equilibrium) model uses passenger flows, frequency benefits and consumer/producer surplus as an input and provides GDP and employment figures as an output.

At the first sight the results appear to be broadly consistent with our own estimates, albeit using a different methodology. The results show that wider economic impacts for Heathrow are greater than Gatwick in all scenarios by a factor of 1.9 to 3.5 depending on the scenario considered.

We understand the Commission's approach of using a S-CGE model as a valid way of estimating the economic impact of airport expansion. We consider this a systematic and robust approach, particularly as it captures many of the interactions between sectors in the economy that could otherwise not be included in the analysis. We also understand that this modelling approach requires a number of pragmatic assumptions to be made and we are impressed with the level of transparency the Commission has provided on this topic. The Commission should put greater emphasis on its results as this is a well-established method.

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<sup>3</sup> ITA (2000) "Costs of Air Transport Delay in Europe", available at <https://www.eurocontrol.int/sites/default/files/content/documents/single-sky/pru/publications/other/cost-of-air-transport-delay-in-eu-ita.pdf>

<sup>4</sup> University of Westminster (2011) "European airline delay cost reference values"

<sup>5</sup> ICF International (2008) "UK CAA Runway Resilience Study Financial Report"

<sup>6</sup> Source: <http://www.eurocontrol.int/sites/default/files/events/presentation/140219-ans-ops-performance-add-asma.pdf>

<sup>7</sup> Source: <http://www.eurocontrol.int/sites/default/files/events/presentation/140219-ans-ops-performance-add-taxiout.pdf>

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- However, as discussed above, we do not agree with the modelling inputs to this approach. Considering the Commission's approach to scenarios, connectivity and the congestion premium the Commission should revise the following inputs:
- Number of passengers on each route – as discussed above, the Commission should use an appropriate central case for its estimation of economic benefit where transfer passengers still exist in the base case at Heathrow and therefore there is not disproportionate increase in transfer passengers at Heathrow with the new runway. This would ensure that the increase in O/D passengers to different destinations is much higher than currently suggested by the Commission; and
- Congestion premium – The Commission should correct the methodological issues identified above and include the true benefits of reducing congestion in the economic modelling.

In addition, the Commission should consider whether the approach to estimating the impact of connectivity on trade needs to distinguish the role of connectivity within Europe more clearly. Air connectivity can help overcome trade barriers by facilitating face-to-face contact which establishes trust. Within Europe, it is questionable whether air connectivity plays the same role when taking into account the EU customs union, largely harmonised product market regulation, long-established trade links, etc. The Commission considers additional passenger traffic to Europe to have much the same impact as additional traffic to markets such as Asia. We do not consider this to be correct. For instance additional connections to Greek holiday islands, while valuable to the passengers concerned, can be expected to add virtually nothing to trade and investment or even net tourism benefits. This is in stark contrast to the value added by additional connections to business destinations in Asia. The Commission should distinguish leisure and business routes as well as unique connections versus connections that are served from other London airports.

The impact on tourism of expansion of either Heathrow or Gatwick is another area where the Commission's assumptions are too broad. Heathrow and Gatwick airport have very different profiles of inbound and outbound tourists, shown by the table below.

**Figure 5.4: Purpose of travel from Heathrow and Gatwick**

Purpose	Country	Main Purpose	LGW	LHR
Business	Foreign	Business	2,120,027	12,896,127
	UK	Business	2,998,088	9,135,687
Business Total			5,118,115	22,031,814
Leisure	Foreign	Holiday	3,498,651	13,224,648
		Other	441,774	1,866,285
		VFR	4,463,588	15,602,825
	UK	Holiday	17,397,249	8,430,828
		Other	541,484	1,149,985
		VFR	6,132,131	10,492,633
Leisure Total			32,474,877	50,767,205
<b>Grand Total</b>			<b>37,592,991</b>	<b>72,799,019</b>

Source: CAA Survey Data, Oct 13 to Sep 14

It is clear from this table that whilst the majority of UK holidaymakers fly from Gatwick rather than Heathrow (twice as many), by far the biggest proportion of foreign holidaymakers fly into Heathrow rather than Gatwick (almost four times as many). This is clearly a reflection of the different ways in which each airport is used: Gatwick for low-cost and charter flights to European destinations used by UK tourists, and Heathrow as a gateway from a range of originating countries in Europe and around the world. Added to this, given that most inbound tourists want to head for London, Heathrow is the most preferred option.

The implication of this is that building a third runway at Heathrow will mainly enable further foreign inbound tourism (stimulating the domestic economy), whilst building a second runway at Gatwick will mainly enable

outbound UK tourism (draining the domestic economy). This effect on UK welfare has not been reflected in the PwC's modelling assumptions.

Overall, we agree with the Commission's modelling approach but strongly recommend that it revises the inputs as discussed above.

### **5.2.1.3 Our recommendations**

We recommend that the Commission amend its micro-economic analysis to:

- reflect in its shadow costs that Heathrow is already constrained today and has been constrained for some time. Therefore, its current shadow costs and unconstrained demand in case of expansion are significantly underestimated
- include consideration of how much of the reduction in congestion premium (shadow cost) is reflected in lower airline or aviation industry profits
- reflect that there are substantial efficiency gains from reducing congestion at Heathrow that are not covered by the analysis and
- provide an intuitive explanation of the differences in the existing results given they do not seem to follow from the model assumptions. It is possible that these results are partially explained by the operating assumptions made in each of the scenarios. If this is the case, it would be useful to understand to what extent results are driven purely by operating assumptions

We recommend that the Commission amend its S-CGE analysis to:

- revise the inputs to the wider economic benefit analysis in line with the recommendations made above – i.e. accurately reflect the additional daily connectivity that Heathrow will bring to emerging markets, and appropriately discount European connectivity for the purposes of calculating productivity and trade benefits
- revise the productivity analysis to reflect the maturity of trade relationships between different trading partners rather than a blanket approach
- look further at the assumptions made into the impact of tourism from expansion of either Gatwick or Heathrow

## 5.3 Heathrow NWR: Local Economy Analysis

### 5.3.1 Housing and employment impacts

#### 5.3.1.1 Commission's Approach

Paragraph 3.130 of the Commission's consultation document suggests that additional housing may be needed to support Heathrow's NWR scheme at Heathrow. It also suggests that, at the upper end of 70,000 homes, this might present challenges for local authorities to meet housing targets and that there are risks of localised constraints. This has been translated to suggest that the new runway might be responsible, for instance, for extensive Green Belt releases. In turn, the Commission's Local Economy Impacts: Assessment (page 121) suggests a potential need for more than 50 additional schools, additional parks etc.

#### 5.3.1.2 Our comments

These are not appropriate conclusions to draw about the potential effects of Heathrow's NWR scheme as supported by the evidence. The Commission's evidence base in fact demonstrates that Heathrow is able to meet its housing and employment requirements within its existing and growing labour market and that the contribution that the new runway would make to regional and local economic and planning strategies is already factored into and relied upon by planning policies for London and the Thames Valley.

The Commission's assessment acknowledges:

*"There are many reasons (why) the additional housing requirement is unlikely to be as high as these figures, depending on assumptions we make about population growth, net migration, unemployment and commuting" (page 111 of the Assessment).*

The assessment also states that:

*"It should also be noted that this is a worst case assessment for the number of additional homes required, which assumes, for example, the highest demand forecasts and lowest productivity improvements and that no more than one airport worker would live in any home" (page 113).*

The Commission recognises that its analysis presents the worst-case assumption on a number of inputs, and its assessment confirms that *"There is potential for the natural growth of population in the area, combined with an increase in the economic activity rate to provide enough workers to fill all the additional jobs at the airport without any increase in housing provision"*.

We support this overall conclusion, but are concerned that compounding a series of inherently unrealistic worst case assumptions presented as evidence generates a false impression of potential impacts. We expand on this below.

#### **Expansion of Heathrow is unlikely to generate either significant additional housing or, as a consequence, significant additional social infrastructure requirements**

There are a number of component assumptions in the Commission's quantitative assessment of up to 70,000 homes that could be questioned but the following are particularly unrealistic:

- No employment is assumed to be taken up by existing (or future) local residents drawn into the workforce. Similarly, no one is assumed to be encouraged to stop commuting out of the area in favour of more local jobs at an expanded Heathrow (page 122 and the assessment *"assumes that no employment opportunities would be taken up by local people"* page 113);
- No account is taken of the potential for an expanded Heathrow to reduce unemployment or to increase economic inactivity (either through organic changes or positive intervention, for example via the Heathrow Academy) (pages 115 and 57). The assessment does separately recognise that *"In practice, many of these [employment] opportunities may be attractive to those without work living locally and natural population growth in these areas will also increase the size of the local labour pool"* (page 113) but this acceptance is not factored in to the quantitative analysis.

It is difficult to understand the value of such extreme assumptions.

The Commission's detailed analysis shows similar growth in the working age population and economic activity rates as those assumed by us. Furthermore, as correctly identified by the Commission, the future catchment for workers at the airport will be significantly larger than at present due to surface access improvements and increases in public transport accessibility via planned rail and road improvements (for example, Crossrail 2).

A very large number of the 35,000 people forecast to be added to the workforce will work locally. On average, 54% of jobs in the five boroughs around Heathrow are taken by residents of these boroughs. Equally, Heathrow currently draws 75% of its employees from a 60 minute travel to work area. Based on future public transport accessibility, this 60 minute catchment will cover most of London and a significant proportion of the Thames Valley. The 60 minute catchment area currently has a working age population of 5.7 million people and that number is forecast to grow by 19% by around 2031, increasing the number of people of working age by 1 million people. This access to an existing and growing labour force is a key advantage of Heathrow as a location for growth.

The Commission is right to assume that more jobs at and around Heathrow would encourage more people to work in the area and so increase economic activity rates. If employment rates were to rise to meet the Government's target of full employment (75% – 80% from the current 63%), this would create an additional labour pool of 794,000 – 1,131,000 people within an hour of Heathrow.

There is also scope to reduce out-commuting, which would further increase the labour supply (and therefore reduce the amount of new housing needed), which is not incorporated into the scenarios, or our work, but the retention of currently out-commuting residents could add a significant additional labour force for the airport from existing residents.

We have a strong track record of local training and recruitment, and if continued as expected would have a significant influence in the uptake of jobs by local residents in a range of sectors.

**The provision of employment of this scale and this broad location is consistent with policy, and necessary for the success of planning strategies which are already in place.**

The employment projections in the London Plan are based on long-term employment trends going back to 1981. In the case of Hillingdon, this incorporates previous growth in transport-related sector jobs at Heathrow (which account for a third of all jobs in the borough). As a result, Hillingdon's trend-based employment growth rates are relatively high, incorporating and factoring in a significant rate of growth at Heathrow (specifically) and the transport sector (in general). These projections underpin the Further Alterations to the London Plan (FALP) and feed in to housing targets within the draft London Strategic Housing Market Assessment (SHMA) and Strategic Housing Land Availability assessment (SHLAA).

The London Plan recognises Heathrow's status as the UK's only hub and its critical importance to the London economy. It identifies the wider Heathrow area as one of London's Opportunity Areas, where economic objectives are driven by the strength of the airport.

There are several areas around (or which will become accessible to, e.g. via Crossrail) Heathrow where significant housing and employment growth has been planned, including Opportunity Areas at, Park Royal, Old Oak Common, Wembley, Paddington and the Lower Lea Valley. Growth at Heathrow will help to unlock the potential of these Opportunity Areas and provide employment for their populations. There are a significant number of key Opportunity Areas identified by the London Plan that will have excellent access to Heathrow and the economic benefits that growth will bring.

It follows that future expansion of Heathrow is largely incorporated into the projections that in turn inform the London Plan and its housing targets. The scale of growth forecast in the working age population greatly exceeds the forecast growth in jobs at Heathrow. Heathrow's expansion would contribute to towards meeting employment that planning policy already assumes is required to be generated.

Thus while local authorities may already face challenges in meeting future housing requirements, these challenges derive from committed household growth forecasts which are incorporated into the FALP. Employment is necessary to serve that population growth, to drive increased economic activity and to provide more sustainable patterns of commuting. Aviation growth is also essential to maintain London's world city status. Expanding Heathrow is directly consistent with and important to wider planning strategies, rather than a challenge to them.

Overall, based on reasonable assumptions outlined above, we do not expect that the future expansion of Heathrow will require any new housing to be provided to account for the additional workforce.

### 5.3.1.3 Our recommendations

We recommend that the Commission

- adopts a more realistic approach to the assessment, which takes into account its own evidence base, rather than an unrealistic worst case scenario. In particular, the assessment should:
  - acknowledge that growth will be across 38 Local Authorities and not just 14 thus spreading any impact more widely and reducing any potential impact on each
  - include an allowance for employment opportunities to be taken by local people to reflect the potential of Heathrow to reduce unemployment to meet Government targets
  - reflect the potential for more than one airport worker to live in any home
  - reflect the potential to reduce out-commuting
  - reflect the potential for local training and recruitment opportunities to increase the uptake of jobs by local people
  - acknowledge the potential for Heathrow to support existing planning strategies, for example, the ability to unlock already identified Opportunity Areas and provide employment for their populations

## 5.4 Heathrow NWR; Surface Access

### 5.4.1 Core and extended baseline

#### 5.4.1.1 Airports Commission's approach

The surface access appraisal documents include a 'Surface Access Process Overview' which sets out the overall appraisal methodology and approach. In this document the Airports Commission establish a list of projects that they expect to be delivered by 2030. This is split between a 'core baseline' made up of schemes that are committed and an 'extended baseline' of projects that are likely to be delivered irrespective of expansion of airports.

Those schemes not in the core or extended baseline are considered in the appraisal as being required as a result of airport expansion. The costs of these schemes are included in the business case assessment. For the Heathrow NWR option the capital costs of Southern Rail Access have been included in the business case as well as rail operating costs and asset renewal costs.

#### 5.4.1.2 Our comments

We first highlighted to the Airports Commission on 5th May 2014 that Southern Rail Access (SRA) should be included in the extended baseline for the purposes of assessment. SRA has been recommended as a short to medium term option by the Commission in its interim report, as follows:

*"...not only for supporting future expansion plans but also for optimising the airport's operations within its current capacity constraints, the Government should work with Network Rail to undertake a detailed study to find the best option for enhancing rail access into Heathrow from the south."*

The study has now commenced and the draft Southern Rail Access to Heathrow Market Study report states that a southern rail access to Heathrow "generates a significant amount of demand and revenue, even for a two runway



scenario"<sup>8</sup>. Both of these statements demonstrate that any costs of operation and rolling stock should be removed from the expansion business case. Costs could be borne by the franchise operator and funded through the revenue generated from the scheme as is normal practice in the UK rail industry.

Southern Rail Access was recognised in Network Rail's 2011 Route Utilisation Strategy<sup>9</sup> as a 'strategic gap' in its rail network. This process specifically did not take into account any airport expansion proposals. As it has already been highlighted by Network Rail as being required without airport expansion, it should trigger the Commission's definition for the 'Extended Baseline'. There is a published long term strategy document from Network Rail stating that Southern Rail Access is required to support background demand regardless of any airport expansion and is the subject of a detailed pre-feasibility study. In the same vein, we do not understand why Southern Rail Access has been treated differently to a number of uncommitted rail infrastructure interventions on the Brighton Main Line that have been included in the extended baseline for the Gatwick proposal.

### 5.4.1.3 Our recommendations

We recommend that the Commission:

- includes Southern Rail Access in the extended baseline and removes the capital and operating costs from the Heathrow NWR and Heathrow ENR business cases

## 5.4.2 Roads assessment

### 5.4.2.1 Airports Commission's approach

To assess the capacity of the road network, the Airports Commission has estimated the traffic flow on each road link and compared this with the expected future capacity to determine whether it will have sufficient capacity in the future. The volume (traffic flow) to capacity ratio has been used to identify whether a road will need to be widened as a result of expansion of the airport.

The surface access appraisal for the Heathrow NWR concludes that the M4 would need to be widened as a result of airport expansion. It includes the impacts of this widening in the capital costs and other assessments of the NWR scheme. Chapter 5 of the Commission's *Appraisal Module 4: Surface Access: Heathrow NWR* sets out the detail of the road assessment used to derive that conclusion.

### 5.4.2.2 Our comments

The commission has concluded that there may need to be a number of improvements to the M4 into London and M4 Spur to accommodate growth at the airport. We have reviewed the detail of the analysis and strongly disagree with the conclusions. These costs, and the associated property impacts, should be removed from the Heathrow NWR assessment.

#### Application of volume to capacity thresholds

We understand that the Commission's appraisal is based on the use of two thresholds for assessing whether additional capacity is required directly as a result of airport expansion:

- Links that the volume to capacity ratio changes from under **100%** to over 100% as a result of expansion **will** require capacity improvements as a result of expansion.
- Links that the volume to capacity ratio change from under **85%** to over 85% as a result of airport expansion **may** require capacity improvements as a result of expansion.

<sup>8</sup> This report is not yet publicly available but Network Rail intend to publish it imminently.

<sup>9</sup> London and SouthEast Route Utilisation Strategy, Network Rail, July 2011

The appraisal report indicates that the M4 between J3 and J4 requires widening as a result of the airport expansion. This is based on the eastbound direction only (from the airport) where the volume to capacity ratio increases from 100% in a 2R 2030 scenario to 103% in a 3R 2030 scenario. At a meeting with the Commission Secretariat and Jacobs on 11th September 2014, it was confirmed that the volume to capacity ratio in the 2R scenario is just below 100%.

The figure in Table 14 of the appraisal module has been rounded to the nearest percentage (i.e. the actual figure is between 99.5% and 99.9%). The rigid application methodology means that if there was a small increase in background traffic flow (i.e. between 10 and 40 vehicles per hour), the conclusion of the assessment would be that widening would not be attributed to the airport expansion.

Given both the uncertainty in forecasting to 2030 and the crude strategic modelling approach, it is not at all clear that widening would be required. We also believe that widening is not the right solution in such a marginal case given the wider network impacts that road widening can have such as induced traffic. In fact, Jacobs highlight in paragraph 5.5.6 that there are other options available, which the Commission has not reflected in its consultation documents.

Mitigation measures set out in our surface access strategy to reduce employee car trips and increase taxi loading should be considered in the analysis before further widening of the M4 is recommended. These mitigations have not been considered. The Commission should also consider the benefits of demand management measures (such as a congestion charge which has been suggested within HAL's own submission to the Commission in May 2014) to reduce Heathrow related traffic.

The widening of the M4 J3-J4 is being triggered by a relatively small increase in traffic (approximately 240 vehicles per hour). For the other sections that have been recommended for potential widening the volume to capacity ratio are only just above 85% in one direction. In both cases there are robust, well understood alternative mitigations which are far preferable to widening. Attributing an additional £2.5 billion (including optimism bias) to the surface access costs of the Heathrow NWR business case and the associated impacts is not justifiable or commensurate to the impact of the expansion on the road network.

### **The impact of congestion on mode choice**

Overall, the Jacobs model has been developed based on a sound approach for a high level appraisal of options. It is necessarily simplified in some of its assumptions and approach to enable a comparison of the different options. Whilst this is reasonable for a strategic level assessment, it is not as well developed as Heathrow's own strategic traffic modelling suite. This has been developed over a number of years and tested through a formal Public Inquiry.

One example of this is the dynamic modelling of traffic. We understand that the Airports Commission intends to undertake more detailed modelling. We would be happy to share any outputs or underlying assumptions from our own model to support this process. However, we are concerned that there is no opportunity for scrutiny of this work through the public consultation or for it to be scrutinised as part of the public consultation process.

The current Jacobs model does not consider the impact of congestion on either route choice or mode choice. Due to the forecast levels of traffic on parts of the M4 between London and Heathrow in the peak hour, it would be reasonable to believe that some passengers would choose an alternative mode. This is particularly likely for airport passengers who value reliability of journey time. The Jacobs appraisal shows that there is spare capacity on Heathrow Express so it is reasonable, and proven in our own analysis, that in the peak hour some trips would transfer to public transport and other highway routes.

The Jacobs mode share model shows a low level of mode shift to public transport from today (6% in Inner London and 4% in outer London), compared with the rest of the south east of England (27% increase). This means that the assessment shows an increasing proportion of traffic originating from London, using the M4 between J2 and J4. Those living in London will typically be more regular public transport users.

Crossrail, the Piccadilly Line Upgrade and Southern Rail Access will all improve journey times to many destinations in London and provide more direct services for those travelling to and from London. Congestion impacts on road journey times are also likely to be greater for those living in London (particularly for those to the east who would need to travel through London by car). This is reflected in our models and a comparison of the mode share

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assumptions by region are shown in the table below:

Region	2030 AC analysis			2030 HAL analysis		
	Car/Taxi	Bus/Coach	Rail	Car/Taxi	Bus/Coach	Rail
Inner London	32%	4%	64%	29%	5%	66%
Outer London	64%	6%	30%	47%	7%	45%
South East	48%	22%	31%	65%	25%	10%

Our analysis, which takes account of congestion, shows more passengers from London make use of public transport as a result. If these assumptions are used in the Airports Commission analysis, the number of car trips to and from London would reduce. This alone results in a volume to capacity ratio that would not trigger the widening threshold for the M4.

**Extent of road network considered**

The assessment also only appears to consider the motorway network. As some employees and passengers are travelling from the immediate local area, there is also some use of other non-motorway routes. These include routes such as the A312. The distribution of trips in our own model (RRTM) are shown in the table below:

	Employees		Air Passengers	
	Inbound	Outbound	Inbound	Outbound
M4 West	16%	24%	16%	11%
M25 North	18%	22%	23%	15%
Local Road (Sipson Road/Cherry Lane)	1%	2%	1%	0%
A408	2%	3%	3%	1%
A437	7%	0%	1%	0%
A312	1%	7%	2%	2%
Western Road	2%	1%	0%	1%
M4 East	3%	5%	10%	19%
Local Road (Cranford Lane / High Street)	1%	0%	1%	0%
A4	5%	3%	2%	2%
A30 (E)	1%	1%	2%	3%
Green Lane	1%	1%	1%	1%
A312	2%	2%	2%	0%
A30 (S & W)	5%	0%	7%	1%
Stanwell Road	0%	0%	1%	4%
Local Roads (Long Lane / Clare Rd)	1%	0%	1%	1%
A3044	6%	4%	1%	0%
M25 (S)	26%	24%	23%	38%
Staines Road	0%	1%	3%	0%
A4 (W)	2%		0%	1%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

If this alternative revised distribution of traffic is applied to the Airports Commission's traffic numbers then the results of the assessment also change. This shows that the widening of the M4 would not be required based on the Airports Commission's analysis methodology of applying the two thresholds:

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To airport						
Section	No. of Lanes	Capacity	3R AC original assessment		3R AC redistributed flows	
M4 J2 and J3	2	4,000	89%	3,560	80%	3,216
M4 J3 and J4	3	6,000	111%	8,880	92%	7,388
M4 Spur	2	4,000	107%	4,280	67%	2,692

From airport						
Section	No. of Lanes	Capacity	3R AC original assessment		3R AC redistributed flows	
M4 J2 and J3	2	4,000	80%	3,200	78%	3,117
M4 J3 and J4	3	6,000	103%	8,240	95%	7,572
M4 Spur	2	4,000	77%	3,080	57%	2,277

This assessment shows that applying slightly different assumptions can result in significantly different conclusions. In its other assessments the Commission has chosen to assess a range of scenarios to test the sensitivity of its conclusions. If this approach is applied to the surface access appraisal then it would show that the widening of the M4 is not required in all scenarios except those with the most pessimistic assumptions.

The case to widen the M4 when applying the current assumptions and methodology is marginal. There is significant uncertainty in the assessment and potential for alternative options. Considering all of these issues there is a strong case to remove the costs and associated wider impacts of widening the M4 from the Heathrow options.

**On airport traffic distribution**

The appraisal overestimates the traffic using 'Heathrow East' in 2030. It uses the 2040 split between and 'West' and 'East' and also assumes no traffic using T4, which would still be operating in 2030.

Terminal	CTA	T5/T6	T4
HAL demand split	30%	60%	10%
AC demand split	42%	58%	0%

The M4 Spur has three lanes for general traffic, plus a bus lane. Based on the traffic flows presented in the appraisal, we believe that a two-lane capacity has been assumed for the assessment. Using the correct capacity and on airport distribution means that widening of the M4 Spur would not be necessary and therefore can be removed from the airport costs.

Using the 'Heathrow East' flows quoted on page 65 of the Jacobs Surface Access Appraisal report (2,284 arrivals, 1,519 departures), it is unclear why the report recommends capacity improvements to the main airport tunnel. The current tunnel has two lanes in each direction in the main tunnel. Based on the flows above, it would be able to accommodate the expected demand. This is without consideration of the additional capacity provided by the southern road tunnel. On this basis, the costs of the works on the M4 Spur and airport tunnel should be removed from the appraisal.

**Junction improvements**

The appraisal indicates that improvements would be needed to J4 and J4b of the M4. There is no methodology or justification presented in the report for these improvements. We would expect these infrastructure improvements with their associated costs and impacts to be avoidable.

### 5.4.2.3 Our recommendations

We recommend that the Commission:

- Remove the costs for the proposed widening on the M4 (J3 to J4 J2 to J3 and J4 to J4b) works to the M4 junctions M4 Spur and existing northern CTA tunnel from the Heathrow NWR business case and any associated impacts from the sustainability appraisal

## 5.4.3 Employee trips

### 5.4.3.1 Airports Commission's approach

The surface access appraisal for Heathrow NWR includes an analysis of future mode share for passengers in chapter 3 'Headline Forecasts'. There has been no assessment of employee mode share.

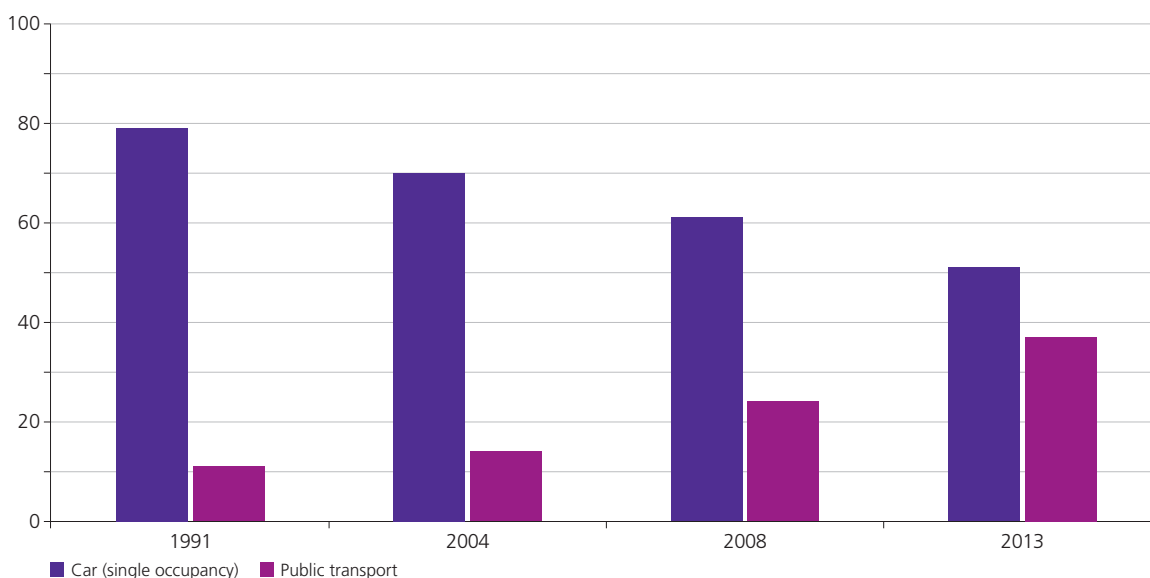
### 5.4.3.2 Our comments

The appraisal does not assess any change in employee travel to and from Heathrow airport. This is despite significant proposed improvements to public transport and other mitigation measures including a proposed reduction in car parking. Conversely, assumed improvements to employee mode share have been applied to the Gatwick assessment.

It has been confirmed by the Commission representatives at a meeting on 19th December that this is because Heathrow is considered to be a facing diminishing returns in terms of mode shift amongst airport employees. We are concerned that the Commission has concluded this without any published supporting evidence. If anything, in recent years, the trend of shift to sustainable modes has increased as Heathrow has broadened its range of interventions to focus on behaviour change as well as network improvements.

We have a strong track record of reducing the proportion of employees driving to work in single occupancy cars. In 1991, there were almost 80% of employees driving to work alone. In the most recent surveys it has fallen to just above 50%. As shown below, this trend has accelerated in the last 5 years. This is before any improvements to the rail and bus network or other interventions.

**Figure 5.6: Heathrow Airport Employee Mode Share**



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Improvements to rail services, coach network and the local bus network will improve journeys from a number of key employee catchments. Airport Commission officials witnessed these interventions first hand when they visited Heathrow on 3rd April 2014.

Our masterplan will relocate more employment closer to public transport nodes (such as Heathrow East and West) making it easier for airport workers to travel by public transport.

To date, our success has been based on incentives-based approach, without any significant demand management to discourage use of cars. As part of our strategy to 2030 we have proposed changes to our parking policy including a reduction in car parking spaces to support sustainable modes. This will mean that those living within walking distance of a bus route or train station will no longer be eligible for parking passes. Passes will be prioritised for active car sharers and those with low emissions vehicles. This will influence behaviour, helping to increase public transport use, increase car sharing and reduce emissions.

Our submission also set out a series of improvements to public transport that would support employee travel to work:

- Improved frequency of services to the South and West of the Airport and introduction of 24 hour routes to enable access to the airport for early morning shifts.
- Extending the Free Travel Zone into local communities to support employee trips to work and sustainable travel within local communities.
- Extending discounted travel products on TfL services through the introduction of a Heathrow contactless product.
- Rail schemes such as Crossrail, Western Rail Access and Southern Rail Access will provide access to the airport by public transport that previously did not exist serving local communities like Slough and Staines as well as locations such as Reading, Maidenhead, Richmond, Twickenham and Clapham.

Whilst significant progress has been made, our analysis indicates that there is still much potential for shift in employee public transport mode share. There are still significant differences in mode share between the local five boroughs which provide the largest number of employees as shown below:

**Figure 5.7: Employee mode share by Borough**

Mode of travel	Hounslow	Hillingdon	Ealing	Slough	Spelthorne	Overall
Car driver (alone)	35%	36%	39%	52%	67%	50%
Public transport	56%	55%	49%	34%	23%	37%
Bus	38%	50%	33%	34%	23%	26%
Rail/LUL	18%	6%	17%	0%	0%	12%
Bus routes	10	8	3	4	4	-
Buses per hour	44	23	17	12	7	-
Early service routes	6	4	3	2	1	-
Train stations (direct access)	0	1	5	0	0	-
LUL Stations (direct access)	5	0	4	0	0	-

This shows that the areas that have the best public transport accessibility have higher public transport mode shares. While improving rail access may reduce bus use, it also reduces the mode share of private car. Rail access will be improved to the south and west (Slough and Spelthorne) through our surface access strategy with new services providing four trains an hour to Slough and Staines. This will also be the focus of bus improvements with opportunities to increase the frequency and duration of services.



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The masterplan will also facilitate better bus access to Colnbrook and Poyle. Projects like Crossrail, Southern Rail Access and Western Rail Access will also significantly improve public transport access to locations like Reading, Maidenhead, Richmond, Clapham and Twickenham. They also provide wider connections that allow direct or single change connectivity to Heathrow by rail. Supported by changes to policies on employee car parking these improvements will see a further shift in employees travelling by public transport with a very high degree of confidence.

Heathrow's own analysis is based on the outputs of our employee mode choice model (HESAM). This is similar to our passenger tool LASAM that allows the airport to predict the change in behaviour of airport workers as a result of changes to the transport network or costs. This has allowed improvements to bus, rail and London Underground to be modelled as well as a constraint on car parking (including a priority for car sharers). The outputs of the model showed that 41.4% of employee would travel to work by car (24.0% car driver alone, 17.4% car share) and 49.1% would use public transport.

The table below shows the forecast increase in public transport use across each borough based on our proposed interventions and restriction on access to car parking:

**Figure 5.8: Forecast increase in public transport use by Borough**

Local authority	Public transport mode share		Public transport options
	2013	2030	
Hounslow	56%	79%	Piccadilly Line, Southern Rail Access, Local buses
Hillingdon	55%	71%	Crossrail, Enhanced local buses.
Ealing	49%	79.9%	Crossrail, Piccadilly Line, local buses.
Slough	34%	47%	Western Rail Access, Enhanced local buses.
Spelthorne	23%	35%	Southern Rail Access, Enhanced local buses

With changes to parking policies and improved public transport access, there is also substantial potential for changes in employee home locations. We undertook sensitivity tests on this analysis to see what would happen if the additional new employees lived in areas of better public transport accessibility (to reflect a policy of employee car parking not being available). This showed that public transport use could increase public transport mode share by a further 6% (to 55%) in 2030. However, for the purpose of our submission we assessed mode shares based on the current geographic split of employees.

The AC acknowledges much of Heathrow's proposed surface access improvements (rail/tube upgrade) will take place, but does not take these improvements into account when assessing employee travel patterns. This approach should be reconsidered given that the commission's analysis for passengers suggests a higher public transport mode share than Heathrow's own analysis.

Heathrow has taken a robust approach and modelled its surface access strategy and the impact it will have on employee behaviour. This analysis has been presented to the Airports Commission in our submission and no clear justification has been given for not applying this analysis to the Heathrow appraisal. The surface access appraisal for the Gatwick scheme assumes a 15.3% point reduction in employees driving to work (75.3% to 60.0%). This figure is taken directly from the Gatwick submission and relates to 2040 rather than 2030. It is unclear what, if any modelled analysis underpins this. For consistency, we would ask that our analysis is reflected in the Commission's analysis, or that employee mode shift assumptions are removed from Gatwick's.

### 5.4.3.3 Our recommendations

We recommend that the Commission:

- amends its analysis in relation to employee trips at Heathrow to allow for an increase in public transport use from 37% today to 49% in 2030 and reflect this impact in all other relevant assessments

## 5.4.4 Accessibility analysis

### 5.4.4.1 Airports Commission's approach

The Surface Access Appraisal for Heathrow NWR (Chapter 6) and Gatwick Second Runway (Chapter 5) include Airport catchment analysis. The analysis assesses the population within certain journey times of the Airport. This informs the assessment of the proposals against surface access objective 3 'enabling access from a wide catchment'.

### 5.4.4.2 Our comments

Further detail is required to understand the differences between Jacob's catchment analysis and our own analysis. The maps are at a small scale so it is difficult to compare the plots. There is no clear list of assumptions to assist in determining differences between the assessment methodologies. Therefore, we cannot properly consider the assessment in the appraisal: Our analysis for Heathrow and Gatwick gave the following results:

**Figure 5.9: Catchment by journey time**

Journey band	Heathrow		Gatwick	
	HAL	AC	HAL	AC
Up to 30 minutes	1,400,000	700,000	530,000	570,000
Up to 60 minutes	8,700,000	3,800,000	6,200,000	5,000,000
Up to 90 minutes	16,600,000	9,900,000	13,600,000	12,000,000
Up to 120 minutes	28,600,000	20,000,000	20,200,000	18,000,000
Up to 180 minutes	47,000,000	38,000,000	41,700,000	34,000,000

**Note: HAL figures rounded to nearest 100,000**

Whilst the absolute size of the catchments can be affected by the assumptions made, we are surprised to see the relative variation between time bands and airports are so different. The HAL and AC assessments are very similar for Gatwick but not Heathrow. Our assessment used the same methodology and assumptions for both airports.

In particular we are surprised at the significant difference in the number of people within 60 minutes. The rail clock times shown in the appraisal reports show that the majority of central and inner London is within an hour of Heathrow. With population density so much higher around Heathrow it is surprising that the resulting 60 minute and 90 minute catchments show a larger population closer to Gatwick.

We have tried to overlay the Airports Commission analysis with our own and this highlighted a significant difference in catchment to the east of London. Crossrail will bring locations such as Canary Wharf, Stratford, Abbey Wood and Ilford within 60 minutes journey of the airport. Our review of the isochrone maps provided in the appraisal suggests that these locations are not included in the 60 minute journey time area.

### 5.4.4.3 Our recommendations

We recommend that the Commission:

- reviews its accessibility analysis to ensure that Crossrail is taken into account and publishes a more detailed set of maps and clear list of assumptions to allow the assessment to be properly reviewed

## 5.5 Heathrow NWR; Noise Analysis

### 5.5.1 Noise assessment assumptions

#### 5.5.1.1 Airports Commission's approach

The Airports Commission have calculated population noise exposure values for a range of different noise measurements.

#### 5.5.1.2 Our Comments

The Airports Commission's assessment indicates higher population noise exposure values than our own detailed noise assessments. Although there are differences in the absolute numbers, the overriding trend in both the Commission's work and our own submission is consistent in concluding that the number of people impacted by noise will be lower than today.

The differences between our assessment and the Commission's may be due to the following factors:

- a different number of air traffic movements in 2030;
- a different and noisier fleet mix in 2030 and 2040;
- and different approach glide slopes in 2040.

In our technical submission to the Airports Commission we set out the following key assumptions. These are discussed fully in the document Heathrow's North-West Runway; Air and ground Noise Assessment.

**Figure 5.10: Heathrow noise assumptions**

Assumption	3R 2030	3R 2040	Comment
<b>Airport Capacity (Movements / % capacity)</b>	570k / 77%	740k / 100%	3R airport at circa 80% capacity in 2030, 100% in 2040
<b>Displaced Thresholds</b>	YES	YES	Significant airfield works required for displaced thresholds. It is proposed that for the existing runways these would be incorporated as a part of the overall airfield masterplan development for a 3R airport.
<b>Approach Glideslope (degrees)</b>	3.2	3.5	Increasing the glideslope to 3.2 degrees is already planned for Heathrow. It is considered that a 3R airport could incorporate a 3.5 degree slope by 2040.
<b>Fleet</b>	Current Imminent	Current Imminent Future	Heathrow has always been able to attract a more modern and "quieter fleet". <1% 'current' in 2040.
<b>Optimised arrival routes</b>	YES	YES	Use of PBN procedures will improve accuracy and consistency of the approach flight tracks in the future.
<b>Continuous Descent Approach</b>	YES	YES	PBN procedures will precisely guide all aircraft in a continuous descent following glideslope angle in future 3R cases. Guided descent picked up from 6,000ft. Currently not all aircraft follow continuous descent.
<b>Optimised Departures</b>	YES	YES	For a 3R airport the airspace must be redesigned so it has been assumed that the opportunity to optimise would be taken.
<b>Continuous Climb Departure</b>	YES	YES	Advance airspace management and PBN will enable every departure to operate a continuous climb-out in the future 3R cases.
<b>Night-time rotation before 06:00</b>	YES	YES	Rotation at night possible in 3R scenarios.

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<b>Full runway Alternation during Easterly and Westerly conditions</b>	YES	YES	3R – mode rotation – 4 modes available to rotate in both easterly and westerly direction. Baseline conditions include the Cranford Agreement which means runway alternation only occurs during westerly conditions.
<b>Night Flights (23:30 – 06:00)</b>	YES	YES	Night flights would continue but there would be no more scheduled than today.

In relation to the future aircraft noise performance we have consulted with airlines, airframe manufacturers and used Sustainable Aviation guidance to inform our assumptions. We have been deliberately conservative in some of our assumptions in order to be confident we can deliver lower noise impacts than today with expansion.

We are confident our assumptions are realistic despite differing from the Commission's. Furthermore, since our submission, we have also undertaken a sensitivity analysis of the Commission's assumptions. The results that we have obtained are similar to those of the Commission indicating that our assumptions, in terms of technology improvements are similar.

In terms of the uptake of new technology Heathrow has a very good track record in attracting the most modern fleet. For example 99% of movements in 2014 were by Chapter 4 aircraft compared with a European average of around 85%<sup>10</sup>. In 2008 we predicted this figure would be 97% by 2015.

Whilst our assumptions differ from the commission we are confident that they are realistic based on these historic trends.

The results presented by the Commission are based on the CAA's ANCON model. Heathrow has also used ANCON, but its limitation should be borne in mind. All results using ANCON consider approach and departure profiles consistent with today and therefore do not consider how precision based navigation (PBN) could improve the utilisation of Continuous Climb Departures (CCD) or Continuous Descent Approaches (CDA). These measures will reduce noise but cannot be accounted for at the moment using ANCON.

### 5.5.1.3 Our recommendations

We recommend that the Commission:

- model a scenario reflecting our assumptions and mitigation proposals to be included in the Commission's appraisal alongside the scenarios which are currently presented
- clearly state any known limitations in the Commission's modelling methodology

## 5.5.2 Noise impact monetisation

### 5.5.2.1 Airports Commission's approach

The Commission has presented the monetisation results for each of the airspace options proposed in our submission.

### 5.5.2.2 Our Comments

It is unclear how the monetisation of noise has been calculated by the Commission and also how non-monetised issues are considered and have informed the Commission's assessment. For robust monetisation it is important to present an understanding of the limitations and uncertainties alongside the results.

<sup>10</sup> ICAO working paper CAEP-SG/20142-WP/34

We have previously written to the Airports Commission (7<sup>th</sup> November 2014) setting out our concerns in relation to the methodology.

### **5.5.2.3 Our Recommendation**

We recommend that:

- the Commission should ensure that the monetisation element is appropriately caveated to make explicit the limitations of the assessment. We would also suggest that the assessment is peer reviewed

## **5.5.3 Ground noise assessment**

### **5.5.3.1 Airports Commission's approach**

The Commission presents population figures for ground noise exposure of at least 57dBLAeq.

### **5.5.3.2 Our comments**

The ground noise assessments undertaken by the Commission indicate considerably higher numbers of people being exposed to ground noise than our assessments these results appear to be based on a high level assessment rather than modelling and we are unable to identify the methodology for determining these outcomes. Our own ground noise assessments are based on extensive and detailed modelling and we believe provide an accurate indication of ground noise impacts.

### **5.5.3.3 Our recommendations**

We recommend that

- the Commission undertake a more detailed ground noise assessment or provide the assumptions used in the basis for their assessments

## 5.6 Heathrow NWR; Air Quality Analysis

### 5.6.1 Air quality assessment scope and mitigation

#### 5.6.1.1 Airports Commission's approach

The Commission has conducted only a high-level assessment of the air quality impacts of Heathrow's NWR scheme. The Commission intends to supplement their work completed to date with more detailed dispersion modelling.

#### 5.6.1.2 Our comments

To date the Commission's approach to assessing air quality impacts has not provided a detailed assessment. It is disappointing that this information is not included in the current consultation. Without it the current assessment is potentially misleading, suggesting there to be a greater risk of exceeding the limit values at Heathrow than has been demonstrated by our own detailed dispersion modelling.

The Commission's work cannot yet be reliably compared to our own air quality assessment because the results do not take into account the detailed air quality mitigation proposals put forward under our scheme. The Commission recognises these measures as '*...several credible mitigation proposals.*' which will act to reduce emissions (Airports Commission Business Case and Sustainability Assessment P10.18).

In addition to the fact that the Commission's assessment omitted to consider mitigation measures, we wish to highlight other significant differences observed between the assumptions used in the Commission's assessment and those used in our own assessment. For example, the Commission's assessment has modelled different glide slopes for landing, a larger numbers of ATMs, and a larger surface access area, which have inevitably resulted in different conclusions than those drawn by our assessment. For this reason, the results of the two assessments cannot be reliably compared.

We are confident in our air quality mitigation. Our own assessment predicts that our mitigation measures will enable expansion to take place without exceeding any of the EU limit values. In paragraph 10.16 of the sustainability assessment the Commission also identify that by the time that the scheme opens, action at both a national and local level will have been considered to address air quality; the effect of these interventions will also need to be factored into the Commissions more detailed work as it progresses.

It is our view that an assessment of the unmitigated impacts of expansion upon air quality does not reflect a realistic scenario.

#### 5.6.1.3 Our recommendations

We recommend that:

- the Commission, in undertaking more detailed air quality modelling, take into account our mitigation proposals along with the other policy measures identified
- consults on the results of the detailed air quality assessment once it has been undertaken



## 5.7 Heathrow NWR; Biodiversity

### 5.7.1 Bird Strike

#### 5.7.1.1 Airports Commission's approach

The Commission's biodiversity assessment identifies a potential impact on bird populations due to potential bird strike mitigations. (Paragraph 11.3).

#### 5.7.1.2 Our comments

In identifying a potential impact on bird populations of bird strike mitigation measures, the Commission are simplifying a complex suite of issues, which are discussed in more detail in section 4.3 of our Biodiversity Assessment technical report. The simplification suggests a degree of certainty which cannot be justified at this stage. This is because it is not clear if or where bird strike mitigation measures will be required, what they will entail and how they are likely to affect bird populations. Furthermore, if any compensatory measures are needed (e.g. because of a predicted effect of bird strike mitigation on a specified bird population), there may be scope to implement these measures in areas where increased bird populations are not likely to affect the risk of bird strike, through biodiversity offsetting.

#### 5.7.1.3 Our recommendations

We recommend that

- the Commission re-examines the statements made on the potential impact upon bird populations to reflect the high uncertainty and low likelihood of bird populations being impacted

## 5.8 Heathrow NWR; Carbon

### 5.8.1 Assessment approach

#### 5.8.1.1 Airports Commission's approach

The Commission has assessed a hypothetical case with the proposed number of passengers and ATMs. The Commission has not assessed our scheme with the mitigation proposed by Heathrow for reducing carbon emissions from aircraft operations, surface access and energy generation.

#### 5.8.1.2 Our Comments

The results of the carbon assessment made by the Commission should be treated with caution if they are to influence the process of making a recommendation on where and how to increase airport capacity. Important factors such as the inclusion of mitigation measures have not been included in the assessment, despite this being a requirement of the Commission's 'Sustainability Assessment Framework'.

The Airports Commission has conducted a high-level assessment of embodied carbon emissions. The Commission's methodology for calculating 'embodied carbon due to construction' was a calculation on the basis of the cost of construction which is likely to lead to an over-estimation relative to our method of calculating from the "bottom up" on the basis of volume of materials likely to be used. The results from the Commission's assessment and our own are not directly comparable.

### **5.8.1.3 Our Recommendation**

We recommend that:

- the Commission considers within its assessment our mitigation proposals for reducing carbon emissions
- the Commission considers the differing approaches to calculating embodied carbon and takes this into account in its assessment

## **5.9 Heathrow NWR; Water & Flood Risk**

### **5.9.1 Greenfield run-off rates**

#### **5.9.1.1 Airports Commission's approach**

The Airports Commission make a number of assumptions for 'greenfield runoff rates' in their water quantity assessment.

#### **5.9.1.2 Our comments**

Our assessment makes different assumptions for 'greenfield runoff rates' to the Commission (Jacobs report 9. Water and Flood Risk). On the basis of these different assumptions, the Commission's assessment raises a concern that the level of attenuation storage provided may be insufficient. The assumptions made by ourselves and the Airports Commission are both reasonable although they are quite different. The only way of confirming which is correct is to undertake more detailed assessment. This would be more appropriately completed at the detailed design and/or consenting stage. HAL commit to undertaking such further work and once greenfield runoff rates are absolutely known, the detail of the level and type of storage to be provided will, of course, be re-examined in more detail and agreed with the Environment Agency. That said we believe that the approach defined in our mitigation strategy will, at the very least, form the basis for our approach.

#### **5.9.1.3 Our recommendations**

The Commission should confirm that the assumptions made by itself and Heathrow are both reasonable and that the only way the mitigation can be any more accurately designed is by undertaking additional assessment work more appropriate to the detailed design and/or consenting stage

### **5.9.2 De-icing**

#### **5.9.2.1 Airports Commission's approach**

The Commission have made a number of assumptions and limitations in their water quality assessment methodology.

#### **5.9.2.2 Our comments**

The detailed technical report prepared by Jacobs on behalf of the Commission assumes no changes to de-icing practices even in the 2030s or 2040s (Jacobs report, Water and Flood Risk section 2.3). This assumption is not correct. There are a range of improvement measures being taken at Heathrow today by ourselves, the airlines and

their ground handlers to modify de-icing operations and reduce pollution risks. These include; a focus on minimisation of de-icer applications linking to live weather conditions, dedicating de-icing activities to sections of taxiway to create a pseudo de-icer pad, and the recovery of de-icer from the ramp surface using recovery vehicles. These improvements will continue as part of the airport's on-going effort to increase winter resilience and airfield efficiency.

Our NWR scheme will enable a further step change in aircraft de-icer pollution control by providing at source containment of de-icing fluids.

### **5.9.2.3 Our Recommendation**

We recommend that the Commission:

- recognise the reducing pollution loading from de-icer and take this into account in their final assessment of the water quality impacts of the Heathrow scheme

## **5.10 Heathrow NWR; Place**

### **5.10.1 Overall value attributed to the Colne Valley Regional Park**

#### **5.10.1.1 Airports Commission's approach**

The consultants undertaking the assessment of the place module on behalf of the Airports Commission did not undertake a site survey of the Colne Valley Regional Park.

#### **5.10.1.2 Our comments**

We believe that the value attributed to the Colne Valley Regional Park by the Commission is too high. This may be because the value has been reached on the basis of only a desk top study as opposed to a site survey. In our view the Colne Valley Regional Park comprises a range of land types and values that overall do not add up to that identified in the Commissions assessment.

#### **5.10.1.3 Our recommendations**

We recommend that the Commission:

- reconsiders the high value attributed to the entirety of the Colne Valley regional park and recognise that not all of the park is of the same value in landscape terms. We would like this to be part of the final assessment

## **5.10.2 The Commission's view of Heathrow's Landscape and Visual Impact Assessment**

### **5.10.2.1 Airports Commission's approach**

In their assessment the Commission have not incorporated the full details submitted by Heathrow in June 2014 in relation to Place.

### **5.10.2.2 Our comments**

Our technical submission titled 'Heathrow's North-West Runway; Landscape and Visual Impact Assessment' was prepared to support part 5 (Enhancing the Natural Environment) volume 1 of the Technical Submission to the Airports Commission.

We would like to point out some corrections to the Commission's assessment;

- The Commission's assessment states that we did not propose an assessment methodology (Jacobs Report, 10. Place Assessment, p.57). This is incorrect and it was included in Section 3.1 of our technical submission. We did not see as our role to undertake an assessment to provide a mitigation strategy.
- The Commission's assessment states that we did not appraise the effects (Jacobs Report, 10. Place Assessment, p.57). This is incorrect and it was included in Table 5.1 of our technical submission to the Commission. However, we included it for information only, as has been noted above, the requirement was for us to provide a mitigation strategy and not an appraisal of effects.
- The Commission's assessment states that we did not assess the effects of flight paths on tranquillity and landscape (Jacobs Report, 10. Place Assessment, p.57). This is incorrect and it was included in Appendix C of our technical submission to the Commission albeit again this was not a requirement of us to undertake but one for the Commission.

### **5.10.2.3 Our recommendations**

We recommend that the Commission:

- revisits the Heathrow technical submission and considers the detail of the report before any final assessment is made

## **5.10.3 Heritage**

### **5.10.3.1 Airports Commission's approach**

The Phase 2: Airports Commission Heritage Assessment Report has been compiled in accordance with Design Manual for Roads and Bridges Volume 11, Section 3 Part 2 Cultural Heritage (HA 208/07).

### **5.10.3.2 Our comments**

HA208/07 provides a useful means of collating Environmental Impact Assessment heritage asset data at a basic level, but is not well suited to meeting the principles of strategic environmental assessment. It applies a number of fixed parameters, such as prescribed limits to the study area, whether these are entirely relevant to the specific environmental considerations or not.

If used more flexibly it has merit in scoping heritage assets, but its major fault arises from the use of an overly simplistic coding system for measuring value, magnitude of change and impact. This reductive process, focused on designated heritage assets, does little to recognise the particular qualities heritage services might offer to sustaining Place.

The Commission's Sustainability Appraisal 'Place Assessment Module' makes reference to both the Assessment Basecase and Assessment Detail. The Phase 2: Airports Commission Heritage Assessment Report focuses solely on the Assessment Detail. By failing to take account of the Basecase, i.e. Natural England's 'National Character Area' the Commission's assessment disconnects heritage assets from context, and does not address effects at an appropriate site specific or community level nor does it take account of local character.

### **5.10.3.3 Our recommendations**

We recommend that the Commission:

- recognise this short coming in their assessment and improve their methodology to allow for local character

## **5.11 Heathrow NWR; Community**

### **5.11.1 Property loss from surface access proposals**

#### **5.11.1 Airports Commission's approach**

The Commission appraisal modules have put forward a view on how the scheme will require properties to be lost to make way for the expanded airport.

#### **5.11.2 Our comments**

The Commission's analysis of property loss associated with the expansion of the airport's footprint broadly accords with our own analysis. However, we believe that the property loss figures due to surface access changes under the scheme have been based on an unnecessarily pessimistic view of the land take required. This means that the Commission's analysis shows significantly more property loss than our own assessment; 750 residential properties for our scheme compared to 783 suggested by the Commission.

In paragraph 3.141 the Commission point out that the number of properties to be lost may change depending upon detailed route and construction design. We agree with this. The local road schemes we propose have not been designed to a point where the numbers of properties can be determined accurately. The routes of these roads will need to be consulted upon and it is very likely that the routes can be improved to minimise property loss.

#### **5.11.3 Our recommendations**

We recommend that the Commission:

- sets out the methodology used for establishing property loss associated with surface access is made clear in order to the impacted communities
- recognise the need to complete a more detailed exercise to determine more accurately the number of residential properties impacted

## 5.12 Community cohesion

### 5.12.1 Airports Commission's approach

The Commission assessment has identified how, in their view, the cohesion of communities closest to the airport would be affected by the scheme.

### 5.12.2 Our comments

We disagree with the generalisations made on community cohesion in paragraph 3.142 of the Consultation document namely that: "At the very local level it is difficult to see any existing community cohesion being maintained, unless entire communities and their facilities could be moved en masse at the same time."

We do acknowledge that the effect of the airport expansion on Harmondsworth and Sipson would be considerable and that Longford would be removed completely. However, we do believe that, even for these communities, although the local dynamic may change, there will still be community cohesion for those that wish to continue living in these villages. We will ensure this through the mitigation efforts that we are making, particularly through provision of new community assets and an enhanced local 'green' environment. In addition our intent is to offer all displaced residents the option of a new home within the local area which will again mitigate to some extent the effects of local people relocating from the area.

With regard to Colnbrook, Brands Hill and Harlington we feel that there is insufficient evidence to justify the Commission's wording. The character of remaining communities may change over time. But this effect would be seen whether or not the airport was to expand, and there is no necessary connection to airport expansion or wider social change with an absence of community cohesion.

### 5.12.3 Our recommendations

We recommend that the Commission:

- Amends the conclusion at para 6.6 of the Evidence Base Document on the overall 'bundled' effect following mitigation from adverse to neutral to reflect the range of mitigations proposed and the opportunities to set remaining communities on a new footing underpinned by facility provision and other community support mechanisms
- Take account of the positive effects of airport development as highlighted by the quality of life analysis into the Community cohesion assessment



## 5.13 Heathrow NWR; Cost and Commercial Viability

### 5.13.1 Optimism Bias

#### 5.13.1.1 Airports Commission's approach

In seeking to comply with the Treasury's Green Book methodology the Commission have applied optimism bias to the capital cost figures provided by HAL. For this purpose they have discriminated between the Core works and the Scheme works. Within each of these categories the Commission have split the works into two types as follows:

- Standard Building = 30%
- Standard Civil Engineering = 70%

The capital costs of Core works have been given an optimism bias of 14.5% and Scheme works an optimism bias of 19.6%. In addition optimism bias has been added to both Opex predictions (11.2%) and predicted Asset replacement costs (30%).

#### 5.13.1.2 Our comments

We understand that the Commission wants to robustly model the potential costs to private investors of the airport expansion. This is to avoid under estimating costs and to minimise the risk that the national economic benefits do not flow through as modelled due to underinvestment by the airport. To do this the Commission is following the Green Book methodology for the application of optimism Bias to publicly funded projects. We understand the need for the funding requirements to be viewed through this lens when considering the investment of Government money. We would emphasise that this is not the only way, nor the most appropriate way, of looking at this issue for a private company. Both private investors and the Regulator will be interested in delivering the passenger throughput (at the appropriate service quality) and the consequent national economic benefit for the minimum cost possible.

We acknowledge the Commission's challenge that we have a potential commercial interest in minimising the apparent overall cost of our proposal in their process. Yet we would also point out that it is not in our interest to underestimate costs either if we are to retain the credibility with our current investors. For this reason we have prepared the cost estimates as accurately as possible, basing them on very recent outturn cost data from almost identical facilities, without attempting to "spin" the resulting figures.

The following note outlines our thoughts on how the Commission has applied optimism bias and where, in our view, the approach has shortcomings in its application.

#### **Capex**

With regard to Capex there are three main issues:-

1. No discrimination between "on airport" works and "off airport" works
2. An incorrect underlying assumption made on the split between buildings and civils works
3. A need for a detailed scrutiny of the individual mitigation factors assumed

#### **On airport v off airport works**

We believe that the Scheme CAPEX works must be split into three areas. This will ensure that the application of optimism bias is carried out in a meaningful and systematic way, whilst following the green book application for optimism bias. We have applied an OB figure to the Core works and a further 2 figures to the Scheme work. The Scheme capex costs should be split into those elements within the confines for the airport and those that are contained outside. 'Airport' and 'External' infrastructure elements have very different knowledge bases associated with them and as such applying differing values for optimism bias is appropriate.

The Airports Commission have applied a mitigated optimism bias figure of 14.5% for the Core works whilst for the 3R Scheme works a mitigated optimism bias figure of 19.6% has been used.

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When looking at the mitigating factors applied to each CAPEX contributory factor, we disagree with the level of those mitigation factors. The overarching argument behind the increase in the mitigating factor is HAL's existing level of data, experience, knowledge of the site and overall know-how in building an extension to the UK's hub airport. This is not to say that all mitigating factors should be increased to 1.00. However a more realistic viewpoint should be taken when assessing construction operations that are effectively business as usual for HAL.

Having reviewed the values applied by the Commission for the application of an optimism bias figure we have derived alternative values which we believe are more reflective of the programme of works and the supply chain that these works will attract. The figures produced are for Core works, Scheme works on airport and Scheme work external to the future airport boundary. The Commission does not make this distinction between the two areas of Scheme works in their application of optimism bias.

**Split between buildings and civils**

An important starting point in the optimism bias model process is establishing a split between the costs of civil engineering work and the costs of building work. The Commission's assumption on both Core and Scheme works of this split is:

- Standard Building = 30%
- Standard Civil Engineering = 70%

This split is not supported by the detail of the NWR cost plan. A more accurate rounded assumption would be:

- Standard Building = 70%
- Standard Civil Engineering = 30%

This is evidenced by HAL's cost plan summary where build elements totalling £9.86 billion value give a split as follows:

- Building = £6.44 billion equivalent to 69.6%
- Civil Engineering = £2.81 billion equivalent to 30.4%

The following table shows the detail:

**Figure 5.11: Summary of split between building and civil costs for Scheme works**

Sub-Element	Building Related Cost	Civil Engineering Related Cost	
Decants / Demolitions	Incl Below		
Enabling Works	485,062,000		
Terminals and Satellites	4,395,079,000		
Baggage and TTS	971,999,600	523,384,400	
Airfield	102,000,000	1,606,874,000	
Landside Infra	320,000,000	641,070,000	
Development Process Costs	164,000,000	41,000,000	
<b>Totals</b>	<b>6,438,140,600</b>	<b>2,812,328,400</b>	<b>9,250,469,000</b>

If this 70 / 30 split reversal is taken into account it would make a significant reduction in the Commission's own calculation for optimism bias on both the Core and Scheme capex figures.

**Examination of individual line item figures used for Capex by the Commission**

To articulate our justification for why an alternative value should be used for certain works it is necessary to detail, line by line, the variances and thought process behind each element. What follows is an extract from both the

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Green Book for each of the above CAPEX categories, including Asset Replacement but excluding OPEX. There is no further commentary on the split between standard Civil Engineering and Standard Building works as this is deemed to be covered above by reference to the current cost plan and overall scope of the project. The categories below are referenced only where a delta exists between our view and the Commission's view. We have looked at both Core and Scheme works. Some of the explanations apply to both and are therefore referenced rather than repeated.

HAL Core Works

## Procurement:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Dispute and Claims Occurred	29	0.95	0.70	-0.3	21	0.95	0.70	-0.3

Three guidance headings given under this Contributory factor are as follows:

- Dispute over Interim Payments
- Claims for changes in scope
- Claims for late release of information by other stakeholders

This guidance surrounds the need for active and meaningful change management along with strong and structured Contract Management. HAL's use of contract conditions that are collaborative in nature is deliberately designed to minimise the potential for disputes and claims. The use of risk management procedures where the client retains much of the risk burden are also used for this purpose. The success of this approach in avoiding delay and cost overrun due to disputes and claims is well evidenced over the last 10 years and £11billion worth of development at Heathrow. Obtaining the 'buy-in' of stakeholders through the HAL Gateway process has minimised the impact of change and late release of information. Procedural improvements and the in depth knowledge of the current site, buildings and assets leave little room for meaningful and significant dispute and claims. As such a mitigation factor of 0.95 is deemed relevant to both Building and Civil Engineering aspects.

## Project Specific:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Degree of Innovation	4	0.95	0.80	-0.2				

Two guidance headings under this Contributory factor are as follows:

- New generation design
- Unusual site conditions requiring innovative solutions

Looking at the Core works it is not anticipated that there will be major changes in design methodology and philosophy over the coming years such that there will be an increase in the requirements for funding a core CAPEX scheme. The potential for unusual site conditions to be found within the Core Scheme are extremely low. This is especially true given the amount of empirical data that exists within the HAL Community for construction of this nature. As such a Mitigation Factor of 0.95 is appropriate to Building works.

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Environmental Impact					22	0.75	0.50	-0.3

Three guidance headings given under this Contributory factor are as follows:

- Contamination
- Noise Pollution

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- Impact on wildlife

The Environment is paramount in everything we do here at HAL and as such there is great merit in applying a Mitigation Factor that reflects our core values and beliefs. We have worked extremely hard and successfully over a number of years to minimise the impact of the airport on the Environment of daily operations. The sums attributed to environmental impact protection within our business case for this 3<sup>rd</sup> runway are significant. The design, construction and operational activities that go into ensuring non-contamination of water courses, roads, local residents and businesses are deliberately specified to be world class. The noise mitigation measures that are currently within our overall business plan are based on empirical data, predicted noise levels and mitigation measures which we know work. We do understand that there is an element of the unknown in external environmental factors which may impact the project and we believe this should be reflected in a meaningful mitigation factor. A mitigation of 0.75 is appropriate to the Civil Engineering element of this work.

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Other					18	0.90	0.50	-0.4

There can be no commentary given on this category as no definition has been provided by the Commission on what 'Other' refers to. Until further analysis can be provided we have applied a mitigation factor in line with the average of other contributory factors.

Client Specific:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Inadequacy of the Business Case	34	0.95	0.80	-0.2	10	0.95	0.80	-0.2

Four guidance headings given under this Contributory factor are as follows:

- Number of services were not anticipated
- Output specifications were not clearly defined
- Oversight in facilities required
- All stakeholders were not involved and so their needs were not defined and included in Business Case

The robustness of the Gateway process instilled as Business as usual within HAL mitigates to a large extent any risk in this area. All aspects of the HAL community are required to sign off on the Business Case. All plans are rigorously reviewed by the airline community, HAL's operations and engineering team and the security and border services. We do recognise that there is always the potential for oversight. However the numerous check and hold points that are in place well before any construction starts keep this risk to the lowest possible level.

We understand from the Green Book guidance notes on this contributory factor that funding and financial aspects are not covered by this section. We deal further with this aspect under the external influences section. Given that the core works surround the enhancement / extension of a BAU approach, we believe that a mitigation factor of 0.95 is appropriate.

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Poor Project Intelligence	2	0.90	0.80	-0.1	7	0.90	0.80	-0.1

Three guidance headings given under this Contributory factor are as follows:

- Insufficient ground investigation
- The detailed design was based on insufficient site information
- Insufficient surveying of existing conditions

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Given the very collaborative nature of our relationship with our supply chain community and the equitable sharing of contractual risk we believe that there is limited potential in the design not being suitably adapted to the site. In addition the amount of work undertaken at Heathrow Airport over many decades provides our team with a wealth of site, ground and design information surrounding the site. No business case progresses past our G3 stage without sufficient surveys having been carried out. It is not in HAL's interest for this to occur. We do appreciate that we have not surveyed every square metre of the site and as such a mitigating factor of 0.90 is appropriate for both Building and Civil works.

External influences:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Economic	11	0.85	0.20	-0.7	7	0.85	0.20	-0.7

Two guidance headings given under this Contributory factor are as follows:

- Change in market demand resulting in a change of funding priorities
- Crash in stock markets

As an airport subject to economic regulation we know our income and funding streams. At each regular 5 year price review the CAA sets a yield per passenger for Heathrow to earn an acceptable return on its overall investment. The protection afforded to HAL by operating under this regulatory framework seeks to minimise a number of risks including those of an economic nature outlined above.

HAL is privately funded predominantly by stable, institutional investors in debt and equity. They are typified by pension and sovereign funds whose long term strategies match the investment opportunities provided by HAL. HAL also has excellent access to both UK and overseas debt markets, issuing debt in sterling and four non-sterling currencies (€, \$, C\$ and SFr). As a result HAL has a wide range of well-developed relationships with bond holders around the world mitigating the risk to financial markets in any individual country. HAL's senior debt has a stable A-investment grade credit rating.

Airline traffic is resilient at the hub. This has been witnessed, most recently, during the global "great recession" of the last few years. Passenger mix changed marginally at Heathrow in this period, but passenger and traffic growth continued. For this reason it is not envisaged that external economic influences will be of major concern to the business case. However, there is a level of prudence to be applied here and we believe that a value of 0.85 should be applied to both Building and Civil works for this element.

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Legislation/Regulations	3	0.75	0.70	-0.1				

One guidance heading given under this Contributory factor is as follows:

- Change in required standards

We currently allow for an element of legislation or regulation change within our asset management calculations whereby security equipment is not depreciated until its technical obsolescence because of the strong likelihood of regulation change. We currently allow for change in screening in line with our historical and empirical datasets. Once again, being part of a regulated industry the impact of regulation or legislation change is somewhat offset and, within bounds, we can recover these costs through our regulatory price cap formulae. We cannot legislate against short term security concerns and the resultant legislative and regulatory guidelines that need to change quickly. As such we believe that the mitigation factor should increase to 0.75 for Buildings.

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## Procurement:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Dispute and Claims Occurred	29	0.95	0.70	-0.3	21	0.95	0.70	-0.3

See Core for explanation

## Project Specific:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Degree of Innovation	4	0.95	0.80	-0.2				

See Core explanation

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Environmental Impact					22	0.75	0.50	-0.3

See Core explanation

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Other					18	0.90	0.50	-0.4

See Core explanation

## Client Specific:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Inadequacy of the Business Case	34	0.90	0.80	-0.1	10	0.90	0.80	-0.1

See Core explanation

We understand from the Green Book guidance notes on this contributory factor that funding and financial aspects are not covered by this section. This aspect is covered under the external influences line. We believe that a mitigation factor of 0.90 is appropriate.

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Poor Project Intelligence	2	0.90	0.80	-0.1	7	0.90	0.80	-0.1

See Core explanation



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External Influences:

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Economic	11	0.85	0.20	-0.7	7	0.85	0.20	-0.7

See Core explanation

	Standard Building optimism bias (%)	HAL Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	AC Mitigation Factor (0<x<1)	Delta
Legislation/Regulations	3	0.75	0.70	-0.1				

See Core explanation

### Summary

These individual lines are then combined into summary tables for the three areas of Core Works, Scheme "Airport Infrastructure", Scheme "External Infrastructure" as follows:

### Heathrow Airport Limited CAPEX Optimism Bias - Core Works

Step 1- Upper bound values for combined projects				
Project Type	Percentage of CAPEX (%)	Upper bound OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	70	24	16.8	
Standard Civil Engineering	30	44	13.2	
Combined				30.0

Step 2 - CAPEX Contributory Factors		Standard Building optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)
Procurement	Late Contractor Involvement in Design	2	0.95	1.9	0.1	3	0.95	2.9	0.2
	Poor Contractor Capabilities	9	0.95	8.6	0.5				
	Dispute and Claims Occurred	29	0.95	27.6	1.5	21	0.95	20.0	1.1
Project Specific	Design Complexity	1	0.90	0.9	0.1				
	Degree of Innovation	4	0.95	3.8	0.2				
	Environmental Impact					22	0.75	16.5	5.5
	Other					18	0.90	16.2	1.8
Client Specific	Inadequacy of the Business Case	34	0.95	32.3	1.7	10	0.95	9.5	0.5
	Project Management Team	1	0.90	0.9	0.1				
	Poor Project Intelligence	2	0.90	1.8	0.2	7	0.90	6.3	0.7
	Other - omitted (<1)								
Environment	Public Relations	2	0.50	1.0	1.0	9	0.50	4.5	4.5
	Site Characteristics	2	0.80	1.6	0.4	3	0.80	2.4	0.6
	Permits/Consents/Approvals								
External Influences	Economic	11	0.85	9.4	1.7	7	0.85	6.0	1.1
	Legislation/Regulations	3	0.75	2.3	0.8				
Weighted Total		100			8.1	100			15.9

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results****Step 3 - Adjusted Capital Expenditure Optimism Bias**

Project Type	Percentage of CAPEX (%)	Mitigated OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	70	1.94	1.36	
Standard Civil Engineering	30	6.97	2.09	
Combined				3.45

**Heathrow Airport Limited CAPEX Optimism Bias – Scheme Works Airport Infrastructure****Step 1- Upper bound values for combined projects**

Project Type	Percentage of CAPEX (%)	Upper bound OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	70	24	16.8	
Standard Civil Engineering	30	44	13.2	
Combined				30.0

**Step 2 - CAPEX Contributory Factors**

		Standard Building optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)
Procurement	Late Contractor Involvement in Design	2	0.95	1.9	0.1	3	0.95	2.9	0.2
	Poor Contractor Capabilities	9	0.95	8.6	0.5				
	Dispute and Claims Occurred	29	0.95	27.6	1.5	21	0.95	20.0	1.1
Project Specific	Design Complexity	1	0.90	0.9	0.1				
	Degree of Innovation	4	0.95	3.8	0.2				
	Environmental Impact					22	0.75	16.5	5.5
	Other					18	0.90	16.2	1.8
Client Specific	Inadequacy of the Business Case	34	0.90	30.6	3.4	10	0.90	9.0	1.0
	Project Management Team	1	0.90	0.9	0.1				
	Poor Project Intelligence	2	0.90	1.8	0.2	7	0.90	6.3	0.7
	Other - omitted (<1)								
Environment	Public Relations	2	0.50	1.0	1.0	9	0.50	4.5	4.5
	Site Characteristics	2	0.80	1.6	0.4	3	0.80	2.4	0.6
	Permits/Consents/Approvals								
External Influences	Economic	11	0.85	9.4	1.7	7	0.85	6.0	1.1
	Legislation/Regulations	3	0.75	2.3	0.8				
<b>Weighted Total</b>		<b>100</b>			<b>9.8</b>	<b>100</b>			<b>16.4</b>

**Step 3 - Adjusted Capital Expenditure Optimism Bias**

Project Type	Percentage of CAPEX (%)	Mitigated OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	70	2.35	1.65	
Standard Civil Engineering	30	7.19	2.16	
Combined				3.80

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results****Heathrow Airport Limited CAPEX Optimism Bias – Scheme Works External Infrastructure**

<b>Step 1- Upper bound values for combined projects</b>				
Project Type	Percentage of CAPEX (%)	Upper bound OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building – N/A	0	24	0	
Standard Civil Engineering	100	44	44	
Combined				44.0

<b>Step 2 - CAPEX Contributory Factors</b>		Standard Building optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)	Standard Civil Engineering optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)
Procurement	Late Contractor Involvement in Design	2	1.00	2.0	0.0	3	0.95	2.9	0.2
	Poor Contractor Capabilities	9	1.00	9.0	0.0				
	Dispute and Claims Occurred	29	1.00	29.0	0.0	21	0.70	14.7	6.3
Project Specific	Design Complexity	1	1.00	1.0	0.0				
	Degree of Innovation	4	1.00	4.0	0.0				
	Environmental Impact					22	0.20	4.4	17.6
	Other					18	0.90	16.2	1.8
Client Specific	Inadequacy of the Business Case	34	1.00	34.0	0.0	10	0.90	9.0	1.0
	Project Management Team	1	1.00	1.0	0.0				
	Poor Project Intelligence	2	1.00	2.0	0.0	7	0.50	3.5	3.5
	Other - omitted (<1)								
Environment	Public Relations	2	1.00	2.0	0.0	9	0.50	4.5	4.5
	Site Characteristics	2	1.00	2.0	0.0	3	0.50	1.5	1.5
	Permits/Consents/Approvals								
External Influences	Economic	11	1.00	11.0	0.0	7	0.85	6.0	1.1
	Legislation/Regulations	3	1.00	3.0	0.0				
<b>Weighted Total</b>		<b>100</b>			<b>0.0</b>	<b>100</b>			<b>37.4</b>

<b>Step 3 - Adjusted Capital Expenditure Optimism Bias</b>				
Project Type	Percentage of CAPEX (%)	Mitigated OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building – N/A	0	0.0	0.0	
Standard Civil Engineering	100	16.5	16.5	
Combined				16.46

We have judged the Scheme Works “External infrastructure” to be 100% in the Civils category.

**OPEX**

The Commission has not provided the build up to the OB applied number of 11.2% to OPEX. The Green Book is explicit in its opening discussion on the application of OB to OPEX:

*“Due to a lack of available data, Mott MacDonald was unable to recommend sound upper and lower bound optimism bias levels for operating expenditure (except for outsourcing projects) or benefits shortfall”*

We believe that nature of the airport that we will be running is substantially the same as the current one in the nature of its assets and operation and believe our calculations based on today's evidence to be robust. We therefore do not believe that applying optimism bias to these figures is appropriate.

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results**Asset Replacement

The nature of the asset replacement programme for the future airport is a well understood entity and will consist in reality of a myriad of minor planned projects for “on airport” infrastructure but for buildings largely rather than civil engineering. We therefore believe that the appropriate percentage for an asset replacement optimism bias would be derived as follows:

**Heathrow Airport Limited CAPEX Optimism Bias – Asset Management & Business Change**

<b>Step 1- Upper bound values for combined projects</b>				
Project Type	Percentage of CAPEX (%)	Upper bound OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	100	24	24	
Standard Civil Engineering	0	44	0	
Combined				24.0

<b>Step 2 - CAPEX Contributory Factors</b>		Standard Building optimism bias (%)	Mitigation Factor (0<x<1)	Reduction in optimism bias	Mitigated optimism bias (%)
Procurement	Late Contractor Involvement in Design	2	0.95	1.9	0.1
	Poor Contractor Capabilities	9	0.95	8.6	0.5
	Dispute and Claims Occurred	29	0.95	27.6	1.5
Project Specific	Design Complexity	1	0.95	1.0	0.1
	Degree of Innovation	4	0.95	3.8	0.2
	Environmental Impact				
	Other				
Client Specific	Inadequacy of the Business Case	34	0.95	32.3	1.7
	Project Management Team	1	0.95	1.0	0.1
	Poor Project Intelligence	2	0.90	1.8	0.2
	Other - omitted (<1)				
Environment	Public Relations	2	0.50	1.0	1.0
	Site Characteristics	2	0.95	1.9	0.1
	Permits/Consents/Approvals				
External Influences	Economic	11	0.95	10.5	0.6
	Legislation/Regulations	3	0.50	1.5	1.5
<b>Weighted Total</b>		<b>100</b>			<b>7.4</b>

<b>Step 3 - Adjusted Capital Expenditure Optimism Bias</b>				
Project Type	Percentage of CAPEX (%)	Mitigated OB (%)	OB contribution (%)	Resultant OB (%)
Standard Building	100	1.8	1.8	
Standard Civil Engineering	0	7.3	0.0	
Combined				1.76

### 5.13.1.3 Our recommendations

We recommend that the Commission use optimism bias figures mitigated further as follows:

	Commission Values	HAL Revised Values
Core	14.5%	3.45%
Scheme – On Airport	19.6%	3.80%
Scheme – Off airport /External	19.6%	16.46%
Asset Replacement	20-30%	2%
OPEX	11.2%	0%

## 5.13.2 Airport charge profile

### 5.13.2.1 Airports Commission's approach

The Commission's consultants have estimated the airport charges that would apply under each of the proposals. Their approach is not based on the existing regulatory structure but on cash flow modelling which does not make explicit assumptions about how the airports will be regulated in future. Section 1.5.3 of the PwC report "Cost and Commercial Viability: Funding and Financing" appears to be intended to provide an explanation of how PwC (on behalf of the Commission") have calculated aeronautical charges.

### 5.13.2.2 Our comments

Note that any reference to actual charge levels in this section must be taken to be illustrative, as the actual regulatory regime (including the WACC) is unknown at this time.

The Commission's consultants have over-estimated the average airport charge at an expanded Heathrow airport by 25% (£30 versus £24 per passenger).<sup>11</sup> This over-estimate results from two key areas:

- differences in cost and revenue assumptions;
- differences in methodology.

#### Differences in cost and revenue assumptions

This accounts for *circa* £2 of the difference in airport charges and is due primarily to the inclusion by the Commission of optimism bias (adding *circa* £4) and an erroneous asset life assumption (reducing charges by *circa* £2).

As discussed above (in section 5.13.1), a 20% optimism bias has been added to Heathrow's capital expenditure, operating cost and commercial revenue forecasts. Heathrow has a detailed understanding of the likely operating costs and commercial revenue opportunities in an expanded airport and recent experience of major projects from the construction of Terminal 5 and the new Terminal 2. Consequently, Heathrow is in an excellent position to provide accurate cost estimates with a greatly reduced need for any optimism bias allowance. The inclusion of optimism bias increases airport charges by *circa* £4.

The Commission's asset life assumptions<sup>12</sup> include an average remaining asset life for the current asset base of 15 years compared to the actual remaining life of *circa* 30 years. This impacts the calculation of regulatory depreciation

<sup>11</sup> Heathrow "Taking Britain further", section 6.2.6.9; and Airport Commission "Heathrow Airport North West Runway: Business Case and Sustainability Assessment", Table 3.6. Note that these figures are illustrative since, amongst other things, the details of the regulatory environment (including the WACC are unknown).

<sup>12</sup> Airport Commission, "Cost and Commercial Viability: Financial Modelling Input Costs" section 2.2.5

and the evolution of the regulated asset base (RAB) and reduces airport charges under the current regulatory regime by *circa* £2.

### **Differences in methodology**

This accounts for the remaining *circa* £4 of the difference in airport charges.

The current RAB based 'building block' model of economic regulation which is used to calculate airport charges at Heathrow is well-understood and long established. There is no indication at present that this model will change materially with an expanded airport. Heathrow have taken the Commission's forecasts of capital expenditure, operating costs and commercial revenues and input them into the current regulatory model. This results in a forecast average airport charge of £26 per passenger.

It is not entirely clear how the Commission's alternative 'cash flow' model results in a £30 airport charge. However, their stated assumption that charges "escalate during periods of capex (excluding asset replacement) but otherwise remain constant in real terms"<sup>13</sup> is a significant simplification that is highly likely to overstate charges.

The Commission acknowledge that their calculations result in airport charges that are higher than Heathrow's forecast and attributes this as 'primarily due to differences in the assessment of cost'<sup>14</sup>. Heathrow's view is that the difference is due primarily to the differences in methodology as detailed above.

### **5.13.2.3 Our recommendations**

The Commission should review its calculation of airport charges to ensure that

- the chosen methodology, which is different to the current model used for economic regulation at Heathrow, does not overstate the level of charges
- any inclusion of optimism bias appropriately reflects Heathrow's knowledge and experience of forecasting airport costs and revenues
- state what airport charges would be under the current regulatory model with clear assumptions that allow outside full verification

## **5.13.3 Funding requirements**

### **5.13.3.1 Airports Commission's approach**

The Commission has:

- included high levels of optimism bias in capex estimates;
- assumed that the average bond tenor for Heathrow is only 9 years compared to 10 years assumed for Gatwick.<sup>15</sup> There is no justification provided for this differential. As explained below, the differential in debt maturity should be the other way around.

### **5.13.3.2 Our comments**

The Commission is over-estimating Heathrow's funding requirement in particular for two specific reasons:

- Firstly, inclusion of optimism bias. The issue of optimism bias has already been discussed in Section 5.13.1;
- Secondly, the Commission's consultants have assumed that the average bond tenor for Heathrow is only 9 years compared to 10 years assumed for Gatwick.

<sup>13</sup> Airport Commission, "Cost and Commercial Viability: Funding and Financing" section 1.5.3

<sup>14</sup> See PwC, "Cost and Commercial Viability: Funding and Financing" section 3.4.4

<sup>15</sup> See PwC, "Cost and Commercial Viability: Funding and Financing", Tables 3 and 11.



The issue of average bond maturity is a significant concern to Heathrow as we believe it results in materially overstating the annual amount of new debt, an important metric for the credit markets.

It may be that in doing the analysis the Commission has assumed that Gatwick's current portfolio reflects its medium term position, however this is a recently implemented portfolio and therefore a longer dated debt portfolio than could be expected as it matures in the medium term.

Whilst that may be an explanation for the difference, we do not believe this approach is justified for a number of reasons. Heathrow's actual average life of debt has been maintained at 11-12 years over recent years. In addition, the differential in average tenor in favour of Gatwick runs counter to the fundamentals of the respective airports' business cases given the relative weakness we observe with Gatwick's case, which has been independently confirmed by Moody's. On the basis of Moody's assessment of the relative credit risk of Heathrow and Gatwick expansion ("New runway will have mixed credit implications for London's airports", Moody's Investor Services, 10 December 2014), we would expect Heathrow to be in a much better position than Gatwick to issue long dated debt.

### 5.13.3.3 Our recommendations

We recommend that the Commission should:

- assume the existing average bond tenor for Heathrow of 12 years currently, rather than make an arbitrary assumption that is inconsistent with that assumed for Gatwick
- consider extending the tenor for Heathrow relative to Gatwick to allow for Heathrow's better credit rating as indicated in the Moody's report

## 5.14 Heathrow NWR; Operational Efficiency

### 5.14.1 Minimum Connection Time

#### 5.14.1.1 Commission's approach

In paragraph 8.6 of the Operational Efficiency module Jacobs questions whether 60 minute MCTs are achievable and suggest that 64-73 minute MCTs are more credible.

#### 5.14.1.2 Our comments

There are many assumptions made to arrive at this assessment. Many of these are unreasonable, others are inconsistent. Firstly some of the assumptions made for Heathrow are unreasonable; we consider 15 minute disembarkation times for MCT passengers to be very conservative. Current airline practices at Heathrow pre-identify and prioritise MCT passengers. The calculation of MCTs should be based on inter-lining assumptions rather than self-connect assumptions at a purpose built hub like Heathrow. This means that the vast majority of passengers will already have onward connection boarding passes and will not be required to visit the transfer connection desk.

We also note that there are inconsistencies in the assumptions used for the Gatwick and Heathrow MCT assessments. For example, Heathrow use 1m/s passenger walking speed, whereas Gatwick's MCT assessments have been made using 1.5m/s. Given the difference in floor space per passenger assumed in either proposal this is much more likely to be the other way around since crowding at Gatwick will be a real issue for practical walking speeds.

Applying consistent assumptions would result in the MCTs for Heathrow and Gatwick being similar for passengers.

In relation to baggage the automated DCV system proposed for Heathrow would transfer bags across the campus at a speed of around 10m/s compared to a tug and dolly solution (proposed at Gatwick) at 4-4.2m/s. With a

distance of around 6km to cover between the furthest gates at Heathrow compared to 5km at Gatwick, the speed efficiency of the DCV compared to the tug and dolly operation will result in significantly shorter baggage MCTs at Heathrow compared to Gatwick and a more resilient operation.

### 5.14.1.3 Our recommendations

We recommend that the Commission recalculates the passenger MCTs for our NWR scheme based on the following assumptions and ensures that these are consistent with those used for Gatwick:

- applying a consistent walking speed for Heathrow and Gatwick
- reducing 15 minute disembarkation times to 7 mins as standard today
- including vertical circulation change times in the Gatwick assessment
- reviewing Gatwick walking distance assessment in NT from transfer bus station to furthest gate on Pier 6
- review the impact of differing transfer baggage solutions on baggage delivery times and achievable MCTs

## 5.14.2 Runway separation

### 5.14.2.1 Airports Commission's approach

In paragraph 2.12 of the Preliminary Safety Review, the CAA states that the third runway must meet "... the requirements of ICAO Document 9643 SOIR for all possible modes of operation, in particular given the stagger for the proposed northern runway. Appropriate mitigations will need to be provided."

### 5.14.2.2 Our comments

We have already acknowledge the ICAO Document 9643 SOIR requirements in paragraph 3.3.2.1 of our Taking Britain Further submission (May 2014). Heathrow will be equipped with navigational equipment meeting the ICAO 9643 SOIR requirements as follows:

#### **2.2.1 Requirements and procedures**

*Note: - See the Procedures for Air Navigation Services - Air Traffic Management (PANS-ATM, Doc 4444), Chapter 6, 6.7.3.2.*

*2.2.1.1 Independent parallel approaches may be conducted to parallel runways provided:*

*a) the runway centre lines are spaced by the distance specified in Annex 14, Volume I, and:*

*i) where runway centre lines are spaced by less than 1 310 m (4 300 ft) but not less than 1035m (3 400 ft), suitable SSR equipment, with a minimum azimuth accuracy of 0.06 degrees (one sigma), an update period of 2.5 seconds or less and a high resolution display providing position prediction and deviation alert is available;*

This will enable Runway 3, at 1035m separation, to operate with independent approaches at full capacity.

NATS makes the following points in relation to runway capacity and SOIR in its Airspace assessment of the NWR scheme:

- Paragraph 6.2.1 and 4: NATS confirm that fully independent operations are enabled, subject to the necessary SOIR requirements being met (see above);
- Paragraph 6.2.9: NATS agree that all four operating modes are operationally feasible and the London TMA can deliver traffic to and accept traffic from all of the four modes identified.

- Paragraphs 6.3.1 and 2. NATS confirms that the hourly movement rates are achievable and the total annual ATMs are not considered to be an upper bound

### 5.14.2.3 Our recommendations

We recommend that the Commission:-

- acknowledges in its summary of Operational Efficiency that Heathrow's NWR scheme has been designed to meet the requirements of ICAO Document 9643 SOIR
- acknowledges that when the NWR scheme is operating at the assumed limit of 740,000 movements there will be operational resilience

## 5.14.3 RAF Northolt

### 5.14.3.1 Airports Commission's approach

In the Commission's document [Module 14 Operational Efficiency - Preliminary Safety Review – CAA CAP1215] the CAA states that the introduction of a new third runway will require a complete review and update of the entire operation [Para 2.17], that the interaction with Northolt needs to be understood fully (possibly leading to a 1 for 1 capacity loss at Heathrow for each movement at Northolt) ( Appendix B Heathrow North West Runway Preliminary Assessment Table Paragraph 2.1)(, and that Missed Approach procedures need to be developed and assessed in detail (Para 2.20).

### 5.14.3.2 Our comments

We acknowledge the need for a full review of ATM procedures. We are working with RAF Northolt to develop an initial view of what these will need to look like. NATS addresses many of these points in its assessment and concludes in its evaluation [Module 14 Operational Efficiency – Airspace Efficiency – Annex 2 Page 32] that it "...does not envisage the development and approval of (Missed Approach) procedures as unachievable in the timeframe being considered for the use of the additional runway." It further concludes in Annex 2 that "if approval for a third runway at Heathrow was granted, NATS redesign of the London TMA would ensure that sufficient airspace capacity will be available to support a three runway Heathrow at the peak and annual ATMs envisaged by Heathrow."

The following statement is from the minutes of a meeting held on 18 Dec. 2014 with Northolt, NATS Heathrow and HAL:-

*Specific details are yet to be worked through and the work is in its early stages but indications are that there remains enough distance or height separation in order for safe and efficient tracks for both Northolt and Heathrow to be designed safely. Initial analysis suggests that the airspace around Heathrow could be designed in such a way that RAF Northolt and Heathrow could operate together effectively and efficiently with no detrimental effect on capacity.*

### 5.14.3.3 Our recommendations

We recommend that the Commission:

- acknowledges that there is now little or no risk to either Heathrow's capacity or Northolt operations from the Heathrow expansion proposal

## 5.14.4 Operational Efficiency summary table

### 5.14.4.1 Airports Commission's approach

At a summary level the Ground Infrastructure Operational Efficiency document identifies three 'Amber Significant Issues' which are suggested to be difficult/complex to address for our NWR scheme.

### 5.14.4.2 Our comments

The NWR scheme amber issues are associated with scalability beyond the NWR scheme's envisaged scope and are therefore not the focus of the current process. Even so, we disagree with the Commission's assessments in these categories for the reasons set out below (words in bold are quotes from the summary table):

#### **Proposed fourth runway to SW or NW would be more disruptive and challenging than the proposed R3**

A fourth runway would indeed be more challenging and has not been the focus of our proposal. We did illustrate in Section 17 of our Long Term Options submission to the Airports Commission (July 2013) how a fourth runway might be developed to the northwest or southwest of the existing airport. These options would certainly be challenging, but were Heathrow ever required in time to consider 'scalability' to deliver a fourth runway, these would form credible starting points for assessment as to suitability for development.

#### **Difficult to extend existing runways westward, given the presence of the M25 tunnel**

None of our illustrative 4 runway schemes shown in our Long Term Options submission envisage delivering a fourth runway at Heathrow by extending one of the existing runways over the M25. We would therefore regard this comment as 'Not Applicable'.

#### **Challenging to extend airfield westwards across the M25**

None of our illustrative 4 runway schemes envisage delivering additional airfield capacity by extending west of the M25. Heathrow would look for expansion to the east of satellite T6B. As Jacobs has clearly appreciated this might just be to permit the long term closure of Terminal 4 in a 3 runway scenario rather than as part of a 4 runway scheme. We would therefore regard this comment as 'Not Applicable'.

### 5.14.4.3 Our recommendations

We recommend the amber designations be reviewed and represented as yellow

## 5.15 Heathrow NWR; Delivery: Risk Assessment & Mitigation

### 5.15.1 Consenting

#### 5.15.1.1 Commission's approach

The Commission's appraisal module 16. *Delivery: Risk Assessment & Mitigation* notes that airport expansion of this scale has not been undertaken in the UK for several years. It refers to two available consenting routes - the 2008 Planning Act and a Hybrid Bill. The Commission notes how Heathrow Airport and Gatwick refer to the necessity of a National Policy Statement and both anticipate the schemes progressing through the DCO planning process. The Commission notes the difficulty in being definitive now on how long the planning process will take. It commits to recommending how planning consent can be secured for any scheme in its final report. The Commission's consultation document (para 1.31/1.32) notes that the delivery of new runway capacity, including consideration of legal and planning issues, are not the subject of the present consultation.

#### 5.15.1.2 Our comments

We are disappointed that the Commission has felt unable to provide its views on the legal and planning issues, including consideration of the appropriate consenting route, in respect of new runway development. We remain convinced that the DCO process under the 2008 Planning Act provides the most appropriate consenting mechanism for this type and scale of project, offering numerous benefits over a less certain and more complex Hybrid Bill route. We would refer you to our more thorough comments on this in our response to the Commission's Delivery Discussion Paper (Aug 2014) and reiterate that we cannot see any reason why the Hybrid Bill process could be considered more suitable for consenting new airport infrastructure.

The DCO process is now maturing as an effective and robust consenting process. The latter now benefits from several examples of complex major schemes successfully making it through the process, such as Hinckley Point C Nuclear Power Station and the more recent Thames Tideway Tunnel. We maintain that it is well suited to a new runway proposal. Our initial discussion with the Planning Inspectorate has also confirmed this to be the case (see <http://infrastructure.planningportal.gov.uk/legislation-and-advice/register-of-advice/?ipcadvice=8530095d75>). Having the Commission's confirmation within the appraisal module on Delivery would have been helpful, not least to ensure that our early preparations for rapid mobilisation in the event of support for Heathrow from the Commission and Government are appropriate and relevant.

We note the Commission's comment in respect of Gatwick that the extent to which any National Policy Statement may delay development of any planning application is unclear. We believe our submission to the Commission in May 2014 (reference) provides sufficient clarity on this. It highlights that:

1. a clear recommendation from the commission and a swift supportive policy announcement by Government are pre-requisites for the expeditious preparation of a National Policy Statement;
2. utilising a thorough and robust evidence base from the Commission's work could significantly speed up the preparation of a National Policy Statement; and
3. a planning (DCO) application can be prepared in parallel with a National Policy Statement.

Even our cautious estimate of 2½ years for the preparation of an NPS shows that an application could be submitted in early 2018, with a subsequent consent in late 2019. There will of course be various risks to this programme but the Commission could have usefully set those out now to ensure scheme promoters have a common understanding and appreciation of what these might be, and can prepare accordingly.

### 5.15.1.3 Our recommendations

We recommend that the Commission:

- provides unambiguous advice to Government on how it can fully expedite the preparation of a National Policy Statement and delivery of new runway capacity including the need for a clear Government policy announcement as soon as possible following receipt of the Commission's recommendation

## 5.15.2 Construction schedule

### 5.15.2.1 Commission's approach

The Commission concludes that our NWR scheme can plausibly be delivered by 2026 and that the risk of not providing one additional runway's capacity by 2030 is very low. It identifies the most significant risks to a 2026 scheme completion arise from the M25 tunnelling and the relocation of the Colnbrook Energy from Waste (EfW) facility. The Commission's runway opening date assumption is 6-18 months later than ours and it would appear that the Commission has allowed for Optimism Bias in the delivery schedule over and above the dates set out by us.

### 5.15.2.2 Our Comments

We agree that both the M25 Tunnelling and the EfW facility relocation are potential constraints to the scheme delivery. These, amongst others, have already been highlighted and are therefore planned to be delivered as early as possible within the scheme. We are already engaging with the relevant stakeholders in order to manage and control any potential impact.

With specific reference to the EfW facility, we are collaborating with the facility's owner and the local authority to identify the best site for its replacement. We have begun a feasibility study to confirm that the plant can be re-provided in the time window available in our schedule. We believe that this approach will help to ensure that the new plant can offer uninterrupted service to the surrounding Local Authorities without any detriment to the overall scheme delivery for the new runway.

We have also commissioned a detailed Construction Delivery Review of the whole programme from Mace, a leading International construction and consultancy company. The findings of this review are included in Appendix D. The review validates the timescales and delivery points, as set out in the construction schedule included in volume 3 of our Taking Britain Further Technical submission to the Commission in May 2014. The review also identifies schedule opportunities, for example, to deliver the terminals earlier than previously thought. This in turn has allowed us to include an additional 4 months contingency for the consenting process over our original schedule submitted to the Commission.

### 5.15.2.3 Our recommendations

We recommend that the Commission:

- include the findings of the new Construction Delivery Review and state clearly that the North West runway scheme can be delivered in the timescales indicated, including June 2025 for runway opening
- re-assess the risk that the relocation of EfW facility presents to this date as 'low risk'



## **Heathrow ENR scheme**

We believe the Heathrow ENR option presents some interesting development concepts. At the same time we can see real challenges for which the Commission's assessment needs to fully consider. In particular, the consultation documents over-estimate the ATM capacity and benefits of the ENR scheme, and materially understate the costs. Significant issues of commercial delivery also need to be included. Above all, the sustainability impacts of restrictions on noise respite need to be adequately assessed.

## **5.16 Heathrow ENR; Strategic Fit Analysis – Capacity, connectivity & competition**

### **5.16.1 Runway capacity**

#### **5.16.1.1 Commission's approach**

The Commission assumes that the ENR scheme will allow the number of ATMs to be to reach 700,000,<sup>16</sup> and builds its passenger forecasts, and resulting economic benefits, from this assumption.

#### **5.16.1.2 Our comment**

Our own work (see section 5.22.1 below) reveals that 700,000 ATMs per year from the ENR scheme can only be achieved with 2 hours of respite each day, which we consider to be unrealistic. Assuming a more realistic 8 hours of respite will reduce the number of ATMs achievable to 625,000 per year. This would broadly scale down the economic benefits of an extended northern runway by more than 10%.

#### **5.16.1.3 Our recommendation**

We recommend that the Commission:

- revises its passenger forecast for the ENR scheme to assume 625,000 ATMs per year if it is intended that the scheme is to deliver 8 hours of respite per day

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<sup>16</sup> Airports Commission, "Strategic Fit: Forecasts", table 6.41 and 6.42.

## 5.17 Heathrow ENR; Economy Analysis

### 5.17.1 GDP impact

#### 5.17.1.1 Airports Commission's approach

PwC have applied their S-CGE model to the Heathrow ENR proposal, resulting in a generally lower estimate of the GDP impact.

#### 5.17.1.2 Our comments

We assume that the lower GDP impact in the S-CGE model stems from the lower movements and hence lower passenger forecast available to this proposal. However, in one scenario ("Global growth"), the Heathrow ENR proposal achieves a higher GDP impact than the Heathrow NWR. There is no obvious rationale or explanation for this counter-intuitive result.

#### 5.17.1.3 Our recommendations

We recommend that the Commission:

- investigates further the GDP impact of the ENR scheme exceeding that of our NWR scheme in the "Global growth" scenario as the PwC modelling suggests

## 5.18 Heathrow ENR; Surface access

### 5.18.1 Hub station

#### 5.18.1.1 Airports Commission's approach

In its surface access appraisal of Heathrow ENR, the Commission has used the same surface access strategy as for Heathrow NWR. This is referred to as the 'on airport surface access strategy'. A separate report 'Surface Access: Heathrow Hub Station Option' assesses the proposals put forward by Heathrow Hub Ltd, which include a new station at Iver to serve as an interchange for the airport.

#### 5.18.1.2 Our comments

We support the Commission's approach of using the 'on airport' surface access strategy for both options. This approach offers a better solution for more passengers, who will have direct access to the airport terminals. The current analysis assumes no interchange penalty for passengers using the hub station. If any further work is undertaken on this option, then this assumption should be tested more robustly with sensitivity tests.

The Commission's analysis shows that the hub station would cost more than the current solution and have a significant impact on existing users of the Great West Main Line. This includes a monetised impact of £30 million per year to existing users of the rail network. This is supported by the draft Western Route Study<sup>17</sup>, prepared by Network Rail which states that this would be a significant trade off due to the higher number of passengers travelling to London compared to Heathrow.

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<sup>17</sup> [www.networkrail.co.uk/long-term-planning-process/western-route-study/](http://www.networkrail.co.uk/long-term-planning-process/western-route-study/)

Western Rail Access is an important project to improve access to Heathrow, with or without expansion. The Commission should continue to support its delivery irrespective of expansion.

### **5.18.1.3 Our recommendations**

We recommend that the Commission:

- continues to assume the 'on airport' surface access strategy for all Heathrow options and supports the delivery of Western Rail Access in the short to medium term irrespective of expansion

## **5.19 Heathrow ENR; Biodiversity Analysis**

### **5.19.1 Classification of designated sites**

#### **5.19.1.1 Airports Commission's approach**

The Biodiversity Assessment for the Heathrow Extended Northern Runway refers to direct land-take effects on five "local designated sites".

#### **5.19.1.2 Our comments**

We would draw the Commission's attention to the fact that one of these sites, the Staines Moor SSSI, is a nationally rather than locally designated site. It is consequently of greater value for biodiversity than the four local sites.

#### **5.19.1.3 Our recommendations**

We recommend that:

- the Commission takes into account the discrepancy in the designation relating to the Staines Moor SSSI and reflect this in assessment

## **5.20 Heathrow ENR; Carbon Analysis**

### **5.20.1 Embodied carbon**

#### **5.20.1.1 Airports Commission's approach**

The Airports Commission has conducted a high-level assessment of embodied carbon emissions.

#### **5.20.1.2 Our comments**

Above we indicate that we believe that the Commission's methodology for calculating 'embodied carbon due to construction', which was based on a calculation linked to the cost of construction, is likely to lead to an over-estimation. This is when compared to our method of calculating embodied carbon which is from the "bottom up" and on the basis of volume of materials likely to be used. The results from the Commission's assessment and our own are not therefore directly comparable.

However, as stated the method takes as its starting point the cost of construction. We have indicated in the capital cost assessment section below that the construction costs for the ENR scheme are under-estimated. We have detailed the reasons why we believe that the Heathrow ENR capital cost should increase by about £2 billion. Therefore and in line with this we believe that the embodied carbon generated for the ENR scheme is also underestimated and should also increase proportionally.

### 5.20.1.3 Our recommendations

We recommend that the Commission:

- recalculates embodied carbon for the Heathrow ENR scheme using more realistic capital costs

## 5.21 Heathrow ENR; Water & Flood Risk Analysis

### 5.21.1 Airports Commission's approach

The Commission has made an assessment of the impacts of the scheme on local water quality and flood risk.

### 5.21.2 Our comments

Based on the Commission's assessment, we believe that our scheme provides greater detail on the mitigation strategy for flood risk and water quality than the Heathrow ENR and Gatwick schemes.

In some respects, this has allowed the Commission to examine the potential residual effects for our scheme in greater detail and therefore arrive at a sustainability assessment rating based upon more in-depth information. The uncertainties that remain with respect to the Heathrow ENR and Gatwick schemes have not allowed the Commission to assess those schemes to the same level of detail, leaving questions regarding their respective residual effects.

With respect to fluvial flood risk, the assessment of the Heathrow Extended Northern Runway option concludes that the provided mitigation "is likely to be a severe underestimate of the storage needed" (para 4.3.4 of the Water and Flood Risk Assessment). It also states that the level of detail provided on flood risk mitigation is insufficient to conclude that the scheme can be implemented without increasing risks elsewhere. The extensive use of culverts for the channels in the Colne Valley would have considerable impact on the hydro-ecological viability of the rivers and negatively impact on the connectivity of habitat upstream and downstream of the airport. As stated in the Jacobs Report "An initial estimate suggests that there could be in excess of 12km of additional culverts (..this would probably be unprecedented in the UK in modern times). The water bodies (now protected under the WFD) are sensitive and extensive diversions/culverting would run counter to the considerable work put in by the Environment Agency... ..to provide environmentally-friendly flood scheme".

### 5.21.3 Our recommendations

We would ask that the Commission:

- take into account the significant uncertainties and questions that remain about the ENR scheme's impact on water quality and flood risk in its assessment

## 5.22 Heathrow ENR; Cost & Commercial Viability Analysis

### 5.22.1 Capital cost estimating

#### 5.22.1.1 Airports Commission's approach

The Jacobs/Leigh Fisher cost estimate appears to be based directly on the documentation supplied by the scheme promoter concerning its view on the capital cost of its proposal rather than a detailed bottom up review by the Commission.

#### 5.22.1.2 Our comments

HAL believe that this has led to significant underestimation of the capital cost of the ENR option. A number of significant capital cost issues need to be addressed. Our review has highlighted a large number of omissions or under-estimates that need to be rectified for simple accuracy. The following list represents the largest items:

1. **APM (Automated People Mover) stations and fit outs.** The measurement of these facilities is significantly less than in the NWR scheme despite there being no obvious rationale for the discrepancy. Similarly with APM tunnels and tracks, the Heathrow ENR APM design shows the system 35m above ground. This is impractical due to connecting with the existing APM systems and the clash with the T5A roof. We have thus assumed that this will be in a tunnel. HAL would not build the solution described in the ENR submission. Taking both the points above, costs need to be added to the ENR capital cost plan. At present the overall costs contained within ENR are approx. £250m inclusive of tunnels, stations and depot. The values used by Jacobs/Leigh Fisher within our NWR scheme are in excess of £1.05 billion. It would be prudent to increase the ENR scheme by a range of between £500m-£750m for this item.
2. **Blight compensation, sound insulation and residential and commercial compulsory purchase order costs.** These have been underestimated for the ENR scheme. The number of residents required to be relocated is lower within the ENR scheme. However, the significant cost associated with the increase in blight to those residents remaining in situ increases due to the additional properties in proximity to the new runway. The blight compensation scheme would need to be at least as extensive as HAL's at £250m and this has not been included. Although the costs associated with CPO maybe less within the ENR scheme, it is suggested that the costs associated with sound insulation measures to those remaining residents will need to be greater than that provided by HAL as there are a greater number of people in the noise footprint. As such an allowance of at least £715m should be made in the ENR capital costs to account for this (given the NWR noise insulation scheme cost is £715m). The current ENR cost plan has £255m to cover both these items and should therefore be increased by at least £710m. We have not been able to find the residential or commercial property compensation allowances in the ENR scheme. While this cost may conceivably be lower than for the NWR scheme we would suggest that a figure of at least £900m be included (when utilising the figures included by the Commission for the NWR scheme of £1.8 billion for the same cost categories).
3. **Utilities.** A value has not been included within the ENR Jacobs/Leigh Fisher cost plan for the provision of Utilities in the Landside infrastructure. An amount of £170m has been included by Jacobs/Leigh Fisher within the Heathrow NWR cost plan and as such an equal figure should be included within the ENR capital cost plan.
4. **River culverts.** Within the Jacobs/Leigh Fisher cost plan for the NWR scheme an amount has been included for Culverts and Waterways to the value of £105m. A corresponding item has not been included within the ENR Jacobs/Leigh Fisher cost plan which arguably creates a larger flood water storage risk. As such a figure of no less than the £105m that is currently in the NWR scheme Jacobs/Leigh Fisher cost plan should be added.

5. **Baggage transfer system.** Additional cost is required for Heathrow ENR remote baggage transfer system to T5/T6. At present the cost included for the ENR scheme by Jacobs/Leigh Fisher includes two fundamental elements: Baggage tunnels/fitout and baggage handling systems. The systems have been priced at an identical value within both schemes (NWR and ENR) by Jacobs/Leigh Fisher whilst the price for the baggage tunnels/fitout within the ENR scheme is exactly 50% that of the Jacobs/Leigh Fisher price for the NWR scheme. If the assumption is made that the system is identical (which is at this stage would be an underestimate given that the schemes do not occupy the same GIFA) then the costs should be identical. Therefore an increase of approx. £125m to the ENR scheme is required. However given that there is a requirement to provide for remote baggage transfer between T5 and T6 in the ENR scheme then it would be prudent to add, for comparison purposes, a value in the range of £75m-£100m in addition to the increased tunnel/fitout costs identified above.
6. **Power generation.** No value has been included within the ENR Jacobs/Leigh Fisher cost plan for 'power generation' in the Landside infrastructure. An amount of £90m has been included by Jacobs/Leigh Fisher within the NWR cost plan and as such a figure no less than this should be included within the ENR capital cost representation.
7. **Flood Catchment.** Given the significant area of flood catchment displaced by the extended runway option an additional allowance needs to be made for this and a similar value to that contained within the NWR scheme by Jacobs/Leigh Fisher would appear sensible to use. An additional £60m should be included within the ENR scheme.
8. **Landside connectivity and tie in to existing systems.** From experience a value in the range of £50 million-£250 million should be added to mitigate the risk associated with tying in to existing systems and ensuring the new infrastructure is joined up to landside roads. Failure to do so would create a scheme that is not operationally viable.
9. **Land use plots necessary to support the ancillary area requirements of the airport.** This point is articulated further below however a conservative range to be included on the ENR cost plan would be anywhere between £75 million - £400 million.
10. **Second control tower.** At present the ENR cost plan does not include any costs for an additional control tower. Within the Jacobs/Leigh Fisher cost plan for the NWR scheme a cost of £60m has been included. It would be prudent, to enable the ENR option to be operationally viable with full airfield visibility to the end of the extended runway, that an additional facility be provided and as such a cost of £60m should be included.
11. **Balancing ponds.** Currently there is no allowance included within the Jacobs/Leigh Fisher ENR cost plan for balancing ponds. If we assume that the same amount used by Jacobs/Leigh Fisher for the HAL scheme be used then a value of no less than £25 million should be added.
12. **Environmental mitigation** (e.g. walls/bunds, replacement flood storage). At this stage the assumption is that any additional capital costs to make the ENR scheme operationally viable in this item are included within point 11 above.
13. **GIFA (Gross Internal Floor Area) of main terminal building underestimated.** We believe that the current GIFA of the main terminal building being proposed by the ENR scheme is significantly undersized. At this stage it is not possible to precisely state what the level of increase should be in GIFA terms to become a viable terminal option. However, we believe a conservative GIFA increase of 30,000m<sup>2</sup> to a total similar to the NWR scheme with similar passenger volumes, at a rate/m<sup>2</sup> of £8,400 (provided within the Gardiner & Theobald cost plan), the corresponding increase would be £170 million.



14. **Risk and Optimism Bias.** In order to provide an updated value including all these costs there is also the requirement to add to the above costs an allowance for project specifics, risk and optimism bias, using the standard approach used elsewhere. This would represent a further increase of £2.15 billion.

### 5.22.1.3 Our recommendations

We recommend the Commission:

- revises its estimate of the capital cost of the Heathrow ENR proposal utilising the following ranges

High Level Area of Increase	Additional Increase required
Airside – Range	£930m - £1,205m
Landside – Range	£2,185m - £2,710m
OB, Risk and Project Costs – Range	£1,713m - £2,153m
<b>Overall Additions - Range</b>	<b>£ 4,828m - £6,068m</b>

## 5.23 Heathrow ENR; Operational Efficiency Analysis

### 5.23.1 Capacity analysis

#### 5.23.1.1 Airports Commission's approach

The Commission's analysis indicates that 700,000 ATMs will be possible from the ENR scheme.

#### 5.23.1.2 Our comments

We are concerned that the Commission's approach either has not been modified to show the real effect of the proposer's respite plans or it has used unrealistic assumptions for sustained runway rates.

Four different operating modes are proposed by the promoter of the ENR scheme which are intended to be operated at the following times and with the following peak capacities:

- Early Respite – 0600-0630 (0.5 hours, 88 ATMs/hour, using NW capacities 76 ATMs/hour)
- Peak Flow – 0630-1200; 1600-1900 (8.5 hours, 130 ATMs/hour)
- Southern Relief – 1200-1600 (4 hours, 90 ATMs/hour, using NW capacities = 80 ATMs/hour)
- Northern Relief – 1900-2300 (4 hours, 100 ATMs/hour, using NW capacities = 96 ATMs/hour)

If the Commission has not taken this into account when reaching a conclusion that the ENR can deliver 700,000 ATMs per annum then it should reassess the ENR scheme capacity. It should do this by reducing the movements in the respite periods as scheduled above and thus the overall daily ATM total for the airport. If the same runway rates and peaking factor are used as the Commission has with the NWR, only 625,000 ATMs are possible with the ENR scheme. The runway rates are those agreed by NATS as well as explicitly used by the Commission on our NWR scheme. The peaking factor is identical to that used for the NWR scheme to translate from busiest day to annual throughput. There is no reason to believe either would be intrinsically different for the ENR scheme. Alternatively, the Commission can conclude that only 2.5 hours respite is possible in total not the 8 hours claimed.

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results**

If the Commission has taken this into account when assessing the annual movement capacity as 700,000, then runway movement rates have been used which are more than 20% higher than those we have agreed with NATS and used in our calculations. We do not believe that these can credibly be delivered on a sustained basis, but if the Commission disagrees it must apply the same runway rates to the NWR option and reassess it as capable of 850,000 ATMs annually. This would deliver 370,000 additional movements compared to the ENR's 220,000 additional movements and significantly change the business case and impacts of the NWR scheme. It would increase the NWR scheme to 150mppa against the ENR scheme's 123mppa. The tables below illustrate the numbers behind the calculations.

**Figure 5.12****1. Using Heathrow's runway movement rate assumptions to assess ENR capacity**

NWR								ENR													
		R1	R2	R3	Hours	ATMs	Total ATMs			R1	R2	R3	Hours	ATMs	Total ATMs						
Early movements	04:30	A	16			1.5	16	16	Early respite	06:00	A	38		A	38	0.5	76	38			
Period 1	06:00	A	38	D	44	M	48	6	130	780	Peak flow	06:30	D	44	A	38	AD	48	5.5	130	715
Period 2	12:00	D	44	A	38	M	48	6	130	780	Southern relief	12:00	D	44	A	38		0	4	82	328
Period 3	18:00	M	48	D	44	A	38	5	130	650	Peak flow	16:00	D	44	A	38	AD	48	3	130	390
Close	23:00		0		0		0				Northern relief	19:00	AD	48		0	AD	48	4	96	384
							daily ATMs	2,226								daily ATMs	1,855				
							peaking factor	332.5								peaking factor	332.5				
							annual ATMs	740,145								annual ATMs	616,788				
							740,000								617,000						

**Commentary**

Heathrow's assumptions on runway rates represent the maximum sustainable throughputs NATS Heathrow believe are possible with appropriate resilience. We have therefore taken these as a hard constraint on the total number of possible movements in a day. The peaking factor is then used to convert from daily total to annual throughput. If these same runway rates and peaking factor are applied to the ENR assertions on how runways would be used for respite the resulting annual throughput is 617,000 ATMs.

**Figure 5.13****2. Using Commission's annual movement assumptions for NWR to calculate ENR annual**

NWR								ENR													
		R1		R2		R3		Hours	ATMs	Total ATMs			R1		R2		R3		Hours	ATMs	Total ATMs
Early movements	04:30	A	16					1.5	16	16	Early respite	06:00	A	38			A	38	0.5	76	38
Period 1	06:00	A	38	D	44	M	48	6	130	780	Peak flow	06:30	D	44	A	38	AD	48	5.5	130	715
Period 2	12:00	D	44	A	38	M	48	6	130	780	Southern relief	12:00	D	44	A	38		0	4	82	328
Period 3	18:00	M	48	D	44	A	38	5	130	650	Peak flow	16:00	D	44	A	38	AD	48	3	130	390
Close	23:00		0		0		0				Northern relief	19:00	AD	48		0	AD	48	4	96	384
								daily ATMs	2,226										daily ATMs	1,855	
								peaking factor	337.0										peaking factor	337.0	
								annual ATMs	750,162										annual ATMs	625,135	
									750,000										625,000		

**Commentary**

The Commission's own assessment of the NWR annual throughput is 750,000 ATMs. If the peaking factor used is increased to reflect this then the equivalent ENR number increases to 625,000 ATMs.

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results****Figure 5.14****3. Using Commission's annual movement assumptions for ENR to calculate respite available**

NWR		R1		R2		R3		Hours	ATMs	Total ATMs	ENR		R1		R2		R3		Hours	ATMs	Total ATMs				
Early movements	04:30	A	16					1.5	16	16	Early respite	06:00	A	38			A	38	0.5	76	38				
Period 1	06:00	A	38	D	44	AD	48	6	130	780	Peak flow	06:30	D	44	A	38	AD	48	8	130	1040				
Period 2	12:00	D	44	A	38	AD	48	6	130	780	Southern relief	12:00	D	44	A	38		0	1.25	82	102.5				
Period 3	18:00	AD	48	D	44	A	38	5	130	650	Peak flow	13:15	D	44	A	38	AD	48	6	130	780				
Close	23:00		0		0		0				Northern relief	21:45	AD	48		0	AD	48	1.25	96	120				
									daily ATMs	2,226										daily ATMs	2,081				
									peaking factor	337.0										peaking factor	337.0				
									annual ATMs	750,162										annual ATMs	701,129				
									750,000													701,000			

**Commentary**

In order to produce the 700,000 ATM result that the Commission have assessed the ENR to be capable of, the four hour periods of respite for north and south that ENR propose must be reduced to 1.25 hours each.

**Figure 5.15****4. Changing runway movement rates to meet Commission annual assumptions for ENR and 8 hours of respite**

NWR		R1		R2		R3		Hours	ATMs	Total ATMs
Early movements	04:30	A	16					1.5	16	16
Period 1	06:00	A	46	D	53	AD	48	6	147	882
Period 2	12:00	D	53	A	46	AD	48	6	147	882
Period 3	18:00	AD	48	D	53	A	46	5	147	735
Close	23:00		0		0		0			
									daily ATMs	2,515
									peaking factor	337.0
									annual ATMs	847,555
										848,000

ENR		R1		R2		R3		Hours	ATMs	Total ATMs
Early respite	06:00	A	46			A	46	0.5	92	46
Peak flow	06:30	D	53	A	46	AD	48	5.5	147	808.5
Southern relief	12:00	D	53	A	46		0	4	99	396
Peak flow	16:00	D	53	A	46	AD	48	3	147	441
Northern relief	19:00	M	48		0	AD	48	4	96	384
Close	23:00		0		0		0			
									daily ATMs	2,076
									peaking factor	337.0
									annual ATMs	699,444
										699,000

**Commentary**

The only alternative to reducing respite dramatically is to assume much higher movement rates per hour. To maintain four hours of both modes of respite a 20% uplift in movement rates on departures and arrivals is necessary. Arrivals rates become 46 per hour and departures 53. Mixed mode is assumed to stay the same. Heathrow do not believe that these rates are credible, but if they were applied to the NWR scenario they would produce an annual throughput of 848k ATMs or 149 mppa.

**A = Arrivals mode** Heathrow assumption is 38/hour sustainable rate

**D = Departures mode** Heathrow assumption is 44/hour sustainable rate

**AD = Arrivals & Deps mode** Heathrow assumption is 48/hour sustainable rate

### 5.23.1.3 Our recommendations

We recommend that the Commission should:

- re-establish a common basis for annual ATM calculation and conclude one of the following:  
Either:  
ENR can only deliver 625,000 movements p.a. and therefore our NWR provides 86% more benefit (270k more movements versus 145k)  
Or:  
ENR can only provide 2.5 hours of respite per day in total over both modes with resulting community impacts  
Or:  
The ENR proposal has less resilience than Heathrow has today and will effectively be inoperable

## 5.23.2 Proposed taxiway network

### 5.23.2.1 Airports Commission's approach

The Commission has stated that the proposed ENR scheme taxiway network appears adequate although some bottlenecks have been identified that could cause congestion during peak periods.

### 5.23.2.2 Our comments

The taxiway network around the Heathrow ENR scheme is less developed and more constrained than our NWR scheme. Our NWR scheme features an additional twin taxiway network to the west of Terminal 6, which offers flexibility to route traffic away from the departures hold area to the north of Terminal 5, when the centre runway is being used for departures on easterly operations.

The ENR scheme is potentially more congested than our NWR scheme with both landing and departing aircraft all converging on the twin taxiway system to the north of T5A and B. The Commission has noted "significant queues" would occur for the Southern Relief mode (Appendix B). For both of these reasons the ENR scheme will suffer from more taxiway congestion and reduced resilience than our NWR scheme. There is a significant risk that further design development will result in the need for additional taxiway links, particularly to the north of T5A and B.

Compared to our NWR scheme which features more taxiway routes, we think there are greater taxiway congestion issues for the ENR scheme.

### 5.23.2.3 Our recommendations

We recommend that the Commission:

- takes account of the difference between the two schemes in terms of taxiway congestion in its overall evaluation

## 5.23.3 Car parking and land use zones

### 5.23.3.1 Airports Commission's approach

The extended runway masterplan shown in Figure 3.1 of Appraisal Framework Module 14: Operational Efficiency – Ground Infrastructure Heathrow Airport Extended Northern Runway (Page 9) has combined HAL's own masterplan within the existing airport boundary with an extended runway concept.

### 5.23.3.2 Our comments

The ENR scheme in Figure 3.1 of Appraisal Framework Module 14: Operational Efficiency – Ground Infrastructure Heathrow Airport Extended Northern Runway (Page 9) does not appear to show any increase in land use provision for long stay car parking or ancillary facilities such as hotels, offices, catering or operational facilities, despite the increase in passengers and ATMs.

### 5.23.3.3 Our recommendations

We recommend that the Commission:

- show an appropriately sized airport that is comparable with the our NWR scheme
- include the cost estimates for this additional land take in its assessment, as well as the additional environmental impact and property CPO implications which need to be taken account of in its assessment
- take account of the need for planning/costs for a landside POD or PRT system to link some of these key facilities, in order to help reduce local traffic, as proposed in our NWR scheme, to be included in the ENR scheme

## 5.23.4 Remote Hub Station Terminal

### 5.23.4.1 The Commission's approach

The Commission has assessed the ENR scheme assuming a Terminal 6 which is located on-site within the extended airport boundary, in order to keep the evaluation similar to our NWR scheme. The Commission does however note the proposal from the ENR scheme promoter to construct a hub station terminal and has undertaken a separate assessment, which notes a number of additional disadvantages for a remote hub station terminal compared to one on-site.

### 5.23.4.2 Our comments

We concur with the Commission's assessment that there are a number of additional operational inefficiencies which would occur should a remote Hub Station Terminal concept be adopted:

- passenger, baggage and staff journey times around the airport would increase, leading to the need for earlier arrival and reporting times
- significantly more passenger and baggage automation would be required which would significantly increase the capital cost, operating cost, power generation required and environmental impact
- there would be less resilience during periods of disruption i.e. a disruption event in the automated baggage or APM tunnels would require long tug and dolly or coach journeys
- greater punctuality risk for airlines and airports if passengers and their baggage are more dispersed across the airport

- there would be a need to create emergency evacuation assembly areas which are airside in the middle of the landside zones between the airport and the remote northern terminal. The protocol for the creation and management of these zones in terms of security and border agency integrity would need to be agreed with the DfT, including the associated increase in operating costs to maintain that integrity.

We do recognize the need to create good links with surface access routes. Compared to today, the NWR scheme will have new rail routes to west and south, the introduction of Crossrail plus links to HS2 (at Old Oak Common if the Heathrow Spur does not go ahead). Additionally, all of the NWR scheme terminals would have direct access to the existing London Underground links, which is an important mode of transport for staff, passengers and local users around the airport. Notably, the remote Hub Station Terminal concept would not have this transport mode direct to the airport unless a new extension was built at very substantial additional cost.

The Commission's analysis indicates that an on-site Terminal 6 has more benefits over a remote Hub Station terminal concept.

### 5.23.4.3 Our recommendations

We recommend that the Commission:

- **discontinue the remote Hub Station Terminal concept given the evidence against this proposal**

## 5.23.5 CAA CAP 1215 Preliminary Safety Review

### 5.23.5.1 Airports Commission's approach

The CAA has identified a number of additional safety risks for the Heathrow ENR scheme, compared to the NWR scheme (Reference CAP1215 Appendix B). The Commission acknowledges these risks.

### 5.23.5.2 Our comments

These are extra safety risks which will not be faced by the NWR scheme. Unless they can be mitigated to a negligible level, the NWR scheme will be a safer option. Based on our assessment, we believe the ENR scheme will struggle to positively address each of the following 5 questions posed by the Commission

- Aerodrome Design and Operation - 1.1 Does the aerodrome design meet established safety standards, requirements and criteria (ICAO/EASA/CAA)?
- Air Traffic Control – 2.1 Can the method of operation be developed using established safety standards, requirements and criteria (ICAO/EASA/CAA)?
- Air Traffic Control – 2.2 Can the proposal be developed as an evolution of the current ATC operation?
- Safety Management – 4.1c Has the aerodrome design proposal and method of operation explicitly taken account of and addressed the following aviation safety threats: Airborne conflict?
- Safety Management – 4.3 Can the proposed concept be progressed without the need for significant safety analysis of the concept to prove that it can be delivered safely without subsequent safety mitigations restricting traffic capacity and flow even further than already assumed?

### 5.23.5.3 Our recommendations

We recommend that the Commission:

- **rank the NWR scheme more favourably in its assessment given that it has less inherent risks based upon current procedures than the ENR scheme until more work has been carried out to address those risks in considerable detail**



## 5.23.6 Airspace Review

### 5.23.6.1 Airports Commission's approach

The Commission relies upon NATS' assessment. NATS has noted that approximately 13% of departures traffic for the ENR scheme that would plan to use the northern runway to head north, would end up needing to use the southern runway, because of the length restrictions of the northern runway (Paragraph 7.2.12). Conversely, a number of aircraft wanting to head south, may need to swap over and use the northern runway, in order to free up a slot for aircraft needing the longer runway.

### 5.23.6.2 Our comments

Whilst NATS have indicated that they can still support the traffic levels asserted for the ENR scheme. However, in order to safely cross the additional aircraft, there will be a significant increase in workload demand on air traffic control and extra track miles in the air with attendant carbon emissions. The NWR scheme does not have these limitations.

### 5.23.6.3 Our recommendations

We recommend that the Commission:

- assesses our NWR scheme more favourably in relation to ease of operation, fewer constraints, fewer unnecessary carbon emissions and greater flexibility

## 5.24 Heathrow ENR; Operational Risk Analysis

### 5.24.1 Operational Risk Associated with New Procedures

#### 5.24.1.1 Airports Commission's approach

The Commission has noted in its Operational Risk assessment for the ENR scheme that the proposed in-line runway could present an incremental risk at times of low visibility. It states these will need to be mitigated by appropriate operational procedures.

#### 5.24.1.2 Our comments

It should be re-iterated that in-line runways are not in operation anywhere around the world. New procedures would need to be developed and approved for safety and capacity for all operational conditions including low visibility. Developing these procedures will take time and may add extra risk to the implementation schedule, even in the event that it can be demonstrated that the extended runway is safe in all conditions.

#### 5.24.1.3 Our recommendations

We recommend that the Commission:

- add additional time to the implementation schedule as the runway operation will need to undergo significant additional proving trials (over and above a normal runway) to demonstrate that the new procedures will work in practice and are safe

## 5.24.2 Pilot Perception

### 5.24.2.1 Airports Commission's approach

The Commission has noted that the ENR scheme or in-line runway concept is new and novel. While at this stage they have noted that it does not appear to present significant issues with respect to existing standards and recommendations, it is recognised that it will need to be proven that it is safe to obtain regulatory approval.

### 5.24.2.2 Our comments

Even if the runway concept can be proven to meet ICAO, EASA and CAA requirements, pilot perception is an important issue to factor into the safety case assessment. This covers all forms of operations including normal, night time and low visibility conditions. Issues of note include:

- Making sure the pilot is absolutely clear which of the in-line runways they are using, given that they are on the same alignment and switch four times during the day
- Ensuring when pilots are approaching the eastern runway on westerly operations that they can clearly see on all stages of the approach and landing that an aircraft around the middle of the runway is a departing aircraft on the western runway and not an aircraft that is at the end of the eastern runway?
- The increased risk of go-arounds as a result of uncertainty above.
- Ensuring pilots are clear on the correct missed approach procedure to enact, if required (e.g. on approach to either of the runways, when they turn early, ensuring it is clear what their route is, and that it is safe)?

### 5.24.2.3 Our recommendations

We recommend that the Commission:

- give consideration to meeting current regulatory requirements and any new factors which might arise from an in-line runway concept, including human or pilot perception factors and
- highlight this as a risk in the operational risk report or undertake further work to provide greater assurance that the risk is manageable

## 5.25 Heathrow ENR; Delivery Analysis

### 5.25.1 Masterplan Delivery

#### 5.25.1.1 Airports Commission's approach

The Commission has indicated in the Consultation document that a 2026 opening date for the new runway is achievable and that there remains a very high probability of meeting the Commission's assessment of need for new capacity by 2030. In doing this it has discounted the ENR scheme's assertion that opening in 2023 is possible. The Commission acknowledges that there are programme risks but has not assessed these in any detail. It has not supplied a detail schedule showing the activities for the period from 2015-26. Because of this we have assessed and commented on the ENR's own delivery schedule submission.

#### 5.25.1.2 Our comments

We agree with the Commission's assertion that ENR cannot be delivered by 2023. However, we believe that there are three compelling reasons why the opening date for the ENR runway will be considerably later than the date of

2026 that the Commission have currently assessed. These are a) Commercial complexity, b) Consenting strategy and c) Construction schedule complexity. We deal with each of these points in the items following below.

### **5.25.1.3 Our recommendations**

We recommend that the Commission:

- considers the commercial complexity consenting strategy and construction schedule complexity on the ENR's delivery schedule and modifies its assessment of the NWR opening date accordingly.

## **5.25.2 Commercial issues**

### **5.25.2.1 Airports Commission's approach**

The Commission has indicated that there are risks associated with transferring ownership of the ENR scheme to Heathrow Airport but does not appear to have allowed for these risks in the delivery schedule.

### **5.25.2.2 Our comments**

Following any decision by Government, in the event that that choice was the ENR scheme, there would inevitably follow a period of due diligence and commercial negotiation between the two parties. This would include an examination of the safety case and detailed discussions on achievable runway rates in order to ensure that the business case assumptions made by the Commission were verifiable by HAL. The purchase of the intellectual property rights that the ENR promoters hold would then be considered. This would involve scrutiny of their patents including testing whether either of them infringe other existing patents established in the US. Only after these issues were satisfactorily resolved could commercial negotiations proper begin. Our assessment of the time period required for this whole process is a minimum of 18 months with the potential to take considerably longer if legal dispute was involved.

### **5.25.2.3 Our recommendations**

We recommend that:

- allowance is made in the ENR delivery programme to take account of commercial issues regarding the ownership of the ENR scheme concept by adding at least 18 months additional time after Government support is announced.

## **5.25.3 DCO process timescale**

### **5.25.3.1 Airports Commission's approach**

Heathrow Hub has claimed that a positive Secretary of State decision for the DCO could be achieved within three years by mid 2018. The Commission appear to have disagreed with this in that it has lengthened the delivery schedule for the ENR scheme.

### **5.25.3.2 Our comments**

While we acknowledge that the DCO process has been in operation for just under 5 years, benchmarking comparably complex schemes to date indicates that a period of 4 years is a more realistic timeframe to achieve

consent. Our Taking Britain Further submission to the Commission (May 2014) sets out why we consider this to be a robust estimate of the DCO programme.

### 5.25.3.3 Our recommendations

We recommend that the Commission:

- assumes a DCO approval date no earlier than Q3 2019 for the ENR scheme before taking into account additional schedule risks and adjustments as set out.

## 5.25.4 Construction duration of the published scope

### 5.25.4.1 Airports Commission's approach

The Commission does not appear to have provided any detail in relation to the construction programme, other than indicating that it believes the scheme can be constructed in 6 years.

### 5.25.4.2 Our comments

The ENR scheme will have a number of similar construction components as the NWR scheme, which we believe can deliver the new runway by 2025 and Terminal 6 by 2026. However, the ENR scheme will impact upon more of the existing airport, more of the M25 motorway and more rivers than the NWR scheme. These essential existing pieces of infrastructure will need to be kept fully operational throughout at today's capacities. This programme will increase construction complexity, duration and, in this instance, overall schedule length as they are on the critical path. The additional impacts are outlined below:

- An additional 3km of the M25 will have to be realigned, with Junction 14a lost, Junction 14 completely rebuilt to the south and major works required to increase the capacity of Junction 13;
- In addition to a significant proportion of the new runway, the new apron area is also heavily constrained by the old M25 alignment as well as other roads. It will be necessary to complete motorway and road realignment prior to being able to commence the apron, stands and terminals, as well as continuing with the significant amount of earthwork associated with the runway / taxiways;
- Where rivers are being diverted around the end of the runway, these will have to go some 2km further west than for the NWR scheme. Where rivers are being put into culverts, these will stretch for over an extra kilometre underground across the full width of the apron as well as the runway;
- The existing northern runway will need to be shortened to 3000m, with all associated navigational aid, lighting, markings/signage and flight testing needing to take place before the new extended runway construction works can start at the western end of the existing runway. This will add extra time to the programme as much of this is likely to need to be done at night in order to keep the runway operational during the day. The construction of the extended runway is also likely to result in de-alternation of the runways to avoid general overflight of the construction zone (with associated Obstacle Limitation Surface/Public Safety Zone impacts) with landings on the northern runway on westerlies and departures on easterlies. Missed approach procedures during westerly operations may restrict the use of some construction techniques/equipment on the extended runway due to dust/obstacle limitation surface constraints with further delays to the schedule.

Taken together, we consider that these complexities would result in the earliest delivery date under the ENR scheme for runway completion being 2029. This is some 3 years later than the current Commission appraisal of 2026 and 4 years later than the NWR scheme. The earliest date for Terminal completion similarly would be 2032.

### 5.25.4.3 Our recommendations

We recommend that the Commission:

- undertakes a more detailed assessment of the ability to deliver the ENR scheme given both the additional construction complexity and more importantly the significant impact it would have on existing operations
- reflect that these operations would need to be maintained throughout the construction period
- recognises that the ENR construction commencement would be at least 18 months later than the NWR scheme, due to the commercial negotiations and safety case assessments required prior to DCO submission and consent (and resulting in construction commencing no earlier than Q3 2021)
- add a further 2 years (over and above the NWR construction schedule) due to the added interfaces of the existing northern runway and greater complexity and constraints required with the motorway / road alignment in the ENR scheme and
- reflect these delays in the overall assessment

## 5.25.5 Construction programme and cost plan

### 5.25.5.1 Airports Commission's approach

The Commission has developed its delivery programme assessment on the basis of the circa £13.5billion scope of works.

### 5.25.5.2 Our comments

As outlined in cost and commercial viability section above we believe there to be approximately £5billion of cost omissions from the current extended runway capital plan including baggage and APM tunnels, river culverts/diversions, increased flood storage areas and land-use zones. Adding these extra areas of scope will increase the overall construction time as items such as river culverts/diversions will add to the critical path duration.

### 5.25.5.3 Our recommendations

We recommend that the Commission:

- reviews the overall programme duration to allow for the items of scope omitted from the original cost plan to be included
- identifies which of the additional items of scope required fall on the critical path and where they do so, add these durations to the schedule additions from item 4

## 5.25.6 Runway Operating Concept proving

### 5.25.6.1 Airports Commission's approach

The Commission notes that the extended runway scheme is a novel concept and that further work with the CAA and appropriate international bodies (ICAO) is required to prove the validity of the operation. The CAA has highlighted in CAP1215 the additional safety risks which would need to be overcome, compared to the NWR scheme (as highlighted under operational efficiency above).

### **5.25.6.2 Our comments**

In the event that it can be demonstrated that the ENR scheme is safe, there is a risk that it will take additional time to prove this during both the planning/design stage (in order to come up with a safe operating concept) as well as during flight trials (in order to prove that the new design can be safely flown). There is risk that the ICAO regulation change process may significantly lengthen this period.

### **5.25.6.3 Our recommendations**

We recommend that the Commission:

- benchmark other significant ICAO regulation changes to establish a likely duration for the process adding this in to a clear schedule for overall airspace change
- validate the ability to deliver this within the same timescale as the consenting and construction period for the ENR scheme to establish whether the overall airspace change is a critical path item; and if it is to amend the delivery schedule accordingly

## Gatwick second runway scheme

For the Gatwick scheme, we strongly question the plausibility of the Gatwick low cost gateway model delivering any potential hub function and the level of connectivity claimed taking into account its experimental nature. We draw attention to the severe impact that predicted passengers charges would have on affordability of fares and the commercial model of Gatwick's airlines. We highlight areas where Gatwick's capital costs are under-estimated and emphasize the serious operational challenges inherent in Gatwick's scheme. We also draw attention to inconsistencies in the Commission's approach to surface access which highlight the lack of resilience in Gatwick's proposals and the potential requirement to widen a section of the M25.

## 5.26 Gatwick; Strategic Fit Analysis

### 5.26.1 Gatwick's "low cost gateway" model

#### 5.26.1.1 Airports Commission's approach

The Commission's consultants, SEO Economic Research, have identified the 'low-cost gateway' model as the most likely route for Gatwick expansion.

#### 5.26.1.2 Our comments

The strategic case assessment of Gatwick, based on the emergence of a "low-cost gateway", needs to fully account for the unproven and at best embryonic nature of the model.

In particular, the materiality of Gatwick's low cost gateway model must be more critically evaluated. Network carrier hubs are an established feature of the aviation market, and network long haul products have been refined over many years to optimise passenger experience and commercial success. The same is true for short haul low cost and charter models. Attempting to coordinate these models must result in compromises (e.g. altered schedules and even reduced rotations) that will impact the financial viability of both types of services.

By contrast, low cost gateways are a futuristic concept with few, if any, examples of where they operate at scale. Although the airport may attempt to refine the product, there nevertheless remains a financial risk to the passenger of missing connections through a delayed first leg. In fact, the SEO Economic Research report published by the Commission (*Expanding Airport Capacity: Competition and Connectivity*) concludes:

*"An airline response where network carriers and/or low-cost carriers partner to facilitate connectivity may increase connectivity as well (airline response 5), but this gain will be limited based on current airline business models. However, this may change as airline business models evolve further." (page 81, our emphasis added)*

In other words, the 'low-cost gateway' model is conjecture, beyond current experience of airline models, and must therefore be given only very limited weight in the Commission's considerations. The development of low cost long haul into a major market segment may help this, but at present low cost long haul is an experimental business model in a small number of niche routes (e.g. New York).

We asked JLS Consulting to prepare a report on future airline business models.<sup>[1]</sup> (see Appendix H). This paper includes a discussion of problems that low cost carriers have in providing a feed for long haul carriers, and shows its very limited success so far (including lack of success at Gatwick).

It is not clear from the Commission's documentation how the NAPAM forecasting model treats "low-cost gateway traffic". The reality of its coordination and commercial challenges (such as those discussed in the JLS report), including compensation arrangements for missed flights, should be taken into account via a reduced propensity of both airlines and passengers to take up these connection possibilities within the NAPAM model.

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<sup>[1]</sup> Projections on Future Airline Business Models and Response to International Transport Forum Report- Expanding Airport Capacity: Competition and Connectivity, JLS Consulting, Jan 2015



### 5.26.1.3 Our recommendation

We recommend that the Commission:

- adapt the NAPAM model to:
  - capture the fact that an expanded Heathrow can provide a better transfer product than an expanded Gatwick (especially if the inferior low-cost gateway model is assumed at Gatwick)
  - ensure that these modifications reflect that the number of new connections that become commercially viable to provide will be greater at an expanded Heathrow, relative to an expanded Gatwick

## 5.26.2 Value of a second hub at Gatwick

### 5.26.2.1 Airports Commission's approach

The Commission consider scenarios where Gatwick develops as a second hub airport.

### 5.26.2.2 Our comments

The SEO Economic Research report published by the Commission ("Expanding Airport Capacity: Competition and Connectivity") concludes:

*"Connectivity is expected to improve the most when the hub carrier at Heathrow uses new capacity to reinforce its hub system, as the possibility to generate long-haul route density on top of local OD demand is largest. Multiple (competing) hub operations within the London airport system will also stimulate connectivity but to a smaller extent, as the connectivity gain of one large hub operation is larger than the sum of two smaller operations, because of the multiplier-effect of hub-and-spoke models."* (page 81, our emphasis added)

Effectively, a second hub at Gatwick will have limited value, especially if considered in the context of connectivity of the whole London system or the UK market. Given the technical problems we have identified in the NAPAM modelling procedure, we can't be clear that this is accounted for in the current assessment.

### 5.26.2.3 Our recommendations

We recommend that the Commission:

- reflects the smaller connectivity gain possible from Gatwick in any 'second hub' scenario in its modelling and assessment

## 5.27 Gatwick; Local Economy Analysis

### 5.27.1 Capacity of Gatwick's local economy to support expansion

#### 5.27.1.1 Airports Commission's approach

In the case of Heathrow the Commission notes:

"The relatively high unemployment rate in areas such as Hillingdon (7.7%) and Ealing (9.9%), along with the possibility of the relatively strong match between the new jobs which could be created and the current skills of the population, and current trends for on airport direct employment, suggest that there is capacity for some of these new jobs to be filled by unemployed people in these areas" (paragraph 8.7 of "Heathrow Airport North West Runway: Business case and Sustainability Assessment").

No such comment is made in the assessment of Gatwick expansion.

#### 5.27.1.2 Our comments

Unlike Heathrow, Gatwick's local economy does not have sufficient capacity to support expansion, principally because of the capacity constraints in the local labour market. Comparing claimant figures as a proxy for unemployment around Gatwick compared to around Heathrow shows how much slack there is in the respective labour markets. Overall, Heathrow's five surrounding boroughs have a claimant count of 15,428. The equivalent area around Gatwick has only 3,966 claimants. This means the claimant rate around Gatwick is only 0.9% (almost full employment), compared to 2% around Heathrow, so the labour pool around Gatwick has a lot less slack than that around Heathrow.

Compounding this, the areas surrounding Gatwick's workforce catchment lacks any capacity to provide more commuting-in labour – in stark contrast to Heathrow where there are ample opportunities to reinforce the local employment base if required.

#### 5.27.1.3 Our recommendations

The Commission must:

- take a more analytical approach to the impact of Gatwick expansion on the local labour market
- taking specific account of the ability of the market to supply the required additional labour in an area of effectively full employment

## 5.28 Gatwick; Surface access

### 5.28.1 Employee travel

#### 5.28.1.1 Airports Commission's approach

The Commission's Appraisal Module 4, Surface Access, sets out its assessment of the impacts of Gatwick's expansion on the surface access network. Chapter 2 of the report, relating to the Gatwick scheme, sets out the headline forecasts and the assumptions for passengers and employee trips.

The assessment assumes that the employee numbers would rise from around 21,000 today to 24,026 in 2030 with one runway and 29,685 in 2030 with two runways. These assumptions are taken directly from the Gatwick Airport

Ltd (GAL) submission. A sensitivity test which assumes a higher number of employees (43,000) is presented in Appendix B.3. The assessment makes use of the assumed Gatwick employee mode share in 2040 for its 2030 assessment.

### 5.28.1.2 Our comments

The approach to employee trips is not consistent between the Gatwick and Heathrow assessments. For the Gatwick assessment, the GAL submission figures for 2040 have been used for the 2030 assessment. For the Heathrow NWR and ENR schemes the current mode share has been used. Given that the Commission has not used its forecasting models for this work, a consistent approach should be used.

Page 47 of the Gatwick second runway surface access report (paragraph 4.2.11) states that if current mode share is applied to employee trips then widening of the M25 would be required between J5 and J6. If a consistent approach to employee mode share is applied then widening of the M25 of J5 to J6 would be required as a result of Gatwick expansion. Appendix B.3 states that if the number of employees were to increase in line with the 'low productivity' forecast that the M25 between J5 and J6 would also need to be widened to support the expansion of Gatwick.

### 5.28.1.3 Our recommendations

We recommend that the Commission:

- adopts a consistent approach to forecasting future employee mode share and reflects the associated effects into its appraisal

## 5.28.2 Resilience

### 5.28.2.1 Airports Commission's approach

In April 2014, the Commission set out its appraisal framework and approach for its Phase 2 assessment work. The Surface Access Appraisal Module suggested that an assessment of surface access resilience would be undertaken:

*"Reliability and resilience of all surface access transport modes, public and private. This will consider multiple methods to access the airport to avoid a single point of failure and to ease points of strain."*

The detailed appraisal module report makes reference to this issue but it is not clear how this has been translated into the summary Consultation Document, Sustainability Assessment or Business Case.

### 5.28.2.2 Our comments

The Gatwick proposal is heavily reliant on the Brighton Main Line and M23. Without these routes, there is insufficient capacity to cope with the demand of an expanded airport. This significant risk is highlighted in the Jacobs report (Appraisal Framework Module 4 - Surface Access: Gatwick Airport Second Runway) but does not feature in the consultation document:

*"...Given Gatwick's current reliance on the BML for rail connections to London and much of the rest of the UK, we feel this represents a potential long term risk to airport expansion plans..." (p30)*

*"...Discussions with the HA indicated that there is a particular concern over the heavy reliance of Gatwick on the stretch of the M23 between junctions 8 and 9 for strategic road connectivity..." (p63)*

The Commission's analysis demonstrates this with 85% of Gatwick rail demand likely to use the Brighton Main Line to the north of the airport. Only 3% of this is towards Reading and Guildford on the North Downs Line, with 82% on services towards London.

The assessment also shows that around two thirds of Gatwick-related road traffic will use the M23 to access the airport, with half of the total traffic using the M23 to the north of the airport. This demonstrates the reliance of the proposals on a small number of routes. There are no suitable alternatives should there be an issue on one of these routes and therefore this is a significant risk to the effectiveness of the surface access proposals to meet the needs of passengers and users of the wider network.

### **5.28.2.3 Our recommendations**

We recommend that the Commission:

- undertakes an assessment of surface access resilience of the Gatwick proposals as set out in its Appraisal Framework and includes this in the assessment of how each option meets Surface Access Objective 2

## **5.28.3 Surface access objectives**

### **5.27.3.1 Airports Commission's approach**

In April 2014, the Commission set out its Appraisal Framework. The Appraisal Framework sets out three objectives for the module:

- Objective 1 – to maximise the number of passengers and workforce accessing the airport by sustainable modes
- Objective 2 – to accommodate the needs of other users of the transport network, such as commuters, intercity travellers and freight;
- Objective 3 – to enable access to the airport from a wide catchment area

### **5.28.3.2 Our comments**

The Gatwick scheme will result in fewer passengers and employees using sustainable modes. The Commission's analysis (Appraisal Framework Module 4 - Surface Access: Gatwick Airport Second Runway – p20) shows that an expanded Heathrow will have a greater proportion of passengers using public transport in 2030 (55% compared to 53.8%) and more employees (43% compared to 40%). This is without considering Heathrow's proposals to reduce the number of employees driving to work.

The Gatwick scheme will also provide access to a smaller catchment. Whilst there is good access to central and south London by rail, most trips to the rest of the UK will need to travel through London and given its location and relatively poor road access, it cannot serve the whole of the UK.

Our analysis shows that there would be an additional 8.4 million people within two hours of Heathrow by public transport, compared to Gatwick, and an additional 5.3 million within three hours by public transport, compared to Gatwick. The Commission's analysis supports this view with a larger catchment within two and three hours of Heathrow.

### **5.28.3.3 Our recommendations**

We recommend that the Commission:

- ensures that the assessment of the shortlisted options focuses on the Commission's surface access objectives as set out in its Appraisal Framework.

## 5.29 Gatwick; Carbon Analysis

### 5.29.1 Embodied carbon

#### 5.29.1.1 Airports Commission's approach

The Airports Commission has conducted a high-level assessment of embodied carbon emissions.

#### 5.29.1.2 Our comments

In section 3 of this response, we indicate that we believe that the Commission's methodology for calculating 'embodied carbon due to construction', which was based on a calculation linked to the cost of construction, is likely to lead to an over-estimation. This is when compared to our method of calculating embodied carbon which is from the "bottom up" and on the basis of volume of materials likely to be used. The results from the Commission's assessment and our own are not therefore directly comparable.

However, as stated the method takes as its starting point the cost of construction. We have indicated in the capital cost assessment section below that the Gatwick scheme has been under-estimated. We have detailed the reasons why we believe that the Gatwick capital cost should increase by about £2.69 billion. Therefore, and in line with this, we believe that the embodied carbon generated for the Gatwick scheme is also underestimated and should also increase proportionally.

#### 5.29.1.3 Our recommendations

We recommend that the Commission:

- recalculate embodied carbon for the Gatwick scheme using more realistic capital costs

## 5.30 Gatwick; Water & Flood Risk Analysis

### 5.30.1 Mitigation

#### 5.30.1.1 Airports Commission's approach

The Commission has made an assessment of the impacts of the scheme on local water quality and flood risk.

#### 5.30.1.2 Our comments

The Commission's assessment of the proposals put forward by Gatwick Airport identifies that there is a good possibility of achieving a neutral impact with respect to water quality and flood risk. It would not be known until well into a detailed design period and possibly not until the airport was operational whether the scheme could achieve appropriate mitigation of flood risk downstream of the airport

It is clear that Heathrow's NWR scheme provides greater detail on the mitigation strategy for flood risk and water quality than has been provided in the ENR scheme and Gatwick. In some respects, this has allowed the Commission to examine potential residual effects in greater detail for our submission. The uncertainties that remain with respect to the ENR and Gatwick schemes have not allowed the Commission to assess those submissions to the same level of detail, leaving questions regarding the residual effects from those schemes.

### 5.30.1.3 Our recommendations

We recommend that the Commission:

- revise the assessment and any conclusions drawn in the assessment to reflect the respective depth of the information presented

## 5.31 Gatwick; Cost & Commercial Viability Analysis

### 5.31.1 Affordability of Gatwick's airport charges

#### 5.31.1.1 Airports Commission's approach

The Commission estimates that airport charges will need to rise at both Heathrow and Gatwick. The charges estimated by the Commission imply increases of 40-45% for Heathrow, and 67-100% for Gatwick. The Commission does not provide any comment on or assessment of the affordability of these increases, including the consequences of large rises in charges at Gatwick.

#### 5.31.1.2 Our comments

We believe that the cost estimates for the Gatwick scheme make material and incontrovertible omissions and under-estimates.

We fully support the importance of a strong and robust commercial case behind any recommendation that the Commission will make. We have set out our concerns with the Commission's estimates of opex and capex, due to an erroneous inclusion of optimism bias earlier in Section 5.13.1.

Here we concentrate on other concerns with the business case – principally the affordability of Gatwick airport charges to its customer base.

Whilst we believe that the estimates of charge increases for Heathrow in particular have been over-estimated (discussed at section 5.13.2), we nevertheless analyse the implications that charges increases at these levels will have. The table below shows that, currently, departing passenger airport charges represent 10.1% of the average fares at both Heathrow and Gatwick. Applying the Commission's analysis of the required airport charges under each scheme (pages 47 and 81 of the Commission's Consultation Document), airport charges at Heathrow would rise by 40-45% under our NWR scheme, compared to 67-100% under the Gatwick scheme. Therefore, assuming the departing passenger charge is passed through to air fares, the increase in fares at Heathrow would be 4.1-4.6%, compared to 6.7-10.1% at Gatwick.

**Figure 5.16: Departing passenger charges as proportion of average fares**

	Average Fare \$	Average Fare £	Pax Charge	%
<b>Heathrow</b>				
EEA Direct	\$160	£106	£28.30	26.7%
RoW Direct	\$651	£431	£39.75	9.2%
EAA Transfer	\$605	£401	£21.23	5.3%
RoW Transfer	\$732	£485	£29.82	6.2%
Overall Average	\$483	£320	£32.41	10.1%
Departing pax increase = 40%				

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results**

Overall Average		£333	£45.37	13.6%
Departing pax increase = 45%				
Overall Average		£335	£46.99	14.0%
<b>Gatwick</b>				
Domestic	\$99	£66	£8.05	12.3%
International	\$188	£124	£12.27	9.9%
Ireland	\$110	£73	£9.89	13.6%
Overall Average	\$176	£117	£11.79	10.1%
Departing pax increase = 67%				
Overall Average		£125	£19.65	15.7%
Departing pax increase = 100%				
Overall Average		£129	£23.58	18.3%

Source: AIS Apr'13-Mar'14, Airport Conditions of Use 2013/14 (£1 = \$1.51)

Overall departing passenger charges rise to between 15.7-18.3% of average fares in the case of Gatwick, compared to 13.6-14.0% for Heathrow. Gatwick's charges would remain below those of Heathrow, but the impact of these increases on the commercial model of airlines at Gatwick would be severe. The substantially bigger impact on fares at Gatwick would reinforce the preference for Heathrow amongst network and other airlines, driving others towards Stansted, thus creating the risk of a loss of traffic as identified by Moody's:

*"This level of tariff increase is unprecedented in Gatwick's history and it could put Gatwick at a competitive disadvantage to Stansted, an airport with 45% spare capacity and which the Commission does not expect to reach full capacity until 2033. Moreover, there is a substantial overlap in Gatwick's and Stansted's carrier bases, with low cost airlines constituting their main customers. The CEO of Easyjet (Gatwick's primary carrier) has recently raised concerns about the effect that the expansion would have on airport charges and the airline's ability to continue to offer low-cost fares." (Moody's Investor Services, "New runway will have mixed credit implications for London's airports", 10 December 2014, page 9)*

The SEO Economic Research report (Expanding Airport Capacity: Competition and Connectivity), published as part of the Commission's consultation states:

*"In the case of Gatwick expansion, airlines would be more sensitive to a rise of charges than they would be in the case of an equivalent increase at Heathrow because Gatwick has a large share of low-cost airlines, which are more cost-sensitive than legacy carriers. Compared to Heathrow, the airport handles a larger share of leisure passengers. These passengers are more sensitive to higher fares, assuming airport charges would be passed on to the consumer." (page 52)*

### 5.31.1.3 Our recommendations

We recommend that the Commission:

- explicitly calculate the impact of airport charge increases on the fares at each airport and assess the likely market impact of such rises



## 5.31.2 Capital cost assessment

### 5.31.2.1 Airports Commission's approach

The Jacobs/Leigh Fisher cost estimate appears to be based directly on the documentation supplied by the scheme promoter concerning its view of the capital cost of its proposal rather than a detailed bottom up review by the Commission itself.

### 5.31.2.2 Our comments

We believe that this has led to significant underestimation of costs in certain areas. We have listed below the major items which we think need to be addressed:

#### **Terminal and Satellite Buildings are under-sized**

The GIFA (Gross internal Floor Area) assumed is not compatible with the Level of Service (LoS) required for an International Terminal. As such the rate/m<sup>2</sup> for cost derivation needs to be increased to reflect an LoS of Furin Level B/C. Although the Gatwick scheme is modelled on a low cost environment there is still concern over the level at which this service will be provided. Using the current rate contained within the Jacobs/Leigh Fisher Gatwick submission of £4,650/m<sup>2</sup> (inclusive of fit out) the additional capex required, before the addition of OB, Risk and other project costs would be in the range £465 -£565m. We believe that this would be the cost to maintain the current level of service being offered by Gatwick and would not in any way seek to enhance the passenger experience.

#### **Costs for the funding of commercial development are omitted**

These costs have not been included and we assume that the scheme promoter believes that they will be self-funding from resultant income. This is the same assumption that we have made for our NWR option. However, in order to compare on a like for like basis, there needs to be added an amount for the provision of enabling infrastructure to these commercial areas. The inclusion of the enabling/base infrastructure provision to the commercial areas at Gatwick could be in the range of £50m - £250m.

Elements of the Gatwick scheme potentially underestimated include:

- **Fuel farm appears to have been omitted**  
A fuel farm element is critical to the functioning of the airport. Although devoid of design input for the costing of a fuel farm at Gatwick we believe that the order of cost could be in the range of £30m - £50m (based on the values included by Jacobs/Leigh Fisher for the NWR scheme). The provision of an enhanced / new fuel farm has already been included in the comparable cost plan for the NWR scheme.
- **No/Limited DCO/Consent/ORAT costs in plan**  
There appears to be disparity in the values submitted by Jacobs/Leigh Fisher for consents and operational readiness across the schemes. The overall values provided for the Gatwick scheme appears to be £60m inclusive of trials, ORAT, consents etc. The corresponding figure used by Jacobs/Leigh Fisher for the NWR is £127m. Given that Gatwick are moving from a single runway operation to a dual runway operation it is envisaged that consents, trials and ORAT would be at least similar to that of the NWR scheme. An additional £70m should be added to the Gatwick scheme in order for costs to be directly comparable.
- **Estimation in enabling works, car park rates, land use plots, environment and compensation** the methodology for attributing cost is unclear and potentially inconsistent across the 3 options

There is also a clear and significant discrepancy between the rates utilised within the Commission's cost plan between the Heathrow and Gatwick schemes. There are a number of significant areas within the Jacobs/Leigh Fisher cost plan for the Gatwick scheme which do not align with those rates used for NWR scheme. These include, but are not limited to:

- New Terminal Fitout – Gatwick £73.64/m<sup>2</sup> vs. HAL £12,761.02/m<sup>2</sup>. Given that the Gatwick scheme is predicated on a low cost environment then the cost of fit out is not expected to result in a comparable product to the Heathrow schemes. However, the rate of £73.64 is not a meaningful figure. Neither is the value of the

**Question 5: Comments on the Commission's appraisal of specific topics including methodology and results**

HAL scheme at £12,761/m<sup>2</sup>. If we utilise an industry standard figure of £1,600/m<sup>2</sup>, for a low cost 'type' arrangement, this provides a total delta of £370m.

- Fixed Links, VCC, Rotunda/Nodes, PCA and Airbridges – The totals provided by Jacobs/Leigh Fisher have not been carried through to the total for this element so there is a totalised error of £105m for the Gatwick Scheme. When the summation error is corrected the overall cost increases by £105m to £220m.
- Taxiways & Aprons – Gatwick £300/m<sup>2</sup> (approx.) vs. HAL £368/m<sup>2</sup> – a total delta of £75m
- Fuel Farm – Gatwick £0 vs. HAL £50m – a total delta of £50m
- Runway – Gatwick £218/m<sup>2</sup> vs. HAL £368/m<sup>2</sup> – a total delta of £37.5m
- ATC Tower – Gatwick £30.5m vs. HAL £60m – a total delta of £29.5m
- Stands – Gatwick £370/m<sup>2</sup> (approx.) vs. HAL £420/m<sup>2</sup> – a total delta of £17.5m

These cost discrepancies are summarised in the table below:

High Level Area of Increase	Additional Costs Increase Required
Airside	£1,665m
Landside	£70m
OB, Risk and Project Costs	£955m
<b>Overall Additions</b>	<b>£2,690m</b>

### 5.31.2.3 Our recommendations

We recommend the Commission:

- Increases its estimate of the capital cost of the Gatwick proposal in the order of £2.25 billion to £2.75 billion after the corresponding additional increases in OB, Risk and Project Costs have been factored in to all extra over values

## 5.31.3 Funding

### 5.31.3.1 Airports Commission's approach

The Commission has assumed that the average bond tenor for Gatwick is 10 years.

### 5.31.3.2 Our comments

The Commission's consultants have assumed that the average bond tenor for Gatwick is 10 years. It may be that in doing the analysis the Commission has assumed that Gatwick's current portfolio reflects its medium term position. However, this is a recently implemented portfolio and therefore a longer dated debt portfolio than could be expected as it matures in the medium term.

In assessing funding viability, the Commission must concentrate on the underlying strength of the business case for Gatwick expansion. Moody's, in its 'New runway will have mixed credit implications for London's airports' analysis conclude that: "The financial risks associated with the scheme [of Gatwick] are high given the size of the project in relation to the company's size and Gatwick's relative lack of experience undertaking such a transformational capital expenditure programme." (page 9)

### 5.31.3.3 Our recommendations

We recommend the Commission:

- assume a shorter average bond tenor for Gatwick to reflect the maturing of its portfolio over the time period being considered; and
- concentrate on the respective underlying strength of the business case for Gatwick in assessing funding viability

## 5.32 Gatwick; Operational Efficiency Analysis

### 5.32.1 Ground infrastructure

#### 5.32.1.1 Airports Commission's approach

At a summary level the Ground Infrastructure Operational Efficiency document identifies eight Amber Significant Issues which are difficult or complex to address for the Gatwick scheme, compared to three Amber Issues for the NWR scheme (of which none are directly related to the new NWR).

#### 5.32.1.2 Our comments

Gatwick's proposal as laid out in the consultation documents raise a number of major operational challenges which will need to be addressed to allow proper assessment.

We have identified a number of restrictions on the use of Code F aircraft on the parallel taxiway network:

- Code F stand provision is constrained
- Code F aircraft are unable to use the EATs (End Around Taxiways) without impacting upon the northern runway operation (i.e. they would need to be treated as a runway crossing)
- Limited scope to expand the existing terminals (plus limitations on the size of the new terminal as well) further constrains ground infrastructure, especially Code F stands.

What is apparent from the Gatwick scheme is that there is insufficient space to deal with regular Code F aircraft operations around the new runway, taxiway and apron network. Given the extent of the limitations listed each taxiing Code F aircraft will cause additional congestion as a result of the infrastructure limitations above. This will have associated environmental impacts, increasing operating costs and reducing punctuality and predictability. A successful hub airport or indeed a point to point long-haul airport will need to deal with a significant number of Code F aircraft at some point in its development. An inability to do this will inevitably constrain its ability to grow.

#### 5.32.1.3 Our recommendations

We recommend the Commission:

- takes into account in the final evaluation the additional congestion and operational limitations of the Gatwick scheme
- in particular its inability to handle increased or regular Code F operations and the limitations this will impose on the future aviation models that the Gatwick might provide

## 5.32.2 Taxiway network

### 5.32.2.1 Airports Commission's approach

The Commission has noted a number of significant taxiway congestion issues in addition to the Code F limitations noted above:

- Potential congestion around Alpha Box;
- Aircraft waiting for departure may affect access to the EATs at peak times;
- Location of the glidepath aerial may impact position of runway links and place restriction on use of the parallel taxiway system;
- Potential for congestion during two way peak flow;
- Conflict of aircraft pushbacks in proximity to aircraft holding for southern runway departures (during westerly operations).

### 5.32.2.2 Our comments

In addition to the Code F constraints noted above, there are a number of other significant taxiway pinch point issues which the Commission has identified. Of particular note is the impact that the ILS glide path aerial and the associated critical/sensitive areas for the existing runway could have on the outer parallel taxiway network. The junction of the twin cross taxiways and the twin taxiway system (highlighted as 3b by the Commission in Figure 5-1; Appraisal Framework Module 14 – Operational Efficiency – Ground Infrastructure Gatwick Second Runway, page 18) could become particularly congested if movements on the outer taxiway were prohibited and aircraft were pushing back from the Code C remote stands onto the inner taxiway.

### 5.32.2.3 Our recommendations

We recommend that the Commission:

- takes into account both the impact of restricting use of the outer taxiway when the ILS is in operation and aircraft pushing back onto the inner taxiway when modelling the airfield taxiway layout
- determine whether there is a workable solution or whether stands would need to be taken out and taxiways pushed back in order for there to be an acceptable level of delay or congestion

## 5.32.3 End Around Taxiway (EAT) design

### 5.32.3.1 Airports Commission's approach

The Commission has noted that the proposed End Around Taxiways would be safety compliant and adequate for taxiway operation, providing sufficient jet blast mitigation is provided.

### 5.32.3.2 Our comments

We do not believe that the Commission has considered sufficiently the impact of the measures necessary to ensure that jet blast from departing aircraft on the runway are at safe levels in relation to aircraft using the EATs.

The proposed EATs are around 110-130m behind the start of take-off roll on the northern runway at both ends. The jet blast applied to aircraft taxiing along the EAT behind a departing aircraft will be excessive (in excess of 100mph). There will be no space due to ILS localiser interference and runway OLS limitations to provide any form of blast screen. Applying a 300m buffer between the start of take-off roll and the EAT will reduce the jet blast on the EAT to around 50-60mph. Whilst this is still considerable, it is a clearance typically used by ATC when undertaking intersection take-offs.

Applying a 300m jet blast clearance zone will reduce the effective northern runway take-off run available to around 3000m for Runway 08. With a compass departures operation a 3000m runway will cause operational restrictions for a considerable proportion of Code E/F northerly departures. These aircraft would need to use the southern runway and cross in the air or alternatively aircraft would not be able to use the EAT whilst aircraft were taking off when using the full runway length. Both scenarios will create additional taxiway congestion, which is noted by the Commission as already being constrained and therefore further congestion will lead to a reduction in capacity. We have assumed that the amount of Code E/F departures, particularly under the higher long haul growth scenarios, could be handled by the southern runway and that there is ATC airspace capacity/workload capability to handle the extra crossings in the air; however both of these assumptions would require validation.

As currently drawn, taxiway modelling should assume that aircraft are prohibited from using the EAT when an aircraft is requiring greater than 3000m for take-off. Alternatively, the runway, airspace and taxiway modelling could assume that all take-offs requiring greater than 3000m would use the southern runway and whether the extra crossings/workload this would place on the system would be manageable. Or, if the existing take-off distance was required on the northern runway, then allowance in the infrastructure costs/impacts should be made to move the northern runway west.

### 5.32.3.3 Our recommendations

We recommend that the Commission:

- considers a 300m/50-60 mph jet blast clearance being the safe base assumption to use, as opposed to a 110-130m/100mph+ jet blast clearance
- model and assess the taxiway congestion that would be caused by the constrained runway operation or move the northern runway slightly west and the western EAT further west to produce the required 300m buffer zone, which would require more land to the west and increase the scheme costs

## 5.32.4 New Midfield Terminal building

### 5.32.4.1 Airports Commission's approach

The Commission notes that the terminal building for the Gatwick scheme is providing a much inferior product to the NWR scheme in that it is only providing approximately 30m<sup>2</sup> per peak hour departing passenger at Gatwick compared to 45-50m<sup>2</sup> at Heathrow (see Figures 8-3 in the Ground Infrastructure assessment document).

### 5.32.4.2 Our comments

There are a number of observations in the consultation documents which would suggest that the new terminal is more undersized than even the 30m<sup>2</sup> per peak hour departing passenger estimate would suggest.

Gatwick's Appendix A5 Operation Efficiency – Master Plan claims that 152,131m<sup>2</sup> net passenger processing area is required to handle 50mppa (Section 3.4). This compares to the current provision of 220,500m<sup>2</sup> combined area today in South Terminal and North Terminal (Section 1.2) which together process 45mppa. For the new 50mppa terminal the net processing area has been increased by 50% to 228,800m<sup>2</sup> to get the overall GIFA of the Midfield Terminal.

Table 8.1 in the Commission's Module 14 for Gatwick assumes the same departure peak hour pax/annual ratio in future years (275 dep hourly pax per mppa) and estimates that the total GIFA increases from 370,834m<sup>2</sup> for the 45mppa combined South Terminal and North Terminal to 768,234m<sup>2</sup> when Phase 3 of the Midfield Terminal is open. The additional building GIFA for the Midfield Terminal of 397,400m<sup>2</sup> does not align with Gatwick's 228,800m<sup>2</sup> assessment of the GIFA above, upon which the Gatwick and the Commission's cost plans have been based.

To further emphasise this point in Gatwick's analysis as published, some of the facilities within the terminal building appear to be grossly undersized. As an example, for a 50mppa terminal there is only predicted to be demand for 79 check-in desks (Section 3.4), albeit there appear to be circa 104 desks shown on the plan. This compares with a provision of circa 340 desks in North and South Terminal today (to handle 35-45mppa). Compare this with Heathrow Terminal 2 which has 115 desks to process 20mppa. Even with changes to check-in processes and technology, we believe that it is unrealistic to think that the number of check-in desks can be reduced to 25% of today's numbers. What appears to have partially impacted this is the forecast departures peak demand of 5352 pax/hour for the new 50mppa terminal vs. combined 7600 pax/hour capacity for the 45mppa combined South and North Terminals today. Even if there was some peak spreading as well as some inefficiency with a two terminal operation, this is a considerable and arguably unrealistic gap.

In summary both at the aggregate and at facility level there is inconsistency in Gatwick's plans and the cost assessment appears too low.

### 5.32.4.3 Our recommendations

We recommend that the Commission:

- increase the assumed GIFA of the Midfield Terminal to 397,400m<sup>2</sup> to maintain the same level of service as the existing Gatwick Terminals
- OR assume a deterioration in space per passenger from 30m<sup>2</sup> to 23m<sup>2</sup> per peak hour departing passenger (approximately a 25% reduction from today), which would place the airport among the lowest of those benchmarked by the Commission in Figure 8-3

## 5.32.5 Minimum connection times

### 5.32.5.1 Airports Commission's approach

In its assessment, Gatwick has summarised a number of its MCT processes.

### 5.32.5.2 Our comments

When Gatwick's summaries of MCT processes are broken down, the combined times appear unrealistic and underestimated. This could be due to having omitted some of the processes (e.g. boarding card checks), parts of the journey (e.g. from transfer to bus station, vertical circulation changes) or having used optimistic assumptions (1.5 m/s walking speeds, where HAL has used 1 m/s).

The Commission's 42-58 minute assessments have included these extra processes or journeys and increased the MCTs beyond Gatwick's assessment.

Whilst the Commission has added in extra processes or journeys omitted by Gatwick, its assessment does appear to have retained the Gatwick 1.5m/s walking distance speed as well as an unrealistic 2 min journey time to get from the North Terminal coach facility, across the taxiway bridge and to the end of Pier 6. Realistically the walking times from the end of the Gatwick midfield pier should be comparable to NWR scheme Concourse K satellite (they are essentially the same length of pier). The walking time to Pier 6 should be increased to take account of the extra walking distance (i.e. to ensure that consistent walking speed assumptions are used for the Heathrow and Gatwick MCT assessments), plus all of the vertical circulation changes.

### 5.32.5.3 Our recommendations

We recommend that the Commission:

- review the calculations for MCTs taking account of additional processes and more realistic walking times

## 5.32.6 Comparison with demand scenarios

### 5.32.6.1 Airports Commission's approach

A summary of the annual passenger forecasts for 2050 for the different scenarios considered by the Commission is summarised in the table below, along with an assessment of the additional demand over and above the capacity one would expect in future given the number of runways available today.

**Figure 5.17: 2050 forecasts for Commission's scenarios**

	Carbon Traded					Carbon Capped				
	AON	GG	RDoE	LCiK	GF	AON	GG	RDoE	LCiK	GF
LGW 2R mppa (2050)	82	96	83	96	68	69	60	61	86	63
Diff 1R (45mppa)	<b>37</b>	<b>51</b>	<b>38</b>	<b>51</b>	<b>23</b>	<b>24</b>	<b>15</b>	<b>16</b>	<b>41</b>	<b>18</b>
LHR 3R NW mppa (2050)	138	148	136	149	133	135	139	132	138	134
Diff 2R (95mppa)	<b>43</b>	<b>53</b>	<b>41</b>	<b>54</b>	<b>38</b>	<b>40</b>	<b>44</b>	<b>37</b>	<b>43</b>	<b>39</b>

The Commission has compared, at a high level, the reduction in infrastructure required under some of these scenarios.

### 5.32.6.2 Our comments

There is a much greater air traffic forecast risk at Gatwick. This will have a considerable impact on the robustness of the business case. At Heathrow all 10 forecast scenarios will fill the third runway and maximise passenger throughput (the lowest scenario is an extra 37mppa). At Gatwick, half of the scenarios will not make full use of the new runway, with the business case viability being especially at risk where there may be only an extra 15-18mppa of throughput, which occurs in three out of the ten scenarios.

There is a strong likelihood that airlines are more likely to want slots during busy times of the day (to fit with operating models/great circle destinations and operating hours there) but less willing to fill in the troughs during the day. As result, there may still be the need to build large amounts of infrastructure to deal with the peak but these assets will have longer periods where they are not fully utilised.

### 5.32.6.3 Our recommendations

We recommend that the Commission:

- fully factor in the additional forecast risk for the Gatwick masterplan in the Operational Efficiency module as well as across other evaluation areas
- make an allowance in this module for addressing the fact that where an airport is operating below maximum capacity the size of facility required is driven by the peak flow in the most commercially advantageous times of day not the average flow across the day



## 5.32.7 Coaching to Midfield Concourse Satellite

### 5.32.7.1 Airports Commission's approach

Gatwick is proposing to operate a large remote satellite (i.e. accessed by coach) from 2025 to 2040, which, as the Commission has noted, will provide a much lower passenger experience than even other parts of Gatwick.

### 5.32.7.2 Our comments

The level of passenger service described is very unlikely to be acceptable to either airlines or the travelling public and as such represents an unrealistic assumption.

### 5.32.7.3 Our recommendations

The Commission should:

- assume the concurrent delivery of the Terminal and Pier infrastructure and their airside linkage and
- thus reflect in its assessments the earlier investment or the associated delay to the delivery of facilities and capacity

## 5.33 Gatwick; Operational Risk Analysis

### 5.33.1 Flood risk

#### 5.33.1.1 Airports Commission's approach

The Commission's assessment shows that Gatwick has increased flood risk (medium with some areas of high; Gatwick Operational Risk - paragraph 2.2) compared to Heathrow (largely free of flood risk, Heathrow NWR Operational Risk - paragraph 2.2). It was flooding at Gatwick in December 2013 that caused major electrical disruption at the airport.

The Airports Commission notes that the second runway is likely to present major changes to the water management environment which, without effective long term mitigation, could cause a significant increase in flood risk elsewhere. The Airports Commission also notes that an effective strategy to mitigate this change in flood risk should be developed as it has not been done so already.

#### 5.33.1.2 Our comments

For Heathrow, the cost of flood mitigation is £300million (circa £0.5billion if the Commission add additional design risk and optimism bias). For Gatwick, the area is larger (e.g. larger apron), so the cost is likely to be greater.

#### 5.33.1.3 Our recommendations

We recommend that the Commission:

- allow additional cost in the Gatwick cost plan to provide adequate flood risk mitigation and provide a consistent approach across all schemes

## 5.33.2 Low visibility risk

### 5.33.2.1 Airports Commission's approach

The Commission's analysis notes that Gatwick has double the number of instances of low visibility procedures than Heathrow (34 days per year at Gatwick compared to 17 at Heathrow).

### 5.33.2.2 Our comments

There is an increased risk of low visibility conditions and reduction of capacity at Gatwick compared to Heathrow.

### 5.33.2.3 Our recommendations

We recommend that the Commission:

- take account of the increased risk of low visibility at Gatwick in the final evaluation of operational risk

## 5.34 Gatwick; Delivery Analysis

### 5.34.1 Construction schedule

#### 5.34.1.1 Airports Commission's approach

When considering the construction schedule for the second runway at Gatwick, the Commission appears to have adopted the assertions set out in Appendix A20 – Construction Schedule and Risk Profile.

#### 5.34.1.2 Our comments

We have reviewed the document and have found a number of inconsistencies and omissions which will have an impact on the claimed delivery dates for all the Phases of construction described. If either the narrative or the schedule of the document were to be read in isolation, the Gatwick scheme would appear to be deliverable as submitted. However, there are potential inconsistencies between the two (and with other documents in the proposal) that would suggest a more detailed review is required.

It is our view that the proposed schedule / phasing (at least in its submitted form) suggests that, at best there is still significant work required to demonstrate the phasing and constructability of the scheme within the declared timescales. At worst, it is based on unachievable interfaces / logic that would potentially result in a further 6 months being required for the runway phase and a further 24 months being required for phase 2.

Based on the observations below, it is also our view that any Quantitative Schedule Risk Analysis (Monte Carlo analysis) that the proposal relies upon to demonstrate the scheme is deliverable (documented in Appendices A20 – Construction Schedule and Risk Profile and A21 Programme Risk Management) must be called into question.

As a general observation, the schedule, and the associated issues highlighted below give the impression that the phasing and delivery of the works are actually finance / cash flow driven as opposed to being requirement or delivery focused. In addition there appear to be misalignments between the schedule and the phased cost plan

A summary of each phase below highlights the more salient observations that we suggest require a reassessment of the delivery dates already stated by the Commission.

### 5.34.1.3 Our recommendations

We recommend that the Commission:-

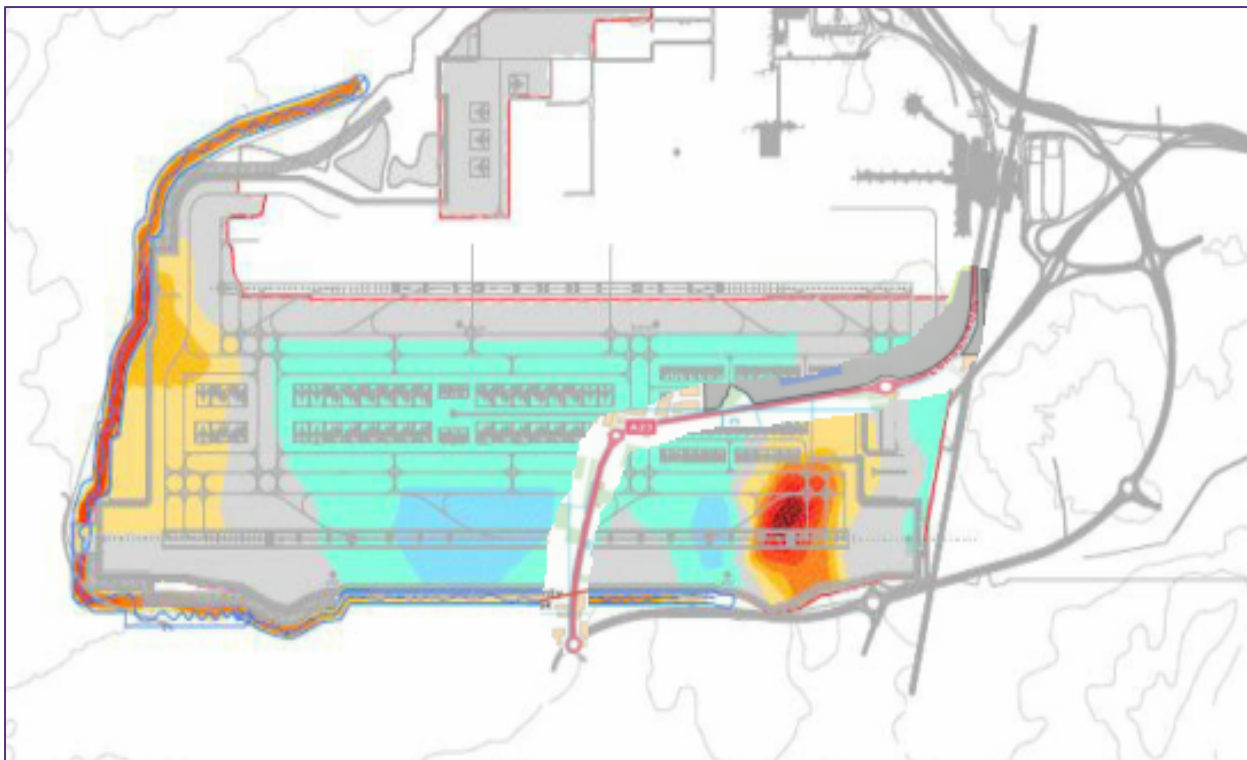
- examines the issues highlighted in the following analysis of the delivery phasing and assure itself that the Gatwick construction schedule (including any further iterations) has taken account of them
- concludes that the Gatwick schedule would require at least a further 6 months for the runway completion and a further 24 months for completion of phase 1

## 5.34.2 Runway opening phase and A23 diversion

### 5.34.2.1 Gatwick's proposal

The A23 dual carriageway cuts across the eastern half of second runway site and requires diversion to the south and east in order to permit the runway, taxiways and aprons to open. In Gatwick's summary construction schedule the Runway Opening Phase A23 diversion is due to be completed by April 2023 and the construction works for the new second runway and Runway Opening Phase taxiways and apron due for completion by October 2024. This gives 18 months to complete the all engineering works required on the A23 site.

**Figure 5.18: Plan showing relationship of existing A23 to proposed terminal and airfield facilities**



### 5.34.2.2 Our comments

Given the extent which the A23 cuts across the site and the amount of land which it sterilises, our view is that 18 months is an overly optimistic duration to start and complete the following sections of work after the realignment of the A23 external to the site:

- A23 site demolition/clearance
- Site Earthworks
- Pavement works for the runway, taxiway and aprons
- Drainage
- Services, including all civils works and M&E installations
- Airfield ground lighting
- Any sub-structure active safeguarding required located under the Runway Opening Phase operational pavements (e.g. APM), required for future phases.

### **5.34.2.3 Our recommendations**

We recommend that the Commission:-

- examines the scope being delivered and its interaction with the A23 removal date and add an extra 6 months duration to this phase of the works

## **5.34.3 Runway opening phase and impact on existing car parks**

### **5.34.3.1 Gatwick's proposal**

The published construction logistics plan for the Runway Opening Phase makes reference to commercial facilities to the south east of the site which would be retained temporarily until they could be reprovided, but makes no mention of sites to the south west of the airport by Lowfield Heath, which are required immediately. This south west site currently accommodates a 5000 space car park which is shown on Gatwick's existing airport plan.

### **5.34.3.2 Our comments**

It is a reasonable assumption that this 5000 space car park is continued to be required to support the current single runway operation during the construction works. Therefore this parking will need to be re-provided elsewhere before removing the current parking. There appears to be no provision for this in the schedule nor is it mentioned in the narrative of the re-provision prior to earthworks commencement; the assumptions log states that no re provision has been allowed for in the schedule.

On the assumption that re-provision is required prior to commencement of construction in the area, then, a double move (re-provision) would be required on the basis that the area safeguarded for future car parking in the final masterplan (between the M23 and the airport) is not accessible until 2028. This will have additional early cost and potential land purchase implications which should be acknowledged by the Commission, or else this will have an impact on the date at which the redevelopment of the land for the new airfield can begin.

Similarly there is no allowance in the schedule for the re-provision of any of the other facilities impacted by the Runway Opening Phase works sited along the current southern perimeter (Lowfield Heath).

### **5.34.3.3 Our recommendations**

We recommend that the Commission:-

- take account of the need to relocate the existing car parking in the analysis of the duration of this phase of the proposed works

## 5.34.4 Runway opening phase and Air Traffic Control tower

### 5.34.4.1 Gatwick's proposal

Gatwick's Construction Schedule and Risk Profile document makes no reference to when the new air traffic control tower will be operational. Gatwick's capital investment plan indicates this would be constructed after Phase 1.

### 5.34.4.2 Our comments

If the new control tower is not built until after Phase 1, it is not clear whether the existing control tower has the capability of being able to see the new runway clearly enough, given the extra distance the runway is away from the current operation. In addition to this, if the tower is only constructed during Phase 1, then it will be difficult to construct the new terminal pier and for the existing control tower to be able to see across the top of the construction site, to the runway ends. There does not appear to be sufficient time in the schedule during Phase 1 to construct the tower first and to get it flight tested and operational and then deliver the pier.

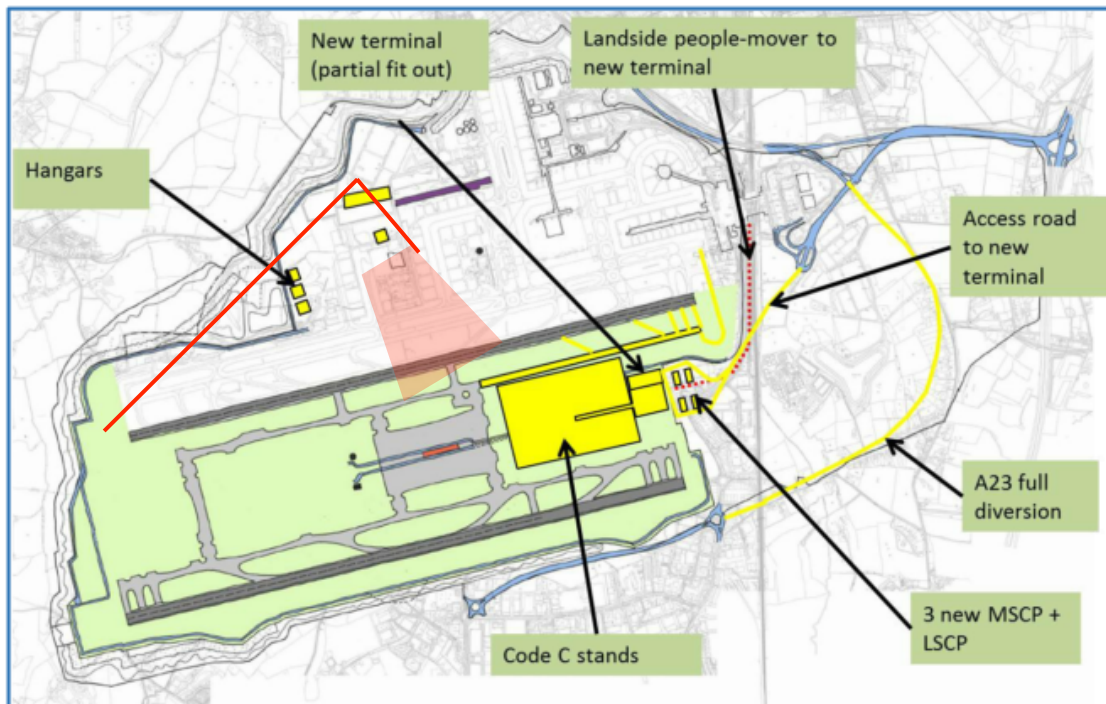


Figure 5. Phase 1 construction scope

### 5.34.4.3 Our recommendations

We recommend that the Commission:-

- reviews the impact that the need to provide the new Control Tower will have on this phase of the proposed works and the runway opening date as well as on the capital expenditure cash-flow plan

## 5.34.5 Runway opening phase and capacity/benefits achieved

### 5.34.5.1 Gatwick's proposal

The Runway Opening Phase is scheduled to open the second runway, remote apron with a pier served by bus from the existing terminals and taxiway crossing points across the existing runway, during 2025. Phase 1, which sees the opening of the Midfield Terminal and pier plus End Around Taxiways, is not scheduled to open until 2030.

### 5.34.5.2 Our comments

Whilst Gatwick claim's that it will have a second runway open by 2025 the capacity benefits of the Runway Opening Phase will be very limited until end around taxiways (EATs) and the Midfield Terminal/Pier open in 2030. This is unlike Heathrow, which will be able to bring on line EAT as well as runway capacity from 2025 and fully linked terminal and apron capacity from 2026.

### 5.34.5.3 Our recommendations

We recommend that the Commission:-

- carefully assesses the point at which adequate terminal capacity is provided to effectively serve the new runway capacity

## 5.34.6 Phase 1 and new terminal opening date

### 5.34.6.1 Gatwick's proposal

Section 3.2 of Gatwick's Appendix 20 Construction Schedule and Risk Profile states that the final A23 diversion is not due to open until March 2028 and that Phase 1 construction works, including the new terminal, forecourt, 4 No. multi-storey car parks, elevated access road across the Brighton mainline and landside APM are due to finish 15 months later by June 2029. There is a discrepancy with the schedule, which has the landside APM opening in December 2033.

### 5.34.6.2 Our comments

The route of the A23, until it is relocated in March 2028, will be located immediately to the east of new terminal building and will cut through the site occupied by the terminal forecourt, 4 No. multi-storey car parks, elevated access road across the Brighton mainline and the landside APM. It is inconceivable to think that all of these new facilities can be constructed in 15 months. Indeed the discrepancy in Gatwick's construction schedule which shows the landside APM not open until December 2033 may be the truer reflection of their own schedule in terms of when the landside campus and surface access connectivity to the new terminal can be opened and hence the terminal complex as a whole.

Without the delivery of the key elements such as the forecourt, short stay multi-storey car parks, access road across the Brighton Mainline and the landside APM, the terminal will not be an effective passenger processing facility.

### 5.34.6.3 Our recommendations

We recommend that the Commission:

- re-assesses the realistic opening date for Phase 1, given the A23 diversion opening date of March 2028 and the facilities that are required to operate a terminal effectively



# Section 6

## Response to Question 6

Comments on the  
Commission's sustainability  
assessments, including  
methodology and results





## Airport's Commission - Question 6:



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



**Question 6: Comments on the Commission's sustainability assessments**

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We support the Commission's overall approach to its Sustainability Assessment. Ensuring any new airport capacity is environmentally and socially sustainable and responsible is essential. Assessing this is not a mechanical exercise but requires judgement and a holistic approach. As we set out in our response on proposed Appraisal Framework in February 2014, we support the way the Commission has selected the right issues to be part of a rounded assessment, providing a balanced overview of the economic, social and environmental effects of additional airport capacity. The use of a scaled rating system to assess effects (highly supportive, supportive, neutral, adverse, highly adverse) both before and after mitigation provides an appropriate basis for assessment at this stage of the process of developing additional capacity. The ratings for each topic represent a judgement based on the detailed technical assessments on which we have commented in Section 5. We agree with the Commission's approach not to use the Sustainability Assessment as "a means for defining a total scheme impact". We also agree with its views that poor performance on one area or a number of areas does not imply that a scheme is not suitable for progression.

With the significant exception of air quality, we broadly concur with the judgement that the Commission has reached for individual topics after considering the mitigation strategies we have proposed. Taken at a headline level the assessment shows a supportive to highly supportive effect on the majority of economic and social indicators, and an adverse and in some cases close to neutral effect on most environmental topics once mitigation is taken into account. Our view is that the sustainable development of Heathrow requires us to maximise the social and economic benefits that aviation brings while reducing adverse impacts and operating within environmental limits. The Commission's assessment shows that such an outcome can be delivered.

This need to balance benefits and impacts within absolute limits is common to each shortlisted proposal. We believe the comparative evidence assembled is clear: Heathrow NWR offers the best overall balance. The challenges for all three scheme are similar, but with key differences on crucial topics such as noise or respite, and more opportunity to offset adverse impacts with the wider benefits of the NWR proposal.

We do not comment here on the assessment of each individual topic in turn, but focus on a selection where we have specific comments or recommendations relevant to the overall assessment.

In summary with respect to noise, we are confident that our scheme's performance and mitigation supports the Commission's overall conclusion. In this context an adverse rating needs to be reconciled against the Commission's conclusion that there is also an improvement across all metrics compared to today.

On air quality we are concerned that the Commission's assessment is not yet complete. We note that our mitigation has not been factored in to the assessment, although the Commission consider our proposals to be credible. Given the importance of this environmental constraint, we believe a firm directional view on air quality is valuable for the overall sustainability assessment.

We would also urge any differences in climate change impact be considered within the assessment – for example the reduction in emissions from reduced aircraft holding.

On climate change and carbon emissions we believe the case for south east airport expansion being possible within UK legal and underlying environmental limits is well established. We would urge this point be reinforced within the overall assessment.

## 6.1 Economy Impacts Assessment

### 6.1.1 Assignment of the Commission's performance assessments

#### 6.1.1.1 Airports Commission's approach

The Commission assigns one of five performance assessments to each impact that it identifies: "Highly adverse", "Adverse", "Neutral", "Supportive" and "Highly supportive". In the case of the Economy Impacts assessment, the Commission's appraisal assigns a "Highly supportive" result to both Heathrow and Gatwick.

#### 6.1.1.2 Our comments

We query the Commission's assessment assigning a "Highly supportive" result to both Heathrow and Gatwick<sup>1</sup> given the fact that the economic benefits of Heathrow expansion are very significantly higher than those of Gatwick expansion - in the Assessment of Need scenario, by 135%<sup>2</sup> in the case of the conventional analysis of transport efficiency; and by 65%<sup>3</sup> in the case of the wider macro-economic modelling. With differences in benefit of this order, it cannot be the case that both are assigned the same "Highly supportive" result.

This comment applies also to the Transport Economic Efficiency impacts analysis, where Heathrow and Gatwick expansion are assigned the same "Highly supportive" and "Supportive" measure (depending on scenario),<sup>4</sup> despite the fact that the benefits of Heathrow expansion are more than double those of Gatwick in three out of the five scenarios, and higher than Gatwick in four out of five scenarios. In the "Global Fragmentation" scenario Gatwick's transport economic efficiency reaches only £3.7 billion – compared to Heathrow's £10.3 billion. Again, it is hard to see how both these can be assigned the same "Supportive" result from a social sustainability perspective.<sup>5</sup>

#### 6.1.1.3 Our recommendations

We recommend that the Commission:

- calibrates its assignment of performance assessments so as to distinguish between impacts that are significantly different between schemes. In particular the Commission needs to recalibrate the assignment of both the Transport Economic Efficiency and the Wider Impacts assessments between Heathrow and Gatwick expansion to capture the significantly higher economic impact of Heathrow expansion

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<sup>1</sup> See paragraphs 7.13 of both the "Business Case and Sustainability Assessment" of both Heathrow Airport North West Runway and Gatwick Airport Second Runway.

<sup>2</sup> £18.3 billion NPV for Heathrow, against £7.8 billion NPV for Gatwick (Tables 7.1 of the respective Gatwick Second Runway and Heathrow North West Runway Business Case and Sustainability Assessments.

<sup>3</sup> £147 billion NPV for Heathrow, against £89 billion NPV for Gatwick (Tables 7.3 of the respective Gatwick Second Runway and Heathrow North West Runway Business Case and Sustainability Assessments.

<sup>4</sup> See paragraphs 7.12 of the "Business Case and Sustainability Assessment" of both Heathrow Airport North West Runway and Gatwick Airport Second Runway.

<sup>5</sup> See table 2.12 of the "Business Case and Sustainability Assessment" of both Heathrow Airport North West Runway and Gatwick Airport Second Runway.

## **6.1.2 Technical refinements to the Commission's analysis**

### **6.1.2.1 Airports Commission's Approach**

The Commission's economic impact analysis covers four broad areas:

- Estimation of a shadow cost, or congestion premium, for each airport;
- Based on the shadow cost, the Commission estimate transport economic efficiency impacts of airport expansion (from a micro-economic analysis), combining the direct benefits to passengers, offset by a reduction in profits to airlines;
- Delay impacts (from a micro-economic analysis) covering essentially only stack (on-air) delays and ground delays, but excluding traffic flow management and turnaround (at-gate holding) delays, and consequential delay costs such as baggage miss-connect and compensation paid by airlines to passengers;
- Wider impacts (from a macro-economic analysis) from a Spatial Computable General Equilibrium (S-CGE) model, which critically relies on passenger forecasts and outputs of the micro-economic analysis.

### **6.1.2.2 Our Comments**

We have covered our comments in more detail in response to Q5. Whilst we broadly support the economic impact analysis undertaken by the Commission there are a number of areas that we have identified for refinement. Most of these are based upon work we have commissioned from Frontier Economics, and their full report is attached to this submission ("Response to the Airports Commission consultation on evidence, a report prepared for Heathrow Airport" – See Appendix L). In respect to the economic impacts Frontier Economics have found that:

#### **Shadow/congestion costs for Heathrow are under-estimated**

The shadow/congestion costs at Heathrow are significantly higher than the Commission has estimated. There are a number of reasons for this but the most disturbing is that the NAPM model treats (without any evidence) all airports as uncongested in the base year of the model's calibration. Whilst this may be true for Gatwick, it is certainly untrue for Heathrow, and can be seen from simple graphing of the number of ATMs at both airports – where Heathrow's clearly reach a capacity ceiling around 2004-5. Even before the capacity ceiling is reached, congestion costs would have begun to mount. Frontier Economics point to a variety of sources that can be used to estimate the base year congestion cost at Heathrow, including slot value, and their own detailed econometric study.

Effectively, the Commission's calibration of the NAPAM model assigns Heathrow's congestion costs in the base year to a preference by passengers not to use Heathrow. Frontier Economics show that this erroneous assumption produces the perverse result that shadow/congestion costs per passenger are higher at Gatwick than they are at Heathrow – a result that is blatantly not true.

#### **The Commission's analysis assume equal weight be given to airline profits as passenger benefits**

Based on the shadow costs, the Commission estimate transport economic efficiency impacts of airport expansion (from a micro-economic analysis), combining the direct benefits to passengers, offset by a reduction in profits to airlines. The Commission implicitly assumes equal weight in social impact terms should be given to passenger benefits as to airline profits. This is counter to the generally accepted objective of giving priority to consumer benefits (indeed the CAA has a primary objective of furthering the interests of passengers). In addition the macro-economic benefit of a reduction in fares to passengers must be greater than that of an increase in airline profits. It is clear that these two effects should not be numerically offset in the way the Commission has done.

#### **The Commission ignores efficiency gains that are not reflected in fare reductions**

The Commission effectively assumes that all congestion cost reductions from airport expansion come from fare reductions, and so are offset by reduction in airline profits. The Commission ignores a number of other sources of efficiency gain that directly benefit airlines. Frontier Economics provide a number of illustrative calculations to show the type and magnitude of these effects. These go beyond the stacking delay costs estimated by the Commission.

## Question 6: Comments on the Commission's sustainability assessments

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### **Wider economic impacts are built on a number of assumptions that skew results in Gatwick's favour**

Although we fully agree with the Commission's S-CGE approach, Frontier Economics have found a number of problems with the input data used. Many of these relate to previous pieces of work – for example the under-estimation of congestion costs for Heathrow (discussed above) feeds directly into the S-CGE and results in an under-estimation of the GDP impact of Heathrow expansion (relative to Gatwick).

Also, the trade effects give roughly equal weight to flights to European destinations (which will include a large proportion of tourist and charter destinations), as they do to long haul routes to emerging markets.<sup>6</sup> Frontier Economics provide relevant evidence that suggests the Commission should be discounting passenger growth to European markets (where trade relationships are largely established and unlikely to be significantly enhanced by additional passengers). Instead, the trade impacts should focus on long haul routes. Failure to do this clearly skews the S-CGE results in favour of Gatwick.

### **6.1.2.3 Our recommendations**

We recommend that the Commission:

- reflects in its analysis that Heathrow is already capacity constrained in the base year of its NAPM model, so that the congestion cost per passenger at Heathrow cannot be lower than that at Gatwick. The Commission could use either slot values or econometric results to do this
- includes consideration that benefits to passengers should be given more weight than any reduction in airline profits
- reflects the substantial efficiency gains from reducing congestion at Heathrow, over and above that quantified by the reduction in aircraft stacking costs
- revises the inputs into the wider economic benefits model (the S-CGE) in line with the higher levels of congestion costs at Heathrow
- revises the S-CGE to reflect the maturity of trade relationships between the UK and different trading countries, by discounting the impact of passenger growth on trade to European markets

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<sup>6</sup> To see this refer to PwC, "Economy: Wider Impacts Assessment", Table 68.

## 6.2 Local Economy Impacts Assessment

### 6.2.1 Impact of Gatwick expansion on local labour market

#### 6.2.1.1 Airports Commission's Approach

In the case of Heathrow the Commission notes:

"The relatively high unemployment rate in areas such as Hillingdon (7.7%) and Ealing (9.9%), along with the possibility of the relatively strong match between the new jobs which could be created and the current skills of the population, and current trends for on airport direct employment, suggest that there is capacity for some of these new jobs to be filled by unemployed people in these areas" (paragraph 8.7 of Heathrow Airport North West Runway: Business case and Sustainability Assessment).

No such comment is made in the assessment of Gatwick expansion.

#### 6.2.1.2 Our comments

Unlike Heathrow, Gatwick's local economy does not have sufficient capacity to support expansion, principally because of the capacity constraints in the local labour market. Comparing claimant figures as a proxy for unemployment around Gatwick compared to around Heathrow shows how much slack there is in the respective labour markets. Overall, Heathrow's surrounding five boroughs have a claimant count of 15,428. The equivalent area around Gatwick has only 3,966 claimants. This means the claimant rate around Gatwick is only 0.9% (almost full employment), compared to 2.0% around Heathrow; so the labour pool around Gatwick has a lot less slack than that around Heathrow.

Compounding this, the areas surrounding Gatwick's workforce catchment area lacks any capacity to provide more commuting-in labour – in stark contrast to Heathrow where there are ample opportunities to reinforce the local employment base if required.

#### 6.2.1.3 Our recommendations

We recommend that the Commission:

- adopt a more critical approach to the impact of Gatwick expansion on the local labour market taking specific account of the ability of the market to supply the required additional labour in an area of effectively full employment. The social value of employment in such a region and the consequences such as pressure on local housing need to be fully assessed

### 6.2.2 Heathrow surface access impacts

#### 6.2.2.1 Airports Commission's approach

The sustainability assessment for Heathrow NWR states that the [local](#) surface access impacts are expected to be either supportive or neutral. In its conclusion the assessment includes a neutral outcome, taking a conservative approach because an assessment of the impacts on the local road network has not been undertaken.

#### 6.2.2.2 Our comments

The Commission's surface access assessment shows that the overall increase in traffic as a result of Heathrow expansion would be marginal at the very worst. This is without considering the mitigation strategy for employee travel that we have proposed. Our commitment to reducing parking for airport workers as well as targeted

## Question 6: Comments on the Commission's sustainability assessments

improvements to the bus network and cycle routes will reduce the number of employee trips by car and Heathrow related traffic on local roads.

Heathrow expansion will result in a better local transport network to support these additional journeys to work. A concrete example include improvements to bus routes to Slough and Spelthorne. This will also make it easier for local communities to access Heathrow and its onward connections to the rail, bus and coach network. This will improve transport connectivity for local communities and result in associated local economic benefits.

The Commission's assessment suggests that these benefits would only be related to southern rail access because the remaining schemes would be in place without airport expansion. However, this does not take account of the fact that improvements to local transport connections to Heathrow will open up access to all of the services through Heathrow, not just the new routes. For example, a new bus connection to Colnbrook delivered through expansion would open up access for its residents to Crossrail, Western Rail Access and Southern Rail Access as well as an expanded coach network.

Taking into account these issues, the outcome of the sustainability assessment in relation to surface access should be changed to supportive.

### 6.2.2.3 Our recommendations

We recommend that the Commission:

- change the conclusion in the sustainability assessment for Heathrow NWR in relation to surface access from 'neutral' to 'supportive'

## 6.3 Noise Assessment

### 6.3.1 Consideration of assessment results

#### 6.3.1.1 Airports Commission approach

In its Sustainability Assessment (paragraph 9.24) the Commission notes that our scheme will have a 'significantly adverse' (we assume this to mean 'highly adverse' as per the Commission's performance measurement levels) noise impact when considered against the Commission's objective of minimising and where possible reducing noise impacts. This is based on the Commission's modelling against a future do minimum scenario. Conversely, in paragraph 9.28, the Commission notes that *'...when comparing a future Heathrow Airport NWR scheme with the present day situation the noise situation is predicted to improve across all metrics.'*

#### 6.3.1.2 Our comments

It is not clear how the improvement in the number of people exposed to noise compared to today has been considered by the Commission.

This is important for a number of reasons;

Firstly, one of the primary concerns of the local community is whether or not an expanded Heathrow will be noisier than today.

Secondly, an underlying principle of sustainable development is to reduce noise impacts when compared to today. Thirdly, aviation noise policy has always sought to benchmark impacts from the time a decision on airport capacity or development has been made. This is supported by the Government's Aviation Policy Framework that states;



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*"The Government's overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise, as part of a policy of sharing benefits of noise reduction with industry."*

Expansion of Heathrow is the only option under consideration that reduces impacts relative to today across all the Commission's metrics, and achieves national policy objectives to reduce the number of people impacted by noise. However, it is not clear how the outcome of the assessment, which points to a 'highly adverse' impact, has been considered against UK aviation policy and the Commission's own objectives, including the objective of the Commission's sustainability assessment on noise which is 'To minimise and where possible reduce noise impacts'.

The Commission should seek to reconcile its 'significantly adverse' (we assume this to mean 'highly adverse' as per the Commission's performance measurement levels) impact based on a 'do minimum' scenario against the improvement across all metrics based on the present day situation.

### 6.3.1.3 Our Recommendation

We recommend that the Commission:

- clarify its approach to ensure that the outputs from the noise assessment which show a 'significantly adverse' impact (we assume this to mean 'highly adverse' as per the Commission's performance measurement levels) are considered in the context of UK aviation policy and the Commission's own objectives

## 6.4 Air Quality Assessment

### 6.4.1 Incomplete assessment

#### 6.4.1.1 Airports Commission's approach

The Commission's Sustainability assessment has assessed the effects upon local air quality of each of the promoter's schemes. For Heathrow's NWR scheme, it concludes that due to an increase in emissions the scheme's impact will be 'significantly adverse'. This does not include consideration of any mitigation measures proposed by Heathrow nor is it based on any detailed dispersion modelling. The Commission recognises, however, that its assessment models a level of traffic in 2030 in excess of that proposed by the scheme promoter itself, 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 the potential for the air quality impacts of the scheme to become 'adverse'. The Commission also notes that it will be carrying out further work to quantify the local impacts through dispersion modelling and the extent to which mitigation will improve performance.

#### 6.4.1.2 Our comments

We have already made comments on this issue in our response to Question 5.

The Commission has acknowledged the limitations in its approach to date. We do not consider that the high level modelling and subsequent risk-based assessment that has been undertaken by the Commission provides a sufficient evidential basis for the conclusions made about our scheme's impacts. The air quality performance of each option cannot be properly assessed until the Commission has completed the detailed dispersion modelling assessment that it has committed to undertaking. For Heathrow, this would also involve full consideration of the benefits derived from our proposed air quality mitigation measures; measures which the Commission has acknowledged as 'credible'.

## Question 6: Comments on the Commission's sustainability assessments

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The current level of assessment undertaken by the Commission does not, in our opinion, provide sufficient evidence to enable it to assign robust impact ratings to the schemes. We consider that the Commission should have withheld judgement in this way until such time as the results of the detailed assessments are available.

### 6.4.1.3 Our recommendations

We recommend that the Commission:

- review the assignment of the air quality impacts on our NWR scheme once the detailed assessment work has been completed
- consults on the results of the detailed air quality assessment once this has been undertaken

## 6.5 Biodiversity Assessment

### 6.5.1 Mitigation of loss of agricultural land

#### 6.5.1.1 Airports Commission's approach

The Commission has assessed the effects on biodiversity of each of the promoter's schemes and makes reference to the mitigation of the loss of agricultural land.

#### 6.5.1.2 Our comments

The assessment of effects on biodiversity caused by the ENR scheme, as presented in the Sustainability Assessment, states that a "*key impact in terms of ecosystem services is loss of agricultural land, for which mitigations are identified*".

This is different to the conclusions within the Sustainability Assessments for our NWR scheme and the Gatwick scheme, both of which also refers to the loss of agricultural land being a key impact, but also refer to no mitigations being identified. Table 2.7 in the Biodiversity: Ecosystem Services report does not, however, indicate that any mitigation for agricultural land is proposed as part of the Heathrow ENR scheme.

It appears, therefore, that the text in the Sustainability Assessment pertaining to the ENR scheme is missing the word 'no' and hence that none of the three schemes assessed include any mitigation for the loss of agricultural land.

#### 6.5.1.3 Our recommendations

We recommend that the Commission:

- corrects the biodiversity assessment for the ENR scheme to reflect that no mitigation is provided for the loss of agricultural land



# Section 7

## Response to Question 7

Comments on the Commission's business cases, including methodology and results





## Airport's Commission - Question 7:



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



**Question 7: Comments on the Commission's business cases**

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Our comments on the Commission's Business Case are again broadly supportive of the general assessment and its approach. On Heathrow's NWR our specific comments relate primarily to the Strategic Case and the Financial and Commercial Case assessments. In respect of the Strategic Case, we would like to see some consideration of the risk inherent in Gatwick's inability to meet the Commission's objectives across a number of scenarios, a clearer distinction between the alignment of the options with local and regional strategies, and a recognition of the wider benefits arising from the options. In respect of the Financial and Commercial Case, we raise a number of concerns which include, amongst other things, an over-estimation of airport charges and an under-estimation of the congestion premium at Heathrow, and the funding availability and affordability of the Gatwick option.

In summary we see the business case for Heathrow NWR to be shown to be strong in most if not all dimensions. The Heathrow ENR option shares some similarities but the evidence suggests crucial weaknesses. ENR will deliver less capacity, later, which reduces the strategic and economic benefits. Critically it also introduces real issues for the management of the airport and considerable additional risks to delivery, especially from commercial complexity. The business case for Gatwick is shown to be far weaker. The strategic fit with the Commission's and wider objectives is less clear. The economic benefits are far smaller in all scenarios. There are also material issues of deliverability, particularly linked to financing, affordability and airline commercial realities.

## 7.1 Strategic case - Assessment of risk within the Commission's scenario approach

### 7.1.1 Airports Commission's approach

The Commission rightly recognises uncertainty in its forecasts for the economy as a whole, and the aviation sector in particular. It does this by reference to four alternative scenarios, in addition to its original forecasts for the "Assessment of Need". Three of these relate principally to the macro-economic environment ("Global growth", "Relative decline of Europe" and "Global fragmentation"), and the fourth to the development of the sector ("Low-cost is King").<sup>1</sup>

### 7.1.2 Our comments

The main purpose of the scenario analysis is to test the outcomes of a policy in respect to uncertainty over realisation of the different scenarios. Although the Commission's scenarios describe uncertainty, it is not clear how risk revealed by the Commission's different scenarios is handled within the Commission's appraisal.

The Commission has published a helpful report by SEO Economic Research,<sup>2</sup> "Expanding Airport Capacity: Competition and Connectivity". The striking conclusion of this report is that:

*"Overall, hub carrier growth following Heathrow expansion and development of Gatwick into a low-cost gateway following Gatwick expansion are the most likely airline responses under the various macroeconomic scenarios developed by the Airports Commission." (page 15)*

SEO Economic Research finds a hub operation at Gatwick is unlikely even in the scenarios where hub capacity expansion is what the market most demands:

*"The lower yields at Gatwick and suboptimal peak-hour capacity also make the establishment of a competing hub operation at Gatwick less likely." (Page 16, and also repeated on Page 90)*

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<sup>1</sup> "Strategic Fit: Forecasts", paragraphs 6.4 to 6.11.

<sup>2</sup> SEO Economic Research is affiliated to the University of Amsterdam, and carries out independent applied economic research. This report was carried out in the context of the OECD International Transport Forum.

## Question 7: Comments on the Commission's business cases

With Heathrow expansion, hub capacity is created. This capacity can be used either for expanding hub operations (e.g. under the "Global Growth" scenario), or equally for point-to-point (under the "Low-cost is King" scenario) as implied by easyJet in their submission to the Commission. Whereas under Gatwick expansion, low cost or low cost gateway are the only likely responses across all scenarios, at best creating a low cost gateway to meet the demand of hub traffic.

The difficulties of building a hub operation at Gatwick follow from the nature of a hub. The hub model is well-established, and articulated by the SEO Economic Research report published by the Commission:

*"Hubs are factories to create route density"*

*"The network economies associated with hub-and-spoke operations stimulate hub carriers to concentrate network growth on a single hub in each region. Hubbing advantages become disproportionately larger with a growth network (Burghouwt 2014). For the hub carrier, operating a concentrated hub-and-spoke system in one of the main elements of its business concept. It needs a base where it can operate such a system, which implies concentrations of as many flights as possible at one single airport. This enables the hub carrier to create maximum hub connectivity and to attract additional connecting traffic, higher load factors to its flights, more frequencies on existing destinations and/or to develop new destinations. Hubs allow network carriers to create route density. Further growth of the network of the hub carrier will result in a non-linear increase of connections via the hub, triggering again more demand, higher load factors, new destinations and higher frequencies. " (page 48)  
(page 42)*

The SEO Economic Research report also notes a clear specialisation in the London airport system:

*"The London aviation market is segmented over a constellation of different airports. The capacity constraints at various airports, the market orientated approach of its airports and the different geographical and infrastructure characteristics of the airports have over time resulted in a clear specialisation of the London airports in terms of airlines and passenger market segments....Heathrow is the only hub in the [London] system, but its lack of peak-hour capacity and the relatively limited slot share of the hub carrier does not allow BA to operate a full- fledged wave-system for arrivals and departures, resulting in a connectivity deficit relative to hub airports of a similar size elsewhere...." (page 42)*

The liberalised airport market has resulted in a specialisation where Heathrow alone fulfils the role of a hub airport – albeit with currently limited capacity to operate a fully efficient hub schedule. Any attempt to develop Gatwick as an alternative hub airport (or even a low cost gateway) is extremely unlikely to succeed.

The major benefit of Gatwick's case is dependent on continued growth for low cost airlines (specifically the "Low-cost is King" scenario) to create a low-cost gateway. Heathrow's case, on the other hand, has strength across all scenarios. In the "Low-cost is King" scenario, Heathrow can provide both hub capacity whilst also allowing low cost growth if that is the way the sector develops. By contrast, Gatwick cannot grow as a hub airport, even if this is what the market most demands.

A North West runway at Heathrow provides a more consistent and robust business case than Gatwick, when compared across the Commission's range of scenarios. So expansion of Heathrow, unlike expansion of Gatwick, can deliver value across all scenarios. Expanding Heathrow is the low risk strategic option.

Opting for Gatwick expansion poses a significant risk to the UK's connectivity as it only works if one scenarios happens whereas Heathrow works across all scenarios.

### 7.1.3 Our recommendations

We recommend that the Commission:

- explicitly takes account of Heathrow's ability to deliver hub or point-to-point benefit (e.g. connectivity) across all of the Commission's scenarios, and Gatwick's inability to do this
- include an assessment of the risk to delivering this connectivity within the Commission's appraisal

## 7.2 Strategic case - Measuring connectivity

### 7.2.1 Airport Commission's approach

As we have already discussed in response to Q5, the Commission measures connectivity by the number of destinations served by daily or all services. We are not sure which measure feeds into the passenger forecasts, but if it is anything other than daily frequency we have concerns.

### 7.2.2 Our comments

We have concerns with the way in which the Airports Commission modelling measures "connectivity" by destinations served on a daily scheduled service, or destinations served by all services. The latter (potentially including infrequent charter services) is totally inappropriate for estimating wider economic impacts from trade, and consequently will over-estimate the impact of Gatwick expansion.

For example, in the "Assessment of Need" scenario, carbon capped, Heathrow is forecast to serve 163 destination on a daily basis and 189 for all services. By contrast, Gatwick is forecast to serve only 122 destinations on a daily basis (significantly less than Heathrow), but 258 for all services (significantly more than Heathrow).<sup>3</sup> Although it might be true that Gatwick will serve more destinations if infrequent charter services are included, this must not be allowed to distort the economic impact results.

Similarly, the impact of connectivity on economic performance must be judged in terms of the number of unique connections to the UK that airport expansion will offer at either Heathrow or Gatwick. While expansion of Heathrow will allow new long haul connections not available at any other UK airport, expansion of Gatwick (to the extent that long haul destinations are provided) will more likely simply replicate destinations already available at Heathrow with commensurately smaller economic benefits.

Detailed analysis and evidence for these points are covered in the accompanying report by Frontier Economics (See Appendix L).

### 7.2.3 Our recommendations

We recommend that the Commission:

- use daily services as the criteria for connectivity to each destination
- comment on the number of uniquely new connections to the UK that expansion of either Heathrow or Gatwick will bring

## 7.3 Strategic Case - Alignment with local and regional strategies on economic grounds

### 7.3.1 Airport Commission's approach

The Commission's Business Case (ref Business Case; Part 2: Wider economic, social and environmental impacts: opportunities and threats; Local assessments) in assessing wider economic, social and environmental impacts of the short-listed options, considers how the options fit with relevant long-term strategies for socio-economic and spatial development. It highlights that expansion at Heathrow or Gatwick has the potential to align well with local and regional development strategies, providing opportunities for London and the surrounding region to play to its

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<sup>3</sup> See Airports Commission "Strategic Fit", Tables 6.26, 6.28, 6.32 and



**Question 7: Comments on the Commission's business cases**

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strategic strength. The Business Case effectively summarises the more detailed findings in the Commission's Strategic Fit Analysis Appraisal Module.

### 7.3.2 Our comments

We recognise and agree with the Commission's conclusions in respect of Heathrow, which reinforce our own assessment in Taking Britain Further that expansion at Heathrow is largely consistent with local and regional policy. Much of what the Commission says about Heathrow in its Business case assessment (ref. Business case; Part 2: Wider economic, social and environmental impacts: opportunities and threats), however, is replicated equally for Gatwick, with little to differentiate between the scale of benefits and the degree to which these fit with and benefit local and regional strategies.

The significance of Heathrow and the contribution that expansion would make in meeting wider spatial and socio-economic objectives compared to Gatwick is not adequately borne out by the Commission's Business Case. The Commission's economic assessments (ref assessments on economic benefits and jobs) highlight that expanding Heathrow instead of Gatwick has the potential to deliver £97bn more in economic benefits and 130,000 more jobs. The positive impact of Heathrow's economic benefits would be realised to a considerably greater degree across London and the rest of the UK than those relating to Gatwick.

This is supported by the high-level strategic fit assessment for Heathrow in the Commission's consultation document (ref Strategic Fit; Assessment against Airports Commission appraisal categories, Consultation Document) which, in the context of local and regional strategies, states that expansion at Heathrow would provide significantly increased employment across the local boroughs, Western Wedge/M4 corridor and London. It is also supported by the Commission's Sustainability Assessment which, under Local Economy impacts (ref Sustainability Assessment; Local Economy Impacts; Conclusion) judges that the Heathrow NWR scheme's impact is 'highly supportive'. The same assessment for Gatwick judges its impact as only 'supportive'.

As noted by the Commission, Heathrow is strategically located on London's east-west axis and is ideally placed as a catalyst for the different agglomerations on this axis, e.g. technology in the Thames Valley, creative industries in the west end and east London, and financial services in the City and Canary Wharf. Heathrow is the vital link that joins these agglomerations to the global economy highlighting its significance not only to London but across the South East.

Conversely, for Gatwick, the same assessment points only to economic benefits in the immediate vicinity, the Wandle Valley and the Gatwick Diamond. These assessments alone imply the benefits of expanding Heathrow at a far greater scale and spread than Gatwick.

The Business Case notes how expansion at Heathrow aligns strongly with the economic aspirations for London and a number of surrounding LEAs but does not assess this comparatively against Gatwick's contribution to the same, so there is little to differentiate between the performance of the short-listed options. The evidence demonstrates that expanding Heathrow has the potential to contribute considerably more to local and regional strategies than Gatwick.

It is important that the Commission's assessment enables reasonable conclusions to be drawn from a comparison of the benefits and impacts between the short-listed options. Equally, it will be crucial for the Commission to base a clear recommendation on the performance of the short-listed options in this respect. At present, there is some inconsistency between the Commission's assessment in its consultation document and that in its Business Case and Sustainability Appraisal. There is little in the Business Case assessment to differentiate between the performance of the options in this respect.

### 7.3.3 Our recommendations

We recommend that the Commission:

- clearly and consistently articulate the degree to which the short-listed options fit with local and regional strategies

## 7.4 Strategic Case - Alignment with local and regional strategies on environmental grounds

### 7.4.1 Airport Commission's approach

The Strategic Fit assessment in the Commission's Consultation document (ref Consultation document, Assessment against AC's appraisal categories; Strategic Fit) notes that Heathrow's negative impacts have been cited as a reason to oppose expansion by a number of nearby local authorities and the London Plan.

The Commission's Business Case assessment (ref Business case; Part2-Wider economic, social and environmental impacts: opportunities and impacts; local assessments) also recognises this opposition and refers to these environmental impacts. A number of the Commission's assessments consider the environmental impacts of Heathrow's expansion, pointing to potential improvements in night noise, fewer people being affected by noise overall, and potential landscape enhancement benefits whilst noting potential air quality exceedences, loss of Green Belt and other potential impacts and benefits.

### 7.4.2 Our comments

The Commission's Business Case and Consultation Document have concluded that expansion at Heathrow has the potential to align well with local and regional development strategies. The assessments make a judgement on how expansion will positively contribute towards meeting local and regional economic objectives and bring benefits across a wide area. Although the Commission's assessments make reference to opposition in local plans and the London plan to Heathrow's expansion on environmental grounds, it does not draw conclusions on whether Heathrow's expansion will contribute positively or negatively in this respect, as it does on economic grounds.

Taking into account the key environmental issues raised by many local authorities around the airport, the Commission's various assessments point to some positive impacts in this respect, particularly in respect of noise and surface access. We are confident that the additional air quality assessment work to be carried out by the Commission will demonstrate that air quality limits can be complied with as indicated by our own assessment work. Moreover, we consider that our extensive improved compensation and mitigation proposals will make Heathrow's impacts considerably more acceptable for many local communities and in fact create enhancements at the national or local level in areas such as flood risk, green spaces and biodiversity.

### 7.3.3 Our recommendation

We recommend that the Commission:

- consider the performance of Heathrow's NWR on environmental grounds together with any mitigation proposed and draw conclusions on the degree to which this overcomes the opposition noted in the local plans and the London Plan

## 7.5 Strategic Case - Consideration of wider benefits from airport expansion

### 7.5.1 Airports Commission's approach

For Heathrow, the Commission's Business Case considers only briefly the potentially supportive wider effects that the airport's expansion might have. These include, for example, widening the catchment for airport employment with improved surface access; supporting further opportunities for growth in the Western Wedge; safeguarding domestic flight connections; supporting growth along London's 'East West Axis' and increasing the potential for growth at Old Oak Common.

### 7.5.2 Our comments

We consider that the Business Case for Heathrow's expansion (and Gatwick's expansion) is too narrow. The Commission's assessment points to some obvious and helpful potential beneficial effects of Heathrow's expansion but it does not go far enough in considering the extent of these wider effects and how they might manifest themselves in supporting other infrastructure. In particular, airports are fundamentally interconnected to multiple other parts of the UK's infrastructure, and importantly enhance the business cases for those other components, both existing and proposed.

The most obvious examples in the case of Heathrow are:

- **Crossrail, Southern Rail Access, and HS2:** as well as benefitting from Crossrail, Southern Rail Access and HS2, an expanded Heathrow will also add value to these projects. The number of potential passengers that Crossrail, Southern Rail Access and HS2 can serve will be increased by an enlarged Heathrow, enhancing the business case for each of these projects;
- **Proposed changes to the M25:** our proposals will benefit existing users through additional capacity and better operation of the road network helping to reduce congestion and therefore reduce costs for all M25 users. So here again, expansion of Heathrow reduces costs for road users;
- **Business across the UK:** Heathrow Airport, as the main airport used by business passengers, enhances the value of businesses throughout the UK. Clearly this is one of the major factors picked up by the economic assessment modules – and included in the Commission's Sustainability Assessment. But here we note that the impact on the economy can be considered as the major component of the wider Business Case, and so should be considered here as well. Expansion of Heathrow, as a hub airport, will contribute far more to the wider business community across all regions of the UK, than would expansion of Gatwick as a local low cost airport.
- **Wider spread of productivity and growth:** New domestic flight connections and improved rail links, as highlighted by the rail schemes above, will improve access from the UK regions to markets, knowledge and labour within and outside the UK. Constrained domestic connectivity and a lack of modal choice is a major obstacle to economic growth and has placed many UK regions at a disadvantage in accessing international markets via the UK's hub airport. An expanded Heathrow, together with new rail links to the west, north and south, could transform the accessibility of the UK's hub, helping to share the socio-economic benefits of improved national and international connectivity more widely across the UK. Linking Heathrow to HS2, for example, could generate valuable economic opportunities for the Midlands and the North. Moreover, better rail connections and integration of transport networks with the UK's hub airport have the potential to initiate improvements to other parts of the network, as increased accessibility leads to improved productivity and economic growth. In light of the policy and social focus on rebalancing the UK economy, this spread of benefit is of intrinsic value in itself.

The argument for considering the business case for expansion of Heathrow (and Gatwick) as part of a wider business case for a whole system is made by Prof. Dieter Helm in his paper "The systems approach to infrastructure and the role and limits of competition – with applications to airports" (See Appendix G).

We note in the Heathrow Business Case that the economic benefits of projects such as Crossrail, HS2, Western Rail Access and Piccadilly Line upgrade have not been associated with the scheme, primarily because the costs of those

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schemes is not associated with Heathrow's expansion (see Consultation Document paragraph 2.15). On the other hand, we note the Commission's comments at paragraph 2.15 of the Consultation Document that confirms the Commission's intention to not look at airport expansion in isolation but to consider how it interacts with the wider transport network and so on – i.e. to look at the full range of scheme impacts. Heathrow expansion will enhance these schemes.

### 7.5.3 Our recommendations

We recommend that the Commission:

- adopts a broader scope in its assessment of the benefits of airport expansion, looking specifically at the unique and indirect effects that can positively enhance the case for other inter-related infrastructure and the benefits that will accrue

## 7.6 Freight

### 7.6.1 Commission's approach

The Commission's financial and commercial modeling implicitly assumes that freight revenues grow in line with passenger revenues.

### 7.6.2 Our comments

Already Heathrow is Britain's most important port, handling more freight by value than Britain's two largest shipping container ports combined. Britain is the world's fifth largest exporter and the Government has set a target of doubling exports. Given this backdrop, we are concerned that the Commission has paid insufficient attention to freight in its appraisal. The Commission's approach does not take account of the fact that there is far greater potential for growth of freight at Heathrow compared to Gatwick.

The Commission describes Gatwick's current air freight operation as "moderately sized" yet the figures in its consultation document show Gatwick's freight handling operation is just 7% of the size of Heathrow's and in no way comparable. The Commission asserts that "expansion at Gatwick may produce benefits for the freight sector" but provides no evidence to support this claim. It acknowledges that "*few low-cost airlines carry bellyhold freight*" but claims "*growth in low-cost long-haul may alter this to some degree*" without providing any evidence to substantiate this.

The report by SEO Economic Research, on behalf of the Commission, includes a section on cargo operators, in which it says:

"Belly cargo on intercontinental routes accounts for 10-15% of the total revenues of the average flight, which may be decisive for profitability. This cargo segment is concentrated at hub airports with scheduled intercontinental connections. Although Heathrow does not have room for full freighters and has formal restrictions on full freighter operations, it is still one of the biggest cargo hubs in Europe because of the belly freight transported. As belly cargo requires the availability of scheduled long-haul, wide body capacity, within the London airports system cargo is concentrated at Heathrow." (page 31, "Expanding Airport Capacity: Competition and Connectivity")

The Commission has not undertaken any forecasts of future freight operations as part of its appraisal, neither has it undertaken any analysis of the impact a lack of freight handling facilities would have on time-sensitive industries such as pharmaceuticals, biotech, and food where air freight is often critical. This is a significant weakness in the Commission's appraisal and we would encourage the Commission to consult with the freight industry as a matter of urgency.

Moreover, as highlighted by SEO Economic Research, Heathrow's successful freight capability is inextricably linked to its hub operation. Flights to new and established economies support trade with those countries. In turn, the

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trade supports Heathrow's extensive long-haul network. Gatwick, as a low cost carrier airport, or a low-cost gateway (in the most likely expansion scenarios identified by SEO Economic Research), could never emulate Heathrow's potential for freight growth.

**7.6.2 Our recommendations**

We recommend that the Commission

- explicitly model the higher benefit of any given increase of connectivity at Heathrow to freight growth compared to Gatwick

## 7.7 Financial & Commercial Case – calculation of price path

**7.7.1 Commission's approach**

The Commission's consultants have estimated the airport charges that would apply under each of the proposals. Their approach is not based on the existing regulatory structure but on cash flow modelling which does not make explicit assumptions about how the airports will be regulated in future. Section 1.5.3 of the PwC report "Cost and Commercial Viability: Funding and Financing" appears to be intended to provide an explanation of how the PwC (on behalf of the Commission) have calculated aeronautical charges.

**7.7.2 Our comments**

The Commission's consultants have over-estimated the average airport charge at an expanded Heathrow airport by 25% (£30 versus £24 per passenger).<sup>4</sup> This over-estimate results from two key areas:

- differences in cost and revenue assumptions
- differences in methodology.

**Differences in cost and revenue assumptions**

This accounts for *circa* £2 of the net difference in airport charges and is due primarily to the inclusion by the Commission of optimism bias (adding *circa*. £4) and an erroneous asset life assumption (subtracting *circa*. £2).

As discussed above (refer to section 5.13), a 20% optimism bias has been added to Heathrow's capital expenditure, operating cost and commercial revenue forecasts. Heathrow has a detailed understanding of the likely operating costs and commercial revenue opportunities in an expanded airport and recent experience of major projects from the construction of Terminal 5 and the new Terminal 2. Consequently, Heathrow is in an excellent position to provide accurate cost estimates with a greatly reduced need for any optimism bias allowance. The inclusion of optimism bias increases airport charges by *circa* £4.

The Commission's asset life assumptions<sup>5</sup> include an average remaining asset life for the current asset base of 15 years compared to the actual remaining life of *circa* 30 years. This impacts the calculation of regulatory depreciation and the evolution of the regulated asset base (RAB) and reduces airport charges under the current regulatory regime by *circa* £2.

<sup>4</sup> Heathrow "Taking Britain further", section 6.2.6.9; and Airport Commission "Heathrow Airport North West Runway: Business Case and Sustainability Assessment", Table 3.6.

<sup>5</sup> Airport Commission, "Cost and Commercial Viability: Financial Modelling Input Costs" section 2.2.5

**Question 7: Comments on the Commission's business cases****Differences in methodology**

Differences in the method of calculation and assumed regulation account for the remaining *circa* £4 of the difference in airport charges calculated by ourselves and Commission.

The current RAB based 'building block' model of economic regulation which is used to calculate airport charges at Heathrow is well-understood and long established. There is no indication at present that this model will change materially with an expanded airport. Heathrow have taken the Commission's forecasts of capital expenditure, operating costs and commercial revenues and input them into the current regulatory model. This results in a forecast average airport charge of £26 per passenger.

It is not entirely clear how the Commission's alternative 'cash flow' model results in a £30 airport charge. The Commission has not released the underlying calculation. However, their stated assumption that charges 'escalate during periods of capex (excluding asset replacement) but otherwise remain constant in real terms'<sup>6</sup> is a significant simplification that is highly likely to have overstate charges.

The Commission acknowledges that their calculations result in airport charges that are higher than Heathrow's forecast and attributes this as 'primarily due to differences in the assessment of cost'<sup>7</sup>. Heathrow's view is that the difference is due primarily to the differences in methodology as detailed above.

**7.7.3 Our recommendations**

We recommend that the Commission:

- review its calculation of airport charges to ensure that the chosen methodology, which is different to the current model used for economic regulation at Heathrow, does not overstate the level of charges
- review its calculation of airport charges to ensure that any inclusion of optimism bias appropriately reflects Heathrow's knowledge and experience of forecasting airport costs and revenues

**7.8 Financial & Commercial Case - affordability****7.8.1 Airports Commission's approach**

We fully support the importance of a strong and robust commercial case behind any recommendation that the Commission will make. We have elsewhere (Section 5.13) discussed the concerns we have with the Commission's estimates of opex and capex, due to an erroneous inclusion of optimism bias. Here we concentrate on other concerns with the business case, specifically affordability.

The Commission presents its results for both Heathrow (increases of 40-45%) and Gatwick (increases of 67-100%) without any further comment. We believe that the estimates for Heathrow in particular have been over-estimated (discussed in Q5). We nevertheless analyse the implications that charges increases at these levels will have.

**7.8.2 Our comments**

The table below shows that, currently, departing passenger airport charges represent 10.1% of the average fares at both Heathrow and Gatwick. Applying the Airport Commission's estimated airport charges, runway expansion would require airport charges to rise by between 67-100% at Gatwick (page 47, "Consultation Document"), compared to 40-45% at Heathrow (page 81, "Consultation Document"). Therefore, assuming the departing passenger charge is passed through to air fares, the increase in fares at Heathrow would be 4.1-4.6%, compared to 6.7-10.1% at Gatwick.

<sup>6</sup> Airport Commission, "Cost and Commercial Viability: Funding and Financing" section 1.5.3

<sup>7</sup> Airport Commission, "Cost and Commercial Viability: Funding and Financing" section 3.4.4

**Question 7: Comments on the Commission's business cases****Figure 7.1: Departing passenger charges as proportion of average fares**

	Average Fare \$	Average Fare £	Pax Charge	%
<b>Heathrow</b>				
EEA Direct	\$160	£106	£28.30	26.7%
RoW Direct	\$651	£431	£39.75	9.2%
EAA Transfer	\$605	£401	£21.23	5.3%
RoW Transfer	\$732	£485	£29.82	6.2%
Overall Average	\$483	£320	£32.41	10.1%
<b>Departing pax increase = 40%</b>				
Overall Average		£333	£45.37	13.6%
<b>Departing pax increase = 45%</b>				
Overall Average		£335	£46.99	14.0%
<b>Gatwick</b>				
Domestic	\$99	£66	£8.05	12.3%
International	\$188	£124	£12.27	9.9%
Ireland	\$110	£73	£9.89	13.6%
Overall Average	\$176	£117	£11.79	10.1%
<b>Departing pax increase = 67%</b>				
Overall Average		£125	£19.65	15.7%
<b>Departing pax increase = 100%</b>				
Overall Average		£129	£23.58	18.3%

Source: AIS Apr'13-Mar'14, Airport Conditions of Use 2013/14

Overall departing passenger charges rise to between 15-7-18.3% of average fares in the case of Gatwick, compared to 13.6-14.0% for Heathrow.

Gatwick expansion has a substantially bigger impact on fares at Gatwick than at Heathrow. This reinforces the preference for Heathrow amongst network and other airlines. This creates the risk of a loss of traffic at Gatwick as identified by Moody's.

The SEO Economic Research report ("Expanding Airport Capacity: Competition and Connectivity"), published as part of the Commission's consultation states:

*"In the case of Gatwick expansion, airlines would be more sensitive to a rise of charges than they would be in the case of an equivalent increase at Heathrow because Gatwick has a large share of low-cost airlines, which are more cost-sensitive than legacy carriers. Compared to Heathrow, the airport handles a larger share of leisure passengers. These passengers are more sensitive to higher fares, assuming airport charges would be passed on to the consumer."* (page 52)

### 7.8.3 Our recommendations

We recommend that the Commission:

- explicitly calculate the impact of airport charge increases on the fares at each airport and assesses the likely market impacts of such rises



## 7.9 Financial & Commercial Case - financing

### 7.9.1 Airports Commission's approach

Financing is one of the key distinguishing factors between the proposals to expand Heathrow Airport and Gatwick Airport respectively. While PwC have undertaken an initial analysis for each of the proposals, we do not believe a comparative analysis has been undertaken.

### 7.9.2 Our comments

We believe the Commission should be giving more attention to:

- The link between funding viability and the strength of the overall business case;
- The link between funding viability and existing market experience and presence.

#### **Viability of funding depends on the strength of the underlying businesses case**

Notwithstanding the fact the Commission's consultants have over-estimated the size of the funding requirement for Heathrow (for reasons given above) it is still inevitably the case that the funding requirement for Heathrow will be greater than that for Gatwick. In assessing funding viability, the Commission must concentrate on the respective underlying strength of the business cases for Heathrow and Gatwick, and not the absolute size of the funding or debt required.

This is the approach taken by Moody's in their "New runway will have mixed credit implications for London's airports" (Moody's Investor Services, 10 December 2014 – See Appendix I). In Moody's view:

- For Heathrow: the construction programme would be challenging but manageable, given the company's *"experience in managing and delivering large and complex capital expenditure projects"* (page 4). Importantly, the significant increases in charges would not limit traffic growth.
- For Gatwick: the construction risk is lower, but there is more financial risk. This is because the substantial increase in airport charges would risk losing traffic to Stanstead or other low cost carrier airports, with little chance of attracting a hub carrier to Gatwick. Moody's therefore conclude that *"The financial risks associated with the scheme [of Gatwick] are high given the size of the project in relation to the company's size and Gatwick's relative lack of experience undertaking such a transformational capital expenditure programme."* (page 9)

This disparity in financial risk identified by Moody's should feature in the Commission's evaluation. The underlying strength of Heathrow's hub carrier demand essentially underwrites the business case, and would consequently provide Heathrow access to both sterling and non-sterling bond and equity markets sufficient for successful completion of the project. Even if we were to accept the Commission's inclusion of optimism bias in capital expenditure forecasts, Heathrow's overall public debt would not rise to more than a level roughly comparable to BP today, and so not out of line with large UK corporates.

By comparison, the business case for Gatwick is intrinsically weak, which will make funding impossible, even if the absolute numbers are lower.

#### **Viability of funding benefits from experience and presence**

Heathrow has a well-established and resilient financing platform and an investment grade credit rating. We have over £11bn in bond outstanding, and have raised £5bn in debt financing since the beginning of 2012. In addition, we benefit from significant capital support from a large number of global banks. This support currently includes provision of £2bn in revolving credit facilities, as well as working capital facilities and hedging support.

Heathrow's strong financial market presence is critical to meet the funding needs of a multi-billion pound airport expansion. With a scalable debt financing platform, we are well placed to efficiently raise cost-effective capital to support expansion. Heathrow is currently among the top five corporate debt issuers of sterling bonds, representing slightly over 50% of its asset base, typically with maturities up to 30-40 years, and provided predominantly by

**Question 7: Comments on the Commission's business cases**

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pension funds and other institutional investors. We believe the market can absorb a 50% to 100% increase in exposure to Heathrow, whilst maintaining a supportive credit rate.

In addition, Heathrow has a materially diversified multi-currency funding platform (accessing debt in US\$, C\$, € and CHF currencies), a position that has taken many years to develop and one that is likely essential immediately to funding the costs of capacity expansion envisaged at both Gatwick and Heathrow.

With a sufficiently strong business case (for Heathrow), the funding will be available; but for an intrinsically weak business case (as for Gatwick), funding will be a major risk.

### **7.9.3 Our recommendations**

We recommend that the Commission:

- undertake a proper comparative analysis of the appetite of the financial markets to fund expansion at Heathrow against Gatwick
- concentrate, more generically, on the respective underlying strength of the business cases for Heathrow and Gatwick (including the economic benefits they produce, the expressed supports of airlines), and not become side-tracked into simplistic comparisons of the absolute size of the funding or debt required

## **7.10 Economic Case – methodology & modelling**

### **7.10.1 Airports Commission's approach**

The economic case built by the Commission divides into two complementary micro and macro-economic analyses. Looking through these two distinct lenses highlights different aspects of the economic case:

- The aggregate of benefits and costs on individual passengers and others affected by the airport expansion proposals (micro-economic);
- The wider impact on the UK economy through the catalytic effects and productivity boost given by better trade and FDI links (macro-economic).

### **7.10.2 Our comments**

Although combining these two analyses is not possible (since they use fundamentally different models) both are important. We have three concerns:

- The Commission's modeling has significantly under-estimated the congestion premium at Heathrow (and possibly over-estimated congestion costs at Gatwick);
- The Commission's micro-economic methodology for estimating transport economic efficiency provides an under-estimate by assuming that any reduction in congestion premiums (also called shadow costs) as a result of expansion will be off-set by a reduction in airline profits;
- The importance of the macro-economic analysis being able to distinguish between productivity benefits that accrue from the provision of routes that will aid international trade and investment, compared to essentially tourist routes.
- Micro-economic analysis

**Technical detail of our concerns and comments are covered in response to Q5.**

- Firstly, The Commission's modeling has significantly under-estimated congestion premium at Heathrow (and possibly over-estimated congestion costs at Gatwick). We are not at all clear precisely how the Commission have estimated airport shadow costs of airport congestion. Whatever methodology has been used the

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Commission have come to the inexplicable result that the congestion benefits per passenger are higher at Gatwick than they are at Heathrow (more detail is provided in the report by Frontier Economics – See Appendix L). This is despite excess demand being clearly higher at Heathrow than at Gatwick.

- Secondly, the Commission's micro-economic methodology for estimating transport economic efficiency results in an under-estimate by assuming that any reduction in shadow costs as a result of expansion will be off-set by a reduction in airline profits. Frontier Economics, in their report, show that a large element of the reduction in the shadow costs of congestion could take the form of reduced airlines costs (e.g. delays and consequential costs of missing baggage and compensation payments).
- Furthermore, although the magnitude of the benefit to passengers from a price reduction may be negated by the profit reduction to airlines, the Commission must consider the distributional implications. Namely, should a price reduction to passengers be given equal weight in the assessment as a reduction in airline profits? We believe more weight should be given to the former – not least because it will have more direct impact on the UK economy.

### Macro-economic analysis

At the first sight the results of PwC's S-CGE model appear to be broadly consistent with those of Frontier Economics work for Heathrow, albeit using a different methodology.

Our main concern is whether the S-CGE can be calibrated in such a way as to bring out the distinctions between the types of connectivity that will be provided through expansion of Heathrow as against Gatwick airport. UK-wide productivity benefits will mainly accrue from the provision of routes that will aid international trade and investment. This will not be short-haul European routes to tourist destinations of the type typically provided by low-cost airlines based at Gatwick. By contrast, long haul routes to emerging markets will be important – typically the routes that will be allowed to grow through growth of hub carriers based at Heathrow.

### 7.10.3 Our recommendations

We recommend that the Commission:

- revise its modelling to correct for the under-estimation of the congestion premium at Heathrow (and possibly over-estimation of congestion costs at Gatwick)
- revise the micro-economic methodology for estimating transport economic efficiency to not automatically allow for the under-estimation of congestion premiums (also called shadow costs) by assuming that any reduction as a result of expansion will be off-set by a reduction in airline profits
- give more weight to price reductions to passengers, than profit reductions for airlines
- revise the S-CGE macro-economic analysis trade effects to discount short-haul routes to tourist destinations to distinguish between productivity benefits that accrue from the provision of routes that will aid international trade and investment, compared to essentially tourist routes, or routes to markets where trading relationships are already established

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# Section 8

## Response to Question 8

Any other comments





## Airport's Commission - Question 8:

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Do you have any other comments?

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## 8.1 Addressing the airport capacity debate

### 8.1.1 Our comments

The debate about where to build additional runway capacity in the UK has been particularly protracted and subject to repeated political u-turns. Over the last few decades, this has largely stemmed from the lack of a clear national policy or strategy for aviation and a lack of political consensus. It took 8 years to reach a positive decision on Heathrow's Terminal 5, with one of the longest planning inquiries in UK history. Again, the lack of a clear national policy against which to consider the need for new terminal capacity was largely to blame for this timescale. The previous Labour Government's proposals for a third runway at Heathrow and a second at Stansted were cancelled by the incoming Coalition Government in 2010, even with a national aviation policy in place. It has become increasingly clear that all those that rely on air transport and its benefits, as well as those that oppose it, are frustrated by the lack of action and political certainty.

We have welcomed the Airports Commission's objective review of runway capacity in the UK. We remain hopeful that the robustness of the Commission's approach will enable Government to quickly establish a firm policy position following publication of the Commission's final recommendation.

### 8.1.2 Our recommendations

We recommend that the Commission:

- ensures the robustness of its business case and sustainability appraisals as key elements of the evidence base necessary to support the preparation of an Airports National Policy Statement
- sets out a clear and unambiguous recommendation to Government on where and how new runway capacity should be delivered
- provides clear guidance to Government on how it should undertake the preparation of a site and scheme specific Airports NPS, closely reflecting the Commission's recommendation
- provides clear guidance on the most appropriate consenting route to delivering new capacity

## 8.2 Airline engagement

### 8.2.1 Our comments

The Commission makes minimal reference to airline engagement or commercial views for the respective options. We expect airlines to respond to the consultation themselves. We strongly believe that the Commission should be looking at the relative strength of support for each of the airport expansion proposals, and also the preferences revealed by airline actions. A failure to ensure pragmatic commercial viability has undermined the long term success of both previous UK airport policy (e.g. Stansted second runway) and numerous international examples.

A third runway at Heathrow has the support of many airline aviation users, unlike Gatwick, whose three of its four largest airlines have said they will not support a second runway there.<sup>1</sup>

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<sup>1</sup> See Guardian, 31 October 2014, "Gatwick expansion makes no sense, says Willie Walsh", <http://www.theguardian.com/business/2014/oct/31/gatwick-expansion-makes-no-sense-willie-walsh>; and 24 October 2014, "Heathrow airport expansion essential, says Virgin's Richard Branson", <http://www.theguardian.com/business/2014/oct/24/richard-branson-supports-heathrow-extension-virgin>, and <http://corporate.easyjet.com/~media/Files/E/Easyjet-Plc-V2/pdf/about-easyjet/easyJet-response-to-the-airports-commission-consultation-jan2015.pdf>

## Question 8: Do you have any other comments?

The Heathrow AOC in its December 2014 response to the CAA consultation on "Economic regulation of new runway capacity", stated in its opening two paragraphs:

*"The Heathrow Airline Operators Committee (AOC) represents the airlines operating at Heathrow Airport. Therefore this response is a general overview rather than the specific view of any particular airline..."*

*"We believe that the development of a third runway at Heathrow Airport provides the best opportunity for expansion of the nation's airport infrastructure and are very supportive of it. We also recognise that the delivery of such an investment will be a substantial undertaking requiring significant amounts of collaboration between all stakeholders in planning for, and the delivery of, the optimum runway along with supporting infrastructure"*  
AOC, "Response to the CAA Consultation, Economic Regulation of New Runway Capacity", 19 December 2014<sup>2</sup>

It is particularly clear that all network airlines have a strong preference for securing slots at Heathrow rather than Gatwick – as suggested by relative slot values. All three airline alliances, plus major non-aligned network carriers, and the largest network airlines from Asia, Europe and America have publically noted support for Heathrow expansion over other options. Even recent events while the Commission's consultation has been on-going reflect this commercial reality. Late last year, Air China moved its only Gatwick-Beijing flight to Heathrow when a slot finally became available. This created double daily frequency to the capital of one of the world's two largest economies.

This was followed by the announcement from Vietnam Airlines that it will leave Gatwick to launch a direct service from Heathrow, with new bookings available from 12th January 2015. The airline will use its new fleet of 787-9 Dreamliners to operate five weekly services to Hanoi and Ho Chi Minh City. The route frequency will be further increased to a daily service as Vietnam Airlines benefits from the strong transfer traffic and premium passenger demand that Heathrow attracts. The announcement also shows that deployment of the 787 Dreamliners and A350s are wholly consistent with a hub airport. 87% of these orders are currently coming from network airlines operating out of hubs.

Vietnam Airlines became the 22nd long-haul carrier to leave Gatwick for Heathrow since 2008, including a wide range of US, Middle Eastern and Asian airlines.

Heathrow currently has a queue of thirty airlines interested in slots. These airlines can have slots for free at other South East airports at any time but choose not to operate them. Although a few airlines have attempted to operate from point-to-point airports, many more have instead opted to base their operations at hubs abroad.

easyJet, Gatwick's biggest airline, has long indicated its preference for expansion at Heathrow last year: "This whole issue should be [decided] where the demand is... The congestion we have does predominantly appear to be around Heathrow." (Carolyn McCall, CEO easyJet, quoted in the Financial Times, 18 November 2014). easyJet's response to the Commission's consultation that was published on 30 January 2015 has now come to a more definitive conclusion:

*"We have carried out an extensive assessment of the options shortlisted by the Airports Commission, working with external experts to assess both how passenger demand will respond to the options and their operational and service quality aspects. We have also entered into discussions with all three of the promoters. easyJet's views reflect what we believe to be in the best interests of our passengers, the airline and the UK economy. In summary, our view is that expansion at Heathrow would provide the greatest passenger and economic benefits."* (easyJet response to the Airports Commission consultation, page 1).

### 8.2.2 Our recommendations

We recommend that the Commission:

- take account of airline preferences and commercial realities in its final recommendation

<sup>2</sup>

<http://www.caa.co.uk/docs/78/AOC's%20response%20to%20CAA%20consultation%20on%20regulation%20of%20new%20runway%20capacity%2019%2012%2014.pdf>

## 8.3 Growing local and national support for Heathrow

### 8.3.1 Our comments

As outlined in section 4.11, the Commission has considered the overall level of risk associated with each scheme's ability to deliver a new runway. While the specific risk of political deliverability is not explicitly mentioned in the Commission's consultation documents, it is inevitably an important consideration for the Commission.

No major infrastructure project is easily delivered. Both the short-listed locations for additional capacity have important practical and political challenges which must be considered in their development. The evidence now shows that it is a myth to suggest that Heathrow is not politically deliverable.

We have been, and continue to be, in constant dialogue with our local communities to take their views into account as we develop our plans. Importantly, these conversations have included the positive role the airport plays today and the benefits we can create in the years ahead through expansion.

Since the rejection of the previous proposal to expand Heathrow in 2010, we have worked hard to develop a new approach to expansion. The most significant changes include developing plans for a third runway further west than previous proposals and committing to a world-class compensation package to help address the noise and property effects of the airport on our local communities.

Today, in the ten constituencies around Heathrow, 58% of residents have a positive view about Heathrow and only 7% feel negatively about the airport. The same survey of over 10,000 local residents showed that over 50% of our neighbours support expansion and 33% oppose it (Populus, December 2014). Furthermore, the Back Heathrow campaign, set up in 2013 to provide a voice for those who support Heathrow expansion has now grown to over 80,000 supporters.

We have entered into a new level of dialogue with the majority of the local authorities that surround the airport. Building on 'The Promise of Heathrow' (section 2.7), we have been discussing with Ealing, Hounslow, Slough and Spelthorne about how we can ensure that residents of these boroughs and the businesses located in them can benefit to the fullest extent possible from the opportunities that Heathrow expansion would bring.

Alongside Spelthorne, Slough have now recognised the benefits that Heathrow expansion can bring. They are both now supporting expansion. Slough have agreed to a formal partnership with Heathrow to work together to put in place mitigation measures for the borough and its residents<sup>3</sup>.

We, and they, are clear that those who would be most impacted by expansion, must see the greatest benefits. We hope that other local authorities such as Hillingdon and Windsor & Maidenhead will hold similar discussions with us if expansion at Heathrow is recommended.

Beyond our local communities, support across the country for Heathrow is strong and growing:

- Regional airports including Aberdeen International, Glasgow Airport, Leeds Bradford International Airport, Liverpool John Lennon and Newcastle International all believe that Heathrow is the 'right choice' for expansion
- In London, 54% of businesses in the capital would prefer Heathrow to be expanded, compared to 30% backing Gatwick (ComRes, June 2014). As a result, the London Chamber of Commerce and Industry is backing Heathrow
- The Local Enterprise Partnerships around Heathrow including Enterprise M3 and Thames Valley Berkshire back Heathrow for the benefits it creates for their members today and with expansion
- The Institute of Directors (IOD) recently polled their members with 61% favouring Heathrow expansion compared to only 39% supporting Gatwick<sup>4</sup>.

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<sup>3</sup> <https://www.slough.gov.uk/news/newsdetail.aspx?id=13572>

<sup>4</sup> <http://www.cityam.com/208557/top-city-boss-get-move-airport>

**Question 8: Do you have any other comments?**

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- 30 Chambers of Commerce across the four corners of the UK, from Inverness to Kent, and from Belfast to Norwich, have come out in support of Heathrow:
  - Aberdeen and Grampian Chamber of Commerce
  - Belfast Chamber of Trade and Commerce
  - Cumbria Chamber of Commerce
  - Doncaster Chamber of Commerce
  - East Lancashire Chamber of Commerce
  - Glasgow Chamber of Commerce
  - Harrogate Chamber of Trade and Commerce
  - Hertfordshire Chamber of Commerce
  - Hillingdon Chamber of Commerce
  - Hounslow Chamber of Commerce
  - Inverness Chamber of Commerce
  - Kent Invicta Chamber of Commerce
  - Liverpool Chamber of Commerce
  - London Chamber of Commerce and Industry
  - Maidenhead & District Chamber of Commerce
  - Norfolk Chamber of Commerce
  - North & Western Lancashire Chamber of Commerce
  - North East Chamber of Commerce
  - Northern Ireland Chamber of Commerce
  - Plymouth Chamber of Commerce
  - South Wales Chamber of Commerce
  - Shropshire Chamber of Commerce
  - South Cheshire Chamber of Commerce
  - Staffordshire Chambers of Commerce
  - Swindon & Wiltshire Initiative
  - Thames Valley Chamber of Commerce
  - West Cheshire & North Wales Chamber
  - West & North Yorkshire Chamber of Commerce
  - West London Business
  - Windsor District Chamber of Commerce.

In addition to these 30 Chambers, other key elements of the country's business community are coming out loud and clear in support of Heathrow:

- Both the Unite and GMB unions support the urgent need for expansion at Heathrow
- Major business organisations including the CBI have made clear their view of the importance of a hub airport to the UK
- Representing Britain's manufacturers, the EEF is supporting Heathrow and has published research showing that 80% of British manufacturers back Heathrow. They have said that *'Expansion at Heathrow is clearly the best option for business and the country overall. It soars ahead of all other options'*
- BIFA, SEGRO and the Freight Transport Association have said that Heathrow is best for freight.

Airlines too continue to demonstrate their preference for the expansion of Heathrow as set out above in section 8.2. Airlines' international trade association, IATA and individual airlines from around the world such as Delta, ANA, and Qatar, have sent submissions to the Commission supporting our proposals.

**Question 8: Do you have any other comments?**

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And, political backing for Heathrow expansion is gaining momentum as we approach the General Election. In contrast to 2010, Heathrow's new approach now has the support of:

- Local MPs including Kwasi Kwarteng (Spelthorne) and Fiona Mactaggart (Slough) and councillors across West London, and the Thames Valley, who recognise the benefits that expansion will bring and the work we are doing to mitigate the impacts of the airport on their communities
- Our neighbouring local authorities of Slough and Spelthorne, that have made public their support in recognition of the future opportunities and the collaborative approach to addressing the impacts of expansion
- Ministers from the Scottish Government, Northern Irish and Welsh Assemblies, as well as MPs, MSPs, MLAs and AMs from across the political divide who are submitting supportive submissions to the Commission recognising the benefits Heathrow expansion will create for their nation or region
- And, at Westminster, a recent poll showed that 58% of polled MPs back Heathrow expansion compared to 13% who support Gatwick to solve the issues of hub airport capacity. (Ipsos Mori, September 2014).

These examples give a sense of the support now building behind Heathrow. Even some of the neighbouring authorities that remain opposed to expansion are increasingly recognising the positive impacts that growth could bring.

There will always be opposition to major infrastructure projects, whatever form they take and wherever they are built. Even given its vastly different setting, Gatwick expansion too is opposed by local community groups, the majority of local authorities (including Kent, West Sussex County Council and others) and most MPs around the airport. This is not to say that Gatwick or other airports cannot work with their communities to address these concerns. Rather, it merely highlights that Heathrow is not uniquely politically problematic.

However, what's clear is that based on a new approach and meaningful dialogue there is a growing majority of support for Heathrow expansion across our local communities. This is supported by the view from across the UK's business community that the Commission presents the last and best chance to secure Britain's status as a global hub and their ability to trade around the world; and, that Heathrow is the right solution.

All this local and national support creates a political imperative to act on a recommendation from the Commission to build our proposal.

### **8.3.2 Our recommendations**

We recommend that the Commission:

- reflect this evidence of growing majority support for Heathrow and the context of equivalent opposition facing all proposals in its final deliberations
- support the need to continue dialogue with local communities beyond the Commission's work to understand their views and take them into account to help mitigate the impacts of expansion and maximise the benefits

**Question 8: Do you have any other comments?**

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# Section 9

## Summary of Recommendations



↑ Departures  
Arrivals →





## Summary of our recommendations to the Commission

The following summary is provided for convenience to readers. Each recommendation should be read in the context of the full text provided in the relevant section of our response. In case of doubt, the main body of text should be understood as representing our response.

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

We recommend that the Commission:

- appraises our latest Masterplan, version 4.8, published on 29 October 2014 included at Appendix A which has been improved in the following areas:
    - airport boundary cut back by Sipson – site currently contains a number of hotels, offices, light industrial which serve the airport in part but do not have to be CPO'd and/or brought inside the airport boundary
    - EfW plant moved away from Stanwell back to site as close to its original location as possible
    - A3044 re-routed to avoid Poyle village centre
    - balancing ponds by Stanwell Moor re-shaped to avoid local amenities (e.g. football pitches)
    - additional landscape mitigation provided in Stanwell Moor and other locations around the south of the airport
    - long stay car parking/ancillary on Cemex site cut back to avoid Stanwell Place (manor house & estate) – will require further decking
    - plan shows more clearly the location of different types of land use (e.g. hotels, offices, industrial)
    - T2 Long Stay/Business parking consolidated on Northside for greater efficiency and lower PRT cost, away from Sipson. Ancillary replaces parking by Sipson.
  - consider the Construction Delivery Review undertaken by MACE and included at Appendix D.
- 
- acknowledge the engagement work to date and consider how to further develop stakeholder trust using initiatives such as the ARUP SoundLab and the setting up of the Community Noise Forum into their appraisal
  - notes our Blueprint for noise reduction (Appendix K)
  - continue to consider the concept of noise envelopes to regulate aircraft noise in their appraisal work.
  - continue to consider the role of an Independent Aviation Noise Authority
- 
- include Heathrow's improved noise insulation offer into the Commission's appraisal. (See Appendix E)
- 
- include our revised property compensation package into its appraisal. (See Appendix F)

- ensures that our air quality mitigation measures to address air quality emissions are factored in to its assessment
- consults on the results of the detailed air quality assessment once it has been undertaken

- align their boroughs impacted with the boroughs in Heathrow's future one hour travel zone, i.e. increase from 14 to 38
- assess the impacts of the housing mitigation measures that they list on the additional homes that may be required to show a more likely range of outcomes, or outcome
- assess any mitigated upper end housing demand number as being delivered across 38 boroughs rather than 14
- assess the mitigating effects of our commitment to funding assistance equivalent to £5,000 per dwelling for at least 750 new social/affordable homes

- note that the expansion of Heathrow would offer a unique chance to deliver specific benefits to the local, regional and national economies as set out in our Promise of Heathrow<sup>1</sup> publication (attached at Appendix M)

- modify its assessment of the risks that the re-provision of the energy from waste plant presents to the deliverability of the Heathrow North West Runway to 'low'

- include southern rail access in the surface access extended baseline
- remove the capital and operational costs of the southern rail access scheme from the Heathrow NWR business case

- incorporate the recently published Highways Agency traffic modeling for the M4 J3-12 SMART motorway scheme into its assessment
- remove the need for widening the M4 and remove the associated surface access costs for the Heathrow NWR business case

- incorporate the Chancellor's commitments regarding the improvements of the M25 Junctions 10-16 in the 2014 autumn statement into their appraisal
- reconsider the apportionment of costs of the M25 works related to Heathrow's expansion

- updates its surface access appraisal to include mode shift by employee, making use of the Heathrow

modelling outputs that show an increase in public transport use from 36.9% today to 49.1% in 2030

- utilise our latest cost plan in its final appraisal, a summary of which is contained in Appendix B
  - apply a maximum of 8.5% Optimism Bias to the cost plan reflecting the justifications set out in our previous correspondence and as restated in section 5.13.1 of this response
  - assume that the uplift to the May 2014 cost plan for NWR is contained within their already identified optimism bias
- 
- acknowledge the limited level of airline engagement to date and that in conjunction with our airlines there will be further opportunities to refine our scheme and identify cost savings during scheme development
- 
- consider the credibility of promoter's proposals to genuinely engage with local communities and stakeholders to improve their proposals and reflect how scheme promoters have already achieved this during the Commission's process to date

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

We recommend that the Commission:

- clearly sets out the performance of each of the short listed options against the Commission's Terms of Reference in the respective Business Cases i.e. how do the options maintain the UK's status as an international hub for aviation
- 
- explicitly takes account of Heathrow's ability to meet the Commission's Terms of Reference across all its scenarios, and Gatwick's inability to do this; and
  - explicitly account for the risk demonstrated by its scenarios within its final appraisal

The Commission should emphasise that its "carbon capped" and "carbon traded" forecasts represent a robust test of the impact of future carbon policy and pricing on demand for aviation.

- presents all of its appraisal information in a consistent assessment year or years to enable a comparison to be made across appraisal modules.
- 
- clearly distinguishes between mitigation and compensation.

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

We recommend that the Commission:

- broaden its consideration of an expanded Heathrow against the national policy context, taking into account national transport and economic strategies, including the proposals for HS2
  - be innovative in its advice to Government on how an expanded Heathrow might best be integrated into the wider transport networks to ensure that economic benefits can be shared more widely across the UK
  - recommend, in its advice to Government, that the Highways Agency, Network Rail and DfT work with the promoter of the preferred option to develop an integrated transport strategy that includes airport connectivity at its core
- explicitly take account of the proliferation of high value trade and FDI dependent companies around Heathrow compared to the public service and lower value service industries around Gatwick in its Local Economic Impact assessment
- clarify what aspects of our mitigation have been considered in the assessment and to what extent they have been incorporated into the proposal to achieve 'adverse'
  - clarify whether any of the airspace options we submitted form part of this mitigation
- should express a clear view on the value of noise respite in its final appraisal particularly in relation to night noise and quantify this where possible
- undertakes detailed air quality dispersion modelling to inform a robust assessment on air quality
  - consults on the results of the detailed air quality assessment once completed
  - recognises the maturity of the methodology developed for assessing air quality at Heathrow over the years and, where appropriate, incorporate the methodology developed from the PSDH air quality programme into its own further work on air quality
  - includes the mitigation measures proposed by Heathrow in its air quality assessment
- recognise Heathrow's track record and achievements made in reducing emissions to date when considering the effectiveness of the mitigations proposed by Heathrow
- undertakes an assessment of surface access resilience for each of the shortlisted options as set out in the appraisal framework and includes this in the assessment of how each option meets Surface Access Objective 2



- includes the risk to delivery of surface access in its business case
- ensures that it has properly assessed the impact of improvements to the bus and coach network as part of its assessment of future mode share for airport workers and catchment analysis
- reflect this evidence of growing support both locally and nationally for Heathrow expansion and the context of an equivalent but surmountable political challenge facing all proposals in your final deliberations
- support the need to continue dialogue with local communities beyond the Commission's work to understand their views and take them into account to help mitigate the impacts of expansion and maximise the benefits

**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 recommend that the Commission:

- Separates the macro-economic scenarios from operational scenarios:
- Treat the operational scenarios as a sensitivity around a range of plausible macro-economic scenarios
- Does not manually seed routes in NAPAM in the central operational scenario (i.e. route viability should be calculated on the basis of best available information today, without manual, subjective, intervention)
- explicitly recognise that some scenarios are more likely than others, particularly the "Low-cost is King" scenario which relies on the development of untested low-cost long haul services from a secondary "hub"
- adds more analytical rigour and evidence needs to be introduced to the scenarios. For example, the assumption that with no runway development, Heathrow evolves into a point-to-point airport, needs to be reconciled with the evidence that to date the proportion of transfer traffic has been at least stable. The assumption that transfer traffic gets displaced appears to have little empirical basis. Also, the Commission should revisit its assumption on 'seeding'. Under the "Global Growth" LGW 2R scenario, it is assumed that SkyTeam relocates from Heathrow to Gatwick. However, the number of ATMs at Heathrow remains unchanged. It is assumed that "other carriers fill the SkyTeam slots". We think that this creates a significant bias in the results in favour of Gatwick relative to Heathrow.

- ensure that the benefits of Gatwick expansion are not exaggerated by distinguishing more clearly routes that are:
  - additional to London – and so will genuinely add to London's connectivity
  - relevant for business passengers as opposed to tourism
  - to emerging markets where new connections will add greatest value
  - form a view on the substitutability of services between Heathrow and Gatwick, given that Gatwick will lack a hub infrastructure
- measure connectivity on a daily basis, or at least a 3 times a week basis; discounting connectivity of less frequent services, thus ensuring that Gatwick's infrequent services are not given undue weight in the economic impact results.

- should explicitly take account of Heathrow's ability to meet objectives across all the Commission's scenarios and Gatwick's inability to do this. We recommend that this element of strategic risk is explicitly included within the Commission's appraisal.

- reflect in its shadow costs that Heathrow is already constrained today and has been constrained for some time. Therefore, its current shadow costs and unconstrained demand in case of expansion are significantly underestimated;
- include consideration of how much of the reduction in congestion premium (shadow cost) is reflected in lower airline or aviation industry profits;
- reflect that there are substantial efficiency gains from reducing congestion at Heathrow that are not covered by the analysis; and
- provide an intuitive explanation of the differences in the existing results given they do not seem to follow from the model assumptions. It is possible that these results are partially explained by the operating assumptions made in each of the scenarios. If this is the case, it would be useful to understand to what extent results are driven purely by operating assumptions.

- revise the inputs to the wider economic benefit analysis in line with the recommendations made above – i.e. accurately reflect the additional daily connectivity that Heathrow will bring to emerging markets, and appropriately discount European connectivity for the purposes of calculating productivity and trade benefits;
- revise the productivity analysis to reflect the maturity of trade relationships between different trading partners rather than a blanket approach;
- look further at the assumptions made into the impact of tourism from expansion of either Gatwick or Heathrow.

- adopts a more realistic approach to the assessment, which takes into account its own evidence base, rather than an unrealistic worst case scenario. In particular, the assessment should:
    - acknowledge that growth will be across 38 Local Authorities and not just 14 thus spreading any impact more widely and reducing any potential impact on each;
    - include an allowance for employment opportunities to be taken by local people to reflect the potential of Heathrow to reduce unemployment to meet Government targets;
    - reflect the potential for more than one airport worker to live in any home;
    - reflect the potential to reduce out-commuting;
    - reflect the potential for local training and recruitment opportunities to increase the uptake of jobs by local people;
  - acknowledge the potential for Heathrow to support existing planning strategies, for example, the ability to unlock already identified Opportunity Areas and provide employment for their populations;
- includes Southern Rail Access in the extended baseline and removes the capital and operating costs from the Heathrow NWR and Heathrow ENR business cases.
- Remove the costs for the proposed widening on the M4 (J3 to J4 J2 to J3 and J4 to J4b) works to the M4 junctions M4 Spur and existing northern CTA tunnel from the Heathrow NWR business case and any associated impacts from the sustainability appraisal.
- amends its analysis in relation to employee trips at Heathrow to allow for an increase in public transport use from 37% today to 49% in 2030 and reflect this impact in all other relevant assessments.
  - reviews its accessibility analysis to ensure that Crossrail is taken into account and publishes a more detailed set of maps and clear list of assumptions to allow the assessment to be properly reviewed.
- model a scenario reflecting our assumptions and mitigation proposals to be included in the Commission's appraisal alongside the scenarios which are currently presented.
  - clearly state any known limitations in the Commission's modelling methodology.
- the Commission should ensure that the monetisation element is appropriately caveated to make explicit the limitations of the assessment. We would also suggest that the assessment is peer reviewed.
- the Commission undertake a more detailed ground noise assessment or provide the assumptions used in the basis for their assessments.

- the Commission, in undertaking more detailed air quality modelling, take into account our mitigation proposals along with the other policy measures identified;
- consults on the results of the detailed air quality assessment once it has been undertaken.

- the Commission re-examines the statements made on the potential impact upon bird populations to reflect the high uncertainty and low likelihood of bird populations being impacted.

- the Commission considers within its assessment our mitigation proposals for reducing carbon emissions.
- the Commission considers the differing approaches to calculating embodied carbon and takes this into account in its assessment.

The Commission should confirm that the assumptions made by itself and Heathrow are both reasonable and that the only way the mitigation can be any more accurately designed is by undertaking additional assessment work more appropriate to the detailed design and/or consenting stage.

- recognise the reducing pollution loading from de-icer and take this into account in their final assessment of the water quality impacts of the Heathrow scheme.

- reconsiders the high value attributed to the entirety of the Colne Valley regional park and recognise that not all of the park is of the same value in landscape terms. We would like this to be part of the final assessment.

- revisits the Heathrow technical submission and considers the detail of the report before any final assessment is made.

- recognise this short coming in their assessment and improve their methodology to allow for local character.

- sets out the methodology used for establishing property loss associated with surface access is made clear in order to the impacted communities.
- recognise the need to complete a more detailed exercise to determine more accurately the number of residential properties impacted.

- Amends the conclusion at para 6.6 of the Evidence Base Document on the overall 'bundled' effect following mitigation from adverse to neutral to reflect the range of mitigations proposed and the opportunities to set remaining communities on a new footing underpinned by facility provision and other community support mechanisms.
- Take account of the positive effects of airport development as highlighted by the quality of life analysis into the Community cohesion assessment.

We recommend that the Commission use optimism bias figures mitigated further as follows:

	Commission Values	HAL Revised Values
<b>Core</b>	14.5%	3.45%
<b>Scheme – On Airport</b>	19.6%	3.80%
<b>Scheme – Off airport /External</b>	19.6%	16.46%
<b>Asset Replacement</b>	20-30%	2%
<b>OPEX</b>	11.2%	0%

- the chosen methodology, which is different to the current model used for economic regulation at Heathrow, does not overstate the level of charges;
- any inclusion of optimism bias appropriately reflects Heathrow's knowledge and experience of forecasting airport costs and revenues;
- state what airport charges would be under the current regulatory model with clear assumptions that allow outside full verification.

- assume the existing average bond tenor for Heathrow of 12 years currently, rather than make an arbitrary assumption that is inconsistent with that assumed for Gatwick.
- consider extending the tenor for Heathrow relative to Gatwick to allow for Heathrow's better credit rating as indicated in the Moody's report.

- applying a consistent walking speed for Heathrow and Gatwick
- reducing 15 minute disembarkation times to 7 mins as standard today
- including vertical circulation change times in the Gatwick assessment
- reviewing Gatwick walking distance assessment in NT from transfer bus station to furthest gate on Pier 6

- review the impact of differing transfer baggage solutions on baggage delivery times and achievable MCTs

- acknowledges in its summary of Operational Efficiency that Heathrow's NWR scheme has been designed to meet the requirements of ICAO Document 9643 SOIR.
- acknowledges that when the NWR scheme is operating at the assumed limit of 740,000 movements there will be operational resilience.

- acknowledges that there is now little or no risk to either Heathrow's capacity or Northolt operations from the Heathrow expansion proposal.

We recommend the amber designations be reviewed and represented as yellow

- provides unambiguous advice to Government on how it can fully expedite the preparation of a National Policy Statement and delivery of new runway capacity including the need for a clear Government policy announcement as soon as possible following receipt of the Commission's recommendation.

- include the findings of the new Construction Delivery Review and state clearly that the North West runway scheme can be delivered in the timescales indicated, including June 2025 for runway opening;
- re-assess the risk that the relocation of EfW facility presents to this date as 'low risk'.

- revises its passenger forecast for the ENR scheme to assume 625 000 ATMs per year if it is intended that the scheme is to deliver 8 hours of respite per day.

- investigates further the GDP impact of the ENR scheme exceeding that of our NWR scheme in the "Global growth" scenario as the PwC modelling suggests.

- continues to assume the 'on airport' surface access strategy for all Heathrow options and supports the delivery of Western Rail Access in the short to medium term irrespective of expansion.

- the Commission takes into account the discrepancy in the designation relating to the Staines Moor SSSI and reflect this in assessment.

- recalculates embodied carbon for the Heathrow ENR scheme using more realistic capital costs.

- take into account the significant uncertainties and questions that remain about the ENR scheme's



impact on water quality and flood risk in its assessment.

- revises its estimate of the capital cost of the Heathrow ENR proposal utilising the following ranges

High Level Area of Increase	Additional Increase required
Airside – Range	£930m - £1,205m
Landside – Range	£2,185m - £2,710m
OB, Risk and Project Costs – Range	£1,713m - £2,153m
<b>Overall Additions - Range</b>	<b>£ 4,828m - £6,068m</b>

- re-establish a common basis for annual ATM calculation and conclude one of the following:  
 Either:

ENR can only deliver 625,000 movements p.a. and therefore our NWR provides 86% more benefit (270k more movements versus 145k)

Or:

ENR can only provide 2.5 hours of respite per day in total over both modes with resulting community impacts

Or:

The ENR proposal has less resilience than Heathrow has today and will effectively be inoperable.

- takes account of the difference between the two schemes in terms of taxiway congestion in its overall evaluation.

- show an appropriately sized airport that is comparable with the our NWR scheme;
- include the cost estimates for this additional land take in its assessment, as well as the additional environmental impact and property CPO implications which need to be taken account of in its assessment;
- take account of the need for planning/costs for a landside POD or PRT system to link some of these key facilities, in order to help reduce local traffic, as proposed in our NWR scheme, to be included in the ENR scheme.

- discontinue the remote Hub Station Terminal concept given the evidence against this proposal.

- rank the NWR scheme more favourably in its assessment given that it has less inherent risks based upon current procedures than the ENR scheme until more work has been carried out to address those risks in considerable detail.

- assesses our NWR scheme more favourably in relation to ease of operation, fewer constraints, fewer unnecessary carbon emissions and greater flexibility.
- add additional time to the implementation schedule as the runway operation will need to undergo significant additional proving trials (over and above a normal runway) to demonstrate that the new procedures will work in practice and are safe.
- give consideration to meeting current regulatory requirements and any new factors which might arise from an in-line runway concept, including human or pilot perception factors; and
- highlight this as a risk in the operational risk report or undertake further work to provide greater assurance that the risk is manageable.
- considers the commercial complexity consenting strategy and construction schedule complexity on the ENR's delivery schedule and modifies its assessment of the NWR opening date accordingly.
- allowance is made in the ENR delivery programme to take account of commercial issues regarding the ownership of the ENR scheme concept by adding at least 18 months additional time after Government support is announced.
- assumes a DCO approval date no earlier than Q3 2019 for the ENR scheme before taking into account additional schedule risks and adjustments as set out.
- undertakes a more detailed assessment of the ability to deliver the ENR scheme given both the additional construction complexity and more importantly the significant impact it would have on existing operations;
- reflect that these operations would need to be maintained throughout the construction period;
- recognises that the ENR construction commencement would be at least 18 months later than the NWR scheme, due to the commercial negotiations and safety case assessments required prior to DCO submission and consent (and resulting in construction commencing no earlier than Q3 2021).
- add a further 2 years (over and above the NWR construction schedule) due to the added interfaces of the existing northern runway and greater complexity and constraints required with the motorway / road alignment in the ENR scheme; and
- reflect these delays in the overall assessment.
- reviews the overall programme duration to allow for the items of scope omitted from the original cost plan to be included;
- identifies which of the additional items of scope required fall on the critical path and where they do so, add these durations to the schedule additions from item 4.

- benchmark other significant ICAO regulation changes to establish a likely duration for the process adding this in to a clear schedule for overall airspace change
  - validate the ability to deliver this within the same timescale as the consenting and construction period for the ENR scheme to establish whether the overall airspace change is a critical path item; and if it is to amend the delivery schedule accordingly
- adapt the NAPAM model to:
    - capture the fact that an expanded Heathrow can provide a better transfer product than an expanded Gatwick (especially if the inferior low-cost gateway model is assumed at Gatwick;
  - ensure that these modifications reflect that the number of new connections that become commercially viable to provide will be greater at an expanded Heathrow, relative to an expanded Gatwick.
- reflects the smaller connectivity gain possible from Gatwick in any 'second hub' scenario in its modelling and assessment.
- take a more analytical approach to the impact of Gatwick expansion on the local labour market
  - taking specific account of the ability of the market to supply the required additional labour in an area of effectively full employment.
- adopts a consistent approach to forecasting future employee mode share and reflects the associated effects into its appraisal.
- undertakes an assessment of surface access resilience of the Gatwick proposals as set out in its Appraisal Framework and includes this in the assessment of how each option meets Surface Access Objective 2.
- ensures that the assessment of the shortlisted options focuses on the Commission's surface access objectives as set out in its Appraisal Framework.
- recalculate embodied carbon for the Gatwick scheme using more realistic capital costs.
  - revise the assessment and any conclusions drawn in the assessment to reflect the respective depth of the information presented.
- explicitly calculate the impact of airport charge increases on the fares at each airport and assess the likely market impact of such rises.

- Increases its estimate of the capital cost of the Gatwick proposal in the order of £2.25 billion to £2.75 billion after the corresponding additional increases in OB, Risk and Project Costs have been factored in to all extra over values.
- assume a shorter average bond tenor for Gatwick to reflect the maturing of its portfolio over the time period being considered; and
  - concentrate on the respective underlying strength of the business case for Gatwick in assessing funding viability
- takes into account in the final evaluation the additional congestion and operational limitations of the Gatwick scheme
  - in particular its inability to handle increased or regular Code F operations and the limitations this will impose on the future aviation models that the Gatwick might provide
- takes into account both the impact of restricting use of the outer taxiway when the ILS is in operation and aircraft pushing back onto the inner taxiway when modelling the airfield taxiway layout
  - determine whether there is a workable solution or whether stands would need to be taken out and taxiways pushed back in order for there to be an acceptable level of delay or congestion
- considers a 300m/50-60 mph jet blast clearance being the safe base assumption to use, as opposed to a 110-130m/100mph+ jet blast clearance
  - model and assess the taxiway congestion that would be caused by the constrained runway operation or move the northern runway slightly west and the western EAT further west to produce the required 300m buffer zone, which would require more land to the west and increase the scheme costs
- increase the assumed GIFA of the Midfield Terminal to 397,400m<sup>2</sup> to maintain the same level of service as the existing Gatwick Terminals
  - OR assume a deterioration in space per passenger from 30m<sup>2</sup> to 23m<sup>2</sup> per peak hour departing passenger (approximately a 25% reduction from today), which would place the airport among the lowest of those benchmarked by the Commission in Figure 8-3
- review the calculations for MCTs taking account of additional processes and more realistic walking times

- fully factor in the additional forecast risk for the Gatwick masterplan in the Operational Efficiency module as well as across other evaluation areas
- make an allowance in this module for addressing the fact that where an airport is operating below maximum capacity the size of facility required is driven by the peak flow in the most commercially advantageous times of day not the average flow across the day

- assume the concurrent delivery of the Terminal and Pier infrastructure and their airside linkage and
- thus reflect in its assessments the earlier investment or the associated delay to the delivery of facilities and capacity.

- allow additional cost in the Gatwick cost plan to provide adequate flood risk mitigation and provide a consistent approach across all schemes.

- take account of the increased risk of low visibility at Gatwick in the final evaluation of operational risk.

- examines the issues highlighted in the following analysis of the delivery phasing and assure itself that the Gatwick construction schedule (including any further iterations) has taken account of them
- concludes that the Gatwick schedule would require at least a further 6 months for the runway completion and a further 24 months for completion of phase 1.

- examines the scope being delivered and its interaction with the A23 removal date and add an extra 6 months duration to this phase of the works.

- take account of the need to relocate the existing car parking in the analysis of the duration of this phase of the proposed works.

- reviews the impact that the need to provide the new Control Tower will have on this phase of the proposed works and the runway opening date as well as on the capital expenditure cash-flow plan

- carefully assesses the point at which adequate terminal capacity is provided to effectively serve the new runway capacity

- re-assesses the realistic opening date for Phase 1, given the A23 diversion opening date of March 2028 and the facilities that are required to operate a terminal effectively

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

We recommend that the Commission:

- calibrates its assignment of performance assessments so as to distinguish between impacts that are significantly different between schemes. In particular the Commission needs to recalibrate the assignment of both the Transport Economic Efficiency and the Wider Impacts assessments between Heathrow and Gatwick expansion to capture the significantly higher economic impact of Heathrow expansion
- reflects in its analysis that Heathrow is already capacity constrained in the base year of its NAPM model, so that the congestion cost per passenger at Heathrow cannot be lower than that at Gatwick. The Commission could use either slot values or econometric results to do this
- includes consideration that benefits to passengers should be given more weight than any reduction in airline profits
- reflects the substantial efficiency gains from reducing congestion at Heathrow, over and above that quantified by the reduction in aircraft stacking costs
- revises the inputs into the wider economic benefits model (the S-CGE) in line with the higher levels of congestion costs at Heathrow
- revises the S-CGE to reflect the maturity of trade relationships between the UK and different trading countries, by discounting the impact of passenger growth on trade to European markets
- adopt a more critical approach to the impact of Gatwick expansion on the local labour market taking specific account of the ability of the market to supply the required additional labour in an area of effectively full employment. The social value of employment in such a region and the consequences such as pressure on local housing need to be fully assessed
- change the conclusion in the sustainability assessment for Heathrow NWR in relation to surface access from 'neutral' to 'supportive'
- clarify its approach to ensure that the outputs from the noise assessment which show a 'significantly adverse' impact (we assume this to mean 'highly adverse' as per the Commission's performance measurement levels) are considered in the context of UK aviation policy and the Commission's own objectives
- review the assignment of the air quality impacts on our NWR scheme once the detailed assessment work has been completed
- consults on the results of the detailed air quality assessment once this has been undertaken
- corrects the biodiversity assessment for the ENR scheme to reflect that no mitigation is provided for the loss of agricultural land



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

We recommend that the Commission:

- explicitly takes account of Heathrow's ability to deliver hub or point-to-point benefit (e.g. connectivity) across all of the Commission's scenarios, and Gatwick's inability to do this
  - include an assessment of the risk to delivering this connectivity within the Commission's appraisal
- use daily services as the criteria for connectivity to each destination
  - comment on the number of uniquely new connections to the UK that expansion of either Heathrow or Gatwick will bring
- clearly and consistently articulate the degree to which the short-listed options fit with local and regional strategies
- consider the performance of Heathrow's NWR on environmental grounds together with any mitigation proposed and draw conclusions on the degree to which this overcomes the opposition noted in the local plans and the London Plan
- adopts a broader scope in its assessment of the benefits of airport expansion, looking specifically at the unique and indirect effects that can positively enhance the case for other inter-related infrastructure and the benefits that will accrue
- explicitly model the higher benefit of any given increase of connectivity at Heathrow to freight growth compared to Gatwick
- review its calculation of airport charges to ensure that the chosen methodology, which is different to the current model used for economic regulation at Heathrow, does not overstate the level of charges
  - review its calculation of airport charges to ensure that any inclusion of optimism bias appropriately reflects Heathrow's knowledge and experience of forecasting airport costs and revenues
- explicitly calculate the impact of airport charge increases on the fares at each airport and assesses the likely market impacts of such rises

- undertake a proper comparative analysis of the appetite of the financial markets to fund expansion at Heathrow against Gatwick
- concentrate, more generically, on the respective underlying strength of the business cases for Heathrow and Gatwick (including the economic benefits they produce, the expressed supports of airlines), and not become side-tracked into simplistic comparisons of the absolute size of the funding or debt required

- revise its modelling to correct for the under-estimation of the congestion premium at Heathrow (and possibly over-estimation of congestion costs at Gatwick)
- revise the micro-economic methodology for estimating transport economic efficiency to not automatically allow for the under-estimation of congestion premiums (also called shadow costs) by assuming that any reduction as a result of expansion will be off-set by a reduction in airline profits
- give more weight to price reductions to passengers, than profit reductions for airlines
- revise the S-CGE macro-economic analysis trade effects to discount short-haul routes to tourist destinations to distinguish between productivity benefits that accrue from the provision of routes that will aid international trade and investment, compared to essentially tourist routes, or routes to markets where trading relationships are already established

## Q8. Do you have any other comments?

We recommend that the Commission:

- ensures the robustness of its business case and sustainability appraisals as key elements of the evidence base necessary to support the preparation of an Airports National Policy Statement
- sets out a clear and unambiguous recommendation to Government on where and how new runway capacity should be delivered
- provides clear guidance to Government on how it should undertake the preparation of a site and scheme specific Airports NPS, closely reflecting the Commission's recommendation
- provides clear guidance on the most appropriate consenting route to delivering new capacity

- take account of airline preferences and commercial realities in its final recommendation

- reflect this evidence of growing majority support for Heathrow and the context of equivalent opposition facing all proposals in its final deliberations
- support the need to continue dialogue with local communities beyond the Commission's work to understand their views and take them into account to help mitigate the impacts of expansion and maximise the benefits



